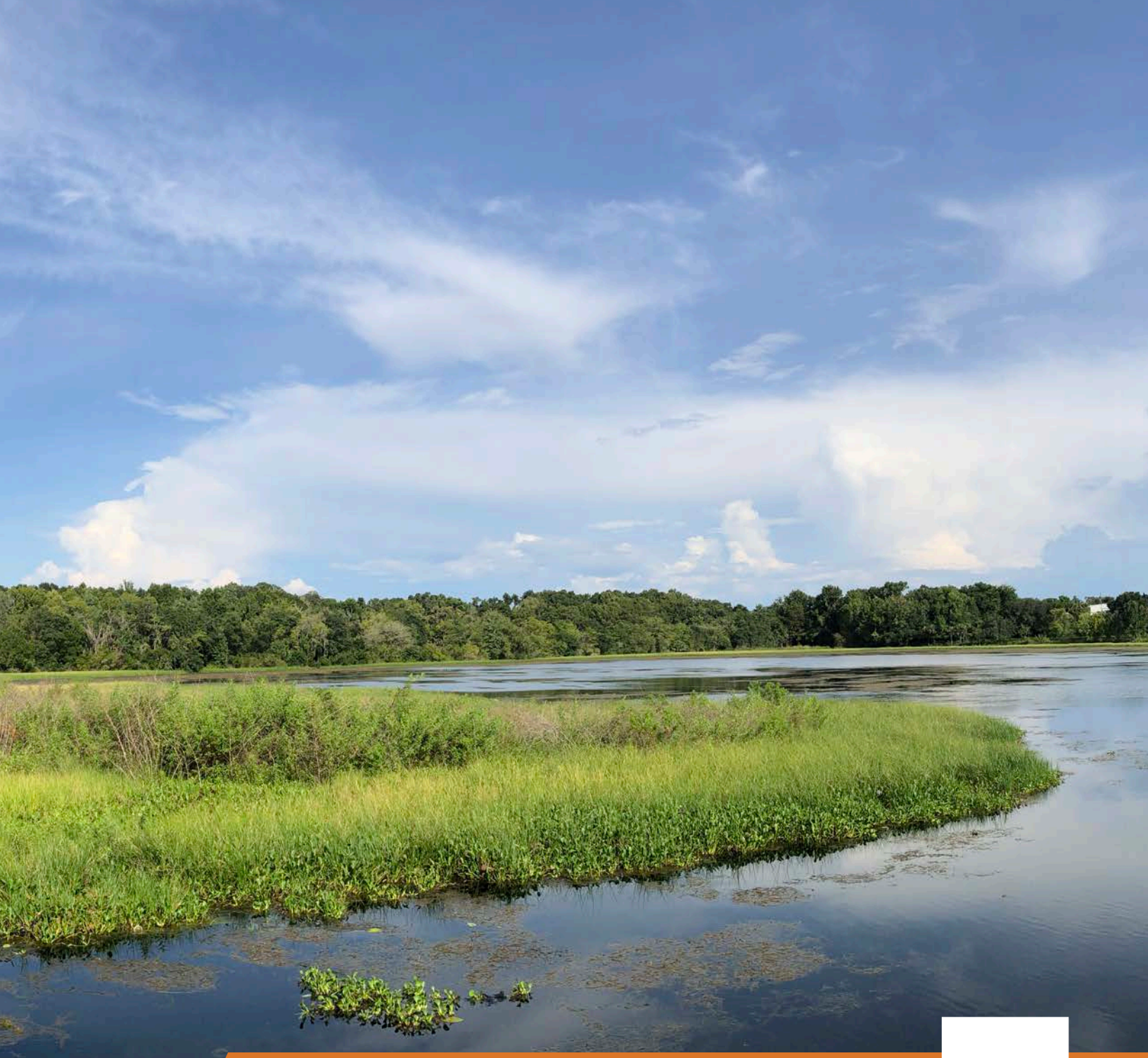


Appendix E

FDOT 2018 REVENUE FORECASTING GUIDEBOOK

Florida Department of Transportation

Revenue Forecasting Guidebook

July 3, 2018



Note

This document is designed to be viewed in an electronic format. All references are hyperlinked.

This is a living, working document. Please report errors, omissions, or corrections to Erika Thompson, Office of Policy Planning, erika.thompson@dot.state.fl.us or 850-414-4807.

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Introduction

The premise of the long range revenue forecast is rooted in federal regulation originally required by the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA). All transportation acts since that time have continued the requirement for a financial plan. Currently, Title 23 of the United States Code (U.S.C.) Section 134 requires a Metropolitan Planning Organization (MPO) Long-Range Transportation Plan (LRTP) to contain a financial plan that demonstrates how the adopted LRTP can be implemented.

The financial plan should indicate resources from public and private sources that are reasonably expected to be made available to carry out the plan and recommend any additional financing strategies for needed projects and programs. The financial plan should demonstrate fiscal constraint and ensure that the LRTP reflects realistic assumptions about future revenues. Additionally, Title 23 U.S.C. Section 134 indicates that the MPO, applicable transit operator, and State should cooperatively develop estimates of funds that will be available to support plan implementation.

Since 1994, the Florida Department of Transportation (FDOT) has worked with the Metropolitan Planning Organization Advisory Council (MPOAC) to develop long range revenue forecasts to assist Metropolitan Planning Organizations (MPOs[1]). The Revenue Forecast helps them to comply with federal requirements for developing cost feasible transportation plans and to demonstrate coordinated planning for transportation facilities and services in Florida. The revenue forecast is used by FDOT for the Strategic Intermodal System (SIS) Cost Feasible Plan (CFP) which is FDOT's plan for identifying projects on the SIS that are considered financially feasible over a period of 11 to 25 years out from the CFP release date.

During the development of the revenue forecast, FDOT meets with and regularly updates the MPOAC on various milestones throughout the process. These updates encourage meaningful conversation about any issues or concerns involving the revenue forecast and allows FDOT to understand and address the concerns of the MPOAC. This regular communication has fostered a cooperative and collaborative environment, assisting the FDOT and MPOs in reconciling their long range plans; thus demonstrating coordinated planning for transportation facilities and services in Florida and better documenting long range needs in the state.

[1] For the purposes of this document, the acronym refers to all forms of a MPO including Transportation Planning Organization (TPO), Transportation Planning Agency (TPA), and Metropolitan Transportation Planning Organization (MTPO).

Purpose

This Guidebook is intended to provide FDOT and MPO staff and consultants with a single source that documents the process for preparing the long range transportation revenue forecast. It also provides the principles by which the process will be guided and the measures used to evaluate the process. Florida's MPOs are advised to use the revenue estimates provided by FDOT and this guidebook to assist in the update of their LRTPs.

If an independent forecast is used, it is in the best interests of all to develop it in a cooperative process with the District and the Office of Policy Planning (OPP).

If a MPO does not use the FDOT revenue forecast, they are required to develop their own independent forecast. Under current FHWA/FTA policy, they are required to document their forecast in their LRTP. Additionally, FDOT recommends (based on 23 CFR 450.324(f)(11)(ii)) that the FDOT Revenue Forecast be included in an Appendix to the LRTP, and that recommendation would still apply even if an MPO develops an independent forecast.

Several fundamental points drive the development of the statewide long range revenue forecast:

- The forecast is based on current federal and state laws, funding sources, and FDOT policies, as well as assumptions concerning factors affecting state revenue sources (e.g., population growth rates, motor fuel consumption and tax rates).

- The FDOT's Program and Resource Plan (PRP) is used as the basis for the forecast. It is the financial planning document used by the Department for the 10-year period that includes the Five Year Work Program. Annual estimates of funding levels for each subprogram and fund source in the PRP are prepared through the horizon year to ensure that the forecast is compatible with the PRP format and structure; however, they are consolidated for analysis and reporting purposes as described later in this document.

- The forecast is centered only on state and federal funds that "pass through" the FDOT Five Year Work Program. It does not include estimates for local government, local/regional authority, private sector, federal funds that go directly to transit operators, or other funding sources except as noted. While these other fund sources are not part of the statewide forecast, they should be considered as part of the overall metropolitan forecast based on their information source.

- The forecast consolidates the numerous fund codes used by the FDOT into three major fund categories: Federal, State, and Turnpike and Tolls. Federal funds include all federal aid (e.g., Surface Transportation Program) that pass through the department's budget. Turnpike funds include proceeds from Turnpike tolls, bonds sold for Turnpike activities, and concession revenues. State funds include the remaining state revenues, such as motor fuel taxes, motor vehicle fees, and right of way bonds. Toll credits are used to match federal aid (referred to as 'soft match') to minimize the state funds used to match regular federal programs.

- No estimates are developed for new revenue sources or increases in existing revenues unless otherwise stipulated in law. This helps ensure long range plans are not jeopardized by erroneous assumptions regarding the time or magnitude of future changes in revenue sources.

- The forecast collapses the Department's major programs into two categories: capacity programs and non-capacity programs. Capacity programs are major FDOT programs that expand the capacity of the state's transportation systems. Non-capacity programs are the remaining FDOT programs that are designed to support, operate, and maintain the state transportation system. Table 1 includes a brief description of each major program. Appendix A contains a more detailed discussion of the programs and the types of activities eligible for funding in each.

- Revenue forecasts estimate the value of money at the time it will be collected and reflects future revenue. Future revenue is often referred to as *year of expenditure* dollars. In recent statewide revenue forecasts, federal funding has been projected to be constant in year of expenditure dollars, meaning it is projected to slowly decline in purchasing power. Typically, state funding has been projected to increase more rapidly, but the projections still amount to slow growth in purchasing power. All amounts in the forecast are expressed in year of expenditure dollars.

- A statewide revenue forecast developed cooperatively, provides consistency in the assumptions and approaches used when estimating future state and federal funding.

- Using the statewide revenue forecast, FDOT will identify planned projects and programs funded with allocations for SIS Highways Construction & ROW, Aviation and Spaceport, Rail, Seaport, and Shared Use Network (SUN Trail, providing a statewide network of paved greenways and trails) programs as part of development of the SIS Cost Feasible Plan. The MPOs will identify planned projects and programs funded by Non-SIS Highways and Transit programs.

Table 1 provides a description of the eight major capacity programs and six major non-capacity programs included in the revenue forecast.

Advisory Concerning Florida's Turnpike Enterprise

Within the framework of the Florida Department of Transportation (FDOT), Florida's Turnpike Enterprise (Turnpike) is given authority, autonomy and flexibility to conduct its operations and plans in accordance with Florida Statute and its Bond Covenants. The Turnpike's traffic engineering consultant projects Toll Revenues and Gross Concession Revenues for the current year and the subsequent 10-year period, currently FYs 2018-2028. The consultant's official projections are available at http://www.floridasturnpike.com/documents/reports/Traffic%20Engineers%20Annual%20Report/1_Executive%20Summary.pdf.

Projections of Turnpike revenues within the State of Florida Revenue Forecast beyond FY2028 are for planning purposes, and no undue reliance should be placed on the

estimates. Such amounts are generated and shared by the FDOT Office of Policy Planning (OPP) for purposes of accountability and transparency in development of this document. Such projections are part of the Revenue Forecast process, which serves the needs of MPOs generating required Long Range Transportation Plans (LRTPs). MPOs do not program capital projects or make decisions concerning Turnpike spending. OPP projections are not part of the Turnpike's formal revenue estimating process and are not utilized for any purpose other than to provide MPOs with an approximation of potential future revenues. Such amounts do not reflect the Turnpike's requirement to cover operating and maintenance costs, payments to bondholders for principal and interest, long-term preservation costs, and other outstanding Turnpike obligations and commitments."

Table 1 Description of the Major Programs Included in the Revenue Forecast

Capacity Programs	Non-Capacity Programs
SIS Highway Construction & ROW – Construction, improvements, and associated right of way on SIS highways (i.e., Interstate, the Turnpike, other toll roads, and other facilities designed to serve interstate and interregional commerce including SIS connectors).	Safety – Includes the Highway Safety Improvement Program, the Highway Safety Grant Program, bicycle and pedestrian safety activities, the Industrial Safety Program, and general safety issues on a Department-wide bases.
Aviation – Financial and technical assistance to Florida's airports in the areas of safety, security, capacity enhancement, land acquisition, planning, economic development, and preservation.	Resurfacing – Resurfacing of pavements on the State Highway System and local roads as provided by state law.
Rail – Rail safety inspections, rail-highway grade crossing safety, acquisition of rail corridors, assistance in developing intercity and commuter rail service, and rehabilitation of rail facilities.	Bridge – Repair and replace deficient bridges on the State Highway System. Includes federal bridge funds which must be expended off the federal highway system (e.g., local bridges not on the State Highway System).
Intermodal Access – improving access to intermodal facilities, airports and seaports, and acquisition of associated rights of way.	Product Support – Planning and engineering required to "produce" FDOT products and services (i.e., each capacity program of safety resurfacing, and bridge programs).
Seaport Development – Funding for development of public deep-water port projects, such as security infrastructure and law enforcement measures, land acquisition, dredging, construction of storage facilities and terminals, and acquisition of container cranes and other equipment used in moving cargo and passengers	Operations & Maintenance (O&M) – Activities to support and maintain transportation infrastructure once it is constructed and in place. The Revenue Forecast includes projections of future FDOT expenditures for O&M on the State Highway System on the District level. Projections are not made on the MPO level because they would not serve any purpose.
Non-SIS Highways Construction & ROW – Construction, improvements, and associated right of way on State Highway System roadways not designated as part of the SIS. Also includes funding for the Economic Development Program, the County Incentive Grant Program, the Small County Road Assistance Program, and the Small County Outreach Program.	Administration and Other – Resources required to perform the fiscal, budget, personnel, executive direction, document reproduction, and contract functions. Also includes the Fixed Capital Outlay Program, which provides for the purchase, construction, and improvement of non-highway fixed assets (e.g., offices, maintenance yards).

Transit – Technical, operating, and capital assistance to transit, paratransit, and ridesharing systems.	
SUN Trail – FDOT is directed to make use of its expertise in efficiently providing transportation projects to develop a statewide system of paved non-motorized trails as a component of the Florida Greenways and Trails System (FGTS), which is planned by the Florida Department of Environmental Protection (FDEP).	

Guiding Principles

Guiding principles establish the foundation by which an organization or process will function. The principles listed below will be used to prepare the statewide revenue forecast. They set the standard of practice for how FDOT will identify and forecast financial resources that are reasonably expected to be available to plan and develop the transportation system.

Financial Integrity

Guiding Principle: FDOT Central Office will demonstrate financial integrity by exhibiting fiscal responsibility when estimating future revenues.

Financial integrity involves responsibly evaluating the probability of risks. As stewards of public money, it is prudent for both FDOT and the MPOs to balance both risk and reward when estimating future revenues. A complete financial plan should consider all potential resources realistically expected to be available under reasonable assumptions at the time of the estimate. Having a financially sound approach can help guard against future unknowns to the greatest extent possible.

Collaboration

Guiding Principle: FDOT Central Office will collaborate with the FDOT District MPO Liaisons and the MPOAC regarding the statewide revenue forecast.

Collaboration is a process where multiple individuals or groups work together to achieve a shared goal. Acknowledging the complex process of developing the statewide revenue forecast, FDOT works with the MPOAC and the MPOs to draft, discuss, and agree upon financial guidelines to ensure consistency in the preparation and use of the forecast. Input and acceptance by all parties (internal and external to FDOT) is important for success and acceptance. Therefore,

agreement on the financial guidelines early in the process helps to minimize the potential for misunderstanding or disagreement as the forecast is prepared.

Communication and Transparency

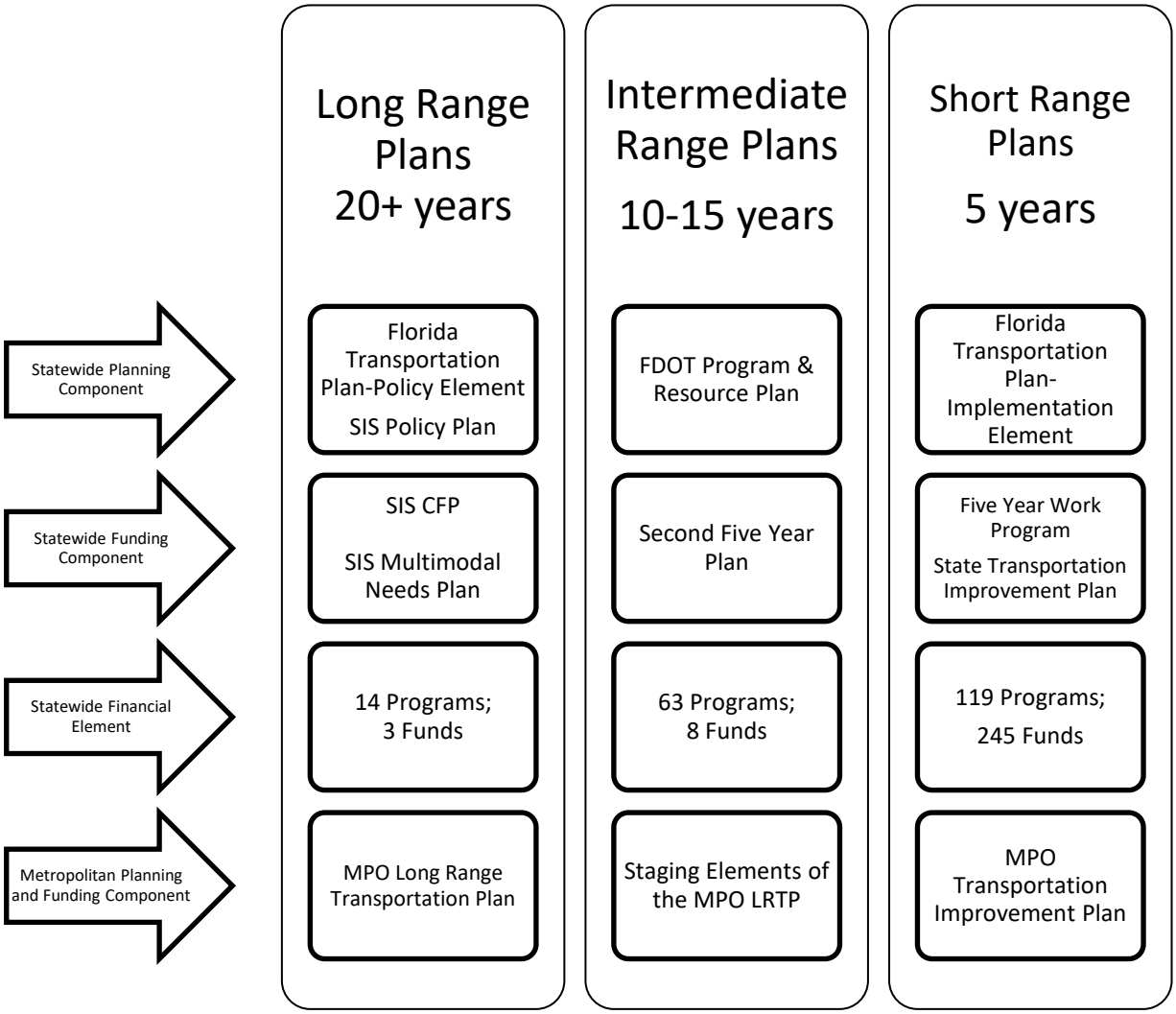
Guiding Principle: FDOT Central Office will communicate with the FDOT District MPO Liaisons and the MPOAC regarding the statewide revenue forecast.

Communication is the transfer of ideas and information among all parties. Communication is the key to FDOT, the MPOAC, and the MPOs making sound decisions to document assumptions on future revenue through the statewide revenue forecast. Throughout the process, it is the intent of FDOT to conduct frequent and thorough updates to encourage open and transparent dialog.

Financial Planning for Transportation

Financial planning for statewide and metropolitan transportation plans is typically required for three periods: long range (20 or more years), intermediate range (10-15 years), and short range (5 years). Figure 1 summarizes the three periods and the types of plans prepared at each stage. The specificity of these plans, including financial elements, varies in detail and implied accuracy. Assumptions, and the level of detail of underlying data, used in development of these three types of plans vary. These assumptions move from general (long range) to specific (short range) as information becomes available as shown below.

Figure 1 Summary of Planning Periods



The following describes the purpose and characteristics for long-, intermediate-, and short-range plans.

Long Range Plans

The purpose of long range plans is to set policy including vision, goals, objectives, and strategies. In some cases, it also identifies needed major improvements while preserving and maintaining prior investments. When improvements are identified, a determination should be made as to those that are "cost feasible". Long range plans are updated every three to five years and are more general than intermediate and short range plans. They are based upon general assumptions and estimates, and can be affected as conditions change (e.g., changes in policy, technology, growth). Characteristics of long range plans typically include:

- Horizons of 20+ years where project plans are sometimes organized in stages (e.g., first five years, second five years);
- Planned public transportation improvements may not specify technologies or detailed access requirements and have general alignments, routes or coverage areas;
- Traffic operations improvements, including the use of Intelligent Transportation System (ITS) techniques, may be included as area-wide programs or multi-corridor programs; and
- System preservation activities such as roadway resurfacing, bridge rehabilitation and maintenance, if included, are treated as programs rather than site- or corridor-specific projects.

In the development of a long range plan, revenue and program forecasts are general in nature to encourage a variety of approaches and technologies to meet stated goals. Program forecasts differentiate only between major types of activities (e.g., capacity improvements for eligible modal programs, preservation programs, and support activities) that are sufficient to develop estimates. Revenue and program forecasts cover 20 or more years and can fluctuate from year to year. Estimates for one year or a few years are not produced because they can be misleading in such a short time frame.

Long range plans are broad guides to the makeup and management of the future transportation system. They do not offer the detail of the FDOT Five Year Work Program or the MPO's Transportation Improvement Program (TIP). Planned improvements and programs may have to be modified as more detailed information becomes available or as conditions change. Project cost estimates and descriptions — including the primary mode in a corridor or system — will change during project development activities. In addition, subsequent changes in revenue estimates, costs, program levels and laws and policies are likely to happen and may affect future 10-year plans such as the Program and Resource Plan (PRP) and shorter term plans such as the Work Program and TIPs. Ideally, these changes are monitored for the purpose of improving the long range planning process.

Long range planning happens at the state and regional/local level. The state carries out long range planning through regular updates of the Florida Transportation Plan (FTP), the Strategic Intermodal System (SIS) Policy Plan, statewide modal plans, the SIS Cost Feasible Plan (CFP), and the Multimodal Unfunded Needs Plan. MPOs document their long range planning efforts with the Long Range Transportation Plan (LRTP).

Types of Plans – State Level
Florida Transportation Plan (FTP). The FTP is the single overarching statewide plan guiding Florida's transportation future. It is a plan for all of Florida created by, and providing direction to the FDOT and all organizations that are involved in planning and managing Florida's transportation system, including the MPOs. The FTP provides the policy framework for the department's intermediate and short range plans including the Program and Resource Plan (PRP), legislative budget requests, and the Work Program.
SIS Policy Plan. The SIS Policy Plan is a primary emphasis of FTP implementation and aligns with the current FTP. The SIS Policy Plan establishes the policy framework for planning and managing Florida's Strategic Intermodal System, the high priority network of transportation facilities important to the state's economic competitiveness. The SIS Policy Plan details policy that focuses on capacity improvements and building a system. It provides guidance for decisions about which facilities are designated as part of the SIS, where future SIS investments should occur, and how to set priorities among these investments given limited funding.
SIS Cost Feasible Plan. The Cost Feasible Plan identifies projects on the SIS that are considered financially feasible during the next fifteen to twenty years based on current revenue forecasts. Projects in this plan could move forward into the Second Five (Years 6 through 10) as funds become available or backwards into the Unfunded Needs Plan if revenues fall short of projections.
Multimodal Needs Plan. The Unfunded Needs Plan identifies transportation projects on the SIS that help meet mobility needs, but where funding is not expected to be available during the time period of the SIS Cost Feasible Plan. Projects in the unfunded needs plan could move forward into the SIS Funding Strategy as funds become available.
Type of Plans – Regional/Local Level
Long Range Transportation Plan (LRTP). The MPO is responsible for developing a LRTP that addresses no less than a 20-year planning horizon. The LRTP encourages and promotes the safe and efficient management, operation, and development of a cost feasible intermodal transportation system. That system will serve the mobility needs of people and freight within and through urbanized areas of this state, while minimizing transportation-related fuel consumption and air pollution. The LRTP must include long-range and short-range strategies consistent with state and local goals and objectives.

Intermediate Range Plans

The purpose of the intermediate range plans is to bridge the gap between long and short range plans given the timing of those two plans. They should show how progress will be made in attaining goals and objectives of the long range plan (e.g., resurfacing objectives). Characteristics include:

- Generally a 10 to 15 year time period
- Increased levels of specificity and detail (but less detail than a Work Program or TIP)
- May be updated each year

Intermediate range planning happens at the state and regional/local level. Intermediate range planning at the state level include production of the Program and Resource Plan (PRP) and the Second Five Year Plan. MPOs accomplish intermediate range planning by updating the staging elements (e.g., highest priority projects for the first 10 or 15 years) of their long range plans.

Types of Plans – State Level
Program and Resource Plan (PRP). The PRP addresses a ten year period. It includes estimates of funding and program accomplishments for over 60 categories of activities (programs or subprograms). Revenue forecasts for these years are developed for four categories of federal funds and four categories of state funds, but specific projects are not identified. Planned program and subprogram levels may have to be modified over time as more detailed information becomes available or as conditions change, including the results of analyses of performance from carrying out previous work programs. FDOT assesses these changes during the annual update and extension of the PRP.
Second (2nd) Five Year Plan. The 2nd Five Year Plan illustrates SIS projects that are scheduled to be funded in the five years following the Tentative Work Program (Years 6 through 10). This plan is developed during the FDOT work program development cycle in the same manner as the Tentative Work Program. Upon annual commencement of the FDOT work program development cycle, the first year of the previous 2nd Five-Year Plan becomes the new fifth year of the Tentative Work Program and the 2nd Five-Year Plan is shifted accordingly. An Approved plan is published for public consumption typically in the fall following the publication of the Adopted Five-Year Work Program.
Types of Plans – Regional/Local Level
Staging elements of the LRTP. As part of drafting the LRTP, the MPO develops a Cost Feasible Plan (CFP) to identify projects for funding by establishing need, defining funding limits, and identifying projects in the Needs Assessment. Projects are evaluated based on project selection criteria that scores a project's benefits and impacts. Within the CFP, the MPO stages projects to be funded based on evaluation criteria and the revenues generally expected to be available during the planning period. The staging of projects should account for limitations in the use of various revenue sources as well as prior investment and commitments to be consistent with the streams of funding from various programs.

Transit Development Plans. TDPs are required for grant program recipients in the Public Transit Block Grant Program, Section 341.052, F.S. A TDP shall be the provider's planning, development, and operational guidance document, based on a ten-year planning horizon and covers the year for which funding is sought and the nine subsequent years. A TDP or an annual update is used in developing the Department's five-year Work Program, the Transportation Improvement Program, and the Department's Program and Resource Plan. It is formally adopted by a provider's governing body, and requires a major update every five years. Technical assistance in preparing TDPs is available from the Department. Specific requirements can be found in Rule 14-73, Florida Administrative Code.

Short Range Plans

The purpose of short range plans – usually called programs – is to identify specific types of work (e.g., planning, engineering, construction) and specific funding (e.g., FDOT fund codes) for projects and programs. They should contain activities that will make progress in attaining goals and objectives of the FTP. Characteristics include:

- Time period of 3-5 years
- Most exact of the three types of planning
- Based on specific assumptions and detailed estimates
- May not be dramatically affected by changed conditions (e.g., adopted projects and programs are intended to be commitments, but may change in extraordinary circumstances).

Short range planning also happens at both the state and regional/local level. The state performs short range planning through production of the Work Program and the State Transportation Improvement Program (STIP). MPOs accomplish short range planning through production of their Transportation Improvement Program (TIP).

Types of Programs – State Level
Adopted Five Year Work Program. The Department's Five Year Work Program addresses project and program funding for the next five fiscal years. It includes detailed information for almost 120 programs and numerous job types, systems, phases, and more than 245 fund categories ("fund codes"). They all have strict eligibility criteria. Changes to the adopted Five Year Work Program are discouraged, but may be required because of revisions to revenue estimates, cost estimates or schedules, or changes in FDOT and MPO priorities. The Work Program is updated and extended each year as part of the Work Program development process.
State Transportation Improvement Program (STIP). The STIP is a federally mandated document including a list of projects planned with federal participation in the next four fiscal years. Although the STIP is approved annually by FHWA at the beginning of each federal fiscal year (October 1st), FHWA allows FDOT to report these four years on a state fiscal year basis (July 1 thru June 30). This is because the report is based upon the same projects that are listed

in the first four years of FDOT's Adopted Five Year Work Program. The STIP and the MPOs TIP must be consistent.
Types of Programs – Regional/Local Level
Transportation Improvement Program (TIP). The TIP is required by state and federal law. It is a prioritized listing/program of transportation projects, covering a period of five years. The TIP is developed and formally adopted by a MPO as part of the metropolitan transportation planning process, consistent with the long range transportation plan. It is developed in cooperation with the Department and public transit operators.

Evaluating the Process of Revenue Forecasting

The measures shown below are quantifiable indicators used to assess progress toward a desired objective. FDOT desires to assess timeliness, level of customer service, frequency, and productivity regarding the production, distribution, and usage of the statewide revenue forecast. This evaluation of the management and planning process demonstrates transparency and accountability both internally among FDOT offices and externally among the MPOAC and the MPOs.

Timeliness: Adherence to schedule

Objective: Produce a timely and accurate forecast to assist the MPO partners in preparation of their long range plans. Timely data is beneficial to producing useful and reliable documents.

Measure: Provide metropolitan level revenue forecast to the MPOs in advance of the next LRTP update cycle.

Target: Within 17 months of first LRTP due in 2019.

Customer Service: Outreach to MPOs

Objective: Ensure the information contained in the revenue forecast is explained and understood based on agreed upon parameters for production. This understanding comes through outreach to partners and assurance that all partners are invited and accommodations are made for participation. This approach to customer service and communication promotes transparency and accountability in the process.

Measure: The number of MPO representatives at the statewide teleconference.

Target: At least one from each MPO.

Measure: Conduct follow up calls to districts and MPOs as requested to obtain feedback on information and explanation provided at the statewide teleconference.

Target: Complete all that are requested.

Measure: Conduct information sessions to MPOs as requested to provide assistance and resources as needed.

Target: Complete all that are requested.

Frequency: Review of financial information

Objective: Provide current financial information as available. FDOT will monitor changes in economic conditions as well as remain closely aligned to the financial information reported by the Revenue Estimating Conference (REC). FDOT will meet with the MPOs as needed to understand the feedback they receive on draft LRTPs concerning the revenue forecast and its relevance to the current economic conditions. FDOT will consider adjustments to the statewide revenue forecast on a periodic basis, if warranted, to determine if a revised revenue forecast is needed for MPOs over the staggered adoption schedule. The current adoption schedule is provided in Table 2.

Measure: Review the statewide revenue forecast to evaluate potential impacts of any change in the financial outlook and update, if needed and when feasible, to ensure relevant and current financial information is being reported.

Target: Evaluate annually

Productivity: Usefulness of document

Objective: Provide financial information that is useful in preparation of long range plan documentation. This is fostered through continuous conversations with the MPOAC and the individual MPOs so that all parties feel ownership in the process.

Measure: The number of MPOs using the statewide revenue forecast as part of the LRTP update process.

Target: 27

Measure: The number of MPOs responding positively concerning the usefulness of the revenue forecast information.

Target: 27

Table 2 LRTP Adoption Schedule

MPO	LRTP Adoption Date Within Current Update Cycle	LRTP Adoption Date Within Next Update Cycle
Palm Beach MPO	10/16/2014	10/16/2019
Miami-Dade Urbanized MPO	10/23/2014	10/23/2019
Hillsborough County MPO	11/12/2014	11/12/2019
North Florida TPO	11/13/2014	11/13/2019
Hernando-Citrus MPO	12/9/2014	12/9/2019
Pinellas County MPO	12/10/2014	12/10/2019
Broward MPO	12/11/2014	12/11/2019
Pasco County MPO	12/11/2014	12/11/2019
River to Sea TPO	9/23/2015	9/23/2020
Gainesville MTPO	10/5/2015	10/5/2020
Charlotte-Punta Gorda MPO	10/5/2015	10/5/2020
Space Coast TPO	10/8/2015	10/8/2020
Florida Alabama TPO	11/3/2015	11/3/2020
Capital Region TPA	11/16/2015	11/16/2020
Ocala-Marion County TPO	11/24/2015	11/24/2020
St. Lucie TPO	12/2/2015	2/3/2021
METROPLAN	12/9/2015	12/9/2020
Lake Sumter MPO	12/9/2015	12/9/2020
Indian River County MPO	12/9/2015	12/9/2020
Polk TPO	12/10/2015	12/10/2020
Collier MPO	12/11/2015	12/11/2020
Martin MPO	12/14/2015	12/14/2020
Sarasota-Manatee MPO	12/14/2015	12/14/2020
Lee MPO	12/18/2015	12/18/2020
Heartland Regional TPO	3/16/2016	3/16/2021
Bay County TPO	7/27/2016	6/22/2021
Okaloosa Walton TPO	3/15/2017	2/16/2022

Timeline for Planning and Conducting the Revenue Forecast

The steps below outline the general timeline for planning and conducting the revenue forecast.

Process Step	M/W/Ds from Workshop*	Estimated Dates	Responsible Party	Date Completed
2016				
Kickoff revenue forecast process with FDOT Central Office	27.5 M	Mid Feb	Martin Markovich	Mid Feb
Begin drafting *Revenue Forecast Guidebook*	27.5 M	Mid Feb	Regina Colson	Mid Feb
Identify changes in process as a result of FAST Act	26.5 M	Mid Mar	Martin Markovich	Mid Mar
Finalize Revenue Forecast Guidebook	22 M	End Jul	OPP	Jan 2018
Begin developing *Financial Guidelines for MPO Long Range Plans*	21.5 M	Mid Aug	MPOAC	Mid Aug
Initiate discussion with MPOAC Policy and Technical Committee on financial guidelines at scheduled meeting	17.5 M	Mid Dec	Regina Colson Martin Markovich	Mid Dec
2017				
MPOAC Board meeting in Sunrise Florida; present outcomes from discussion with MPOAC Policy & Technical Committee on financial guidelines	16.5 M	Jan 26th	Carmen Monroy	Jan 26th
Meeting of Revenue Subcommittee	15.5 M	Feb 10	Regina Colson Martin Markovich	Feb 10
Finalize discussions with SPO regarding SIS Cost Feasible Plan	14 M	End Mar	Martin Markovich	End Mar
Review draft *Financial Guidelines for MPO Long Range Plans* at scheduled meeting	13 M	End Apr	MPOAC	End Apr
Draft revenue forecast information and training materials for MPOs	13 M	End Apr	Martin Markovich	End Apr
Update list of FDOT District MPO Liaison contacts for revenue forecast purposes	1 Y	End May	Alex Gramovot	End May
Establish and document policies for revenues from Managed Lane networks and other P3s	10.5 M	Early Jul	Leon Corbett	Early Jul
Finalize financial guidelines methodology	10.5 M	Mid Jul	MPOAC	Deferred
Receive LRTP Revenue Forecast PRP from OWPB	10.5 M	Mid Jul	Tammy Rackley	Mid Jul
Review LRTP Revenue Forecast PRP; establish program to finalize revenue estimates	9.5 M	Mid Aug	Martin Markovich	Mid Aug
Secure final MPOAC approval of *Financial Guidelines for MPO Long Range Plans* at scheduled meeting	7.5 M	Mid Nov	MPOAC	Deferred
Finalize forecast methodology	7 M	End Oct	Martin Markovich	End Oct

Process Step	M/W/Ds from Workshop*	Estimated Dates	Responsible Party	Date Completed
Receive and review most current REC results	5.5 M	Mid Dec	Martin Markovich	Mid Dec
Perform data reduction to consolidate, collapse, and organize the revenue forecast	5.5 M	Mid Dec	Martin Markovich	Mid Dec

* Approximate months, weeks, or days from Revenue Forecast Workshop (May 2018); "+" means after Workshop

Process Step	M/W/Ds from Workshop*	Estimated Dates	Responsible Party	Date Completed
2018				
Policy Planning management reviews the draft revenue forecast	5 M	Early Jan		
Policy Planning staff finalizes the revenue forecast	5 M	Early Jan		
Finalize revenue forecast information and training materials	4.5 M	Mid Jan		
Transmit highway revenue forecast information to SPO	4.5 M	Mid Jan		
Provide training to districts on how to prepare forecast information for MPO	3 M	End Feb		
Receive and review the Tentative Work Program	3 M	Early Mar		
Receive and review CFP from SPO	2.5 M	Mid Mar		
Transmit CFP to districts for distribution to MPOs	2.5 M	Mid Mar		
Transmit metropolitan estimates to districts for review and comment	2.5 M	Mid Mar		
Transmit all draft revenue forecast information to districts including spreadsheets, final guidebook, and PPT	2 M	End Mar		
Follow up teleconference with FDOT District MPO Liaisons	7 W	Early Apr		
Transmit final spreadsheet and other materials to FDOT District MPO Liaisons	6 W	April 11		
Finalize meeting room, videoconference equipment, etc. with central office and district offices	1 M	April 23		
Transmit custom spreadsheets, guidebook and PPT to MPOs	1 W	May 16		
Conduct statewide video conference (approximately 17 months before first LRTP is due)	**0**	**May 23**		

Process Step	M/W/Ds from Workshop*	Estimated Dates	Responsible Party	Date Completed
Follow up meetings with FDOT District MPO Liaisons and MPO staff to provide clarification, as needed	+1 M	End June		
Feedback sessions with FDOT District MPO Liaisons, as needed	+3-6 M	Sep-Dec		

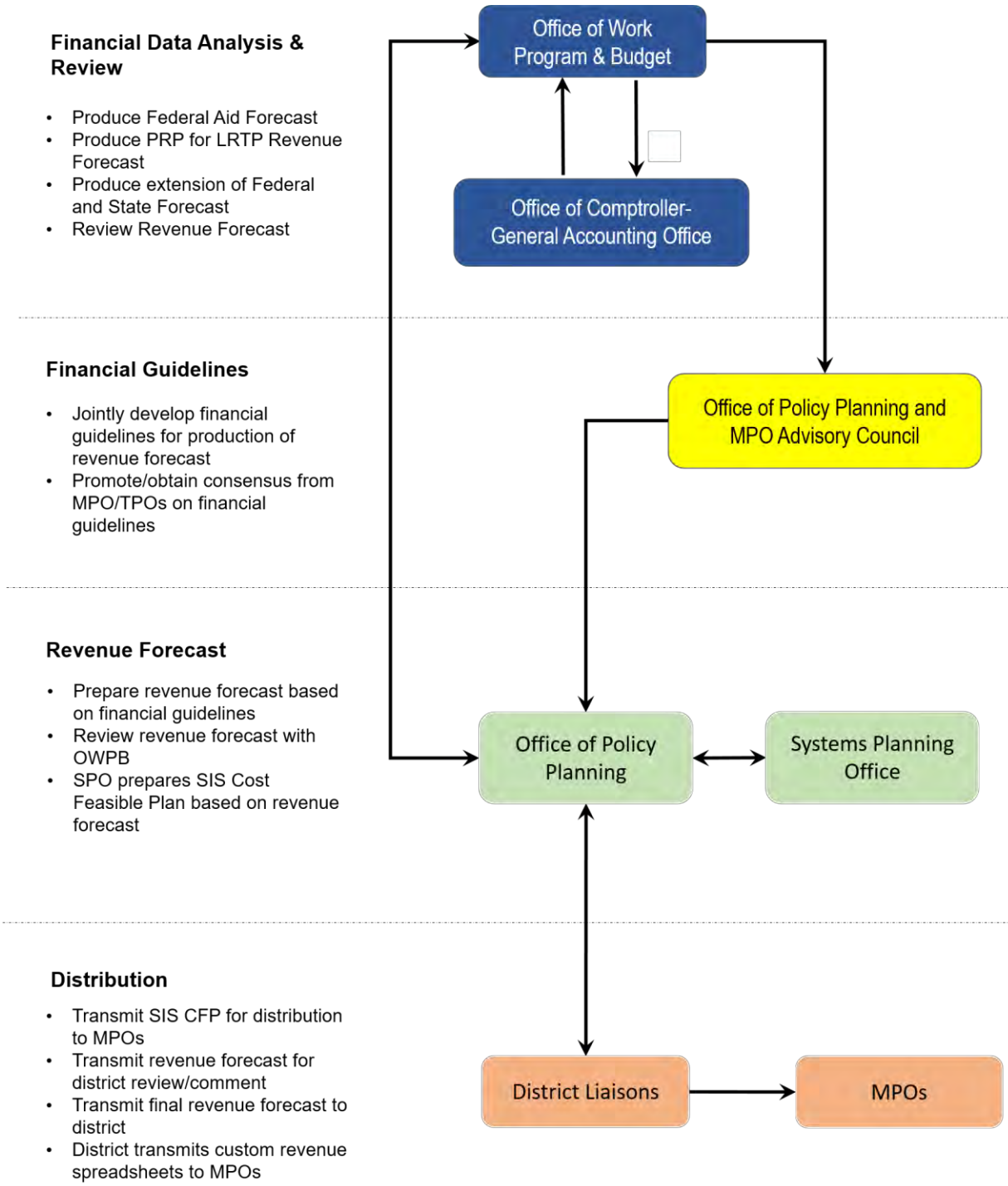
Revenue Forecast Process

As part of assisting with the updates of all 27 metropolitan long range transportation plans, FDOT develops a long range revenue forecast. The forecast horizon is agreed upon by FDOT and the MPOAC. The forecast reflects changes in state revenue since the previous forecast approximately five years prior. The revenue forecast includes estimates through the agreed upon horizon year to provide all MPOs projections concerning state and federal funds that are expected to be included in the FDOT Work Program. The statewide forecast provides consistency and a basis for financial planning across all 27 MPOs. This section provides an overview of roles and responsibilities and details the methodology for producing the revenue forecast.

Overview of Roles and Responsibilities

Production of the statewide revenue forecast involves multiple offices within FDOT and a variety of responsibilities within each office. It also involves communication and collaboration with the MPOAC and the 27 MPOs who represent a diverse arrangement of local and regional entities. The flow of information from each office and entity, as shown in Figure 2, is key to producing an accurate and timely revenue forecast.

Figure 2 Flow of Information for the Revenue Forecast



The roles and responsibilities for each office and entity, as it relates to the statewide revenue forecasting process, are summarized in Table 3.

Table 3 Overview of Roles and Responsibilities for the Revenue Forecast Process

Key Roles	Responsibilities
Intermodal System Development, Office of Policy Planning	
• Director • Economist • Demographics Coordinator • Public Transportation Manager	This office develops, documents, and monitors the statewide and metropolitan planning processes including production of a statewide revenue forecast for statewide and metropolitan long range planning.
Office of Work Program and Budget (OWPB)	
• Program and Resource Allocation Supervisor • Program Plan Supervisor • Finance, Program, and Resource Allocation Manager	This office allocates and manages the resources available to the Department for transportation programs in a manner which is consistent with the Florida Transportation Plan, Florida Statutes, and the mission and vision of the Department.
Office of Comptroller-General Accounting Office (OOC-GAO)	
• Transportation Revenue Coordinator • Project Finance Manager	This office represents the Department at Revenue Estimating Conferences; completes monthly and annual statistical reports to the Federal Highway Administration, and prepares annual updates of the Transportation Tax Source Primer, Transportation Funding Sources presentation, and Bond Finance Update Report. The Project Finance Manager projects surplus toll revenue and transit funding for Managed Lane facilities that have been in service for 5 years or more.
Intermodal System Development, Systems Implementation Office (SPO)	
• SIS Implementation Manager • SIS Statewide Coordinator	This office implements the Strategic Intermodal System (SIS) through the development of the SIS Needs Plan, Cost Feasible Plan, Second Five Year Plan, and the Work Program.

FDOT District MPO Liaisons	
• FDOT District MPO Liaisons	The District offices work with the MPOs in their respective districts to coordinate through the cooperative planning efforts of the MPOs and the FDOT District offices.
Metropolitan Planning Organization Advisory Council (MPOAC)	
• Executive Director	This council provides statewide transportation planning and policy support to augment the role of individual MPOs in the cooperative transportation planning process. The MPOAC assists MPOs in carrying out the urbanized area transportation planning process by serving as the principal forum for collective policy discussion.
MPOAC - Policy and Technical Subcommittee	
• Chair • Subcommittee members	This subcommittee annually prepares legislative policy positions and develops initiatives to be advanced during Florida's legislative session.
Metropolitan Planning Organizations (MPO)	
• Staff Director • MPO Staff	These organizations are made up of local elected and appointed officials responsible for developing, in cooperation with the state and public transportation operators, transportation plans and programs including the long range transportation plan (LRTP). The staff of these organizations are users of the SIS Cost Feasible Plan and the metropolitan estimates.

Methodology for Developing the Revenue ForecastPreparation of the revenue forecast involves multiple offices and occurs over a period of approximately 17-18 months. The offices involved are listed below:

The following steps take place to prepare the revenue forecast (major milestones are called out):

Phase 1 – Office of Policy Planning

- The Office of Policy Planning discusses the update of the *Financial Guidelines for MPO Long Range Plans* with the MPOAC Executive Director and MPOs approximately 17-18 months before the revenue forecast is due. This document outlines the agreed upon guidance for defining and report needs, financial reporting for cost feasible long range plans, revenue

estimates, and developing project costs. It also identifies the agreed upon horizon year and planning time periods.

- The Office of Policy Planning Economist meets with the Systems Implementation Office (SPO) to discuss timing of the revenue forecast for use in the SIS Cost Feasible Plan.

- The Office of Policy Planning, in consultation with the MPOAC and MPOs, finalizes the *Financial Guidelines for MPO Long Range Plans*.

Phase 2 – Offices of Finance and Administration

- Using the financial information provided to the states through the current federal authorization act (currently the FAST Act), the Office of Work Program and Budget (OWPB), Program and Resource Allocation Supervisor develops the FDOT Federal Aid Forecast. This forecast uses the inflation factors provided in the current federal authorization act through the life of the act (currently through FY 2020). OWPB calculates a projection of federal funding for Florida for several years beyond the end of the current federal authorization. The timeframe for the FDOT Federal Aid Forecast is the same as the Program and Resource Plan, generally a period of 11 years. This forecast is provided to the Office of the FDOT Comptroller-General Accounting Office (OOC-GAO) Transportation Revenue Coordinator.

- The OOC-GAO Transportation Revenue Coordinator develops a forecast of state revenues as input to the Transportation Revenue Estimating Conference (REC) and the Highway Safety REC. When preparing this forecast, FDOT assumes current law and administrative practices will remain in effect. The current year forecast is adjusted based on this observation and the historical proportion the data represents the total annual amount. FDOT uses forecasted growth in population, households (total number and average size), net migration, income, total tourism, air tourism, new vehicles sales, fuel prices, average vehicle mileage, and construction expenditures as its assumptions depending on the tax sources.

- All or part of the FDOT forecast may be included in the official forecast adopted by the conference principals, which then becomes the State Revenue Forecast (note: different from FDOT's statewide revenue forecast produced for the MPOs). FDOT also receives documentary stamp revenue forecasted at the General REC.

- Because the REC and Federal Aid forecasts only go out 10-11 years, the OOC-GAO Transportation Revenue Coordinator creates the State Transportation Trust Fund forecast. OOC-GAO extrapolates the federal and state 10-year forecasts out to the horizon year agreed upon by FDOT and the MPOAC using the following steps:

    - For the long range federal forecast, the Federal Aid Forecast discussed above is used and the rate held constant out to the horizon year. At this time, the projection is held constant in year of expenditure terms from the last year of the current act (FY 2020). With an expectation of future inflation, this projection means that Federal Aid will slowly decline in real terms.

- For the state forecast, the growth trend in years 6-10 are used and held constant out to the horizon year. Adjustments are made for fee revenue that does not change (flat fees).

- The OOC-GAO Transportation Revenue Coordinator prepares a spreadsheet to determine which revenues are exempt from inclusion in the public transportation allocation.

- The OOC-GAO Transportation Revenue Coordinator provides the State Transportation Trust Fund forecast to the OWPB, Program Plan Supervisor for use in creating the Revenue Forecast Program and Resource Plan (PRP). This document, prepared specifically for use in the LRTP Revenue Forecast process, begins with the tentative work program plus the new 'fifth' year and the next four years.

Note: The official tentative work program is due to the Governor and Legislature two weeks after the start date of legislative session. This tentative work program is the desired file to use in drafting the LRTP Revenue Forecast PRP. However, much depends on the timing of the REC cycle and the legislative session that year. The financial forecast resulting from the REC is used as the basis for the work program. Sometimes the tentative work program may be amended because of changes that are documented in the REC. It is important for the Office of Policy Planning to work closely with the Office of Work Program and Budget to ensure the most appropriate forecast with the understanding there is flexibility in the process.

- The OOC-GAO Project Finance Manager, after consulting with OPP, projects surplus toll revenue and transit funding for Managed Lane facilities that have been in service for 5 years or more.

- The OWPB, Program Plan Supervisor organizes the extended PRP into a variety of files using the information from the OOC-GAO Transportation Revenue Coordinator. These files are arranged for:

    - Statewide

    - SIS

    - P3 (This information in this file is reported as programmed because the amounts have already been inflated.)

    - Statewide less SIS & P3

- The OWPB Program Plan Supervisor reviews the various plans with the OWPB Finance, Program and Resource Allocation Manager for quality control.

Phase 3 – Office of Policy Planning

- The extended PRP is sent to the Office of Policy Planning Economist for review to ensure the document follows current policy, is mathematically correct, and is financially reasonable. The Office of Policy Planning Economist discusses and resolves any issues with OWPB staff.

- The Office of Policy Planning Economist reviews the extended PRP for anomalies in the extended years. The Office of Policy Planning Economist researches the anomalies that exist and smooths the data. This technical function ensures data outliers do not skew the overall results.

Note: To ensure accuracy of the formulas and the worksheet mechanics used to calculate the forecast, a test run was performed in the year prior to when the official revenue forecast is due.

- The Office of Policy Planning Economist smooths the data from the extended PRP. This involves using revenues and expenditures from the Work Program, which includes complete data, to revise projected revenues and expenditures for the outer years, in this case FYs 2027-2045. It also involves smoothing dollar values to eliminate abrupt crashing or soaring. There is no reason to forecast major, abrupt changes in dollar values in the 2030s or 2040s.

- With the smoothed data from the PRP, the Office of Policy Planning Economist performs a data reduction process to:

Policy Planning performs data reduction process

  - Consolidate the numerous fund codes used by the FDOT into three major fund categories: Federal, State, and Turnpike
    - Federal funds include all federal aid that passes through the Work Program
    - Turnpike funds include planning projections of proceeds from Turnpike tolls, bonds sold for Turnpike activities, and concession revenues
    - State funds include the remaining state revenues, such as motor fuel taxes, motor vehicle fees, and right-of-way bonds
  - Collapse the FDOT's major programs into two categories: capacity and non-capacity.
    - Capacity programs are major FDOT programs that expand the capacity of Florida's transportation systems.
    - Non-capacity programs are remaining FDOT programs that are designed to support, operate, and maintain the state transportation system.
  - Break down the capacity program funds geographically by county based on statutory formula.

- Statutory formula gives a 50 percent weight to the county's population as enumerated by the most recent census and a 50 percent weight to the county's recent annual gas tax receipts.

- The Office of Policy Planning Economist, in consultation with Office of Policy Planning Director and other Office of Policy Planning staff, reviews and edits the revenue forecast as necessary to ensure accuracy.

- The Office of Policy Planning Economist finalizes the revenue forecast and prepares the worksheets for each county's share of the statewide estimate.

- The Office of Policy Planning Economist provides the SPO the revenue forecast for highways to be used in the SIS Cost Feasible Plan. The Office of Policy Planning and SPO meet as needed to discuss the revenue forecast results for highways.

- The Office of Policy Planning Economist receives and reviews the SIS Cost Feasible Plan from the SPO for reasonableness. The Office of Policy Planning Economist, in consultation with SPO, transmits the SIS Cost Feasible Plan to the FDOT District MPO Liaisons for distribution to the MPOs.

- The Office of Policy Planning Economist transmits the metropolitan estimates from the revenue forecast to the FDOT District MPO Liaisons for review and comment. Based on comment from FDOT District MPO Liaisons, the Office of Policy Planning Economist will adjust if necessary in consultation with the appropriate managers and offices.

Phase 4 – FDOT Districts and Office of Policy Planning

- Within a week of transmission of the SIS Cost Feasible Plan and the metropolitan estimates, Office of Policy Planning staff provides training to FDOT District MPO Liaisons on the SIS Cost Feasible Plan and the metropolitan estimates from the revenue forecast. The training will explain how the District staff should package the metropolitan estimates for their MPOs.

- The FDOT District MPO Liaisons transmit the final metropolitan estimates and updated Revenue Forecast Handbook to all MPOs.

FDOT transmits final estimates to MPOs.

- Within a week of transmission of the metropolitan estimates, the Office of Policy Planning staff in conjunction with the FDPOT District MPO Liaisons and the MPOAC, conduct a statewide videoconference to review the agreed upon revenue forecast process and all materials distributed detailing the metropolitan estimates and the SIS Cost Feasible Plan.

- The Office of Policy Planning staff follows up with FDOT Districts and MPOs to offer meetings as needed to discuss specific details of individual metropolitan estimates.

Conduct statewide videoconference

Revenue Forecast Handbook for MPOs

The estimates and the guidance in this section were prepared by FDOT, based on a statewide estimate of revenues that fund the state transportation program, and are consistent with:

- "Financial Guidelines for MPO 2040 Long Range Plans" adopted by the Metropolitan Planning Organization Advisory Council (MPOAC) in 2012. Since the MPOAC Board has not adopted Financial Guidelines for the current LRTP cycle, FDOT is working with the previous adopted guidelines, which, with minor adjustments to time bands, are quite applicable to the current processing.

- "Federal Strategies for Implementing Requirements for LRTP Update for the Florida MPOs", adopted *Month Year*, prepared by the U. S. Department of Transportation, Federal Highway Administration in cooperation with the Federal Transit Administration.

This section documents how the Revenue Forecast is developed and provides guidance for using the forecast information in updating MPO plans. FDOT develops metropolitan estimates from the Revenue Forecast for certain capacity programs for each MPO. To be perfectly clear, it has never been FDOT policy to forecast estimates for specific fund codes in the Revenue Forecast, and it is not current FDOT policy. The metropolitan estimates are included in a separate document entitled "Supplement to the Revenue Forecast Handbook" prepared for each MPO. A separate report entitled *Appendix for the Metropolitan Long Range Plan* is prepared for each MPO to include in the documentation of its long range plan. Further guidance on use of these estimates is provided in the section, *Developing a Cost Feasible Plan*.

General Guidance on Using the Estimates

The metropolitan estimates are summarized into five fiscal year periods and a final 10-year period. For planning purposes, some flexibility should be allowed for estimates for these time periods (e.g., within 10 percent of the funds estimated for that period). However, for the LRTP to be fiscally constrained, it is required the total cost of all phases of planned projects for the entire forecast period not exceed the revenue estimates for each element or component of the plan.

When developing long range plans, MPOs are not legally required to use the same terminology used in the Department's Revenue Forecast such as *Non-SIS Highways Construction & ROW*. However, MPOs should identify the metropolitan estimates from the forecast, the source of the revenues, and how these revenues are used in documentation of their plan updates.

MPOs are encouraged to document project costs and revenue estimates for their long range transportation plans for fiscal years 20xx-20xx. This will provide a common basis for analyses of finance issues (e.g., unmet transportation needs). Appendix C includes inflation factors and guidance for converting project costs estimates to *year of expenditure* dollars.

Metropolitan Estimates

This section describes the revenue forecast information concerning metropolitan estimates and the guidance for using this information. The metropolitan estimates are for planning purposes only and do not represent a state commitment for funding, either in total or in any 5-year time period.

Metropolitan estimates reflect the share of each state capacity program planned for the area. The estimates can be used to fund planned capacity improvements to major elements of the transportation system (e.g., highways, transit). FDOT will develop an appendix for MPO plans that identifies statewide funding estimates and objectives for non-capacity programs.

Statewide estimates for major state programs are based on current laws and policies. The major program categories used in the forecast are listed below.

Major Program Categories

Capacity Programs	**Non-Capacity Programs**
Statewide	Safety
SIS Highways Construction & ROW	Resurfacing
Aviation	Bridge
Rail	Product Support
Intermodal Access	Operations & Maintenance
Seaport Development	Administration
Non-SIS Highways Construction & ROW	
Transit	
Sun Trail	

The forecast of funding levels for the Department's programs are developed based on the Program and Resource Plan. Annual estimates of funding levels through 2045 are based on federal and state laws and regulations and Department policies at the time the forecast is prepared. For example, statewide funding levels are established to accomplish the program objectives for resurfacing, routine maintenance, and bridge repair and replacement. These estimates are summarized to reflect the major program categories used in the 2045 Revenue Forecast.

Capacity Program Estimates

The FDOT Central Office prepares district and county estimates from the statewide forecast based on methods developed in consultation with MPOs, FDOT program managers, and district staff as shown in Table 4. Using this information prepared by the Central Office, District staff develops MPO estimates consistent with district and county shares of the statewide forecast, adjusting as needed to account for issues such as differences between metropolitan area boundaries, county boundaries or Transportation Management Area boundaries. The metropolitan estimates for each

MPO are included in a separate document, entitled "Supplement to the 2045 Revenue Forecast Handbook."

Table 4 Methodology for Determining District and Metropolitan Estimates from the 2045 Revenue Forecast

Major Capacity Program Category	Methodology
SIS Highways Construction & ROW	Based on the 2045 SIS Highways Cost Feasible Plan and other sources. Funding estimates and projects to be provided to MPOs.
Non-SIS Highways Construction & ROW	Generally, distribute funding estimates by statutory formula. Also develop estimates for TMA (SU) and Transportation Alternatives funds in TMAs; those funds taken "off the top" before distributing remaining funds. Apprise MPOs that at least some portion of these funds can be planned for Transit. Develop "off system" estimates. SCOP and CIGP are also included here.
Transit	Use statutory formula to distribute funds to Districts and counties.
Aviation	Because the primary use of Aviation funds is for airside improvements not a part of MPO planning, develop only statewide estimates.
Rail	Because of uncertainties with long range passenger rail and absence of commitments to specific rail corridors, develop only statewide estimates.
Intermodal Access	The future of this program is not clear, given the creation of the SIS. As a result, develop only statewide estimates
Seaport Development	Statewide estimates only, the Florida Seaport Transportation Economic Development (FSTED) Council identifies projects eligible for funding.
SUN Trail	Statewide there is a $25 million annual allocation from the redistribution of new vehicle tag revenues. FDOT uses the State Transportation Trust Fund (STTF) to develop a statewide system of nonmotorized, paved trails for bicyclists and pedestrians as a component of the Florida Greenways and Trails System (FGTS).
Operations and Maintenance Estimates	Develop district-wide estimates of funding for Resurfacing, Bridge and Operations & Maintenance programs and provide to MPOs, per agreement between FDOT and FHWA Division Office related to reporting Operations and Maintenance estimates for the State Highway System in MPO LRTPs.

Statewide Capacity Programs

FDOT is taking the lead in identifying planned projects and programs funded by the following major programs: SIS Highways Construction & ROW, Aviation, Rail, Seaport Development and Intermodal Access. SIS Highways Construction & ROW projects and revenues are identified in the SIS Cost Feasible Plan and are provided to MPOs with the other elements of the revenue forecast. The SIS Cost Feasible Plan includes all roads on the Strategic Intermodal System including connectors between SIS corridors and SIS hubs. These estimates are for planning purposes and do not represent a commitment of FDOT funding. It should be noted that FDOT continues to work with modal partners to identify aviation, rail, seaport, and intermodal access projects beyond the years in the work program. However, FDOT and its partners have not been able to identify cost feasible projects beyond the work program sufficiently to include them in the SIS Cost Feasible Plan and therefore, in MPO cost feasible plans.

Other Capacity Programs

The Department requests that MPOs lead in the identification of planned projects and programs funded by the non-SIS Construction & ROW and Transit programs. MPOs may use the total funds estimated for these two programs to plan for the mix of public transportation and highway improvements that best meets the needs of their metropolitan areas. Since, the FDOT is responsible for meeting certain statutory requirements for public transportation funding, MPOs should provide the level of Transit Program funding for transit projects and programs.

Transportation Management Area (TMA) Funds

FDOT provides estimates of funds allocated for Transportation Management Areas, as defined by the U. S. Department of Transportation. They are the same as "SU" funds in the Five Year Work Program. MPOs should perform a thorough analysis of how these funds are to be reflected in their long range plan. The following is guidance for that analysis.

Planning for the Use of TMA Funds

MPOs eligible for TMA Funds are provided estimates of total TMA Funds. MPOs are encouraged to work with FDOT district programming and planning staff to determine how to reflect TMA Funds in the long range plan. Consideration should be given to:

- Programmed use of TMA Funds among the various categories in the FDOT revenue forecast. These include Non-SIS Highways Construction & ROW, Product Support (e.g., Planning, PD&E studies, Engineering Design, Construction Inspection, etc.), SIS Highways Construction & ROW, Transit.
- Planned use of TMA Funds based on policies regarding the planned use of funds through the long range plan horizon year.
- Clear articulation in the long range plan documentation of the policies regarding the use of TMA funds, and estimates of TMA funds planned for each major program and time period.

Transportation Alternatives (TA) Funds

FDOT provides estimates of funds for Transportation Alternatives, as defined by MAP-21, to assist MPOs in developing their plans. Estimates of Transportation Alternatives funds allocated for TMAs (i.e., "TALU" funds) are provided to each TMA.

Estimates of funds for areas with populations under 200,000 (i.e., TALL funds) and for any area of the state (i.e., TALT funds) are also provided to MPOs. MPOs may desire to include projects funded with TALL or TALT funds in the long range transportation plan. If so, the MPO should identify such projects as "illustrative projects" in its plan.

Funds for Off-System Roads

The Department estimates the amount of funds that may be used off-system which are funds that could be used for planned programs or projects on roads that are not on the State Highway System (i.e., roads owned by counties and municipalities). "Off-System" funds are included in the non-SIS Construction & ROW program estimates, which are comprised of federal and state funds. **By law, state funds cannot be used for highway improvements not on the State Highway System, except to match federal aid or for SIS connectors owned by local governments or for other approved programs which could include projects not on the SHS such as SCOP and CIGP.** Federal funds included in the Non-SIS Highways program estimates may be used anywhere except for roads that are functionally classified as local or rural minor collectors, unless such roads were on the federal-aid system as of January 1, 1991.

All estimates of TMA funds (see above) may be used on off-system roads. The following is guidance for estimating other federal funds that can be used for off-system roads:

- MPOs in TMAs can assume all estimated TMA funds and 10% of the FDOT estimates of Non-SIS Highways Construction & ROW funds can be used for "Off-System" roads.

- MPOs that are not in TMAs can assume that 15% of Construction & ROW funds provided by FDOT can be used for "Off-System" roads.

Preliminary Engineering Estimates

MPOs are encouraged to include estimates for key pre-construction phases in the LRTP, namely for Project Development and Environmental (PD&E) studies and Engineering Design.

FDOT has included sufficient funding for these and other Product Support activities to produce the construction levels in the 2045 Revenue Forecast. Costs for these phases for SIS highways will be provided to MPOs in the 2045 SIS Highways Cost Feasible Plan. For projects funded with the revenue estimates for Non-SIS Highways Construction & ROW Funds provided by FDOT, MPOs can assume that the equivalent of 22 percent of those estimated funds will be available from the statewide Product Support estimates for PD&E and Engineering Design. Note: these funds are in addition to the estimates for Non-SIS Highways Construction & ROW funds provided to MPOs. MPOs should document these assumptions.

For example, if the estimate for Construction & ROW in a 5-year period is $10 million, the MPO can assume that an additional $2.2 million will be available for PD&E and Design in the 5-year period from FDOT Product Support estimates. If planned PD&E and Design phases use TMA funds, the amounts should be part of (i.e., not in addition to) estimates of TMA funds provided to MPOs.

The Department encourages MPOs to combine PD&E and Design phases into Preliminary Engineering in LRTP documentation. Boxed funds can be used to finance Preliminary Engineering; however, the specific projects using the boxed funds should be listed, or described in bulk in the LRTP (i.e., Preliminary Engineering for projects in Fiscal Years 2027-2045).

Additional State Revenues

It is well known that State of Florida gas tax revenues and fees are a primary source of funding the State Transportation Trust Fund (STTF).

Doc stamp taxes dedicated to the STTF have fluctuated because of volatility in the Florida real estate market and complex provisions in the law governing this major source of Florida revenues. Recent years have been characterized by recovery in the real estate market, and the projections of the transportation Revenue Estimating Conference (REC) indicate continued growth in this source of funding. However, state law provides for a cap of $541.75 million per year on doc stamp taxes that can be allocated to the STTF. If growth continues as projected, this cap is estimated to be reached sometime in the next 10-15 years.

The following information regarding transportation proceeds from doc stamp taxes, fuel use tax fees, rental car surcharges and Motor Vehicle License fees is useful for planning of these funds in metropolitan LRTPs. None of these funds are specifically allocated on the County or MPO levels. Therefore, most categories of funding should not be used for funding constrained projects within LRTPs.[2]

Small County Outreach Program (SCOP)

Annually, 10% of the doc stamp transportation proceeds is allocated to this program for transportation projects in small counties and small cities. These allocations are made based on population as prescribed in law. The 2045 Revenue Forecast assumes these funds will not be available for projects in metropolitan areas. Other funding sources may include local option gas tax. *Additionally,* under provisions added to law in 2015, 5% of initial Motor Vehicle License fees is allocated to the SCOP.

New Starts Transit Program

Annually, 10% of FDOT doc stamp funds are applied to the Florida New Starts Program. State eligibility requires that:

[2] Funds allocated to the SIS are a somewhat different case. SIS projects are identified by FDOT, and they must be included in the LRTP in order to advance toward construction.

- Project must be a fixed-guideway rail transit system or extension, or bus rapid transit system operating primarily on a dedicated transit right of way;
- Project must support local plans to direct growth where desired;
- State funding limited to up to 50% of non-federal share;
- Local funding is required to at least match state contribution and be dedicated to the project; and
- Eligible phases are final design, right of way acquisition, construction, procurement of equipment, etc.

MPOs may desire to include projects partially funded with statewide New Starts funds in the long range transportation plan. Any commitment of these funds by FDOT should be documented in the LRTP. Otherwise, the MPO should identify such projects as "illustrative projects" in its plan along with, at a minimum, the following information:

- Description of the project and estimated costs;
- Assumptions related to the amount of statewide New Starts funding for the project; and
- Assumptions related to the share and amount of non-State matching funds for the project (federal and local) and the likelihood such funding will be available as planned.

MPOs should work with their district office in developing and documenting this information.

Strategic Intermodal System

After allocations to the Small County Outreach Program and the New Starts Transit Program, 75% of the remaining Documentary Stamp tax funds are allocated annually for the SIS. Additionally, at least 20.6% of initial Motor Vehicle License fees is allocated to the SIS. Section 339.61(1) requires $60 million to the SIS. FDOT will plan for these funds as part of the SIS Cost Feasible Plan, which provides funding and project information to MPOs.

Transportation Regional Incentive Program (TRIP)

After allocations to the Small County Outreach Program and the New Starts Transit Program, 25% of the remaining documentary stamp tax funds are allocated annually to TRIP. Additionally, 6.9% of initial Motor Vehicle License fees is allocated to TRIP. Of the doc stamp funds allocated to TRIP, the first $60 million are apportioned annually to the Florida Rail Enterprise. The purpose of TRIP is to encourage regional planning by providing state matching funds for improvements to regionally significant transportation facilities identified and prioritized by regional partners. TRIP funds are distributed to the FDOT Districts based on a statutory formula of equal parts population and fuel tax collections. Table 5 outlines TRIP requirements in Florida law. MPOs are provided estimates of TRIP funds. TRIP will fund up to 50 percent of eligible project costs.

MPOs may desire to include projects partially funded with TRIP funds in the long range transportation plan. If so, the MPO should identify such projects as "illustrative projects" in its plan along with, at a minimum, the following information:

- Status of regional transportation planning in the affected MPO area, including eligibility for TRIP funding;
- Description of the project and estimated costs;
- Assumptions related to the share and amount of district TRIP funding for the project; and
- Assumptions related to the share and amount of non-State matching funds for the project (federal and/or local) and the likelihood such funding will be available as planned.

MPOs should work with their district office in developing and documenting this information.

Table 5 TRIP Requirements in Florida Law (s. 339.155(4) and s. 339.2819, Florida Statutes)

Projects to be funded with TRIP funds shall, at a minimum: 1. Serve national, statewide, or regional functions and function as an integrated regional transportation system; 2. Be identified in the capital improvements element of a comprehensive plan that has been determined to be in compliance with Part II of Chapter 163, F. S. after July 1, 2005, and be in compliance with local government comprehensive plan policies relative to corridor management; 3. Be consistent with the Strategic Intermodal System Plan; and 4. Have a commitment for local, regional, or private financial matching funds as a percentage of the overall project cost.
In allocating TRIP funds, priority will be given to projects that: 1. Provide connectivity to the Strategic Intermodal System; 2. Support economic development and the movement of goods in rural areas of critical economic concern; 3. Are subject to a local ordinance that establishes corridor management techniques, including access management strategies, right-of-way acquisition and protection measures, appropriate land use strategies, zoning, and setback requirements for adjacent land uses; and 4. Improve connectivity between military installations and the Strategic Highway Network or the Strategic Rail Corridor Network.

SUN Trail

State law now provides that $25 million of the annual initial Motor Vehicle License fees are allocated to the Florida Shared-Use Nonmotorized Trail Network (SUN Trail). This statewide network is being constructed by FDOT, and FDOT bears the primary responsibility for planning it. SUN Trail projects from the FDOT Work Program need to be included in MPO's TIPs to advance. As such, these TIP projects would also be required for the LRTP. MPOs may wish to

include proposed, but not programmed, SUN Trail projects among the illustrative projects included in their LRTPs. Finally, MPOs may wish to highlight planned connections with SUN Trail stemming from other Bike/Ped projects, or from projects of any mode.

Non-Capacity Programs

Non-Capacity Programs refer to the FDOT programs designed to support and maintain the state transportation system including safety; resurfacing; bridge; product support; operations and maintenance; and administration. Consistent with the MPOAC Guidelines, FDOT and FHWA agreed the LRTP will meet FHWA expectations if it contains a summary of FDOT estimates to operate and maintain the State Highway System in the FDOT district in which the MPO is located. FDOT provides these estimates in the "Supplement to the 2045 Revenue Forecast Handbook." FDOT also includes statewide funding for these programs in the forecast to meet statewide objectives as laid out in Florida Statute for operating and maintaining the State Highway System.

FDOT provides an "Appendix for the Long Range Metropolitan Plan" to MPOs to include in the documentation of their long range plans. The appendix is intended to provide the public with documentation of the state and federal financial issues related to each MPO plan and to facilitate reconciliation of statewide and metropolitan plans. The appendix will describe how the statewide 2045 Revenue Forecast was developed and identifies the metropolitan area's share of the forecast's capacity programs. In addition, the appendix includes the forecast's statewide estimates for non-capacity programs, which are sufficient for meeting statewide objectives and program needs in all metropolitan and non-metropolitan areas. This appendix should accomplish the goal of ensuring that sufficient funding will be available to operate and maintain the state transportation system in metropolitan areas.

Other Funds

The Department makes certain expenditures that are not included in major programs discussed above. Expenditures include debt service and, where appropriate, reimbursements to local governments. These funds are not available for statewide or metropolitan system plans.

Other Transportation Revenue

Local government revenues such as taxes and fees; federal funds distributed directly to local governments; local or regional tolls play a critical role in providing local and regional transportation services and facilities. The Department does not have access to detailed information on local and regional revenue sources and forecasts of revenues expected from them. Information on many of those sources can be found in *Florida's Transportation Tax Sources: A Primer*[3] and the *Local Government Financial Information Handbook*.[4] The following is guidance to MPOs in the identification and forecasting of current revenue sources, potential new sources and the development of long range estimates.

Current Revenue Sources

Initially, MPOs should identify sources of local and regional revenues that have funded transportation improvements and services in recent years and are expected to continue. The following is a summary of sources potentially available.

Local Government Taxes and Fees

Local government sources include those that are dedicated for transportation purposes. In many areas they are supplemented by general revenues allocated to specific transportation programs (e.g., transit operating assistance may be provided from the general fund). Other sources are available for transportation if enacted by one or more local governments in the metropolitan area. Local government financial staff will have information on recent revenue levels, uses of funds, and trends.

State Imposed Motor Fuel Taxes

Florida law imposes per-gallon taxes on motor fuels and distributes the proceeds to local governments as follows: the Constitutional Fuel Tax (2 cents); the County Fuel Tax (1 cent); and the Municipal Fuel Tax (1 cent). The Constitutional Fuel Tax proceeds are first used to meet the debt service requirements on local bond issues backed by the tax proceeds. The remainder is credited to the counties' transportation trust funds. The County Fuel Tax receipts are distributed directly to counties. Municipal Fuel Tax proceeds are transferred to the Revenue Sharing Trust Fund for Municipalities, combined with other non-transportation revenues, and distributed to municipalities by statutory criteria. The Constitutional Fuel Tax may be used for the acquisition, construction, and maintenance of roads. The County Fuel Tax and Municipal Fuel Tax may be used for any legitimate transportation purpose. Estimated distributions of these sources can be found in the *Local Government Financial Information Handbook*.

[3] *Florida's Transportation Tax Sources, A Primer*, is published annually by FDOT at: http://www.dot.state.fl.us/officeofcomptroller/pdf/GAO/RevManagement/Tax%20Primer.pdf

[4] *Local Government Financial Information Handbook*, is an annual publication of the Florida Legislature's Office of Economic and Demographic Research at http://edr.state.fl.us/Content/local-government/reports/lgfih12.pdf.

Local Option Motor Fuel Taxes

Local governments may levy up to 12 cents of local option fuel taxes pursuant to three types of levies. Recent proceeds from these optional motor fuel taxes for each county are contained in the *Local Government Financial Information Handbook*.

First, a tax of 1 to 6 cents on every gallon of motor and diesel fuel may be imposed by an ordinance adopted by the majority vote of the county commission or by countywide referendum for up to 30 years. However, this tax is imposed on diesel fuel in every county at the rate of 6 cents per gallon. These funds may be used for any legitimate county or municipal transportation purpose (e.g., public transportation operations and maintenance, road construction or reconstruction). In addition, small counties (i.e., less than 50,000 as of April 1, 1992) may use these funds for other infrastructure needs.

Second, a tax of 1 to 5 cents on every gallon of motor fuel sold may be imposed by a majority plus one vote of the county commission or by countywide referendum. These funds may be used for transportation purposes to meet the requirements of the capital improvement element of an adopted comprehensive plan. This includes roadway construction, reconstruction, or resurfacing, but excludes routine maintenance.

Third, a tax of 1 cent (often referred to as the Ninth-Cent Fuel Tax) on every gallon of motor and diesel fuel sold may be imposed. A county can impose the tax on motor fuel by an extraordinary vote of its board of commissioners or by referendum. However, this tax is imposed on all diesel fuel sold in every county. These funds may be used for any legitimate county or municipal transportation purpose (e.g., public transportation operations and maintenance, construction or reconstruction of roads).

Other Transportation-Related Sources

Examples of these sources include public transportation fares and other charges, toll revenues from local or regional expressway and/or bridge authorities, transportation impact fees, and other exactions. The use of, and levels of proceeds from, these sources varies significantly among metropolitan areas.

Property Taxes and Other General Revenue Sources

Most local governments finance some transportation facilities and/or services from their general fund. These revenue sources include property taxes, franchise or business taxes, and local government fees. Sources, funding process, and eligible services vary widely among local governments. Local government financial staff have information on recent revenue levels, uses of funds, trends, and other information needed by MPOs.

Discretionary Sales Surtaxes

A Charter County and Regional Transportation System Surtax of up to 1% may be levied by charter counties, counties that are consolidated with one or more municipalities, and counties within or under an interlocal agreement with a regional transportation or transit authority created under Chapter 343 or Chapter 349, subject to a referendum. These funds may be used for fixed

guideway rapid transit systems, including the cost of a countywide bus system that services the fixed guideway system. Proceeds may also be transferred to an expressway or transportation authority to operate and maintain a bus system, or construct and maintain roads or service the debt on bonds issued for that purpose.

A Local Government Infrastructure Surtax of either 0.5% or 1% may be levied for transportation and other purposes. The governing authority in each county may levy the tax by ordinance, subject to a successful referendum. In lieu of county action, municipalities representing the majority of the county population may adopt resolutions calling for countywide referendum on the issue and it will take effect if the referendum passes. The total levy for the Local Government Infrastructure Surtax and other discretionary surtaxes authorized by state law (for school construction, hospitals and other public purposes) cannot exceed 1%. See section 212.055, Florida Statutes, for more information on these discretionary sales surtaxes.

Federal Revenues

These are revenues from federal sources that are not included in the 2045 Revenue Forecast. Examples include federal assistance for aviation improvements and capital and operation assistance for transit systems. Potential sources distributed directly to local governments or authorities include revenue from the Federal Airport and Airway Trust Fund, the Federal Highway Trust Fund (Mass Transit Account), and the Federal General Fund.

Bond Proceeds

Local governments may choose to finance transportation and other infrastructure improvements with revenue or general obligation bonds. These types of local government bonds are often area wide and/or designed to fund programs (e.g., transportation, stormwater) and/or specific projects. Primarily for this reason, analyses of the potential use of this source should be undertaken separately from analyses of the use of bonds for toll facilities, where toll revenues from specific projects are used for project costs and debt repayment.

Other Current Sources

Other possible sources include private sector contributions or payments, such as proportionate share contributions. Often, these will be sources for specific projects or programs.

New Revenue Sources

Revenues from current sources have not been sufficient to meet transportation capacity, preservation, and operational needs in Florida's metropolitan areas. MPOs should examine the potential for new revenue sources that could be obtained to supplement current sources to meet those needs. This examination of each potential source should include analyses of:

- Authority (how sources are authorized in current state and/or local laws and ordinances);
- Estimates of proceeds through 20xx;
- Reliability of the estimates (e.g., amount, consistency); and
- Likelihood that the source will become available (e.g., the probability that the proceeds will be available to fund improvements, taking into account issues such as previous state

and/or local government legislative decisions, results of previous referenda, and commitments from decision makers).

Optional Sources Authorized by Current State Law

Communities in most metropolitan areas have not taken full advantage of some of the optional and discretionary transportation revenue sources authorized by current state law. These include the Ninth-Cent Fuel Tax, the full 11 cents available from the Local Option Fuel Tax, the Charter County and Regional Transportation System Surtax, and the Local Government Infrastructure Surtax. Where authorized, these sources are subject to either the approval of local governing bodies or referenda.

Innovative Financing Sources

Typically, these are other sources that are used in some local areas in Florida or other states, but are not used in a specific metropolitan area (e.g., toll facilities). Most require state and/or local government legislative authorization before they can be established.

In addition, state and/or federal law has authorized several transportation finance tools that can make additional funds available or accelerate the completion of needed projects. These tools are described in Appendix B, *Leveraging, Cash Flow and Other Transportation Finance Tools*.

Development of Revenue Estimates

MPOs should develop estimates through 2045 for each current or new revenue source. Typically, these will be annual estimates that should be summarized for longer time periods (e.g., 5 years) for plan development purposes. MPOs should consult with financial planning staff from local governments and service providers and consider the following issues.

Historical Data

Information should be obtained related to factors that may affect the revenue estimates, such as recent annual proceeds and growth rates. MPOs should consider forecasting methodologies that include the relationships of revenue growth rates to other factors (e.g., population growth, retail sales), to assist with revenue projections, particularly if little historical data exist or annual proceeds fluctuate significantly (e.g., proceeds from impact fees).

Adjustments for Inflation

Estimates of future revenue sources usually identify the value of money at the time it will be collected, sometimes referred to as *year of expenditure* or *current* dollars, and reflect future growth in revenue and inflation. If this is not the case, see Appendix C for factors used for adjusting revenue forecasts to "year of expenditure" dollars.

Use of Revenues for Maintenance and Operations

About 50 percent of state and federal revenues in the 2045 Revenue Forecast is planned for non-capacity state programs. The emphasis on non-capacity activities funded with local and regional

revenue sources may vary widely among metropolitan areas, but it is important to ensure that sufficient local funds are planned for maintenance and operations activities. Those revenues needed for non-capacity programs should not be considered to be available to fund capacity improvements.

Constraints on the Use of Revenues

MPOs should identify any constraints or restrictions that may apply to a revenue source for its use to fund multimodal transportation improvements. For example, federal and local transit operating assistance may be limited to transit services and cannot be used to fund highway improvements. Other constraints include any time limitations on the funding source, such as the limitations on levies of discretionary sales surtaxes.

Developing a Cost Feasible Plan

Each MPO has established a process for updating its cost feasible plan for its metropolitan transportation system. These processes include public involvement programs tailored to the metropolitan area; schedules for identifying needs, and resources; testing of alternative system networks; and adoption. The Department, particularly through its district planning staff, is an active partner in assisting each MPO in plan development. This section, recognizing the diversity of structure in each MPO, provides general guidance and recommendations to MPOs in updating their cost feasible plans. The guidance should be tailored to the plan development process including establishing local priorities identified in each metropolitan area.

Project Identification

The long range plan will define the transportation system that best meets the needs of the metropolitan area and furthers metropolitan and state goals. The system plan will be comprised of transportation projects and/or programs that are expected to be implemented by 20xx, consistent with the MPOAC *Financial Guidelines for MPO 2045 Long Range Plans*. Projects and programs for at least the years 2027-2045 will be identified in TIPs and FDOT Adopted Work Programs[5].

The following discusses projects or programs that should be identified for the years 2027-2045. They should be considered as candidates for inclusion in the adopted long range system plan, subject to each MPO's plan development process, including the reconciliation of all project and program costs with revenue estimates. MPOs are encouraged to clearly identify *regionally significant* projects, regardless of mode, ownership, or funding source(s).[6]

Statewide Capacity Programs

The Department is taking the lead in identifying planned projects and programs funded by these major programs: SIS Highways Construction & ROW, Aviation, Rail, and Intermodal Access. SIS Highways Construction & ROW projects planned within metropolitan areas were provided at the same time as the 2040 Revenue Forecast. These estimates are for planning purposes and do not represent a commitment of FDOT funding.

MPOs are encouraged to review those projects with district staff, identify any projects or areas that require further discussion, and reach agreement with district staff on how those projects will be incorporated in the update of the metropolitan cost feasible plan.

Issues that may require further discussion include candidate projects not included in the SIS Highways Cost Feasible Plan. These may include projects or major project phases that could not be funded by the estimates for the SIS Highways Construction & Right-of-Way program. Information to be discussed should include: project descriptions and cost estimates, funding

[5] Several Florida MPOs are not scheduled to update LRTPs until 2020 and beyond. MPOs are encouraged to use the latest information available in the TIP or FDOT Adopted Work Program for any years after FY 2023 that may be available.

[6] See "Federal Strategies for Implementing Requirements for LRTP Update for the Florida MPOs," for a description of regionally significant projects.

sources (e.g., Non-SIS Highways Construction & Right-of-Way funds; local, authority or private sector sources), and relationship to other planned improvements.

Other Capacity Programs

The MPOs will lead in identifying projects or programs that could be funded, or partially funded, by the state with (1) Non-SIS Highways Construction & Right-of-Way and (2) Transit programs. Estimates of those funds have been provided to MPOs. Each MPO should consider the mix of highway and transit projects and programs that best serves its metropolitan area, and that the funding estimates for these two programs are "flexible" for the years 2027-2045. MPOs are encouraged to work with district staff as candidate projects are identified and reach agreement on how they will be incorporated in the update of the metropolitan cost feasible plan. The following should be considered:

- Project Descriptions and Cost Estimates - MPOs should work with district staff, local governments, authorities and service providers, and private sector interests to develop project descriptions and cost estimates in sufficient detail for their planning process. Projects may include improvements to the State Highway System, transit system improvements, and components of Transportation System Management (TSM) and Transportation Demand Management (TDM) programs such as intersection improvements, traffic signal systems, ridesharing programs, and ITS projects.

- Costs of Major Phases - At a minimum, MPOs should identify construction, right-of-way, and Preliminary Engineering (PD&E and Design phases) costs separately. These estimates will be needed because (1) the Non-SIS Highways program estimates include state funding for construction plus right-of-way, and (2) sufficient funds have been estimated to provide planning and engineering (i.e., Product Support as defined in Appendix A) for all state capacity programs. Specific estimates for right-of-way costs should be used for any project where such estimates exist. For other projects, the Department will provide information on the relationship of construction and right-of-way costs to assist with these calculations (see Appendix C for more information).

- Potential Supplemental Funding - MPOs should identify potential revenue sources that could be used to supplement the estimates from the Non-SIS Highways and Transit programs to fund, or partially fund, these projects. This includes federal funds that are not part of the Department's revenue forecast, or revenues from local and private sector sources.

Other Projects and Programs

Revenue and project information provided by the Department is intended for those activities that are funded through the state transportation program. Other transportation improvement activities in metropolitan areas may include improvements to local government roads, transit programs that are financed by local revenues and funds, and projects and programs for modes that are not funded by the state program. It is recommended that the following types of information should be developed for these candidate projects and programs: (1) project descriptions and cost estimates, (2) costs of major phases, and (3) funding sources.

Development of a Cost Feasible Multimodal Plan

Development of a *cost feasible multimodal system plan* requires a balancing of high-priority improvements with estimates for expected revenue sources, subject to constraints regarding how certain funding estimates can be used. The Department has provided some flexibility for one-third of the state and federal funds estimated for capacity improvements between 2027 and 2045. Due to program constraints included in the 2045 Revenue Forecast and other sources (e.g., federal transit operating assistance), the following discussion of major system plan elements is organized by transportation mode.

Highways

The highway element of the multimodal system plan will be comprised of current or proposed facilities that are SIS highways, the remainder of the State Highway System, and appropriate local roads. These three components must be examined separately because of the constraints related to the use of revenue estimates for various programs. MPOs may choose to include "illustrative projects" in their plan, partially funded with Transportation Regional Incentive Program (TRIP) funds. See the guidance under *Documentary Stamps Tax Funds* in the Metropolitan Area Estimates section of this handbook for more information.

- SIS Highways

  The MPO should identify planned improvements and funding for corridors on the SIS, consistent with the 2045 SIS Highways Cost Feasible Plan and any adjustments agreed upon by the Department. Such adjustments could result from agreements to supplement SIS funds to either accelerate or add improvements to SIS Highways.

- Other Roads

  The MPO should identify planned improvements and funding for corridors that are not on the SIS. Potential funding sources include the "flexible" funds from the state Non-SIS Highways Construction & ROW and Transit programs, and funds from local or private sector sources that have been identified as reasonably available.

- Local Highways and Streets

  The MPO should identify planned improvements and funding for local road facilities that should be included in the long range plan. The Department has provided estimates of off-system funds in the statewide forecast that can be used for these improvements, provided they meet federal eligibility requirements. Off-system funds estimated by the Department may be used anywhere except for roads that are functionally classified as local or rural minor collectors, unless such roads were on a federal-aid system as of January 1, 1991. Other funds should include local or private sector sources that have been identified as reasonably available.

- Operational Improvements Programs

  MPOs should identify program descriptions and funding levels for transportation system management programs such as intersection improvements, traffic signal systems, and ITS projects. Transportation demand management program descriptions and funding levels can be identified in the highway element, in the transit element, or separately. Generally, such programs should be funded with revenues estimated for the State Non-SIS Highways Construction & ROW and Transit programs or local revenue sources.

Transit

MPOs should identify transit projects and programs and funding for local or regional bus systems and related public transportation programs in the transit element in cooperation with transit providers. Demand management programs, including ridesharing, bicycle and pedestrian projects can be included, or can be identified separately. Potential funding sources include the "flexible" funds from the state Non-SIS Highways Construction & ROW and Transit programs, federal and local transit operating assistance, and other funds from local or private sector sources that have been identified as reasonably available. MPOs may choose to include "illustrative projects" in their plan, partially funded with New Starts Program funds. See the guidance under *Documentary Stamps Tax Funds* in the Metropolitan Area Estimates section of this handbook for more information.

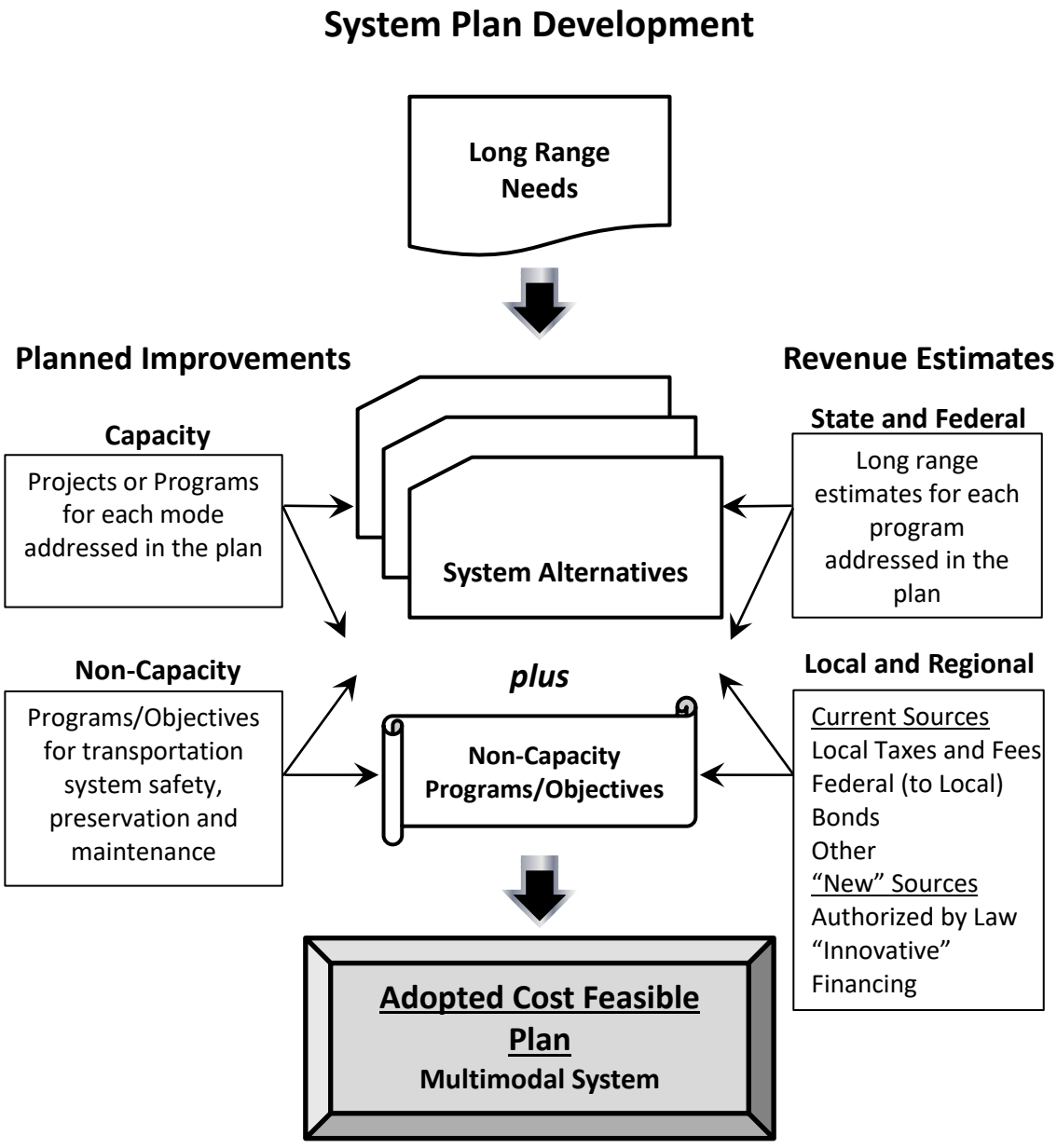
Balancing Planning Improvements and Revenue Estimates

It is expected that each MPO will test several alternative plans leading toward adoption of a cost feasible multimodal plan for the metropolitan transportation system (see Figure 3 below). The system alternatives should examine different ways to meet state and metropolitan goals and objectives through priority setting, and should be analyzed within the context of the metropolitan area's public involvement program. They may contain alternative mixes of the candidate projects discussed above, alternative schedules for implementation, and alternative improvements for specific projects. Throughout this process, MPOs should reconcile project costs with revenue estimates, taking into consideration the revenues estimated for transportation improvements and any flexibility or constraints associated with the estimates.

State and federal estimates for 20xx-20xx are prepared in five-year time periods to assist MPOs with the testing and staging of alternatives. For planning purposes, some flexibility should be allowed for estimates for these time periods. For example, the total cost of planned projects for the period 20xx-20xx for funding with the flexible Non-SIS Highways and Transit estimates should be within 10 percent of the funds estimated for that period. It is strongly recommended, however, that the total cost of planned projects for the entire 2027-2045 period not exceed revenue estimates for the entire period for each element or component of the plan.

As part of LRTP documentation, MPOs should identify all projects planned to be implemented with federal funds within the first 10 years of the plan.

Figure 3 Cost Feasible Plan Project and Financial Planning
Metropolitan Long Range Transportation Plan Development



Appendix A: State Transportation Programs and Funding Eligibility

This appendix defines the major program categories used in the 2045 Revenue Forecast and provides guidelines for what types of planned projects and programs are eligible for funding with revenues estimated in the forecast. Metropolitan plan updates that incorporate the information from this revenue forecast should be consistent with these guidelines.

State Transportation Programs

The 2045 Revenue Forecast includes all state transportation activities funded by state and federal revenues. The basis for the forecast is the framework of the Program and Resource Plan (PRP), the Department's financial planning document for the 10-year period that includes the Work Program. The PRP addresses over 60 programs or subprograms. The chart at the end of this Appendix lists programs and major subprograms and how they have been combined for the revenue forecast.

Major Program Categories

Revenue estimates for all state programs were combined into the categories shown in Table 6. The funding eligibility information is organized according to these categories and the responsibilities for project identification for each program. Each of the major programs falls under one of the following PRP groups of programs:

- Product – Activities which build the transportation infrastructure.
- Product Support – Planning and engineering required to produce the products.
- Operations & Maintenance – Activities which support and maintain transportation infrastructure after it is constructed and in place.
- Administration – Activities required to administer the entire state transportation program.

Table 6 Major Program Categories

Program and Resource Plan	Major Programs	
	Capacity	Non-capacity
Product	SIS Highways Construction & ROW Non-SIS Highways Construction & ROW Aviation Transit Rail Intermodal Access Seaport Development	Safety Resurfacing Bridge
Product Support		Product Support Preliminary Engineering
Operations & Maintenance		Operations & Maintenance
Administration		Administration

Planning for Major Programs

MPO long range plans will contain project and financial information for a wide range of transportation improvements expected through 2045. The Department and MPOs share the responsibility for identifying these improvements and the expected funding for each. The information in this document is limited to projects and programs funded with state and federal revenues that typically are contained in the state Five Year Work Program. MPOs must also consider projects and programs in their long range plans that may be funded with other sources available within the metropolitan area. These include local government taxes and fees, private sector sources, local/regional tolls, and other sources each MPO may identify. Responsibilities, and the general level of detail required for long range plans, include:

- Capacity Programs – to the extent possible, project descriptions and costs will be developed for each transportation mode, consistent with estimated revenues, as follows:

    - SIS Highways, Aviation, Rail, Seaport Development and Intermodal Access – the Department leads in project identification in each metropolitan area.
      Note: The Department continues to work with modal partners to identify aviation, rail, seaport, and intermodal access projects beyond the years in the Work Program. However, FDOT and its partners have not been able to identify cost feasible projects beyond the Work Program sufficiently to include them in the SIS Cost Feasible Plan and, therefore, in MPO cost feasible plans.
    - Non-SIS Highways and Transit – each MPO leads in project identification within its metropolitan area.

- Non-Capacity Programs – the Department estimates sufficient revenues to meet statewide safety, preservation and support objectives through 2045, including in each metropolitan area. It is not necessary to identify projects for these programs, so estimates for these

activities have not been developed for metropolitan areas. The Department will prepare separate documentation to address these programs and estimated funding and provide it to MPOs for inclusion in the documentation of their long range plans.

Funding Eligibility for Major Programs

The SIS Cost Feasible Plan, Multimodal Unfunded Needs Plan and metropolitan LRTPs consider many types of transportation improvements to meet long range needs, constrained by the funding expected to be available during the planning period. The following are explanations of the types of projects, programs and activities that are eligible for state and/or federal funding in each of the major categories contained in the 2045 Revenue Forecast.

Statewide Capacity Programs

The Department leads in the identification of planned projects and programs that are associated with the Strategic Intermodal System (SIS) and provides detailed information to MPOs. As a result, metropolitan plans and programs that include state and federal funds for these major programs should be coordinated and consistent with state long range plans and programs. Each is discussed below.

SIS Highways Construction & Right-of-Way

The Strategic Intermodal System (SIS) and the Emerging SIS, includes over 4,300 miles of Interstate, Turnpike, other expressways and major arterial highways and connectors between those highways and SIS hubs (airports, seaports, etc.). The SIS is the state's highest priority for transportation capacity investments.

Metropolitan plans and programs for SIS Highways should be consistent with the 2045 SIS Highway Cost Feasible Plan, as provided to each MPO. Projects associated with aviation, rail, seaport development and intermodal access may be funded under this program, provided that they are included in the SIS Highway Cost Feasible Plan. Capacity improvement projects eligible for funding in the current plan include:

- Construction of additional lanes;
- The capacity improvement component of interchange modifications;
- New interchanges;
- Exclusive lanes for through traffic, public transportation vehicles, and other high occupancy vehicles;
- Bridge replacement with increased capacity;
- Other construction to improve traffic flow, such as intelligent transportation systems (ITS), incident management systems, and vehicle control and surveillance systems;
- The preferred alternative defined by an approved multi-modal interstate master plan;
- Weigh-in-motion stations;
- Acquisition of land which is acquired to support the SIS highway and bridge construction programs, and land acquired in advance of construction to avoid escalating land costs and prepare for long-range development; and
- New weigh stations and rest areas on the interstate.

The following activities are not eligible for funding from the SIS Highways Construction & Right-of-Way program estimates: planning and engineering in SIS corridors (see Product Support below), highway/road construction and right-of-way acquisition not listed above, and support activities to acquire right-of-way (see Product Support below).

Aviation

The state provides financial and technical assistance to Florida's airports. FDOT's Work Program Instructions provide information regarding additional funding eligibility and state matching funds requirements. Projects and programs eligible for funding include:

- Assistance with planning, designing, constructing, and maintaining public use aviation facilities;
- Assistance with land acquisition;
- "Discretionary" assistance for capacity improvement projects at certain airports. In 2017 those meeting the eligibility criteria are Miami, Orlando, Ft. Lauderdale/Hollywood, Tampa, Southwest Florida, and Orlando Sanford international airports.

The following activities are not eligible for funding from the Aviation program estimates: planning and engineering to support state programs (see Product Support below), financial and technical assistance for private airports, and "discretionary" capacity improvements at airports other than those listed above.

Rail

The state provides funding for acquisition of rail corridors and assistance in developing intercity passenger and commuter rail service, fixed guideway system development, rehabilitation of rail facilities and high speed transportation. FDOT's Work Program Instructions provide information regarding additional funding eligibility and state matching funds requirements. Projects and programs eligible for funding include:

- Financial and technical assistance for intermodal projects;
- Rail safety inspections;
- Regulation of railroad operations and rail/highway crossings;
- Identification of abandoned rail corridors;
- Recommendations regarding acquisition and rehabilitation of rail facilities; and
- Assistance for developing intercity rail passenger service or commuter rail service.

The following activities are not eligible for funding from the Rail program estimates: planning and engineering to support state programs (see Product Support below), financial and technical assistance for rail projects and programs not specified above.

Intermodal Access

The state provides assistance in improving access to intermodal facilities and the acquiring of associated rights of way. FDOT's Work Program Instructions provide information regarding additional funding eligibility and state matching funds requirements. Projects and programs eligible for funding include:

- Improved access to intermodal or multimodal transportation facilities;
- Construction of multimodal terminals;
- Rail access to airports and seaports;
- Interchanges and highways which provide access to airports, seaports and other multimodal facilities; and
- Projects support of certain intermodal logistics centers.

The following activities are not eligible for funding from the Intermodal Access program estimates: planning and engineering to support state programs (see Product Support below), and programs not specified above.

Seaport Development

The state provides assistance with funding for the development of public deep water ports. This includes support of bonds issued by the Florida Ports Financing Commission that finances eligible capital improvements. FDOT's Work Program Instructions provide information regarding additional funding eligibility and state matching funds requirements. Projects and programs eligible for funding and state matching funds requirements vary among several programs.

The following activities are not eligible for funding from the Seaport Development program estimates: planning and engineering to support state programs (see Product Support below), programs not specified above, and financial and technical assistance at other ports.

Other Capacity Programs

MPOs will lead in the identification of planned projects and programs for the (1) Non-SIS Highways Construction & ROW and (2) Transit programs. For 20xx-20xx, MPOs should identify projects as contained in the Work Program. For all years after 20xx, MPOs should plan for the mix of highway and transit programs that best meets the needs of their metropolitan area. As a result, MPOs may identify either highway or transit improvement programs and projects, consistent with the total amount of the two major programs, and consistent with the following eligibility criteria.

Non-SIS Highways Construction & Right of Way

The primary purpose of this program is to fund improvements on the part of the State Highway System (SHS) that is not designated as SIS. The approximately 8,000 miles of such highways represent about 64% of the SHS. Projects and programs eligible for funding include:

- Construction and improvement projects on state roadways which are not on the Strategic Intermodal System (SIS), including projects that:
    - Add capacity;
    - Improve highway geometry;
    - Provide grade separations; and
    - Improve turning movements through signalization improvements and storage capacity within turn lanes.

- Acquisition of land which is acquired to support the SHS highway and bridge construction programs, and land acquired in advance of construction to avoid escalating land costs and prepare for long-range development;
- Construction and traffic operations improvements on certain local government roads that add capacity, reconstruct existing facilities, improve highway geometrics (e.g., curvature), provide grade separations, and improve turning movements through signalization improvements and adding storage capacity within turn lanes; and
- Acquisition of land necessary to support the construction program for certain local government roads, as discussed immediately above.

The Department provides separate estimates of funds from this program that may be used on local government roads that meet federal eligibility criteria (i.e., off-system). By law, state funds cannot be used on local government roads except to match federal aid, for locally owned SIS Connectors, and under certain subprograms subject to annual legislative appropriations. Long range plans should not assume that state funds will be appropriated for local government road improvements.

Use of these funds for road projects not on the SHS will effectively reduce the amount of funds planned for the SHS and public transportation in the metropolitan area, the District and the state.

The following activities are not eligible for funding from the Non-SIS Highways Construction & Right-of-Way program estimates: planning and engineering in SHS corridors (see Product Support below), highway/road construction and right-of-way acquisition not listed above, support activities to acquire right-of-way (see Product Support below), land acquisition for airports (see Aviation above), and land acquisition for railroad corridors (see Rail above).

Transit

The state provides technical and operating/capital assistance to transit, paratransit, and ridesharing systems. Projects and programs eligible for funding include:

- Capital and operating assistance to public transit systems and Community Transportation Coordinators, through the Public Transit Block Grant Program
  Note: For this program, state participation is limited to 50% of the non-federal share of capital costs and up to 50% of eligible operating costs. The block grant can also be used for transit service development and corridor projects. An individual block grant recipient's allocation may be supplemented by the State if (1) requested by the MPO, (2) concurred in by the Department, and (3) funds are available. The Transportation Disadvantaged Commission is allocated 15% of Block Grant Program funds for distribution to Community Transportation Coordinators;
- Service Development projects, which are demonstration projects that can receive initial funding from the state
  Note: For these projects, Up to 50% of the net project cost can be provided by the state. Up to 100% can be provided for projects of statewide significance (requires FDOT concurrence). Costs eligible for funding include operating and maintenance costs (limited to no more than three years) and marketing and technology projects (limited to no more than two years);

- Transit corridor projects that are shown to be the most cost effective method of relieving congesting and improving congestion in the corridor;
- Commuter assistance programs that encourage transportation demand management strategies, ridesharing and public/private partnerships to provide services and systems designed to increase vehicle occupancy;
- Assistance with acquisition, construction, promotion and monitoring of park-and-ride lots; and
- Assistance to fixed-guideway rail transit systems or extensions, or bus rapid transit systems operating primarily on dedicated transit right-of-way under the New Starts Transit Program.

The following activities are not eligible for funding from the Transit program estimates: planning and engineering to support state programs (see Product Support below), and federally funded financial and technical assistance for transit plans and programs for those funds that are not typically included in the state Five Year Work Program (e.g., federal funds for operating assistance).

Non-Capacity Programs

Statewide estimates for all state non-capacity programs are an integral part of the 2045 Revenue Forecast to ensure that statewide system preservation, maintenance, and support objectives will be met through 2045. These objectives will be met in each metropolitan area, so it was not necessary to develop metropolitan estimates for these programs. Neither the Department nor the MPOs needs to identify projects for these programs. However, pursuant to an agreement between FDOT and the Federal Highway Administration Division Office, FDOT has provided district-level estimates of "Operations and Maintenance" costs on the State Highway System to MPOs for inclusion in the documentation of their long range transportation plans. The Operations and Maintenance estimates are the total estimates for the State Resurfacing, Bridge, and Operations & Maintenance programs.

The forecast for these programs and related information will be provided to each MPO in an Appendix for inclusion in the documentation of their long range plan. The following information on project eligibility for these programs is provided for informational purposes only.

<u>Safety</u>

Safety issues touch every area of the state transportation program. Specific safety improvement projects and programs in this major program address mitigation of safety hazards that are not included in projects funded in other major programs. Projects and programs eligible for funding include:

- Highway safety improvements at locations that have exhibited a history of high crash frequencies or have been identified as having significant roadside hazards;
- Grants to state and local agencies for traffic safety programs with the intent of achieving lower levels and severity of traffic crashes; and
- Promotion of bicycle and pedestrian safety and vulnerable road users, including programs for public awareness, education and training.

The following activities are not eligible for funding from the Safety program estimates: planning and engineering to support state programs (see Product Support below), safety improvements funded as a part of other major state programs (e.g., SIS construction), financial and technical assistance for safety programs not specified above.

Resurfacing

The state periodically resurfaces all pavements on the State Highway System (SHS) to preserve the public's investment in highways and to maintain smooth and safe pavement surfaces. Projects and programs eligible for funding include:

- Periodic resurfacing of the Interstate, Turnpike and other components of the SHS;
- Resurfacing or reconstructing of county roads in counties eligible to participate in the Small County Road Assistance Program; and
- Periodic resurfacing of other public roads, consistent with federal funding criteria and Department and MPO programming priorities.

The following activities are not eligible for funding from the Resurfacing program estimates: planning and engineering to support state programs (see Product Support below), resurfacing that is funded by other major state programs as a part of major projects that add capacity (e.g., SIS and Non-SIS Highways construction), thin pavement overlays which eliminate slippery pavements (funded by the Safety Program), and resurfacing of other roads not specified above. Other than the Small County Road Assistance Program, funds for resurfacing on off-system projects are not included in the forecast. Any planned off-system resurfacing projects must be funded from the off-system share of the Non-SIS Highways Construction & Right-of-Way estimates.

Bridge

The state repairs and replaces deficient bridges on the SHS, or on other public roads as defined by state and federal criteria. Projects and programs eligible for funding include:

- Repairs of bridges and preventative maintenance activities on bridges on the SHS;
- Replacement of *structurally deficient* bridges on the SHS (Note: The state Bridge Replacement Program places primary emphasis on the replacement of structurally deficient or weight restricted bridges. Planned capacity improvements for bridges that are to be widened or replaced to address highway capacity issues must be funded from the Non-SIS Highways or SIS Highways Construction & Right-of-Way major programs);
- Replacement of bridges which require structural repair but are more cost effective to replace;
- Construction of new bridges on the SHS;
- Replacement of *structurally deficient* bridges off the SHS but on the federal-aid highway system, subject to state and federal policies and eligibility criteria; and
- Replacement of *structurally deficient* bridges off the federal-aid highway system, subject to state and federal policies and eligibility criteria.

The following activities are not eligible for funding from the Bridge program estimates: planning and engineering to support state programs (see Product Support below), and repairs to or replacements of bridges on roads not specified above.

Product Support

Planning and engineering activities are required to produce the products and services described in the major programs discussed above. These are functions performed by Department staff and professional consultants. Costs include salaries and benefits; professional fees; and administrative costs such as utilities, telephone, travel, supplies, other capital outlay, and data processing. Functions eligible for funding include:

- Preliminary engineering (related to environmental, location, engineering and design);
- Construction engineering inspection for highway and bridge construction;
- Right of way support necessary to acquire and manage right-of-way land for the construction of transportation projects;
- Environmental mitigation of impacts of transportation projects on wetlands;
- Materials testing and research; and
- Planning and Public Transportation Operations support activities.

Estimates for the Product Support program are directly related to the estimates of the product categories of the 2045 Revenue Forecast. That is, these levels of Product Support are adequate to produce the estimated levels of the following major programs: SIS Highways Construction and Right-of-Way, Non-SIS Highways Construction & Right-of-Way, Aviation, Transit, Rail, Intermodal Access, Seaport Development, Safety, Resurfacing, and Bridge. As a result, the components of metropolitan plans and programs that are based on state and federal funds should be consistent with the total of the above product categories to ensure that sufficient Product Support funding is available from state and federal sources through 2045. MPOs are encouraged to include estimates for PD&E and Design phases in the LRTP, particularly for projects that cannot be fully funded by 2045 as described earlier in this guidebook.

The following activities are not eligible for funding from the Product Support program estimates: planning and engineering to support plans or programs that are not eligible for funding from the Product programs, and local and regional planning and engineering activities not typically included in the state Five Year Work Program.

Operations & Maintenance

Operations and maintenance activities support and maintain the transportation infrastructure once it is constructed. Scheduled major repairs or replacements such as resurfacing, bridge replacement or traffic operations improvements are parts of the Resurfacing, Bridge, and Non-SIS Highways Highway programs, respectively. Functions eligible for funding include:

- Routine maintenance of the SHS travel lanes; roadside maintenance; inspections of state and local bridges; and operation of state moveable bridges and tunnels;
- Traffic engineering analyses, training and monitoring that focus on solutions to traffic problems that do not require major structural alterations of existing or planned roadways;

- Administration of and toll collections on bonded road projects such as toll expressways, bridges, ferries, and the Turnpike; and
- Enforcement of laws and Department rules which regulate the weight, size, safety, and registration requirements of commercial vehicles operating on the highway system.

The following activities are not eligible for funding from the Operations and Maintenance program estimates: operations and maintenance activities on elements of the transportation system not specified above.

Administration

Administration includes the staff, equipment, and materials required to perform the fiscal, budget, personnel, executive direction, document reproduction, and contract functions of carrying out the state transportation program. It also includes the purchase of and improvements to non-highway fixed assets. Eligible functions and programs are:

- Resources necessary to manage the Department in the attainment of goals and objectives;
- Acquisition of resources for production, operation and planning units including personnel resources; external production resources (consultants); financial resources; and materials, equipment, and supplies;
- Services related to eminent domain, construction letting and contracts, reprographics, and mail service;
- Costs for the Secretary, Assistant Secretaries, and immediate staffs; for the Florida Transportation Commission and staff; and for the Transportation Disadvantaged Commission; and
- Acquisition, construction and improvements of non-highway fixed assets such as offices, maintenance yards, and construction field offices.

The following activities are not eligible for funding from the Administration program estimates: administrative activities not specified above.

Table 7 Program Categories for the 2045 Revenue Forecast and Program & Resource Plan

2045 REVENUE FORECAST PROGRAMS	PROGRAM & RESOURCE PLAN	
	PROGRAMS	SUBPROGRAMS
CAPACITY	**I. PRODUCT**	
SIS Highways Construction & Right-of-Way	SIS Highway Construction	1. Interstate Construction 2. Turnpike Construction 3. Other SIS Construction 4. SIS Traffic Operations
	SIS Right of Way	1. SIS Advance Corridor Acquisition
Other Roads Construction & Right-of-Way	Other Roads Construction	1. Other Traffic Operations 2. Construction 3. County Transportation Programs 4. Economic Development
	Other Roads Right of Way	1. Other Roads 2. Other Roads Advance Corridor Acquisition 3. Other Advance Corridor Acquisition
Public Transportation • **Aviation** • **Transit** • **Rail** • **Intermodal Access** • **Seaport Development**	Aviation	1. Airport Improvement 2. Land Acquisition 3. Planning 4. Discretionary Capacity Improvements
	Transit	1. Transit Systems 2. Transportation Disadvantaged - Department 3. Transportation Disadvantaged - Commission 4. Other 5. Block Grants 6. New Starts Transit
	Rail	1. High Speed Rail 2. Passenger Service 3. Rail/Highway Crossings 4. Rail Capital Improvements/Rehabilitation
	Intermodal Access	None
	Seaport Development	None
	SUN Trail	None

NON-CAPACITY	PROGRAMS	SUBPROGRAMS
Safety	Safety	1. Highway Safety 2. Rail/Highway Crossings (discontinued) 3. Grants
Resurfacing	Resurfacing	1. Interstate 2. Arterial & Freeway 3. Off-System 4. Turnpike
Bridge	Bridge	1. Repair - On System 2. Replace - On System 3. Local Bridge Replacement 4. Turnpike
Product Support	**II. PRODUCT SUPPORT**	
		A. Preliminary Engineering *(all)* B. Construction Engineering Inspection *(all)* C. Right-of-Way Support *(all)* D. Environmental Mitigation E. Materials & Research *(all)* F. Planning & Environment *(all)* G. Public Transportation Operations
Operations & Maintenance	**III. OPERATIONS & MAINTENANCE**	
		A. Operations & Maintenance *(all)* B. Traffic Engineering & Operations *(all)* C. Toll Operations *(all)* D. Motor Carrier Compliance
Administration	**IV. ADMINISTRATION**	
		A. Administration *(all)* B. Fixed Capital Outlay *(all)* C. Office Information Systems

Notes:

- *(all)* refers to all levels of subprogram detail below the one shown in this table.
- Program and Resource Plan category "V. OTHER" is related to the "TOTAL BUDGET" and was included in the 2040 Revenue Forecast as "Other" (i.e., not as a "Program").

Appendix B: Leveraging, Cash Flow, and Other Transportation Finance Tools

Metropolitan areas are encouraged to consider innovative or non-traditional sources of funding and financing techniques in their long range plans. These may include optional revenue sources such as local option motor fuel taxes or local option sales taxes that are not currently in place, toll facilities, public/private partnerships, and debt financing. It should be noted that debt financing, borrowing implementation funds to be paid back from future revenues, should be analyzed carefully before deciding to use it to fund projects. There are tradeoffs between building a project earlier than would otherwise be the case and increased costs from interest and other expenses required to finance projects this way.

Several such sources or techniques are available because of state and federal laws. Concurrence of the Department, and in some cases the federal government, is required before projects or programs can be funded through these sources. As a result, each MPO should coordinate with the Department before including these sources and techniques in its long range plan.

The following is general guidance for specific sources. More detailed guidance can be obtained from FDOT staff. Guidance on planning for future toll facility projects concludes this appendix.

Federal/State Transportation Finance Tools

Federal law allows several methods of transportation finance that provide opportunities to leverage federal transportation funds. Most of the tools can be applied in more than one state program. The tools are not identified separately in the Program and Resource Plan, but the Department has established processes and criteria for their use. MPOs should work closely with FDOT before including these and other federal financing tools as part of their long range financial planning.

State Infrastructure Bank (SIB)

The SIB was originally established by the National Highway System Act of 1995 to encourage state and local governments to identify and develop innovative financing mechanisms that will more effectively use federal financial resources.

Florida has two separate SIB accounts: the federal-funded SIB account (capitalized by federal money and matched with appropriate state funds as required by law); and the state-funded SIB (capitalized with state funds and bond proceeds). The SIB can provide loans and other assistance to public and private entities carrying out or proposing to carry out projects eligible for assistance under state and federal law. Highway and transit projects are eligible for SIB participation. See FDOT Work Program Instructions for more details.

SIB applications are accepted during the published advertisement period via the FDOT online application process (See http://www.dot.state.fl.us/officeofcomptroller/PFO/sib.shtm).

Advance Construction (AC)

States can initially use state funds to construct projects that may eventually be reimbursed with federal funds. These are state funds used to finance projects in anticipation of future federal apportionments. Subsequently, authorized by Title 23 U.S.C. 120(j)(1), the state can obligate federal-aid funds to reimburse the federal share of those projects (i.e., the share that was initially funded with state dollars). This is a way to construct federal-aid projects sooner than if Florida had to wait for future federal funding obligations before construction could begin. Florida has used this financing tool for many years to advance the construction of needed projects. AC has a greater impact on the timing of project construction than on the amount of federal funds.

Flexible Match

Federal law allows private funds, materials or assets (e.g., right of way) donated to a specific federal-aid project to be applied to the state's matching share. The donated or acquired item must qualify as a participating cost meeting eligibility standards and be within the project's scope. Such private donations will effectively replace state funds that would have been used to match the federal aid, freeing up the state funds for use on other projects.

Toll Credits (Soft Match)

Federal law permits the use of certain toll revenue expenditures as a credit toward the non-federal share of transportation projects, as authorized by Title 23 U.S.C. 120. For example, the Turnpike is paid for with tolls, but it is eligible for federal aid. A toll credit is a credit from the federal government for the unused federal matching funds that could have been requested for Turnpike construction. This credit can be used instead of state or local funds to meet federal match requirements for other transportation projects, including transit.

Such credits free up state or local funds for other uses, that otherwise would have been used to match federal aid. Toll credits can only be used for transportation capital investments (e.g., highway construction, buses).

Transportation Infrastructure Finance and Innovation Act (TIFIA)

Federal law authorizes the United States Department of Transportation (USDOT) to provide three forms of credit assistance for surface transportation projects of national or regional significance: secured (direct) loans, loan guarantees, and standby lines of credit. USDOT awards assistance on a competitive basis to project sponsors (e.g., state department of transportation, transit operators, special authorities, local governments, private consortia). Various highway, transit, rail, and intermodal projects may receive credit assistance under TIFIA.

State Transportation Finance Tools

Florida law establishes several programs that allow the state, local governments and transportation authorities to cooperatively fund transportation projects sooner than would be the case under traditional state programs. In addition, state funds can be used to assist local

governments and transportation authorities with pre-construction activities on potential toll facilities, and to assist with state economic development.

Local Fund Reimbursement

Local Fund Reimbursement (LFR) are local funds used to advance a project in the adopted work program. Local entities provide the funding for specific projects in advance and will be reimbursed in the future. The reimbursement will come in the year the project was initially funded in the adopted Work Program. Local governments can contribute cash, goods and/or services to the Department to initiate projects sooner than scheduled in the Work Program.

Section 339.12, F.S., authorizes the local government reimbursement program. It allows projects in the adopted Five Year Work Program to be advanced, subject to a statewide $250 million cap on commitments. There are statutory exceptions to the $250 million cap as described in the above referenced statute.

Economic Development Program

The Non-SIS Highways Construction & ROW Program contains an Economic Development sub-program. It is administered by FDOT, in cooperation with the Department of Economic Opportunity. The Program may provide funds for access roads and highway improvements for new and existing businesses and manufacturing enterprises that meet certain criteria.

For the purposes of MPO plan updates, it has been assumed that the metropolitan area's statutory share of these funds will be available for transportation improvements and is a part of the funds in the estimate of Non-SIS Highways Construction & Right of Way provided to the MPO. MPOs should not consider the Economic Development sub-program as a revenue source separate from, or in addition to, the estimates provided by the Department for the 2045 Revenue Forecast.

Future Toll Facility Projects in Metropolitan Long Range Transportation Plans

FDOT, primarily through the Turnpike Enterprise, and local expressway authorities are currently engaged in studies of the feasibility of new toll facilities or extensions of existing facilities. If a MPO desires to include future toll facility projects in its long range plan beyond those currently included in the FDOT SIS Cost Feasible Plan (CFP), the MPO should coordinate with Turnpike Enterprise and possibly local authority staff to determine if these facilities should be included in the plan (possibly as *illustrative* projects). Issues to be considered include:

- Local/regional support of elected officials and the public for the project;
- Environmental, socio-economic and related impacts of the project;
- Consistency with affected local comprehensive plans; and
- Economic feasibility of the project (costs, revenues, debt service coverage, value for money analysis which compares public and privately financed alternatives side-by-side before a financing option is selected. This analysis is a strong tool for informing the public and ensuring that the public good has been protected, etc.)

FDOT's experience with analyses of economic feasibility for such projects suggests that it is extremely difficult to meet debt service requirements for a new toll facility or extension solely with toll revenues generated by the project, particularly in early years of operation. Often, the difficulty varies depending upon the location of the facility (e.g., urban, rural). However, each project is different based upon the location, competing roadways, and other factors. When little project information is available, FDOT offers the following additional considerations to MPOs that are interested in including future toll facility projects in their cost feasible long range plans:

- For projects in suburban or emerging suburban areas, estimated toll revenues likely will cover only a portion of the total project cost;
- For projects in urban areas, estimated toll revenues may cover a somewhat higher portion of the cost of the project. However, project costs, particularly for right of way, are much higher than in other areas;
- For projects in rural areas, possibly associated with proposed new land development which will take time to materialize, estimated toll revenues in the early years likely will be substantially lower than total project cost.

For the purposes of the metropolitan long range plan, MPOs should document the amount and availability of revenues from other sources expected to be available to finance the project cost. Other sources may potentially include local revenue sources, Non-SIS Highways Construction & ROW funds from the 2045 Revenue Forecast, and private sector contributions. FDOT encourages MPOs to consult with the Turnpike Enterprise and/or local authority for technical assistance on preparing early analyses for possible toll facilities in the cost feasible long range plan.

Appendix C: Other Information

Inflation Factors

Consistent with federal planning regulations [23 CFR 450.324(f)(11)] and *Financial Guidelines for MPO 2045 Long Range Plans* to be adopted by the Metropolitan Planning Organization Advisory Council (MPOAC) in early 2017, the 2045 Revenue Forecast is expressed in Year of Expenditure (YOE) dollars. MPOs will need to use inflation factors to adjust project costs from "Present Day Cost" dollars (typically 2015 or 2016 dollars for recent cost estimates) to future YOE dollars. MPOs also may have to adjust estimates of local revenues not included in the Department's forecast to YOE dollars, depending on how those revenue estimates were developed.

Adjusting Project Costs

In order to balance project costs against the revenue estimates from the 2045 Revenue Forecast, costs and revenues need to be expressed using the same base year. Project cost estimates are typically expressed in "present day costs" (i.e., year that the project costs were developed, such as 2015), which are based on the value of money today and not adjusted for inflation.

Table 8 will assist MPOs in converting project costs to YOE dollars. For example, if the cost estimate for a specific project is expressed in fiscal year 2015 dollars and the project is planned to be implemented in the 2026 to 2030 time period, the MPO should multiply the cost estimate by 1.43to convert the cost estimate to YOE dollars. The inflation multipliers included in Table 8 are based on the Department's inflation factors associated with the FY 2018-2022 Work Program and previous work programs. Factors for project cost estimates developed in fiscal years 2015, 2016, 2017 and 2018 are shown in Table 8 because needed project cost estimates are likely to be denominated in dollars of one of those years. If subsequent project cost estimates are developed denominated in fiscal years 2019, 2020 or 2021, the table can be updated.

As a detailed example, consider a desired project for which a cost estimate was generated by local government in FY 2015. The annual inflation rates in the lower part of Table 8 can be used to convert local cost estimates prepared in "today's" dollars to YOE dollars. When the cost estimate is expressed in 2015 dollars, the MPO can estimate the amount in 2021 dollars as follows:

2021 dollars = (2015 dollars) * (1.030) * (1.027) * (1.025) * (1.027) * (1.028) * (1.026)
(for 2016) (for 2017) (for 2018) (for 2019) (for 2020) (for 2021)

For consistency with other estimates, FDOT recommends summarizing estimated local funds for each year by the 5-year periods.

Table 8 Inflation Factors to Convert Project Cost Estimates to Year of Expenditure Dollars by Time Bands

Time Period for Planned Project or Project Phase Implementation	Multipliers to Convert Project Cost Estimates to Year of Expenditure Dollars			
	Project Cost in 2015 PDC $*	Project Cost in 2016 PDC $*	Project Cost in 2017 PDC $*	Project Cost in 2018 PDC $*
2024-2025 (2 Year Period)	1.29	1.25	1.22	1.19
2026-2030	1.43	1.39	1.35	1.32
2031-2035	1.69	1.64	1.59	1.55
2036-2045	2.22	2.16	2.10	2.05

Table 9 Inflation Factors to Convert Project Cost Estimates to Year of Expenditure Dollars for Each Individual Year

	Multipliers are based on the following annual inflation estimates:			
	From	To	Annual Rate	
	2015 Dollars	2016 Dollars	3.0%	
	2016 Dollars	2017 Dollars	2.7%	
	2017 Dollars	2018 Dollars	2.5%	
	2018 Dollars	2019 Dollars	2.7%	
	2019 Dollars	2020 Dollars	2.8%	
	2020 Dollars	2021 Dollars	2.6%	
	2021 Dollars	2022 Dollars	2.5%	
	2022 Dollars	2023 Dollars	2.7%	
	2023 Dollars	2024 Dollars	2.8%	
	2024 Dollars	2025 Dollar	2.9%	
	2025 Dollars	2026 Dollars	3.0%	
	2026 Dollars	2027 Dollars	3.1%	
	2027 Dollars	2028 Dollars	3.2%	
	2028 Dollars	2029 Dollars	3.3%	
	2029 Dollars	2030 Dollars and beyond	3.3 % each year	

* "PDC $" means "Present Day Cost"

Relationship of Construction and ROW Costs

The Department experiences extreme variation in the costs of right-of-way for improvement projects. Since fiscal year 1991-92, district right-of-way programs have ranged from as low as 4% of construction costs to more than 30% and, in rare instances, have exceeded construction costs.

MPOs should work with their district office for more information on right of way costs (see the FDOT website at http://www.dot.state.fl.us/planning/policy/costs/).

The 2045 Revenue Forecast contains estimates for combined construction and right of way funding. For planned construction projects, MPOs are requested to work with district staff to develop right-of-way estimates and right-of-way inflation estimates. If no project-specific estimate is available, MPOs should use the right-of-way/construction ratio recommended by the district to estimate right-of-way costs. For example, if the estimated construction cost of a project is $40 million and the district has established a right-of-way/construction ratio of 25%, then the total cost for construction and right-of-way is $50 million ($40 + $10).

Appendix D: Glossary

Capacity Programs: Major FDOT programs that expand the capacity of existing transportation systems including the following statewide programs: SIS Highways Construction and Right-of-Way and Public Transportation programs. This category also includes 'Non-SIS Highways Construction and Right-of-Way' and Transit.

Charter County and Regional Transportation Surtax: A local discretionary sales tax that allows each charter county with an adopted charter, each county the government of which is consolidated with that of one or more municipalities, and each county that is within or under an interlocal agreement with a regional transportation or transit authority created under Ch. 343 or 349, F.S., to levy at a rate of up to 1 percent. Generally, the tax proceeds are for the development, construction, operation, and maintenance of fixed guideway rapid transit systems, bus systems, on-demand transportation services, and roads and bridges.

Concession Revenues: Non-toll revenues generated from concession contracts entered into by the Turnpike, such as the Service Plaza concession contract.

Constitutional Fuel Tax: A state tax of two cents per gallon of motor fuel. The first call on the proceeds is to meet the debt service requirements, if any, on local bond issues backed by the tax proceeds. The balance, called the 20 percent surplus and the 80 percent surplus, is credited to the counties' transportation trust funds.

Cost Feasible Plan (CFP): A phased plan of transportation improvements that is based on (and constrained by) estimates of future revenues.

County Fuel Tax: A county tax of 1 cent per gallon. The proceeds are to be used by counties for transportation-related expenses, including the reduction of bonded indebtedness incurred for transportation purposes.

Discretionary Sales Surtaxes: These taxes include eight separate surtaxes, also known as local option sales taxes, are currently authorized in law and represent potential revenue sources for county governments generally. These surtaxes apply to all transactions subject to the state tax imposed on sales, use, services, rentals, admissions, and other transactions authorized pursuant to Ch. 212, F.S., and communications services as defined for purposes of Ch. 202, F.S. The total potential surtax rate varies from county to county depending on the particular surtaxes that can be levied in that jurisdiction.

Documentary Stamps Tax: This tax is levied on documents, as provided under Chapter 201, Florida Statutes. Documents subject to this tax include, but are not limited to: deeds, stocks and bonds, notes and written obligations to pay money, mortgages, liens, and other evidences of indebtedness.

Fixing America's Surface Transportation Act (FAST) Act: Authorization of the federal surface transportation programs for highways, highway safety and transit for the five-year period 2016-2020.

Florida's Turnpike Enterprise (FTE): Florida's Turnpike Enterprise, part of the Florida Department of Transportation, oversees a 483-mile system of limited-access toll highways.

General Obligation Bonds: A municipal bond backed by the credit and taxing power of the issuing jurisdiction rather than the revenue from a given project.

Intelligent Transportation System (ITS): A wide range of advanced technologies and ideas, which, in combination, can improve mobility and transportation productivity, enhance safety, maximize the use of existing transportation facilities, conserve energy resources and reduce adverse environmental effects.

I**ntermodal Surface Transportation Efficiency Act of 1991 (ISTEA)**: Legislative initiative by U.S. Congress that restructured funding for transportation programs. ISTEA authorized increased levels of highway and transportation funding from FY92-97 and increased the role of regional planning commissions/MPOs in funding decisions. The Act also required comprehensive regional and statewide long-term transportation plans and places an increased emphasis on public participation and transportation alternatives. (FHWA)

Local Option Fuel Taxes: County governments are authorized to levy up to 12 cents of local option fuel taxes in the form of three separate levies. The first is a tax of 1 cent on every net gallon of motor and diesel fuel sold within a county known as the Ninth-Cent Fuel Tax. The second is a tax of 1 to 6 cents on every net gallon of motor and diesel fuel sold within a county. The third tax is a 1 to 5 cents levy upon every net gallon of motor fuel sold within a county, and diesel fuel is not subject to this tax. A local government may pledge any of its revenues from the tax to repay state bonds issued on its behalf and, in addition, may use such revenues to match state funds in the ratio 50%/50% for projects on the State Highway System, or for other road projects which would alleviate congestion on the State Highway System.

Long-Range Transportation Plan (LRTP): A long range, 20-year, strategy and capital improvement program developed to guide the effective investment of public funds in transportation facilities. The plan is updated every three years and may be amended as a result of changes in projected federal, state and local funding, major improvement studies, congestion management system plans, interstate interchange justification studies and environmental impact studies.

Managed Lane Networks: In Florida, express lanes are a type of managed lane where congestion is managed with pricing, access, eligibility and dynamic tolling. Express lanes are implemented to address existing congestion, enhance transit services, accommodate future regional growth and development, enhance hurricane and other emergency evacuation and improve system connectivity between key limited access facilities.

Metropolitan Planning Organization (MPO): An organization made up of local elected and appointed officials responsible for developing, in cooperation with the state, transportation plans and programs in metropolitan areas containing 50,000 or more residents. MPOs are responsible for the development of transportation facilities that will function as an intermodal transportation system and the coordination of transportation planning and funding decisions.

Metropolitan Planning Organization Advisory Council (MPOAC): A statewide organization created by the Florida Legislature to augment the role of the individual Metropolitan Planning Organizations in the cooperative transportation planning process. The MPOAC assists the MPOs in carrying out the urbanized area transportation planning process by serving as the principal forum for collective policy decisions.

Municipal Fuel Tax: This one-cent fuel tax is one of the revenue sources that fund the Municipal Revenue Sharing Program. Municipalities must use the funds derived from this tax for transportation-related expenditures.

New Starts Transit Program: Established by the 2005 Florida Legislature to assist local governments in developing and constructing fixed-guideway and bus rapid transit projects to accommodate and manage urban growth and development.

Ninth-cent Fuel Tax: A tax of 1 cent on every net gallon of motor and diesel fuel sold within a county. The proceeds are used to fund specified transportation expenditures.

Non-capacity programs: FDOT programs designed to support, operate, and maintain the state transportation system including safety; resurfacing; bridge; product support; operations and maintenance; and administration.

Off-System Funds: Funds used for a project that is not on the State Highway System (SHS).

Performance Measures: A metric directly tied to achieving a goal or objective or used in a decision making process; or an indicator or context measure which is used to identify relevant background conditions and trends.

Program and Resource Plan (PRP): A 10-year plan that provides planned commitment levels for each of the department's programs. It guides program funding decisions to carry out the goals and objectives of the Florida Transportation Plan

Revenue: Income received.

Revenue Forecast: A forecast of State and Federal funds projected to be available for the FDOT Work Program for the long range (at least 20 years). The Revenue Forecast is usually prepared once every 5 years to help define funding available for the Systems Implementation Office Cost Feasible Plan (CFP) and to assist MPOs in fulfilling Federal requirements for their Long Range Transportation Plans (LRTPs).

Small County Outreach Program (SCOP): A program that allows municipalities and communities in Rural Areas of Opportunity designated under Section 288.0656(7)(a), Florida Statutes to request funding for qualifying projects under a special appropriation of $9 million.

State Imposed Motor Fuel Taxes: Florida law imposes per-gallon taxes on motor fuels and distributes the proceeds to local governments as follows: the Constitutional Fuel Tax (2 cents); the County Fuel Tax (1 cent); and the Municipal Fuel Tax (1 cent).

Statutory Formula: Formula used that is made up of equal parts population and motor fuel tax collections.

Strategic Intermodal System (SIS): Florida's transportation system composed of facilities and services of statewide and interregional significance, including appropriate components of all modes.

Surface Transportation Program (STP): Federal-aid highway funding program that funds a broad range of surface transportation capital needs, including many roads, transit, sea and airport access, vanpool, bike, and pedestrian facilities.

TALL funds: Funding distribution code used by FDOT for a Transportation Alternatives Program project in areas of the State other than urban areas with a population greater than 5,000 but no more than 200,000.

TALN funds: Funding distribution code used by FDOT for a Transportation Alternatives Program project in areas of the State other than urban areas with a population of 5,000 or less.

TALT funds: Funding distribution code used by FDOT for a Transportation Alternatives Program project in any area of the State, not based on population.

TALU funds: Funding distribution code used by FDOT for a Transportation Alternatives Program project in urbanized areas of the State with an urbanized area population greater than 200,000.

Transportation Alternatives Funds: Funds from the Transportation Alternatives Program (TAP).

Transportation Alternatives Program (TAP): Federally-funded community-based projects that expand travel choices and improve the transportation experience by improving the cultural, historic, and environmental aspects of transportation infrastructure. Focuses on improvements that create alternatives to transportation for the non-motorized user and enhancements to the transportation system for all users.

Transportation Demand Management (TDM): Programs designed to reduce demand for transportation through various means, such as the use of transit and of alternative work hours.

Transportation Improvement Program (TIP): Short-term (three to five years) plan of approved policies developed by an MPO for a jurisdiction that is fiscally constrained.

Transportation Management Area (TMA): Urbanized areas with a population over 200,000 are designated as Transportation Management Areas (TMAs). These areas are subject to special planning and programming requirements.

Transportation Regional Incentive Program (TRIP): Created to improve regionally significant transportation facilities in "regional transportation areas". State funds are available throughout Florida to provide incentives for local governments and the private sector to help pay for critically needed projects that benefit regional travel and commerce.

Transportation System Management and Operations (TSM&O): An integrated program to optimize the performance of existing multimodal infrastructure through implementation of systems, services, and projects to preserve capacity and improve the security, safety, and reliability of our transportation system.

Work Program (Adopted): The five-year listing of all transportation projects planned for each fiscal year by the Florida Department of Transportation, as adjusted for the legislatively approved budget for the first year of the program.

Work Program (Tentative): The 5-year listing of all transportation projects planned for each fiscal year which is developed by the central FDOT office based on the district work programs.

Year of Expenditure Dollars: Dollars that are adjusted for inflation from the present time to the expected year of construction.



Appendix F

2045 LRTP REVENUE FORECAST

2045 REVENUE FORECAST
HERNANDO/CITRUS MPO

WITH STATEWIDE, DISTRICTWIDE
AND COUNTY-SPECIFIC PROJECTIONS
2045 Forecast of State and Federal Revenues for Statewide and Metropolitan Plans

Overview

This report documents the Florida Department of Transportation (FDOT) revenue forecast through 2045. Estimates for major state programs for this metropolitan area, for FDOT Districts, and for Florida as whole are included. This includes state and federal funds that "flow through" the FDOT work program. This information is used for updates of Metropolitan Planning Organization (MPO) Long Range Transportation Plans (LRTPs) and related documents.

Background

In accordance with federal statute, longstanding FDOT policy and leadership by the Metropolitan Planning Organization Advisory Council (MPOAC), the Office of Policy Planning (OPP) provides projections of future available funding to Florida's 27 MPOs. This data is known as the Revenue Forecast. Consistent data is being applied to the development of the FDOT Strategic Intermodal System (SIS) Highway Cost Feasible Plan.

The department developed a long-range revenue forecast through 2045. The forecast is largely based upon recent federal legislation (e.g., the FAST Act[1]) and changes in multiple factors affecting state revenue sources and current policies. This 2045 forecast incorporates (1) amounts contained in the department's work program for 2018 through 2022, (2) the impact of the department's objectives and investment policies, and (3) the Statutory Formula (equal parts of population and motor fuel tax collections) for distribution of certain program funds. All estimates are expressed in nominal dollars, also known as year of expenditure (YOE) dollars.

Purpose

This version of the forecast (in word processing or portable document format) provides one specific MPO, and all interested parties, with dollar figures that will be necessary and useful as it prepares its LRTP. If more detail or particular additional numbers are needed, these may subsequently be delivered in spreadsheet format. This document does not forecast funds that do not "flow through" the state work program. Further information concerning local sources of revenue is available from State of Florida sources, particularly *Florida's Transportation Tax Sources: A Primer,* and the *Local Government Financial Information Handbook.*[2]

[1] Fixing America's Surface Transportation (FAST) Act, Public Law 114-94, December 4, 2015.

[2] FDOT's tax source primer is available at http://www.fdot.gov/comptroller/pdf/GAO/RevManagement/Tax%20Primer.pdf. The financial information handbook is prepared by the Office of Economic and Demographic Research, part of the Florida Legislature; it is available at http://edr.state.fl.us/Content/local-government/reports/lgfih17.pdf.

This forecast features county level estimates for major FDOT capacity programs, specifically Other Roads and Transit. If an MPO includes more than one county, the county level estimates are totaled to produce an overall MPO estimate. If an MPO's boundary doesn't match county boundaries, the FDOT District will determine appropriate funding totals for that MPO. OPP is available for consultation and support, and Districts are asked to share their method and results with our office. However, final responsibility rests with the appropriate District.

There is a long-term goal to focus planning on metropolitan areas which do not correspond to county or city boundaries. In some cases, analyses and plans are based on census designated urbanized areas (UZAs). But for most sources of funding, it is more practical to define geographic areas by county boundaries.

This forecast does not break down SIS Highway expenditures to the county or District level. SIS Highway expenditures are addressed in the SIS Cost Feasible Plan (CFP), which is under preparation by the FDOT Systems Implementation Office.[3] Districts always inform MPOs of projects that are proposed to be included in the CFP, and, conversely, CFP projects need to be included in the appropriate MPO LRTP(s) to receive federal funding.

This Forecast lists funding for FDOT programs designed to support, operate, and maintain the state transportation system. The FDOT has set aside sufficient funds in the 2040 Revenue Forecast for these programs, referred to as "non-capacity programs" here, to meet statewide objectives and program needs in all metropolitan and non-metropolitan areas. Specific District level amounts are provided for existing facilities expenditures. Funding for these programs is not included in the county level estimates.

2045 Revenue Forecast (State and Federal Funds)

The 2045 Revenue Forecast is the result of a three-step process:

1. State and federal revenues from current sources were estimated.
2. Those revenues were distributed among appropriate statewide capacity and non-capacity programs consistent with statewide priorities.
3. County level estimates for the Other Roads and Transit programs were developed, along with County, District or Statewide estimates for other funding categories that are of particular interest to the 27 Florida MPOs.

Forecast of State and Federal Revenues

The 2045 Revenue Forecast includes program estimates for the expenditure of state and federal funds expected from current revenue sources (i.e., new revenue sources were not added). The forecast estimates revenues from federal, state, and Turnpike sources included in the Department's 5-Year Work Program.

The forecast does not estimate revenue from other sources (i.e., local government/authority taxes, fees, and bond proceeds; private sector participation; and innovative finance sources). Estimates of state revenue sources were based on estimates prepared by the State Revenue Estimating Conference (REC) in September 2017 for state fiscal years (FYs) 2019 through 2028. Estimates of federal revenue sources were based on the Department's Federal Aid Forecast for FYs 2018 through 2027. Assumptions about revenue growth are shown in Table 1:

[3] Formerly known as the Systems Planning Office.

Table 1
Revenue Sources and Assumptions

Revenue Sources	Years	Assumptions*
State Taxes (includes fuel taxes, tourism-driven sources, vehicle-related taxes and documentary stamps taxes)	2019-2028	Florida REC Estimates; these average in the range from 2.5% to 3.0% per year
	2029-2045	Annual 1.93% increase in 2029, gradually decreasing to -0.44% in 2045
Federal Distributions (Total Obligating Authority)	2018-2027	FDOT Federal Aid Forecast
	2028-2045	Annual 0.0% increase through 2045
Turnpike	2018-2028	Turnpike Revenue Forecast
	2029-2045	Annual 1.93% increase in 2029, gradually decreasing to -0.44% in 2045

* Note all growth rates show nominal, or year of expenditure, dollar figures. Consistent with REC assumptions, a constant annual inflation rate of 2.60% is projected forward indefinitely. Therefore, *an assumption of nominal growth of 1.93% signifies a real decline of about 0.65% per year.*

A summary of the forecast of state, federal and Turnpike revenues is shown in Table 2. The *2045 Revenue Forecast Guidebook* contains inflation factors that can be used to adjust project costs expressed in "present day cost" to "year of expenditure" dollars.

Table 2
Forecast of Revenues
2045 Revenue Forecast (Millions of Dollars)
(Percentages reflect percentage of total period funding produced by that source. For example, Federal funding is projected to provide 24% of all funding for the period of 2021 through 2025)

Major Revenue Sources	Time Periods (Fiscal Years) 2020[1]	2021-2025[1]	2026-2030	2031-2035	2036-2045	26-Year Total[2] 2020-2045
Federal	2,353	10,884	11,878	12,108	24,217	61,440
	28%	24%	23%	21%	20%	22%
State	5,263	27,311	34,040	38,164	80,399	185,178
	62%	61%	65%	66%	66%	65%
Turnpike	814	6,572	6,688	7,861	16,518	38,453
	10%	15%	13%	14%	14%	13%
Total[2]	**8,430**	**44,768**	**52,606**	**58,133**	**121,134**	**285,071**

[1] Based on the FDOT Adopted Work Program for 2018 through 2022.
[2] Columns and rows sometimes do not equal the totals due to rounding.

Estimates for State Programs

Long range revenue forecasts assist in determining financial feasibility of needed transportation improvements, and in identifying funding priorities. FDOT policy places primary emphasis on

safety and preservation. Remaining funding is planned for capacity programs and other priorities.

The 2045 Revenue Forecast includes the program funding levels contained in the July 1, 2017 Adopted Work Program for 2018 through 2022. The forecast of funding levels for FDOT programs for 2020-2045 was developed based on the corresponding Program and Resource Plan (PRP), which includes the Adopted Work Program and planned funding for fiscal years 2023-2026. This Revenue Forecast provides information for Capacity and Non-Capacity state programs. The information is consistent with "Financial Guidelines for MPO Long Range Plans" moved forward by the Metropolitan Planning Organization Advisory Council Policy and Technical Committee on July 13, 2017.

The Revenue Forecast entails long-term financial projections for support of long-term planning. The forecast is delivered well in advance of the 5-year LRTP adoption schedule, roughly 18 months in advance of the first required adoption. This forecast is considered satisfactory for the remainder of the 5-year cycle; in other words, it is useful for MPOs whose adoptions come at the end of the cycle, about 3½ years after the first MPOs. However, FDOT reserves the right to consider adjustments to the Revenue Forecast during the LRTP adoption cycle, if warranted.

Capacity Programs

Capacity programs include each major FDOT program that expands the capacity of existing transportation systems (such as highways and transit). Table 3 includes a brief description of each major capacity program and the linkage to the program categories used in the PRP.

Statewide Forecast for Capacity Programs

Table 4 identifies the statewide estimates for capacity programs in the 2045 Revenue Forecast. $285 billion is forecast for the entire state transportation program from 2020 through 2045; about $149 billion (52%) is forecast for capacity programs.

Metropolitan Forecast for Capacity Programs

Pursuant to federal law, transportation management area (TMA) funds and certain Transportation Alternatives (TALU) funds are projected based on current population estimates. These 2 categories only apply to federally designated TMAs; 15 of the State's 27 MPOs qualify for these funds. District estimates for certain Transportation Alternatives (TA) funds and the Other Roads program were developed using the current statutory formula.[4] For planning purposes, transit program funds were divided between Districts and counties according to population.

[4] The statutory formula is 50% population and 50% motor fuel tax collections.

TABLE 3
Major Capacity Programs Included in the 2045 Revenue Forecast
and Corresponding Program Categories in the Program and Resource Plan (PRP)

2045 Revenue Forecast Programs	PRP Program Categories
SIS Highways Construction & ROW - Construction, improvements, and associated right of way on SIS highways (i.e., Interstate, the Turnpike, other toll roads, and other facilities designed to serve interstate and regional commerce including SIS Connectors).	Interstate Construction Turnpike Construction Other SIS Highway Construction SIS Highway Traffic Operations SIS Highway Right of Way (ROW) SIS Advance Corridor Acquisition
Other Arterial Construction/ROW - Construction, improvements, and associated right of way on State Highway System roadways not designated as part of the SIS. Also includes funding for local assistance programs such as the Transportation Regional Incentive Program (TRIP), and the County Incentive Grant Program (CIGP).	Arterial Traffic Operations Construction County Transportation Programs Economic Development Other Arterial & Bridge Right of Way Other Arterial Advance Corridor Acquisition
Aviation - Financial and technical assistance to Florida's airports in the areas of safety, security, capacity enhancement, land acquisition, planning, economic development, and preservation.	Airport Improvement Land Acquisition Planning Discretionary Capacity Improvements
Transit - Technical and operating/capital assistance to transit, paratransit, and ridesharing systems.	Transit Systems Transportation Disadvantaged – Department Transportation Disadvantaged – Commission Other; Block Grants; New Starts Transit
Rail - Rail safety inspections, rail-highway grade crossing safety, acquisition of rail corridors, assistance in developing intercity and commuter rail service, and rehabilitation of rail facilities.	Rail/Highway Crossings Rail Capacity Improvement/Rehabilitation High Speed Rail Passenger Service
Intermodal Access - Improving access to intermodal facilities, airports and seaports; associated rights of way acquisition.	Intermodal Access
Seaport Development - Funding for development of public deep-water ports projects, such as security infrastructure and law enforcement measures, land acquisition, dredging, construction of storage facilities and terminals, and acquisition of container cranes and other equipment used in moving cargo and passengers.	Seaport Development
SUN Trail – FDOT is directed to make use of its expertise in efficiently providing transportation projects to develop a statewide system of paved non-motorized trails as a component of the Florida Greenways and Trails System (FGTS), which is planned by the Florida Department of Environmental Protection (FDEP).	Other State Highway Construction Other State Highway ROW Other Roads Construction Other Roads ROW Other SIS Highway Construction SIS Highway ROW

Table 4
Statewide Capacity Program Estimates
State and Federal Funds from the 2045 Revenue Forecast (Millions of Dollars)

Major Programs	Time Periods (Fiscal Years)					26-Year Total[2]
	2020[1]	2021-25[1]	2026-30	2031-35	2036-45	2020-2045
SIS Highways Construction & ROW	2,199	12,940	12,490	13,933	28,971	70,534
Other Roads Construction & ROW	885	6,483	7,918	8,550	17,783	41,618
Aviation	211	1,143	1,433	1,596	3,354	7,738
Transit	417	2,306	2,881	3,154	6,580	15,339
Rail	178	850	1,255	1,425	2,985	6,692
Intermodal Access	40	262	345	379	791	1,816
Seaports	114	622	837	938	1,970	4,481
SUN Trail	25	125	125	125	250	650
Total Capacity Programs	**4,068**	**24,731**	**27,284**	**30,100**	**62,684**	**148,868**
Statewide Total Forecast	**8,430**	**44,768**	**52,606**	**58,133**	**121,134**	**285,071**

[1] Based on the FDOT Tentative Work Program for 2018 through 2022.
[2] Columns and rows sometimes do not equal the totals due to rounding.

Estimates for the Other Roads and Transit program categories for this metropolitan area are included in Table 5.

Table 5
County Level Capacity Program Estimates
State and Federal Funds from the 2045 Revenue Forecast (Millions of Dollars)
Estimates for the Hernando/Citrus Metropolitan Planning Organization

	Time Periods (Fiscal Years)					26-Year Total
Capacity Programs*	2020	2021-25	2026-30	2031-35	2036-45	2020-2045
Other Roads Construction & ROW	12.91	94.72	115.05	124.13	258.29	605.10
Transit	5.91	32.83	41.40	45.34	94.46	219.94
Total - Main Programs	18.82	127.55	156.45	169.47	352.75	825.04

* Estimates for 2018 through 2022 are contained in the FDOT Adopted Work Program.
# Other Roads estimates do not include projected funding for the TRIP program of the Federal TMA program (SU Fund Code).
^ Transit estimates do not include projected funding for the Florida New Starts program.

A few programs fund capacity projects throughout the state on a competitive basis. The two most prominent programs for MPOs are the Transportation Regional Incentive Program (TRIP) and the Florida New Starts Transit Program. Formerly, TRIP was referred to as a Documentary Stamp Tax program, but there are currently multiple sources of funding. With the economic recovery, the forecast funding for TRIP is now over five times the level of 5 years ago. Also, amounts for the federally funded TMA program (Fund Code SU) are provided in Table 6, and not included in Table 5. Neither TRIP, Florida New Starts or TMA funds are included above.

Table 6
Transportation Management Area (TMA) Funds Estimates
(Known as SU Funds in FDOT Work Program)
Federal Funds from the 2045 Revenue Forecast (Millions of Dollars)

Hernando/Citrus Metropolitan Area (Defined as Hernando and Citrus Counties)	**Time Periods (Fiscal Years)**					**26-Year Total**[1]
	2020[1]	**2021-25**	**2026-30**	**2031-35**	**2036-45**	**2020-2045**
TMA/SU Funds	N/A	N/A	N/A	N/A	N/A	N/A

Projects which would be partially or entirely funded by TRIP or FL New Starts cannot be counted as "funded" in LRTPs. This is because there is no guarantee of any specific project receiving TRIP or FL New Starts funding in the future. Both programs are competitive, and only a small percentage of potentially eligible projects receive funding. However, these projects can be included in LRTPs as "illustrative" projects.[5] If MPOs have specific questions, they should consult with their District liaison and planning staff; District staff will contact the OPP, Work Program, or other Central Office staff as needed. Conditional estimates of TRIP funds by District are in Table 7. Statewide estimates of FL New Starts funds are in Table 8.

The FAST Act continued funding for Transportation Alternatives projects. Categories impacting MPOs include funds for (1) Transportation Management Areas (TALU funds); (2) areas with populations greater than 5,000 up to 200,000 (TALL funds), and (3) any area of the state (TALT funds). Estimates of Transportation Alternatives Funds are shown further below in Table 9.

Table 7
Districtwide Transportation Regional Incentive Program Estimates
State Funds from the 2045 Revenue Forecast (Millions of Dollars)

FDOT District	**5-Year Period (Fiscal Years)**					**26-Year Total**[2]
	2020[1]	**2021-25**	**2026-30**	**2031-35**	**2036-2045**	**2020-2045**
District 1	3.1	21.9	32.7	36.4	74.6	**168.8**
District 2	2.5	17.6	26.3	29.2	59.9	**135.5**
District 3	1.6	11.6	17.3	19.2	39.3	**89.0**
District 4	4.1	28.9	43.1	47.9	98.2	**222.3**
District 5	4.7	32.8	49.0	54.4	111.7	**252.6**
District 6	2.8	19.7	29.4	32.7	67.0	**151.6**
District 7	3.3	23.2	34.6	38.4	78.8	**178.2**
Statewide Total Forecast	**22.2**	**155.8**	**232.3**	**258.2**	**529.5**	**1,197.9**

[1] Estimates for 2018 through 2022 are contained in the FDOT Adopted Work Program.
[2] Columns and rows sometimes do not equal the totals due to rounding.

[5] Other projects for which funding is uncertain may also be included as illustrative projects.

Table 8
Transit - Florida New Starts Program Estimates
State Funds from the 2045 Revenue Forecast (Millions of Dollars)

Statewide Program	Time Periods (Fiscal Years)					26-Year Total
	2020	2021-25	2026-30	2031-35	2036-45	2020-2045
Statewide Total Forecast	41.8	226.3	259.2	282.4	593.4	1,403.1

Table 9
Transportation Alternatives Funds Estimates
Federal Funds from the 2045 Revenue Forecast (Millions of Dollars)

Hernando/Citrus Metropolitan Area (Defined as Hernando and Citrus Counties)	Time Periods (Fiscal Years)					26 Year Total [1]
	2020 [1]	2021-25	2026-30	2031-35	2036-45	2020-2045
TALU (Urban); Funds for TMA	N/A	N/A	N/A	N/A	N/A	N/A
TALL (<200,000 population); Entire FDOT District	0.37	1.86	1.86	1.86	3.71	9.65
TALT (Any Area); Entire FDOT District	3.67	18.33	18.33	18.33	36.66	95.32

[1] Rows sometimes do not equal the totals due to rounding.

Non-Capacity Programs

Non-capacity programs refer to FDOT programs designed to support, operate and maintain the state highway system: safety, resurfacing, bridge, product support, operations and maintenance, and administration. Table 10 includes a description of each non-capacity program and the linkage to the program categories used in the Program and Resource Plan.

County level estimates are not needed for these programs. Instead, FDOT has included sufficient funding in the 2040 Revenue Forecast to meet the following statewide objectives and policies:

- **Resurfacing program:** Ensure that 80% of state highway system pavement meets Department standards;
- **Bridge program:** Ensure that 90% of FDOT-maintained bridges meet Department standards while keeping all FDOT-maintained bridges open to the public safe;
- **Operations and maintenance program:** Achieve 100% of acceptable maintenance condition standard on the state highway system;
- **Product Support:** Reserve funds for Product Support required to construct improvements (funded with the forecast's capacity funds) in each District and metropolitan area; and
- **Administration:** Administer the state transportation program.

The Department has reserved funds in the 2040 Revenue Forecast to carry out its responsibilities and achieve its objectives for the non-capacity programs on the state highway system in each

TABLE 10
Major Non-Capacity Programs Included in the 2040 Revenue Forecast and Corresponding Program Categories in the Program and Resource Plan (PRP)

2040 Revenue Forecast Programs	PRP Program Categories
Safety - Includes the Highway Safety Improvement Program, the Highway Safety Grant Program, Bicycle/Pedestrian Safety activities, the Industrial Safety Program, and general safety issues on a Department-wide basis.	Highway Safety Grants
Resurfacing - Resurfacing of pavements on the State Highway System and local roads as provided by state law.	Interstate Arterial and Freeway Off-System Turnpike
Bridge - Repair and replace deficient bridges on the state highway system. In addition, not less than 15% of the amount of 2009 federal bridge funds must be expended off the federal highway system (e.g., on local bridges not on the State Highway System).	Repair - On System Replace - On System Local Bridge Replacement Turnpike
Product Support - Planning and engineering required to "produce" FDOT products and services (i.e., each capacity program; Safety, Resurfacing, and Bridge Programs).	Preliminary Engineering Construction Engineering Inspection Right of Way Support Environmental Mitigation Materials & Research Planning & Environment Public Transportation Operations
Operations & Maintenance - Activities to support and maintain transportation infrastructure once it is constructed and in place.	Operations & Maintenance Traffic Engineering & Operations Toll Operations Motor Carrier Compliance
Administration and Other - Resources required to perform the fiscal, budget, personnel, executive direction, document reproduction, and contract functions. Also includes the Fixed Capital Outlay Program, which provides for the purchase, construction, and improvement of non-highway fixed assets (e.g., offices, maintenance yards). The "Other" category consists primarily of debt service.	Administration Fixed Capital Outlay Office Information Systems Debt Service

District and metropolitan area. Table 11 identifies the statewide estimates for non-capacity programs. About $136 billion (48% of total revenues) is forecast for non-capacity programs.

Table 11
Statewide Non-Capacity Expenditure Estimates
State and Federal Funds from the 2045 Revenue Forecast (Millions of Dollars)

Major Categories	Time Periods (Fiscal Years)					26-Year Total[1]
	2020	2021-25	2026-30	2031-35	2036-45	2020-2045
Safety	141	820	826	825	1,659	**4,271**
Resurfacing	633	4,354	4,150	4,241	8,756	**22,135**
Bridge	1,035	1,051	2,403	2,946	6,122	**13,556**
Product Support	1,302	6,576	6,709	7,096	14,614	**36,299**
Operations and Maintenance	1,384	7,442	8,596	9,162	18,939	**45,523**
Administration and Other	429	2,770	2,891	2,819	5,559	**14,468**
Statewide Total Forecast	**4,923**	**23,013**	**25,576**	**27,089**	**55,650**	**136,251**

[1] Columns and rows sometimes do not equal the totals due to rounding.

Table 12 contains District-wide estimates for State Highway System (SHS) existing facilities expenditures for information purposes. Existing facilities expenditures include all expenditures for the program categories Resurfacing, Bridge, and Operations and Maintenance (O&M). In the previous Revenue Forecast, these expenditures were described as SHS O&M, but the expenditures on the Resurfacing and Bridge categories, in combination, are about as much as those for O&M. These existing facilities estimates are provided pursuant to an agreement between FDOT and the Federal Highway Administration (FHWA) Division Office.

Table 12
State Highway System Existing Facilities Estimates by District
State and Federal Funds from the 2045 Revenue Forecast (Millions of Dollars)

Major Programs	Time Periods (Fiscal Years)					26-Year Total[1]
	2020	2021-25	2026-30	2031-35	2036-45	2020-2045
District 1	457	1,922	2,267	2,446	5,060	**12,151**
District 2	606	2,551	3,009	3,247	6,716	**16,129**
District 3	495	2,084	2,458	2,652	5,487	**13,176**
District 4	410	1,728	2,038	2,199	4,549	**10,924**
District 5	561	2,362	2,785	3,006	6,217	**14,931**
District 6	203	854	1,007	1,087	2,248	**5,399**
District 7	319	1,345	1,586	1,712	3,541	**8,503**
Statewide Total Forecast	**3,051**	**12,847**	**15,150**	**16,348**	**33,817**	**88,214**

Note: Includes Resurfacing, Bridge, and Operations & Maintenance Programs.
[1] Columns and rows sometimes do not equal the totals due to rounding.

Advisory Concerning Florida's Turnpike Enterprise

Within the framework of FDOT, Florida's Turnpike Enterprise (Turnpike) is given authority, autonomy and flexibility to conduct its operations and plans in accordance with Florida Statute and its Bond Covenants. The Turnpike's traffic engineering consultant projects Toll Revenues and Gross Concession Revenues for the current year and the subsequent 10-year period, currently FYs 2018-2028. The consultant's official projections are available at http://www.floridasturnpike.com/documents/reports/Traffic%20Engineers%20Annual%20Report/1_Executive%20Summary.pdf.

Projections of Turnpike revenues within the State of Florida Revenue Forecast beyond FY2028 are for planning purposes, and no undue reliance should be placed on these projections. Such amounts are generated and shared by the FDOT Office of Policy Planning (OPP) for purposes of accountability and transparency. They are part of the Revenue Forecast process, which serves the needs of MPOs generating required Long Range Transportation Plans (LRTPs).

MPOs do not program capital projects or make decisions concerning Turnpike spending. OPP projections are not part of the Turnpike's formal revenue estimating process and are not utilized for any purpose other than to assist MPOs and perform related functions. Such amounts do not reflect the Turnpike's requirement to cover operating and maintenance costs, payments to bondholders for principal and interest, long-term preservation costs, and other outstanding Turnpike obligations and commitments.

REVENUE FORECAST FOR THE HERNANDO/CITRUS MPO LONG RANGE PLAN UPDATE

2045 Forecast of State and Federal Revenues for Statewide and Metropolitan Plans

Table 8 Inflation Factors to Convert Project Cost Estimates to Year of Expenditure Dollars by Time Bands

Time Period for Planned Project or Project Phase Implementation	Multipliers to Convert Project Cost Estimates to Year of Expenditure Dollars			
	Project Cost in 2015 PDC $*	Project Cost in 2016 PDC $*	Project Cost in 2017 PDC $*	Project Cost in 2018 PDC $*
2024-2025 (2 Year Period)	1.29	1.25	1.22	1.19
2026-2030	1.43	1.39	1.35	1.32
2031-2035	1.69	1.64	1.59	1.55
2036-2045	2.22	2.16	2.10	2.05

Table 9 Inflation Factors to Convert Project Cost Estimates to Year of Expenditure Dollars for Each Individual Year

	Multipliers are based on the following annual inflation estimates:			
	From	To	Annual Rate	
	2015 Dollars	2016 Dollars	3.0%	
	2016 Dollars	2017 Dollars	2.7%	
	2017 Dollars	2018 Dollars	2.5%	
	2018 Dollars	2019 Dollars	2.7%	
	2019 Dollars	2020 Dollars	2.8%	
	2020 Dollars	2021 Dollars	2.6%	
	2021 Dollars	2022 Dollars	2.5%	
	2022 Dollars	2023 Dollars	2.7%	
	2023 Dollars	2024 Dollars	2.8%	
	2024 Dollars	2025 Dollar	2.9%	
	2025 Dollars	2026 Dollars	3.0%	
	2026 Dollars	2027 Dollars	3.1%	
	2027 Dollars	2028 Dollars	3.2%	
	2028 Dollars	2029 Dollars	3.3%	
	2029 Dollars	2030 Dollars and beyond	3.3 % each year	

* "PDC $" means "Present Day Cost"

Relationship of Construction and ROW Costs

The Department experiences extreme variation in the costs of right-of-way for improvement projects. Since fiscal year 1991-92, district right-of-way programs have ranged from as low as 4% of construction costs to more than 30% and, in rare instances, have exceeded construction costs.

Inflation Factors	2025	1.19	Average: 1.53
	2026-2030	1.32	
	2031-2035	1.55	
	2036-2045	2.05	

Gas Tax History of Expenditures Citrus County

	FY 14/15		FY 15/16		FY 16/17		FY 17/18		FY 18/19*	
Construction	139,247	4.03%	202,502	1.46%	132,199	1.54%	3,341,011	24.27%	1,054,857	12.42%
Debt Service	1,841,039	53.31%	2,001,295	14.45%	2,593,542	30.19%	2,582,102	18.76%	2,583,722	30.42%
Maintenance	1,473,137	42.66%	11,650,739	84.09%	5,864,829	68.27%	7,840,418	56.97%	4,855,461	57.16%
	3,453,423		13,854,536		8,590,570		13,763,531		8,494,040	

* as of 6/24/19

Hernando County

Account Title	YTD Exp	% Exp	% Rev	
Operating Expenses	**4,833,108**	40.67%	41.49%	Maintenance
Capital Outlay	**3,412,808**	28.72%	29.29%	Capital
Pavement Managemen	**3,107,903**	26.15%	26.68%	Maintenance
Grants & Aid	**683**	0.01%	0.01%	
Non-Operating Expense	**529,828**	4.46%	4.55%	
	11,884,329	73.85%	75.33%	

CONSTITUTIONAL GAS T	1,880,245
COUNTY FUEL TAX	825,885
LOGT 1-6 FUEL-GENL TR	4,753,266
ADDL LOGT 1-5 GAS-RES	3,290,699
NINTH-CT FUEL TAX-RES	900,085
Gas Tax Revenue	**11,650,179**

The following is the breakout of Collector vs Residential cost for Pavement Mgmt Program also.

IMPROV-PAVEMENT M(	359,613		
IMPROV-RESIDENTIAL(P	2,286,652		
IMPROV-RESIDENTIAL(P	461,637		
Pavement Managemen	**3,107,903**	26.15%	26.68%

2040 LRTP Forecast
HERNANDO/CITRUS MPO

County	Jurisdiction	Funding Source	2020-2025	2026-2030	2031-2040	Total	Assumptions
Hernando	State	SIS	$0	$24,818,000	$223,531,000	$248,349,000	
	State/Federal	Other Arterial & Construction	$37,700,000	$29,100,000	$63,600,000	$130,400,000	Capacity
	County	Transportation Impact Fees	$24,998,726	$25,088,234	$57,583,095	$107,670,055	Maintenance
	County	2nd Local Option Fuel Tax (2 c)	$6,879,328	$5,790,347	$11,817,464	$24,487,139	
	County	Local Gov't Infr. Surtax (0.50%), 25% Rds	$16,656,923	$17,540,611	$48,862,883	$83,060,417	25% to transportation
	County	Developer	$6,807,284	$47,082,223	$109,125,562	$163,015,069	
	County	Constitutional Fuel Tax (2 c)	$9,818,048	$8,266,356	$16,862,508	$34,946,912	100% for Maintenance
	County	County Fuel Tax (1 c)	$4,327,181	$3,650,467	$7,439,915	$15,417,563	100% for Maintenance
	County	1st Local Option Fuel Tax (6 c)	$24,550,417	$20,673,882	$42,159,507	$87,383,806	
	County	2nd Local Option Fuel Tax (2 c)	$6,879,328	$5,790,347	$11,817,464	$24,487,139	100% for Capital
	County	Ninth Cent Fuel Tax (1 c)	$4,364,633	$3,665,626	$7,486,805	$15,517,064	
		Total Available (Roadway)	**$131,737,907**	**$191,466,093**	**$600,286,203**	**$934,734,164**	
Citrus	State	SIS	$0	$0	$0	$0	
	State/Federal	Other Arterial & Construction	$28,500,000	$21,900,000	$47,800,000	$148,502,856	Capacity
	County	Transportation Impact Fees	$17,282,067	$33,084,403	$90,246,928	$140,613,398	Maintenance
	County	Constitutional Fuel Tax (2 c)	$1,598,308	$1,330,169	$2,680,782	$5,609,259	80% for Maintenance and 20% Capital
	County	County Fuel Tax (1 c)	$704,602	$585,380	$1,182,559	$2,472,541	80% for Maintenance and 20% Capital
	County	1st Local Option Fuel Tax (6 c)	$3,019,959	$2,513,350	$5,065,844	$10,599,153	
	County	2nd Local Option Fuel Tax (2 c)	$11,274,189	$9,385,512	$18,916,716	$39,576,417	
	County	Ninth Cent Fuel Tax (1 c)	$536,681	$445,819	$902,040	$1,884,540	
	County	Transportation Millage	$33,133,428	$31,212,378	$72,595,622	$136,941,428	
		Total Available (Roadway)	$96,049,234	$100,457,011	$239,390,491	$486,199,592	

Gas Tax History

Citrus:	60% maintenance, 20 % construction
Hernando:	68% maintenance 32% construction

$	1,420,933,756.00

(Revised

Table 5-1: Funding Sources for Roadway Capacity by Multi-Year Band (Year of Expenditure)

County	Jurisdiction	Funding Source	2020-2025	2026-2030	2031-2040	Total
Hernando	State	SIS	$0	$24,818,000	$223,531,000	$248,349,000
	State/Federal	Other Arterial & Construction	$37,700,000	$29,100,000	$63,600,000	$130,400,000
	County	Transportation Impact Fees	$24,998,726	$25,088,234	$57,583,095	$107,670,055
	County	2nd Local Option Fuel Tax (2¢)	$6,879,328	$5,790,347	$11,817,464	$24,487,139
	County	Local Gov't Infr. Surtax (0.50%), 25% Rds	$16,656,923	$17,540,611	$48,862,883	$83,060,417
	County	Developer	$6,807,284	$47,082,223	$109,125,562	$163,015,069
		Total Available(roadway)	**$93,042,261**	**$149,419,415**	**$514,520,004**	**$756,981,680**
Citrus	State	SIS	$0	$0	$0	$0
	State/Federal	Other Arterial & Construction	$28,500,000	$21,900,000	$47,800,000	$148,502,856
	County	Transportation Impact Fees	$17,282,067	$33,084,403	$90,246,928	$140,613,398
	County	Constitutional Fuel Tax (2¢)	$1,598,308	$1,330,169	$2,680,782	$5,609,259
	County	County Fuel Tax (1¢)	$704,602	$585,380	$1,182,559	$2,472,541
	County	1st Local Option Fuel Tax (6¢)	$3,019,959	$2,513,350	$5,065,844	$10,599,153
	County	2nd Local Option Fuel Tax (2¢)	$11,274,189	$9,385,512	$18,916,716	$39,576,417
	County	Ninth Cent Fuel Tax (1¢)	$536,681	$445,819	$902,040	$1,884,540
	County	Transportation Millage	$33,133,428	$31,212,378	$72,595,622	$136,941,428
		Total Available (roadway)	**$96,049,234**	**$100,457,011**	**$239,390,491**	**$435,896,736**

Projected Hernando County Revenues Worksheet

Revenue	2025	2026 to 2030	2031 to 2035	2036 to 2045
County Gas Tax	$855,000	$4,400,000	$4,607,000	$9,834,000
Constitutional Gas Tax	$1,928,000	$9,889,000	$10,303,000	$21,848,000
Local Option Gas Tax	$4,668,000	$23,663,000	$24,203,000	$50,031,000
9th Cent Gas Tax	$880,000	$4,464,000	$4,565,000	$9,434,000
Second Local Option Gas Tax	$3,397,000	$17,210,000	$17,589,000	$36,312,000
Road Impact Fees	$2,430,000	$12,820,000	$15,460,000	$36,630,000
Total	$14,158,000	$72,446,000	$76,727,000	$164,089,000

Projected Citrus County Revenues Worksheet

Revenue	2025	2026 to 2030	2031 to 2035	2036 to 2045
County Gas Tax	$785,000	$4,072,000	$4,313,000	$9,356,000
Constitutional Gas Tax	$1,783,000	$9,232,000	$9,760,000	$21,101,000
Local Option Gas Tax	$3,339,000	$17,202,000	$18,050,000	$38,638,000
9th Cent Gas Tax	$658,000	$3,389,000	$3,552,000	$7,595,000
Second Local Option Gas Tax	$2,482,000	$12,807,000	$13,471,000	$28,936,000
Road Impact Fees	$1,670,000	$8,810,000	$9,430,000	$23,420,000
Total	$10,717,000	$55,512,000	$58,576,000	$129,046,000

Total
$19,696,000
$43,968,000
$102,565,000
$19,343,000
$74,508,000
$67,340,000
$327,420,000

Total
$18,526,000
$41,876,000
$77,229,000
$15,194,000
$57,696,000
$43,330,000
$253,851,000

Present Day Value ($2019) Forecasted Revenues						
Jurisdiction	**Revenue**	**2025**	**2026-2030**	**2031-2035**	**2036-2045**	**Total All Years**
State - Hernando	SIS	$0	$0	$8,258,065	$32,758,537	$41,016,601
	TRIP	$323,661	$2,084,181	$1,987,906	$3,086,622	$7,482,370
	TALL	$184,949	$775,315	$660,269	$995,771	$2,616,304
	TALT	$184,949	$791,989	$674,468	$1,019,927	$2,671,333
	Other Arterial & Construction	$8,757,344.71	$47,957,012.77	$44,064,058	$69,325,524	$170,103,940
State- Citrus	TRIP	$264,574.19	$1,703,697.44	$1,624,997.61	$2,523,134.36	$6,116,404
	TALL	$151,185.25	$633,775.45	$539,731.35	$813,985.08	$2,138,677
	TALT	$151,185.25	$647,405.03	$551,338.48	$833,731.35	$2,183,660
	Other Arterial & Construction	$7,158,621.68	$39,202,078.14	$36,019,813.13	$56,669,597.67	$139,050,111
Total State		**$17,176,471**	**$93,795,455**	**$94,380,645**	**$168,026,829**	**$373,379,400**
Hernando	Impact Fees	$2,042,016.81	$9,712,121.21	$9,974,193.55	$17,868,292.68	$39,596,624
	Impact Fees 100%	$9,294,117.65	$44,159,090.91	$45,322,580.65	$81,243,902.44	$180,019,692
	Gas Taxes	$2,370,151.26	$10,865,242.42	$9,511,303.23	$14,969,024.39	$37,715,721
	Developer				$79,519,545.85	$79,519,546
Citrus	Impact Fees 100%	$2,806,722.69	$13,348,484.85	$12,167,741.94	$22,848,780.49	$51,171,730
	Impact Fees	$1,403,361.34	$6,674,242.42	$6,083,870.97	$11,424,390.24	$25,585,865
	Gas Taxes	$3,078,487.39	$14,324,393.94	$12,835,870.97	$20,856,097.56	$51,094,850
Total County		**$8,894,017**	**$41,576,000**	**$38,405,239**	**$144,637,351**	**$233,512,606**
GRAND TOTAL		**$26,070,487**	**$135,371,455**	**$132,785,884**	**$312,664,180**	**$606,892,006**

Hernando/Citrus MPO 2045 LRTP Revenue Forecast

Year of Expenditure Forecasted Revenues						
Jurisdiction	**Revenue**	**2025**	**2026-2030**	**2031-2035**	**2036-2045**	**Total All Years**
State - Hernando	SIS	$0	$0	$12,800,000	$67,155,000	$79,955,000
	TRIP	$385,157	$2,751,119	$3,081,254	$6,327,575	$12,545,104
	TALL	$220,090	$1,023,416	$1,023,416	$2,041,331	$4,308,253
	TALT	$220,090	$1,045,425	$1,045,425	$2,090,851	$4,401,791
	Other Arterial & Construction	$10,421,240	$63,303,257	$68,299,290	$142,117,325	$284,141,111
State- Citrus	TRIP	$314,843	$2,248,881	$2,518,746	$5,172,425	$10,254,896
	TALL	$179,910	$836,584	$836,584	$1,668,669	$3,521,747
	TALT	$179,910	$854,575	$854,575	$1,709,149	$3,598,209
	Other Arterial & Construction	$8,518,760	$51,746,743	$55,830,710	$116,172,675	$232,268,889
Total State		**$20,440,000**	**$123,810,000**	**$146,290,000**	**$344,455,000**	**$634,995,000**
Hernando	Impact Fees	$2,430,000	$12,820,000	$15,460,000	$36,630,000	$67,340,000
	Impact Fees 100%	$11,060,000	$58,290,000	$70,250,000	$166,550,000	$306,150,000
	Gas Taxes	$2,820,480	$14,342,120	$14,742,520	$30,686,500	$62,591,620
	Developer	-	-	-	-	$163,015,069
Citrus	Impact Fees 100%	$3,340,000	$17,620,000	$18,860,000	$46,840,000	$86,660,000
	Impact Fees	$1,670,000	$8,810,000	$9,430,000	$23,420,000	$43,330,000
	Gas Taxes	$3,663,400	$18,908,200	$19,895,600	$42,755,000	$85,222,200
Total County		**$10,583,880**	**$54,880,320**	**$59,528,120**	**$133,491,500**	**$421,498,889**
GRAND TOTAL		**$31,023,880**	**$178,690,320**	**$205,818,120**	**$477,946,500**	**$1,056,493,889**

Total Transportation Dollars

			2040 Revenue Forecast				2045 Revenue Forecast					Difference	2045 Revenue Distribution				
County	Jurisdiction	Funding Source	2020-2025	2026-2030	2031-2040	Total	2021-2025	2026-2030	2031-2035	2036-2045	Total	Total Difference (2045 - 2040)	Assumptions	Capacity Expansion	Operations and Maintenance		
Hernando	State	SIS	$0	$24,818,000	$223,531,000	$248,349,000	$0	$0	$12,800,000	$67,155,000	$79,955,000	($168,394,000)	100% Capital	$79,955,000	$0	100%	0%
	State/Federal	Other Arterial & Construction	$37,700,000	$29,100,000	$63,600,000	$130,400,000	$10,421,469	$63,303,257	$68,299,290	$142,117,325	$284,141,111	$153,741,111	100% Capital	$284,141,111.48	$0	100%	0%
	State/Federal	Other Federal/State Subtotal	-	-	-	-	$825,336	$4,819,961	$5,150,095	$10,459,756	$21,255,148	$21,255,148	100% Capital	$21,255,148.31	$0	100%	0%
		Total State Funded	**$37,700,000**	**$53,918,000**	**$287,131,000**	**$378,749,000**	**$11,246,805**	**$68,123,218**	**$86,249,385**	**$219,732,081**	**$385,351,260**	**$6,602,260**	**Total State Funded**	**$385,351,260**	**$0**		
	County	Transportation Impact Fees	$24,998,726	$25,088,234	$57,583,095	$107,670,055	$2,430,000	$12,820,000	$15,460,000	$36,630,000	$67,340,000	($40,330,055)	100% Capital	$67,340,000	$0	100%	0%
		County Fuel Tax (1 c)	$4,327,181	$3,650,467	$7,439,915	$15,417,563	$855,000	$4,400,000	$4,607,000	$9,834,000	$19,696,000	$4,278,437	26% Capital, 74% Maintenance	$5,120,960	$14,575,040	26%	74%
		Constitutional Fuel Tax (2 c)	$9,818,048	$8,266,356	$16,862,508	$34,946,912	$1,928,000	$9,889,000	$10,303,000	$21,848,000	$43,968,000	$9,021,088	26% Capital, 74% Maintenance	$11,431,680	$32,536,320	26%	74%
		1st Local Option Fuel Tax (6 c)	$24,550,417	$20,673,882	$42,159,507	$87,383,806	$4,668,000	$23,663,000	$24,203,000	$50,031,000	$102,565,000	$15,181,194	26% Capital, 74% Maintenance	$26,666,900	$75,898,100	26%	74%
		2nd Local Option Fuel Tax (2 c)	$6,879,328	$5,790,347	$11,817,464	$24,487,139	$3,397,000	$17,210,000	$17,589,000	$36,312,000	$74,508,000	$50,020,861	26% Capital, 74% Maintenance	$19,372,080	$55,135,920	26%	74%
		Ninth Cent Fuel Tax (1 c)	$4,364,633	$3,665,626	$7,486,805	$15,517,064	$880,000	$4,464,000	$4,565,000	$9,434,000	$19,343,000	$3,825,936	100% Transit	$0	$19,343,000	0%	100%
		Developer	$6,807,284	$47,082,223	$109,125,562	$163,015,069	-	-	-	-	$163,015,069	$0	100% Capital	$163,015,069.00	$0.00	100%	0%
		Total County Funded	**$81,745,617**	**$114,217,135**	**$252,474,856**	**$448,437,608**	**$14,158,000**	**$72,446,000**	**$76,727,000**	**$164,089,000**	**$490,435,069**	**$55,201,981**	**Total County Funded**	**$292,946,689**	**$197,488,380**		
Total Hernando County Revenue			**$119,445,617**	**$168,135,135**	**$539,605,856**	**$827,186,608**	**$25,404,805**	**$140,569,218**	**$162,976,385**	**$383,821,081**	**$875,786,329**	**$61,804,240**	**Total Hernando County Revenue**	**$678,297,949**	**$197,488,380**		
Citrus	State/Federal	Other Arterial & Construction	$28,500,000	$21,900,000	$47,800,000	$148,502,856	$8,523,000	$51,772,500	$55,858,500	$116,230,500	$232,384,500	$83,881,644	100% Capital	$232,384,500	$0	100%	0%
	State/Federal	Other Federal/State Subtotal	-	-	-	-	$674,664	$3,940,039	$4,209,905	$8,550,244	$17,374,852	$17,374,852	100% Capital	$17,374,851.69	$0	100%	0%
		Total State Funded	**$28,500,000**	**$21,900,000**	**$47,800,000**	**$148,502,856**	**$9,197,664**	**$55,712,539**	**$60,068,405**	**$124,780,744**	**$249,759,352**	**$83,881,644**	**Total State Funded**	**$232,384,500**	**$0**		
	County	Transportation Impact Fees	$17,282,067	$33,084,403	$90,246,928	$140,613,398	$1,670,000	$8,810,000	$9,430,000	$23,420,000	$43,330,000	($97,283,398)	100% Capital	$43,330,000	$0	100%	0%
	County	County Fuel Tax (1 c)	$704,602	$585,380	$1,182,559	$2,472,541	$785,000	$4,072,000	$4,313,000	$9,356,000	$18,526,000	$16,053,459	20% Capital, 80% Maintenace	$3,705,200	$14,820,800	20%	80%
	County	Constitutional Fuel Tax (2 c)	$1,598,308	$1,330,169	$2,680,782	$5,609,259	$1,783,000	$9,232,000	$9,760,000	$21,101,000	$41,876,000	$36,266,741	20% Capital, 80% Maintenace	$8,375,200	$33,500,800	20%	80%
	County	1st Local Option Fuel Tax (6 c)	$3,019,959	$2,513,350	$5,065,844	$10,599,153	$3,339,000	$17,202,000	$18,050,000	$38,638,000	$77,229,000	$66,629,847	20% Capital, 80% Maintenace	$15,445,800	$61,783,200	20%	80%
	County	2nd Local Option Fuel Tax (2 c)	$11,274,189	$9,385,512	$18,916,716	$39,576,417	$2,482,000	$12,807,000	$13,471,000	$28,936,000	$57,696,000	$18,119,583	100% Capital	$57,696,000	$0	100%	0%
	County	Ninth Cent Fuel Tax (1 c)	$536,681	$445,819	$902,040	$1,884,540	$658,000	$3,389,000	$3,552,000	$7,595,000	$15,194,000	$13,309,460	100% Transit	$0	$15,194,000	0%	100%
	County	Transportation Millage	$33,133,428	$31,212,378	$72,595,622	$136,941,428	-	-	-	-	$0	($136,941,428)	100% Maintenance	$0	($136,941,428)	0%	100%
		Total County Funded	**$67,549,234**	**$78,557,011**	**$191,590,491**	**$337,696,736**	**$10,717,000**	**$55,512,000**	**$58,576,000**	**$129,046,000**	**$253,851,000**	**($83,845,736)**	**Total County Funded**	**$128,552,200**	**($11,642,628)**		
Total Citrus County Revenue			**$96,049,234**	**$100,457,011**	**$239,390,491**	**$486,199,592**	**$19,914,664**	**$111,224,539**	**$118,644,405**	**$253,826,744**	**$503,610,352**	**$35,908**	**Total Citrus County Revenue**	**$360,936,700**	**($11,642,628)**		
Total Revenues							**$45,319,469**	**$251,793,757**	**$281,620,790**	**$637,647,825**	**$1,379,396,680**	**$61,840,148**	**Total Revenues**	**$1,039,234,649**	**$185,845,752**		

Note: Revenues shown are calculated in year of expenditure $16,597,058

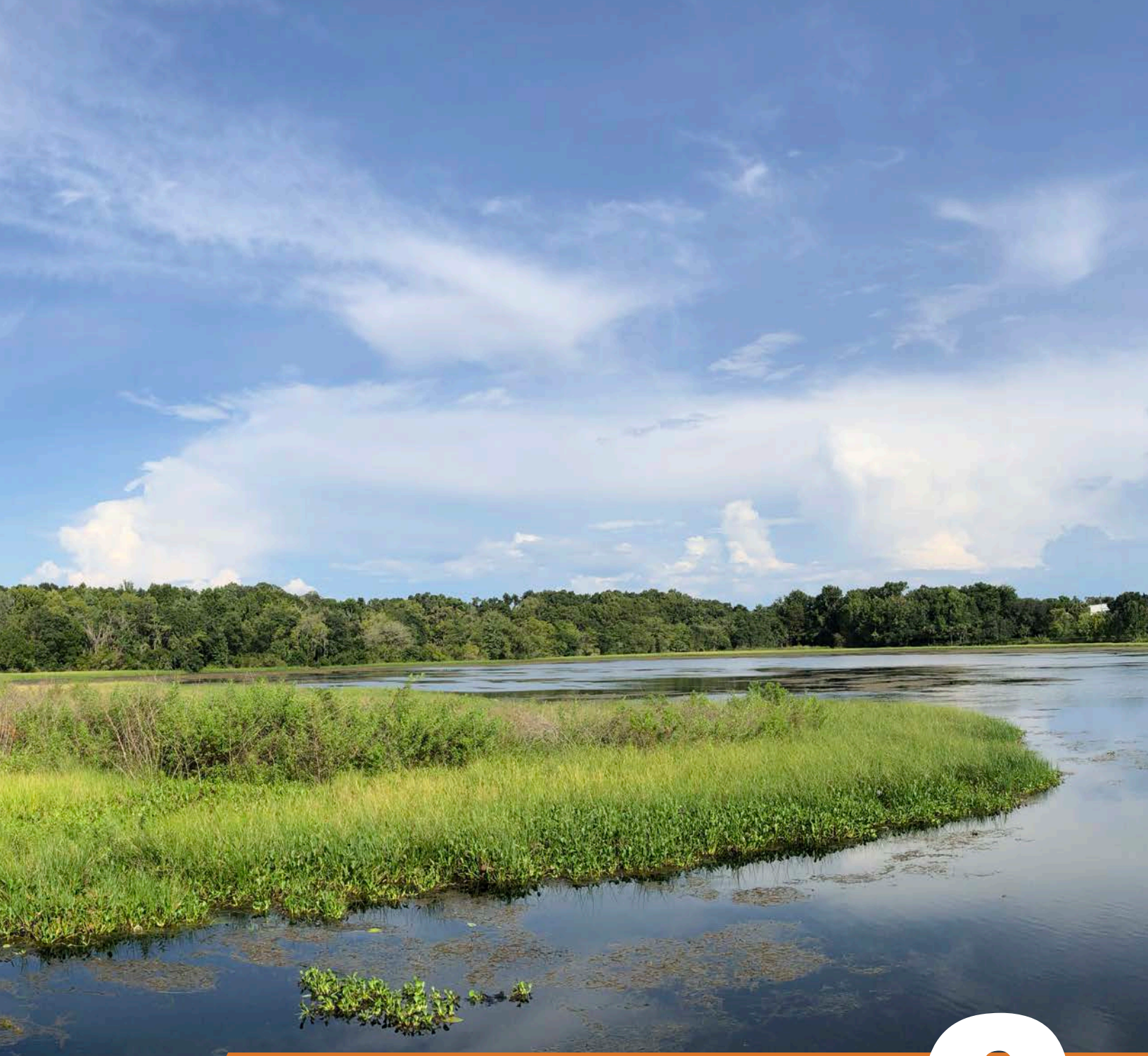
$2,292,723.22

Hernando Gas Taxes Capacity Only

	2021-2025	2026-2030	2031-2035	2036-2045	
County Fuel Tax (1 c)	$222,300.00	$1,144,000.00	$1,197,820.00	$2,556,840.00	
Constitutional Fuel Tax (2 c)	$501,280.00	$2,571,140.00	$2,678,780.00	$5,680,480.00	
1st Local Option Fuel Tax (6 c)	$1,213,680.00	$6,152,380.00	$6,292,780.00	$13,008,060.00	
2nd Local Option Fuel Tax (2 c)	$883,220.00	$4,474,600.00	$4,573,140.00	$9,441,120.00	
Total - YOE	$2,820,480.00	$14,342,120.00	$14,742,520.00	$30,686,500.00	$62,591,620.00
	1.19	1.32	1.55	2.05	
Present Day	$2,370,151.26	$10,865,242.42	$9,511,303.23	$14,969,024.39	$37,715,721.30

Citrus Gas Taxes Capacity Only

	2021-2025	2026-2030	2031-2035	2036-2045	
County Fuel Tax (1 c)	$157,000.0	$814,400.0	$862,600.0	$1,871,200.0	
Constitutional Fuel Tax (2 c)	$356,600.0	$1,846,400.0	$1,952,000.0	$4,220,200.0	
1st Local Option Fuel Tax (6 c)	$667,800.0	$3,440,400.0	$3,610,000.0	$7,727,600.0	
2nd Local Option Fuel Tax (2 c	$2,482,000.0	$12,807,000.0	$13,471,000.0	$28,936,000.0	
Total - YOE	$3,663,400.0	$18,908,200.0	$19,895,600.0	$42,755,000.0	$85,222,200.0
	1.19	1.32	1.55	2.05	
Present Day	$3,078,487.39	$14,324,393.94	$12,835,870.97	$20,856,097.56	$51,094,849.86



Appendix G

FY 2019/20 – 2023/24 TRANSPORTATION IMPROVEMENT PROGRAM

FY 2019/20-2023/24
Proposed Adoption:
June 18, 2019

Transportation Improvement Program

METROPOLITAN PLANNING ORGANIZATION

HERNANDO/CITRUS

1661 Blaise Drive

Brooksville, Florida 34601

Phone: 352.754.4

HERNANDO/CITRUS
METROPOLITAN PLANNING ORGANIZATION (MPO)

Hernando County
Commissioner Wayne Dukes
Commissioner John Allocco, Vice-Chairman
Commissioner Steve Champion
Commissioner Jeff Holcomb
Commissioner John Mitten, Alternate

Citrus County
Commissioner Jeff Kinnard, Chairman
Commissioner Ronald Kitchen
Commissioner Scott Carnahan, Alternate
Commissioner Jimmie T. Smith, Alternate

City of Brooksville
Vice Mayor Robert Battista
Council Member William Kemerer, Alternate

City of Crystal River
Council Member Pat Fitzpatrick
Council Member Robert Holmes, Alternate

City of Inverness
Council Member Cabot McBride
Council Member Jacquie Hepfer, Alternate

Florida Department of Transportation, Nonvoting Advisor
David Gwynn P.E., Secretary

HERNANDO/CITRUS METROPOLITAN PLANNING ORGANIZATION

Steven Diez, MPO Executive Director

The preparation of this report has been financed in part through grant[s] from the Federal Highway Administration and Federal Transit Administration, U.S. Department of Transportation, under the State Planning and Research Program, Section 505 [or Metropolitan Planning Program, Section 104(f)] of Title 23, U.S. Code. The contents of this report do not necessarily reflect the official views or policy of the U.S. Department of Transportation.

ADOPTION: JUNE 18, 2019

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HERNANDO/CITRUS MPO
TRANSPORTATION IMPROVEMENT PROGRAM
(FISCAL YEARS 2019/2020-2023/2024)

Endorsement

This document was prepared by the Hernando/Citrus Metropolitan Planning Organization (MPO) Staff, and was developed consistent with State/Federal Requirements, in cooperation with the Florida Department of Transportation (FDOT) District Seven Office, Hernando County Transportation Services, the Citrus County Engineering Division, the City of Brooksville, the City of Crystal River, and the City of Inverness.

The Hernando/Citrus MPO, at its regular meeting on June 18, 2019 , endorsed the FY 2019/2020-2023/2024 Hernando/Citrus Transportation Improvement Program (TIP).

Further, it is hereby certified that the planning process of the Hernando/Citrus Area Transportation Study is being carried on in conformance with the provisions of 23 C.F.R. 450, 23 U.S.C. 134, and 339.175 (7) F.S.

This certification determination is being made based on an in-depth review, utilizing a checklist provided by FDOT and covering all aspects of the transportation planning process in the Spring Hill Urbanized Area, the Homosassa Springs-Beverly Hills- Citrus Springs Urbanized Area, and the remainder of Hernando County and Citrus County.

Date: June 18, 2019

_____

Jeff Kinnard, Chairman
Hernando/Citrus MPO
APPROVED AS TO FORM

AND LEGAL SUFFICIENCY

BY_____
MPO Attorney

INTRODUCTION

HERNANDO/CITRUS MPO
TRANSPORTATION IMPROVEMENT PROGRAM (TIP)

Introduction

The Hernando/Citrus Transportation Improvement Program (TIP) is developed and updated annually as part of the Hernando/Citrus Area Transportation Study Certification Process. Preparation and maintenance of the TIP is one of several prerequisites to continued receipt of Federal Assistance for Transportation Improvements.

The TIP, a multi-modal program consisting of improvements recommended from the transportation systems management and long-range elements of the Transportation Plan, is developed through a continuing comprehensive and coordinated effort involving the Florida Department of Transportation (FDOT). The FDOT's Final Tentative 5-Year Work Program is the basic input source for the Strategic Intermodal System (SIS), National Highway System (NHS), non-NHS, and Mass Transit portions of the TIP. Data required for the balance of the TIP is assembled from input provided through the Technical Advisory Committee, the Transportation Systems Operations Committee, the Bicycle/Pedestrian Advisory Committee, and the Citizens Advisory Committee.

Purpose

The TIP is a 5-year financially feasible program of multi-modal transportation improvement projects, as adopted by state and local government jurisdictions and transportation agencies. The Hernando/Citrus MPO TIP is updated annually by the Metropolitan Planning Organization (MPO) as one of several prerequisites for continued receipt of federal assistance for transportation improvements.

The projects listed in the TIP are capital and non-capital surface transportation projects proposed for funding under Title 23 U.S.C. and Title 49 U.S.C. Chapter 53 (including bicycle facilities, sidewalks, and transportation alternatives projects). Also included are all regionally significant projects requiring an action by the Federal Highway Administration (FHWA) or Federal Transit Administration (FTA) regardless of funding source. In addition, the TIP identifies major improvement projects funded with local sources.

Financial Plan

The TIP is a financially constrained plan for 5 years from FY 2019/2020 – 2023/2024 (See table 7 on page 26). Current and proposed Federal, State and locally dedicated revenue sources are reliable and provide a high level of assurance that the Tentative Work Program

will be fully implemented. The TIP is also financially constrained for all locally funded projects. For all projects in the TIP, costs and revenues are shown in Year of Expenditure (YOE) dollars

Project Selection Process

The federally funded projects included within this TIP were selected in accordance with Title 23, CFR 450.330(b). The project selection process with the FDOT, FHWA, FTA, the Hernando/Citrus MPO, the Community Transportation Coordinator (CTC), and the municipalities within the urbanized area of the MPO resulted in the adoption of a State of Florida Department of Transportation Five Year Work Program for FY 2019/2020-2023/2024 . Projects funded by Title 23 and Title 49 funds and all regionally significant projects in this TIP reflect year of expenditure (YOE) costs based on the year in which funding is anticipated to be available consistent with the requirements of 23 CFR Part 450.324(a) and 339.175(8), F.S.

Components of this process include project prioritization by the MPO, the FDOT Tentative Work Program public hearing, and local government project review. A brief description of each of these components includes:

- Project Prioritization by the MPO - The MPO, working through its Technical Advisory, Bicycle/Pedestrian Advisory, and Citizens Advisory committees (a part of the public involvement process), prioritized projects on the State Highway System based upon projects identified through the Cost Feasible Plan of the Long Range Transportation Plan. Prioritization includes a technical analysis of State maintained roadways considering such variables as level of service, performance measure evaluation, cost of upgrading the facility, and project connectivity with the existing roadway system.

- FDOT Tentative 5-Year Work Program Public Hearing - FDOT conducted an on-line Public Meeting for the Tentative Work Program that provided interactive maps, videos, downloadable/searchable documents, and opportunity to comment on projects in the Tentative Work Program. FDOT also presented highlights from the Tentative 5- Year Work Program at MPO Board and committee meetings fall of 2018, making all documents and maps available and held a full-day open house at FDOT headquarters in Tampa . The public was encouraged to submit comments throughout the D7 Work Program website or by mailing in comments.

- Local Government Project Review - As part of the local adoption of the Hernando/Citrus MPO TIP, the process nominally includes a public hearing, as well as review by the Technical Advisory and Citizens Advisory committees. The TIP adoption process enables a project prioritization selection to be completed by the MPO, adequate funding to be anticipated, and project phasing to be developed.

Project Consistency with Local Plans

The project selection process used for adoption of the Hernando/Citrus MPO TIP is based upon the requirements of the Federal surface transportation legislation of 2015, Fixing America's Surface Transportation FAST Act.

Regarding project selection, the adopted Hernando/Citrus TIP is consistent with the following FHWA work program development requirements:

- Only major categories of federal and state funding are included within the TIP.
- The federally funded projects within the TIP have been reviewed and found to be consistent with the MPO priorities as determined through the project selection process.
- The projects selected for the Hernando/Citrus TIP are consistent with the
  - FDOT's 5-Year Work Program and SIS Plan
  - The Brooksville-Tampa Bay Regional, Crystal River and Inverness Airport Master Plans
  - Hernando/Citrus MPO 2040 Long Range Transportation Plan,
  - FY 2015-2024 Hernando County Transit Development Plan
  - Transportation Disadvantaged Program as incorporated in the Transportation Disadvantaged Service Plan (TDSP) for both Hernando County and Citrus County
  - FY 2016-2025 Citrus County Transit Development Plan
  - Adopted comprehensive plans of the six affected local governments, which include Hernando County, Citrus County, the City of Brooksville, the City of Crystal River, the City of Inverness, and the City of Weeki Wachee.
- Based upon the project selection process and anticipated funding levels from Federal, State and local funding sources are reasonably expected to be available for all projects within the Transportation Project Listings.

Annual Listing of Projects

Pursuant to the provisions of 23 U.S.C. 134 (j)(7)(B) and 49 U.S.C. 5303(c)(5)(B), and Subsection 339.175 (7) (h), F.S., the MPO has published an annual listing of projects for which Federal funds have been obligated in the preceding year.

These projects are summarized in Appendix A and also can be found on the FDOT website www.fdot.gov/workprogram/Federal/fa-MPO-ObligDet.shtm.

Project Priority Statement

The development of the FDOT Tentative 5-Year Work Program includes those projects approved by the MPO within the List of Priority Projects (LOPP). The LOPP's Major Improvement & Congestion Management, and Complete Streets (formerly known as Transportation Alternatives) categories, contain projects that are considered of highest priority for improvement by the MPO and its advisory committees. The criteria for the ranking of transportation projects include: existing and projected facilities levels of service; safety considerations; anticipated funding levels; ability to complete the project; and overall modal performance and system connectivity. Consistent with federal requirements and the LRTP, the prioritization process considers the recommendations of the MPO's advisory committees. Facility specific projects are ranked consistent with the LRTP's prioritization of the major transportation corridors within the MPO's jurisdiction. Consistent with the adopted Public Participation Plan (PPP), the MPO holds at least one public meeting prior to the TIP adoption.

HERNANDO/CITRUS MPO
TRANSPORTATION PERFORMANCE MEASURESEASURES/
TRANSPORTATION IMPROVEMENT PLAN (TIP) COMPLIANCE

Introduction

The Moving Ahead for Progress in the 21st Century Act (MAP-21) which was enacted in 2012 , requires State DOTs and MPOs to conduct performance-based planning by tracking performance measures and setting data-driven targets to improve those measures. Performance-based planning ensures the most efficient investment of federal transportation funds by increasing accountability, transparency, and providing for better investment decisions that focus on key outcomes related to seven national goals:

- Improving Safety
- Maintaining Infrastructure Condition
- Reducing Traffic Congestion
- Improving the Efficiency of the System and Freight Movement
- Protecting the Environment
- Reducing Delays in Project Delivery

In 2015, The Fixing America's Surface Transportation (FAST) Act supported and continued the goals and overall performance of the MAP-21. This legislation established required performance measures and timelines for State DOTs and MPOs to comply with the requirements of MAP-21. The Federally required performance measures were incorporated into the Hernando/Citrus MPO's Congestion Management Process (May 2017) and include specific measures to address the following:

- Safety (Fatalities and Severe Injuries)
- System Performance (Reliable Travel Time)
- Goods Movement (Reliable Travel Time for Trucks)
- System Preservation (Pavement and Bridge Condition)
- Transit Asset Management

State DOTs are required to establish statewide targets for the required performance measures and MPOs have the option to support the statewide targets or adopt their own. Currently, Hernando/Citrus MPO has adopted the FDOT performance targets to be incompliance. The current 2017 Performance Report can be found in Appendix B.

These performance measures and targets only apply to the National Highway System which includes the Interstate Highway System and typically the Principal Arterials. NHS roadways in Citrus and Hernando Counties include:

- Interstate 75
- Suncoast Parkway
- US 19
- US 41
- US 98
- US 301
- SR 44
- SR 50
- SR 200
- CR 485 (Cobb Road)

Hernando/Citrus MPO System Performance Targets

On September 18, 2018, the Hernando/Citrus MPO agreed to support FDOT's statewide system performance targets, thus agreeing to plan and program projects in the TIP that will, once implemented, make progress toward achieving the statewide targets.

The Hernando/Citrus MPO TIP was developed and is managed in cooperation with FDOT, TheBUS, and Citrus County Transit. It reflects the investment priorities established in the Hernando/Citrus 2040 Long Range Transportation Plan (LRTP). The focus of the Hernando/Citrus MPO's investments to maintain system performance may include but is not limited to projects and programs in the following areas:

- Corridor improvements
- Intersection improvements (on NHS roads)
- Intersection improvements
- Projects evaluated in the CMP and selected for the TIP

- Investments in transit, bicycle, or pedestrian systems that are expected to promote mode shift
- TSMO projects or programs
- Travel demand management programs

The Hernando/Citrus MPO TIP has been evaluated and the anticipated effect of the overall program is that, once implemented, progress will be made towards achieving the statewide performance targets.

MPO Safety Performance Target Established

Safety was the first category of performance measures under the new Federal rules requiring adoption of performance targets. In March of 2016, the Highway Safety Improvement Program (HSIP) and Safety Performance Management Measures Rule (Safety PM Rule) was finalized and published in the *Federal Register*. The rule requires MPOs to set targets for the following safety-related performance measures and report progress to the State DOT:

- Fatalities;
- Serious Injuries;
- Nonmotorized Fatalities and Serious Injuries;
- Rate of Fatalities per 100 Million Vehicle Miles Traveled (VMT); and
- Rate of Serious Injuries per 100 Million VMT.

The 2016 Florida Strategic Highway Safety Plan (SHSP) is the statewide plan that focuses on how to accomplish the vision of eliminating fatalities and reducing serious injuries on all public roads. The SHSP was developed in coordination with Florida's 27 metropolitan planning organizations (MPOs) through Florida's Metropolitan Planning Organization Advisory Council (MPOAC). The SHSP development process included review of safety-related goals, objectives, and strategies in MPO plans. The SHSP guides FDOT, MPOs, and other safety partners in addressing safety and defines a framework for implementation activities to be carried out throughout the State.

The Florida SHSP and the Florida Transportation Plan (FTP) both commit to a visionary performance target of zero deaths. The FDOT Florida Highway Safety Improvement Program (HSIP) annual report documents the statewide interim performance measures toward that zero deaths vision.

Table 1: Historical Statistics by Performance Measure and Year, Hernando/Citrus MPO

PERFORMANCE MEASURE	2011-2015 AVERAGE	2011-2015 % CHANGE	2012-2016 AVERAGE	2012-2016 % CHANGE	2013-2017 AVERAGE	2013-2017 % CHANGE
Average Annual Fatalities [1]	49.2	4.7%	49.6	.8%	54	8.9%
Average Annual Serious Injuries[2]	445	3.8%	461.2	3.6%	482.4	4.6%
Average Annual Fatality Rates[3]	1.71	3.9%	1.458	-0.9%	1.541	5.7%
Average Annual Serious Injury Rates[4]	13.329	3.1%	13.560	1.7%	13.794	1.7%
Average Annual Pedestrian and Bicyclist Fatalities and Serious Injuries[5]	41	13.3%	43	4.9%	42.8	-0.5%
Average Annual Fatalities[1]	49.2	4.7%	49.6	.8%	54	8.9%

1 *The average number of fatalities per year is the sum of the annual total fatalities for each year in the range divided by 5, to one decimal place. Fatalities are individuals listed on a Florida Traffic Crash Report (FTCR) form with injury code "5" – fatal (within 30 days).*

2 *The average number of serious injuries per year is the sum of the annual total serious injuries for each year in the range divided by 5, to one decimal place. Serious injuries are individuals listed on an FTCR form with injury code "4" – incapacitating.*

3 *The average fatality rate is an average of the yearly rate figures for the years in the range, to three decimal places. Each yearly rate is calculated by dividing the total number of fatalities for the year by the total traffic volume for the year. Traffic volume is expressed in 100 Million Vehicle-Miles and is the Daily Vehicle-Miles Traveled (sum for the region of the counts of vehicles per day times the length of the segments associated with the traffic) times the number of days in the year, divided by 100,000,000. This yields an annual volume of Vehicle-Miles. The number of fatalities divided by the traffic volume is the annual fatality rate. This measure averages the five annual rates within the measurement window and does NOT use the cumulative five-year fatalities over the cumulative five-year traffic volume.*

4 *The average serious injury rate is an average of the yearly rate figures for the years in the range, to three decimal places. Each yearly rate is calculated by dividing the total number of serious injuries for the year by the total traffic volume for the year. See (3) above for an explanation of traffic volume. The same traffic volume figure is used here in the same way.*

5 *The average serious injury rate is an average of the yearly rate figures for the years in the range, to three decimal places. Each yearly rate is calculated by dividing the total number of serious injuries for the year by the total traffic volume for the year. See (3) above for an explanation of traffic volume. The same traffic volume figure is used here in the same way.*

**Source: fatality and serious injury counts from Florida Dept. of Transportation (FDOT) State Safety Office's Crash Analysis Reporting (CAR) database as of December 19, 2018; traffic volumes as published by the FDOT office of Transportation Data and Analytics at* http://www.fdot.gov/planning/statistics/mileage-rpts/

The MPO acknowledges FDOT statewide HSIP interim safety performance measures and FDOT's 2018 safety targets, which set the target at "0" for each performance measure to reflect the Department's goal of zero deaths. However, the MPO is setting its safety performance targets based upon data collected within the MPO planning area for previous years related to safety performance measures. On January 30, 2018, the MPO adopted Resolution 2018-01 to establish its own targets, a 5% reduction based on a five-year rolling average for the required safety performance measures. On February 19, 2019, the MPO adopted Resolution 2019-01 and reaffirmed its commitment to a 5% reduction based on a five-year rolling average for the required safety measures.

The 2019 targets documented in MPO Resolution 2019-01 are in the tables following.

Hernando/Citrus MPO Safety Performance Measures and Targets

The TIP considers potential projects that fall into specific investment priorities established by the MPO in the LRTP. For the Hernando/Citrus MPO this includes safety programs such as:

- Continued involvement and support for the Community Traffic Safety Team (CTST) and/or the Safe Routes to Schools (SRTS) Team to address infrastructure or behavior safety.
- Infrastructure examples: Installation of school flashing signals, roadway lighting, traffic calming, traffic signals.
- Behavioral safety examples: SRTS education/enforcement activities, pedestrian/bicycle safety education.

The TIP includes specific investment priorities that support each of the MPO's goals including safety, using a prioritization and project selection process established in the LRTP. The TIP prioritization process continues to use a data-driven method and stakeholder input to evaluate projects that have an anticipated effect of reducing both fatal and injury crashes. The MPO's goal of reducing fatal and serious injury crashes is linked to this investment plan and the process used in prioritizing the projects is consistent with Federal requirements.

Transit Asset Management Targets

The Transit Asset Management rule from the Federal Transit Administration (FTA) became effective on October 1, 2016. This rule applies to all recipients and subrecipients of Federal transit funding that own, operate, or manage public transportation capital assets. The rule introduces three key requirements: 1) new State of Good Repair (SGR) performance measures and targets, 2) revised National Transit Database (NTD) reporting requirements, and 3) new Transit Asset Management (TAM) Plan. MPOs are encouraged to incorporate Transit Asset Measures and targets in the LRTP and TIP through a process that includes a written agreement between the transit providers, the MPO, and FDOT.

"State of good repair" is defined as the condition in which a capital asset is able to operate at a full level of performance. This means the asset:

1. Is able to perform its designed function.
2. Does not pose a known unacceptable safety risk.
3. Its lifecycle investments have been met or recovered.

Transit agencies are required to report performance measures and targets annually, while MPOs may choose to revise or maintain their performance targets when they update their TIPs or LRTPs. MPOs are encouraged to consult and communicate with State DOTs and transit providers to ensure alignment of targets any time these agencies update or establish new targets.

Hernando/Citrus MPO Transit Asset Management Targets

On September 18, 2018, the MPO adopted Resolution 2018-11 to incorporate the performance targets and measures identified in the Transit Asset Management Plan for TheBus into the TIP shown in Table 2, Table 3, and Table 4 below.

TAM Performance Measures and Targets, Hernando County: Age

Age is the percent of revenue vehicles within a particular asset class that have met or exceeded their Useful Life Benchmark (ULB) for Hernando County, Florida by Vehicle Type and year, 2019-2023

Table 2: Percentage of Revenue Vehicles in Hernando County, Florida that have met or exceeded their ULB, by Revenue Vehicle Type and Target Year, 2019 to 2013

Revenue Vehicle Type	2019 Target	2020 Target	2021 Target	2022 Target	2023 Target
AB - Articulated Bus	N/A	N/A	N/A	N/A	N/A
AO – Automobile	N/A	N/A	N/A	N/A	N/A
BR- Over-the-road Bus	N/A	N/A	N/A	N/A	N/A
BU – Bus	10%	10%	10%	10%	N/A
CY – Cutaway Bus	10%	20%	20%	10%	10%
DB – Double Decked Bus	N/A	N/A	N/A	N/A	N/A
FB – Ferry Boat	N/A	N/A	N/A	N/A	N/A
MB – Mini-bus	N/A	N/A	N/A	N/A	N/A
MV – Mini-van	N/A	100%			
RT – Rubber-tire Vintage Trolly	N/A	N/A	N/A	N/A	N/A
SB – School Bus	N/A	N/A	N/A	N/A	N/A
SV – Sports Utility	N/A	N/A	N/A	N/A	N/A
TB – Trolly Bus	N/A	N/A	N/A	N/A	N/A
VN – Van	N/A	N/A	N/A	N/A	N/A
Custom 1	N/A	N/A	N/A	N/A	N/A
Custom 2	N/A	N/A	N/A	N/A	N/A
Custom 3	N/A	N/A	N/A	N/A	N/A

Table 3: Percentage of Equipment in Hernando County, Florida that have met or exceeded their ULB, by Equipment Type and Target Year, 2019 to 2013

Equipment Type	2019 Target	2020 Target	2021 Target	2022 Target	2023 Target
Non Revenue / Service Automobile	N/A	N/A	N/A	N/A	N/A
Steel Wheel Vehicles	N/A	N/A	N/A	N/A	N/A
Trucks and other Rubber Tire Vehicles	N/A	N/A	N/A	N/A	N/A
Intelligent Transportation System	N/A	N/A	N/A	N/A	N/A
Electronic Farebox System	N/A	N/A	N/A	N/A	N/A
Custom 3	N/A	N/A	N/A	N/A	N/A

**This table is included in the document to provide information for the State and Federal Governments*

Table 4: Percentage of Facilities in Hernando County, Florida that have met or exceeded their ULB, by Facility Type and Target Year, 2019 to 2023

Facility Type	2019 Target	2020 Target	2021 Target	2022 Target	2023 Target
Administration	N/A	N/A	N/A	N/A	N/A
Maintenance	N/A	N/A	N/A	N/A	N/A
Parking Structures	N/A	N/A	N/A	N/A	N/A
Passenger Facilities	N/A	N/A	N/A	N/A	N/A
Equipment Storage Facility	N/A	N/A	N/A	N/A	N/A
Custom 2	N/A	N/A	N/A	N/A	N/A
Custom 3	N/A	N/A	N/A	N/A	N/A

**This table is included in the document to provide information for the State and Federal Governments*

TAM Performance Measures and Targets, Citrus County: Age

On September 18, 2018, the MPO adopted Resolution 2018-11 to incorporate the performance targets and measures identified in the Citrus County Asset Management Plan for Citrus Transit into the TIP shown in Table 5, Table 6, and Table 7 below.

Table 5: Percentage of Revenue Vehicles in Citrus County, Florida that have met or exceeded their ULB, by Revenue Vehicle Type and Target Year, 2019 to 2013

Revenue Vehicle Type	2019 Target	2020 Target	2021 Target	2022 Target	2023 Target
AB-Articulated Bus	N/A	N/A	N/A	N/A	N/A
AO – Automobile	N/A	N/A	N/A	N/A	N/A
BR- Over-the-road Bus	N/A	N/A	N/A	N/A	N/A
BU – Bus	N/A	N/A	N/A	N/A	N/A
CY – Cutaway Bus	20%	20%	20%	20%	20%
DB – Double Decked Bus	N/A	N/A	N/A	N/A	N/A
FB – Ferry Boat	N/A	N/A	N/A	N/A	N/A
MB – Mini-bus	N/A	N/A	N/A	N/A	N/A
MV – Mini-van	100%	N/A	N/A	N/A	N/A
RT – Rubber-tire Vintage Trolly	N/A	N/A	N/A	N/A	N/A
SB – School Bus	N/A	N/A	N/A	N/A	N/A
SV – Sports Utility	N/A	N/A	N/A	N/A	N/A
TB – Trolly Bus	N/A	N/A	N/A	N/A	N/A
VN – Van	N/A	N/A	N/A	N/A	N/A
Generator	0%	N/A	N/A	N/A	N/A
Custom 2	N/A	N/A	N/A	N/A	N/A
Custom 3	N/A	N/A	N/A	N/A	N/A

Table 6: Percentage of Equipment in Citrus County, Florida that have met or exceeded their ULB, by Equipment Type and Target Year, 2019 to 2013

Equipment Type	2019 Target	2020 Target	2021 Target	2022 Target	2023 Target
Non Revenue / Service Automobile	N/A	N/A	N/A	N/A	N/A
Steel Wheel Vehicles	N/A	N/A	N/A	N/A	N/A
Trucks and other Rubber Tire Vehicles	N/A	N/A	N/A	N/A	N/A
Intelligent Transportation System	N/A	N/A	N/A	N/A	N/A
Electronic Farebox System	N/A	N/A	N/A	N/A	N/A
Custom 3	N/A	N/A	N/A	N/A	N/A

**This table is included in the document to provide information for the State and Federal Governments*

Table 7: Percentage of Facilities in Citrus County, Florida that have met or exceeded their ULB, by Facility Type and Target Year, 2019 to 2023

Facility Type	2019 Target	2020 Target	2021 Target	2022 Target	2023 Target
Administration	N/A	N/A	N/A	N/A	N/A
Maintenance	N/A	N/A	N/A	N/A	N/A
Parking Structures	N/A	N/A	N/A	N/A	N/A
Passenger Facilities	N/A	N/A	N/A	N/A	N/A
Equipment Storage Facility	N/A	N/A	N/A	N/A	N/A
Custom 2	N/A	N/A	N/A	N/A	N/A
Custom 3	N/A	N/A	N/A	N/A	N/A

Major Projects

The following Major Capacity/Congestion projects were initiated or scheduled for a production phase in FY 2020 :

Table 8: Major Capacity/Congestion Projects for Citrus and Hernando Counties, By Facility, 2019

Facility	From	To	Activity	Project Phase	Year
Suncoast Parkway II (SR 589)	SR 44	CR 486	New 4 lane Toll Road	CONST	2024
SR 50/US 98 (Cortez Blvd.)	Lockhart Road	E. of Remington Road	Add 2 lanes (existing 4)	CONST	2020
SR 50/US 98 (Cortez Blvd.)	Windmere Rd.	US 98 (McKethan Rd.)	Add 2 lanes (existing 4)	CONST	2020
SR 50 (Cortez Blvd.)	US 98 (McKethan Rd.)	US 301 (Treiman Blvd.)	Add 2 lanes (existing 2)	CONST	2020
CR 578 (County Line Rd.)	Toll 589 (Suncoast Pkwy.)	US 41 (Broad St.)	Construct 4 lanes	CONST	2019
SR 50 Bypass	CR 485 (Cobb Rd.)	W. of Buck Hope Road	Add 2 lanes (existing 4)	CONST	2023
SR 50 Bypass	W. of Buck Hope Road	Jefferson Street (50A)	Add 2 lanes (existing 4)	CONST	2024
US 41 (SR 45) (N. Florida Ave.)	SR 44 (E. Gulf to Lake Hwy.)	S of Withlacoochee Trail Bridge	Add 2 lanes (existing 2)	CONST	2023
US 41 (SR 45) (N. Florida Ave.)	S of Withlacoochee Trail Bridge	Live Oak Ln.	Add 2 lanes (existing 2)	ROW	2020-2021
US 41 (SR 45) (N. Florida Ave.)	Live Oak Ln.	Arlington St.	Add 2 lanes (existing 2)	ROW	2024
SR 50 (Cortez Blvd.)	US 301/SR 35 (Treiman Blvd.)	Hernando/Sumter Co. Line	Add 2 lanes (existing 2)	ADV ROW	2022

Complete Streets

The following Complete Streets Transportation Alternative projects were initiated or scheduled for a production phase in FY 2020 :

Table 9: Complete Streets Transportation Alternative Projects for Hernando/Citrus MPO, by Project/Corridor, 2019

PROJECT/CORRIDOR	FROM	TO	PROJECT TYPE	PROJECT PHASE/YEAR
Explorer K-8 - Sidewalks (SRTS Application)	w/n 2-mile radius of school		SRTS	CST 2022
JD Floyd K-8 - Sidewalks (SRTS Application)	w/n 2-mile radius of school		SRTS	CST 2020
Brooksville Elementary - Sidewalk (SRTS Application)	w/n 2-mile radius of school		SRTS	CST 2020
Westside Elementary - Sidewalk (SRTS application)	w/n 2-mile radius of school		SRTS	CST 2020
GNT Gap Connector Trail - Multi-Use Trail	SR50/Cortez Blvd.	GNT	ST	CST 2020
West GNT Trail Connector - Multi-Use Trail	W Suncoast Pkwy	SR 50/Cortez Blvd.	ST	CST 2020
Deltona Blvd. - Sidewalk	Elgin Blvd.	SR 50	TA	CST 2021
Deltona Blvd. - Sidewalk	Spring Hill Dr.	Begonia St.	TA	CST 2021
E. Linden Dr.- Sidewalk	Coronado Dr.	Spring Hill Dr.	TA	CST 2021
Elgin Blvd. - Sidewalk	Deltona Blvd.	Mariner Blvd.	TA	CST 2022
S Linden Dr. - Sidewalk	County Line Rd.	Spring Hill Dr.	TA	CST 2024
US 19/SR 55/S. Suncoast Blvd. - Multi-Use Trail	Hernando/Citrus County Line	W. Green Acres St.	RRR	CST 2020
Forest Ridge Elementary - Phase I Sidewalk	W. Norvell Bryant Hwy (CR 486)	W. Lake Beverly Dr.	SRTS	CST 2021
Withlacoochee State Trail (WST) Connector	WST Northern Terminus	Dunnellon Trailhead	ST	CST 2019
Pleasant Grove Elementary (CR 581) - Sidewalk	Pleasant Grove Rd.	W. Gulf to Lake Hwy (SR 44)	SRTS	CST 2020

N Turkey Oak Dr.	SR 44	US 19	SRTS	CST 2021
Withlacoochee State Trail (WST) - Rehabilitation	Hernando/Citrus County Line	Citrus/Marion County Line	TBD	Feasibility Study 2020
Eastside Elementary - Sidewalk	w/n 2-mile radius of school		SRTS	PE 2022
Fox Chapel Middle School - Sidewalk	w/n 2-mile radius of school		SRTS	PE 2022
W. Landover Blvd.	Northcliffe Blvd.	Elgin Blvd.	TA	CST 2023

Public Involvement

As previously noted, it is the policy of the Hernando/Citrus MPO to agenda public input at all of its meetings. The public participation process is outlined in the MPO's Public Participation Plan (PPP) which can be accessed at the following link: https://www.hernandocounty.us/departments/departments-f-m/metropolitan-planning-organization-new/get-involved The PPP was updated in September 2018 . The PPP outlines goals and objectives for actively engaging the public in its programs and processes to ensure transparency. In addition to the MPO providing a newsletter, the Citizens Advisory Committee (CAC) and Bicycle Advisory Committee (BAC) is used to enhance public involvement throughout the planning process. As part of the LRTP update, a series of stakeholder interviews and workshops are being conducted in 2019 . The MPO website is routinely updated with relevant announcements and information.The draft FY 2019/2020-2023/2024 TIP was posted on the MPO's website during the review process 30 days prior to adoption of the document by the MPO Board at its meeting on June 18, 2019. https://www.fdot.gov/planning/policy/metrosupport/

Amendments

At times, the TIP may require changes that are necessitated by the addition of a new project to the FDOT 5-Year Work Program that is not yet in the TIP, or changes due to monetary revisions to the State's Budget. Such changes are reflected in the TIP through amendments. Proposed amendments are generally presented to the public as part of the MPO's regularly advertised meetings. Copies of the proposed amendments are made part of the agenda package which is available for public review on the MPO's website. After approval by the MPO, amendments are attached at the end of the original TIP, and submitted to the State for inclusion in the STIP.

Certification

In April 2014, Governor Rick Scott authorized the redesignation, planning area boundary expansion and reapportionment of the Hernando County MPO. This redesignation resulted in the renaming and expansionof the MPO to the Hernando/Citrus MPO. The MPO participates in an annual joint-certification process with FDOT District 7 staff, the last of which concluded in April 2018

FIVE-YEAR FUNDED PROJECTS

HERNANDO/CITRUS MPO
FIVE-YEAR FUNDED PROJECTS

Introduction

This section of the TIP is based on input from the FDOT. It incorporates all the major bridge, highway, rail, intersection, maintenance, repair, reconstruction, replacement, and new construction projects currently programmed for accomplishment with State and/or Federal funds in the Hernando/Citrus MPO Area.

Specifically included are projects on the Interstate, National Highway System (NHS), and Strategic Intermodal System (SIS). Also included are projects on all other (non-interstate and non-NHS) categories of roads that needed to be highlighted.

The primary purpose of this section is to provide details of area priorities, funding, phasing, cost estimates, and the timings of the Hernando/Citrus MPO improvements projected for implementation for Surface Transportation Program (STP) and other non-local funds.

Fiscal Summary of TIP Projects for FY 2019/20 - 2023/24

A Fund Summary of the TIP is provided below to demonstrate financial feasibility of the projects programmed in the next five years.

Table 10: Five-Year TIP Fund Summary for the FDOT District 7 by Fund Name, 2020-2024

FUND	FUND NAME	<2020	2020	2021	2022	2023	2024	>2024	ALL YEARS
ACID	ADV CONSTRUCTION SAFETY (HSID)	0	1,414,509	0	0	0	0	0	1,414,509
ACNP	ADVANCE CONSTRUCTION NHPP	3,545,395	60,902,585	6,055,711	0	0	36,932,171	0	107,435,862
ACSA	ADVANCE CONSTRUCTION (SA)	533,181	0	0	0	0	0	0	533,181
ACSL	ADVANCE CONSTRUCTION (SL)	31,902	0	0	0	0	0	0	31,902
ACSS	ADVANCE CONSTRUCTION (SS,HSP)	0	71,732	2,296,421	0	0	0	0	2,368,153
CM	CONGESTION MITIGATION - AQ	0	73,503	0	1,843,091	0	0	0	1,916,594
D	UNRESTRICTED STATE PRIMARY	50,105,906	3,150,000	3,230,000	3,230,000	3,230,000	3,230,000	0	66,175,906
DC	STATE PRIMARY PE CONSULTANTS	$1,626	0	0	0	0	0	0	1,626
DDR	DISTRICT DEDICATED REVENUE	10,484,229	13,452,442	21,236,122	14,861,121	7,653,746	0	0	67,687,660
DI	ST. - S/W INTER/INTRASTATE HWY	22,408,597	0	0	0	8,564,545	0	0	30,973,142
DIH	STATE IN-HOUSE PRODUCT SUPPORT	1,741,524	2,184,630	634,284	472,868	287,236	0	0	5,320,542
DPTO	STATE - PTO	2,541,205	991,510	1,346,190	1,180,081	888,106	1,109,480	0	8,056,572

FUND	FUND NAME	<2020	2020	2021	2022	2023	2024	>2024	ALL YEARS
DS	STATE PRIMARY HIGHWAYS & PTO	9,080,583	1,011,267	0	5,096,376	3,916,244	0	0	19,104,470
DU	STATE PRIMARY/FEDERAL REIMB	11,633,398	525,543	614,001	669,656	705,884	734,671	0	14,883,153
EB	EQUITY BONUS	1,009,491	0	0	0	0	0	0	1,009,491
FAA	FEDERAL AVIATION ADMIN	0	7,394,300	486,000	12,219,900	0	0	0	20,100,200
FTA	FEDERAL TRANSIT ADMINISTRATION	10,093,786	1,800,000	1,800,000	1,800,000	900,000	0	0	16,393,786
GFSA	GF STPBG ANY AREA	0	9,188,493	0	0	0	0	0	9,188,493
GFSL	GF STPBG <200K<5K (SMALL URB)	0	1,836,008	0	0	0	0	0	1,836,008
GFSN	GF STPBG <5K (RURAL)	0	291,351	0	0	0	0	0	291,351
GMR	GROWTH MANAGEMENT FOR SIS	2,417,000	0	0	0	0	0	0	2,417,000
GRSC	GROWTH MANAGEMENT FOR SCOP	0	605,287	653,795	678,513	731,923	0	0	2,669,518
HSP	SAFETY (HIWAY SAFETY PROGRAM)	100,709	0	0	0	0	0	0	100,709
LF	LOCAL FUNDS	16,676,320	9,782,537	2,522,738	3,095,397	1,410,616	1,540,868	0	35,028,476
LFP	LOCAL FUNDS FOR PARTICIPATING	0	499,162	533,316	488,933	486,428	0	0	2,007,839
NHPP	IM, BRDG REPL, NATNL HWY-MAP21	821,170	0	0	0	0	0	0	821,170
NHRE	NAT HWY PERFORM - RESURFACING	0	2,181,385	0	0	0	0	0	2,181,385
PKBD	TURNPIKE MASTER BOND FUND	92,476,314	0	0	12,000,000	0	64,714,000	0	169,190,314

FUND	FUND NAME	<2020	2020	2021	2022	2023	2024	>2024	ALL YEARS
PKED	2012 SB1998-TURNPIKE FEEDER RD	6,524,808	0	0	0	0	0	0	6,524,808
PKYI	TURNPIKE IMPROVEMENT	83,695,742	5,968,372	2,200,000	7,041,004	0	0	0	98,905,118
PKYO	TURNPIKE TOLL COLLECTION/OPER.	0	82,080	0	0	0	0	0	82,080
PKYR	TURNPIKE RENEWAL & REPLACEMENT	4,145	0	0	0	0	0	0	4,145
PL	METRO PLAN (85% FA; 15% OTHER)	896,637	507,012	507,012	507,012	507,012	0	0	2,924,685
RED	REDISTR. OF FA (SEC 1102F)	48,983	0	0	0	0	0	0	48,983
SA	STP, ANY AREA	7,541,030	6,513,200	0	0	64,750	0	0	14,118,980
SCED	2012 SB1998-SMALL CO OUTREACH	0	256,410	256,410	256,410	256,410	0	0	1,025,640
SCOP	SMALL COUNTY OUTREACH PROGRAM	0	245,599	249,231	251,684	167,618	0	0	914,132
SCWR	2015 SB2514A-SMALL CO OUTREACH	0	299,487	300,385	280,188	303,333	0	0	1,183,393
SL	STP, AREAS <= 200K	5,181,114	2,014,102	3,262,479	12,500	12,500	12,500	0	10,495,195
SN	STP, MANDATORY NON-URBAN <= 5K	682,749	1,385,819	686,660	684,162	670,360	684,458	0	4,794,208
SR2S	SAFE ROUTES - INFRASTRUCTURE	34,746	0	0	0	0	0	0	34,746
SR2T	SAFE ROUTES - TRANSFER	1,533,513	648,898	2,234,516	510,551	0	0	0	4,927,478
TALL	TRANSPORTATION ALTS- <200K	16,626	344,553	338,573	348,236	348,774	348,387	0	1,745,149
TALN	TRANSPORTATION ALTS- < 5K	0	54,693	0	0	0	0	0	54,693

FUND	FUND NAME	<2020	2020	2021	2022	2023	2024	>2024	ALL YEARS
TALT	TRANSPORTATION ALTS- ANY AREA	762,879	1,109,544	525,782	2,470,716	246,242	314,982	0	5,430,145
TLWR	2015 SB2514A-TRAIL NETWORK	5,553,619	7,755,285	0	14,376,388	0	0	0	27,685,292
Grand Total		**348,178,927**	**144,541,298**	**51,969,626**	**84,374,787**	**31,351,727**	**109,621,517**	**0**	**770,037,882**

**Effective Date: 04/03/2019 Florida Department of Transportation Run: 04/05/2019 15.01.31*

FULL PROJECT COSTS AND OTHER PROJECT DETAILS

Projects on the Strategic Intermodal System (SIS)

The normal project production sequence is to have a Project Development and Environment (PD&E) phase, a Design (PE) phase, a Right of Way (ROW) phase, and a Construction (CST) phase. Some projects may not have a ROW phase, if land is not needed to complete the project. Costs on the TIP pages for projects on the SIS will have historical costs, five years of the current TIP and five years beyond the current TIP, which may or may not be the total project cost. If there is no CST phase on the TIP page, then the entry will probably not be reflective of the total project cost. For some projects, such as resurfacing, safety or operational project, there may not be a total cost provided but rather additional details on that program.

The SIS is a network of high priority transportation facilities which includes the State's largest and most significant commercial service airports, spaceport, deep-water seaports, freight rail terminals, passenger rail and intercity bus terminals, rail corridors, waterways and highways. All projects on the SIS will have a SIS identifier on the TIP page (see example TIP page below).

For costs beyond the ten-year window, access to the LRTP is provided. The LRTP reference on the TIP page provides the information necessary to locate the full project costs and/or additional details regarding the project in the LRTP (see example TIP page below).

Fund	<2017	2017	2018	2019	2020	2021	>2021	All Years
Item Number: 411012 2 Project Description: I-75 (SR 93) FROM N OF SR 50 TO HERNANDO/SUMTER CO/L *SIS*								
LRTP: Objectives 1.2, 1.4, 1.8, 1.9 (Pages 5-11, 6-6 through 6-7); Appendix H								
District: 07 County: HERNANDO Type of Work: ADD LANES & REHABILITATE PVMNT Project Length: 13.084								
PRELIMINARY ENGINEERING / MANAGED BY FDOT								
-TOTAL OUTSIDE YEARS	4,176,639	0	0	0	0	0	0	4,176,639
RIGHT OF WAY / MANAGED BY FDOT								
-TOTAL OUTSIDE YEARS	604,682	0	0	0	0	0	0	604,682
ENVIRONMENTAL / MANAGED BY FDOT								
-TOTAL OUTSIDE YEARS	37,767	0	0	0	0	0	0	37,767
DESIGN BUILD / MANAGED BY FDOT								
-TOTAL OUTSIDE YEARS	23,439,964	0	0	0	0	0	0	23,439,964
Item 411012 2 Totals:	28,259,052	0	0	0	0	0	0	28,259,052

Non- SIS Projects

The normal project production sequence is to have a Project Development and Environment (PD&E) phase, a Design (PE) phase, a Right of Way (ROW) phase, and a Construction (CST) phase. Some projects may not have a ROW phase, if land is not needed to complete the project. Costs on the TIP pages for projects not on the SIS will have historical costs and five years of the current TIP, which may or may not be the total project cost. If there is no CST phase on the TIP page, then the entry will probably not be reflective of the total project cost. For some projects, such as resurfacing, safety or operational projects, there may not be a total cost provided but rather additional details on that program.

Total project costs and other project details will be accessible in the TIP for all non-SIS projects in the TIP. All projects not on the SIS will have a Non-SIS identifier on the TIP page (see example TIP page below).

For costs beyond the five-year window, access to the LRTP is provided. The LRTP reference on the TIP page provides the information necessary to locate the full project costs and/or additional details regarding the project in the LRTP (see example TIP page below). If there is no LRTP reference in the TIP, full project costs are provided in the TIP.

Fund	<2017	2017	2018	2019	2020	2021	>2021	All Years
Item Number: 436712 1 Project Description: BROOKSVILLE FROM CROOM RD TO US 41 (BROAD ST) *NON-SIS*								
LRTP: Objectives 2.3, 3.4, 3.5 (Pages 6-8 through 6-9); Appendix D-2								
District: 07 County: HERNANDO Type of Work: SIDEWALK Project Length: .819								
Extra Description: DESIGN AND CONSTRUCT 5' SIDEWALKS								
PRELIMINARY ENGINEERING / MANAGED BY HERNANDO COUNTY BOARD OF COUNTY								
SR2T -SAFE ROUTES - TRANSFER	0	54,799	0	0	0	0	0	54,799
CONSTRUCTION / MANAGED BY HERNANDO COUNTY BOARD OF COUNTY								
TALL -TRANSPORTATION ALTS- <200K	0	0	0	0	291,985	0	0	291,985
Item 436712 1 Totals:	0	54,799	0	0	291,985	0	0	346,784
Project Total:	0	54,799	0	0	291,985	0	0	346,784

Disclaimer:

The "Total Project Cost" amount displayed for each of the federal and state funded projects in the TIP represents 10 years of programming in the Florida Department of Transportation's (FDOT's) Work Program database for projects on the Strategic Intermodal System (SIS) (FYs 2019-2028), and 5 years of programming in the FDOT Work Program for non-SIS projects (FY 2020-2024), plus historical cost information for all projects having expenditures paid by FDOT prior to FY 2020 .

For a more comprehensive view of a particular project's anticipated total project cost for all phases of the project, please refer to the Long Range Transportation Plan (LRTP).

Table 11: Hernando/Citrus (FDOT District 7) Five-Year TIP 2020-2024, by Fund

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
HIGHWAYS								
LRTP Objectives: 1.3, 1.4, 1.8 (pages 6-6 through 6-7): Appendix H Item Number: 257165 3 Project Description: **US 41 (SR 45) FROM SR 44 TO S OF WITHLACOOCHEE TRAIL BRIDGE *NON-SIS***								
District: 07 County: **CITRUS** Type of Work: ADD LANES & REHABILITATE PVMNT Project Length: .998								
Extra Description: 2 TO 4 LANES								
RIGHT OF WAY / MANAGED BY FDOT								
CM -CONGESTION MITIGATION - AQ	0	0	0	1,843,091	0	0	0	1,843,091
DDR -DISTRICT DEDICATED REVENUE	0	1,827,635	2,659,525	3,180,561	0	0	0	7,667,721
DIH -STATE IN-HOUSE PRODUCT SUPPORT	245,000	295,000	40,000	0	0	0	0	580,000
DS -STATE PRIMARY HIGHWAYS & PTO	3,459	92,366	0	20,656	0	0	0	116,481
GFSA -GF STPBG ANY AREA	0	4,740,206	0	0	0	0	0	4,740,206
GFSN -GF STPBG <5K (RURAL)	0	291,351	0	0	0	0	0	291,351
SN -STP, MANDATORY NON-URBAN <= 5K	645,249	1,373,319	674,160	671,662	0	0	0	3,364,390
CONSTRUCTION / MANAGED BY FDOT								
DDR -DISTRICT DEDICATED REVENUE	0	0	0	0	7,542,300	0	0	7,542,300
DIH -STATE IN-HOUSE PRODUCT SUPPORT	0	0	0	0	168,283	0	0	168,283
DS -STATE PRIMARY HIGHWAYS & PTO	0	0	0	0	3,916,244	0	0	3,916,244
SN -STP, MANDATORY NON-URBAN <= 5K	0	0	0	0	657,860	0	0	657,860

Item 257165 3 Totals:	**893,708**	**8,619,877**	**3,373,685**	**5,715,970**	**12,284,687**	**0**	**0**	**30,887,927**

LRTP Objectives: 1.3, 1.4, 1.8 (pages 6-6 through 6-7): Appendix H Item Number: 257165 4 Project Description: **US 41 (SR 45) FROM S OF WITHLACOOCHEE TRAIL BRIDGE TO E OF LIVE OAK LN *NON-SIS***								
District: 07 County: **CITRUS** Type of Work: ADD LANES & REHABILITATE PVMNT Project Length: .899								
Extra Description: 2 TO 4 LANES								
RIGHT OF WAY / MANAGED BY FDOT								
DDR -DISTRICT DEDICATED REVENUE	0	330,189	3,289,242	3,912,869	0	0	0	7,532,300
DIH -STATE IN-HOUSE PRODUCT SUPPORT	0	300,101	300,101	0	0	0	0	600,202
DS -STATE PRIMARY HIGHWAYS & PTO	0	43,000	0	0	0	0	0	43,000
Item 257165 4 Totals:	**0**	**673,290**	**3,589,343**	**3,912,869**	**0**	**0**	**0**	**8,175,502**
LRTP Objectives: 1.3, 1.4, 1.8 (pages 6-6 through 6-7): Appendix H Item Number: 257165 5 Project Description: **US 41 (SR 45) FROM E OF LIVE OAK LANE TO E OF ARLINGTON *NON-SIS***								
District: 07 County: **CITRUS** Type of Work: ADD LANES & REHABILITATE PVMNT Project Length: .897								
Extra Description: 2 TO 4 LANES								
RIGHT OF WAY / MANAGED BY FDOT								
SN -STP, MANDATORY NON-URBAN <= 5K	0	0	0	0	0	671,958	0	671,958
Item 257165 5 Totals:	**0**	**0**	**0**	**0**	**0**	**671,958**	**0**	**671,958**
Project Total:	**893,708**	**9,293,167**	**6,963,028**	**9,628,839**	**12,284,687**	**671,958**	**0**	**39,735,387**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objectives: 1.3, 1.4, 1.8 (pages 6-6 through 6-7): Appendix H Item Number: 405822 5 Project Description**: US 19 FROM CARDINAL ST TO GREEN ACRES ST *SIS***								
District: 07 County: **CITRUS** Type of Work: ADD LANES & RECONSTRUCT Project Length: 4.090								
Extra Description: 4 TO 6 LANES								
PRELIMINARY ENGINEERING / MANAGED BY FDOT								
DDR -DISTRICT DEDICATED REVENUE	505,217	0	0	0	0	0	0	505,217
DIH -STATE IN-HOUSE PRODUCT SUPPORT	19,628	0	0	0	0	0	0	19,628
DS -STATE PRIMARY HIGHWAYS & PTO	56,600	0	0	0	0	0	0	56,600

SA -STP, ANY AREA	1,760,062	0	0	0	0	0	0	1,760,062
ENVIRONMENTAL / MANAGED BY FDOT								
SA -STP, ANY AREA	0	0	0	0	64,750	0	0	64,750
Item 405822 5 Totals:	**2,341,507**	**0**	**0**	**0**	**64,750**	**0**	**0**	**2,406,257**
Project Total:	**2,341,507**	**0**	**0**	**0**	**64,750**	**0**	**0**	**2,406,257**
Fund	**<2020**	**2020**	**2021**	**2022**	**2023**	**2024**	**>2024**	**All Years**
LRTP Objectives: 2.2, 3.9, 3.10 (pages 6-8 through 6-10)								
Item Number: 435295 2 Project Description: **W CITRUS SPRINGS BLD FROM N SANTOS DR TO US 41 *NON-SIS***								
District: 07 County: **CITRUS** Type of Work: RESURFACING Project Length: 2.323								
Extra Description: 2 LANES								
CONSTRUCTION / RESPONSIBLE AGENCY NOT AVAILABLE								
GRSC -GROWTH MANAGEMENT FOR SCOP	0	0	643,185	0	0	0	0	643,185
LF -LOCAL FUNDS	0	0	140,127	0	0	0	0	140,127
LFP -LOCAL FUNDS FOR PARTICIPATING	0	0	379,691	0	0	0	0	379,691
SCED -2012 SB1998-SMALL CO OUTREACH	0	0	102,240	0	0	0	0	102,240
SCOP -SMALL COUNTY OUTREACH PROGRAM	0	0	245,355	0	0	0	0	245,355
SCWR -2015 SB2514A-SMALL CO OUTREACH	0	0	8,166	0	0	0	0	8,166
Item 435295 2 Totals:	**0**	**0**	**1,518,764**	**0**	**0**	**0**	**0**	**1,518,764**
Project Total:	**0**	**0**	**1,518,764**	**0**	**0**	**0**	**0**	**1,518,764**
Fund	**<2020**	**2020**	**2021**	**2022**	**2023**	**2024**	**>2024**	**All Years**
LRTP Objectives: 2.2, 3.9, 3.10 (pages 6-8 through 6-10)								
Item Number: 435296 1 Project Description: **CR 491 FROM GROVER CLEVELAND BLVD TO OCALA STREET *NON-SIS***								
District: 07 County: **CITRUS** Type of Work: RESURFACING Project Length: 3.142								
Extra Description: 4 LANES								
CONSTRUCTION / RESPONSIBLE AGENCY NOT AVAILABLE								

GRSC -GROWTH MANAGEMENT FOR SCOP	0	605,287	0	0	0	0	0	605,287
LFP -LOCAL FUNDS FOR PARTICIPATING	0	499,162	0	0	0	0	0	499,162
SCED -2012 SB1998-SMALL CO OUTREACH	0	256,410	0	0	0	0	0	256,410
SCOP -SMALL COUNTY OUTREACH PROGRAM	0	245,599	0	0	0	0	0	245,599
SCWR -2015 SB2514A-SMALL CO OUTREACH	0	299,487	0	0	0	0	0	299,487
Item 435296 1 Totals:	**0**	**1,905,945**	**0**	**0**	**0**	**0**	**0**	**1,905,945**
Project Total:	**0**	**1,905,945**	**0**	**0**	**0**	**0**	**0**	**1,905,945**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objectives: 2.2, 2.3, 3.4, 3.5, 3.9 (pages 6-8 through 6-10)								
Item Number: 437514 1 Project Description: **US 19/US 98/SR 55/S SUNCOAST BLVD FR HERNANDO CO LN TO W GREEN ACRES *SIS***								
District: 07 County: **CITRUS** Type of Work: RESURFACING Project Length: 6.811								
Extra Description: 4 LANES								
PRELIMINARY ENGINEERING / MANAGED BY FDOT								
DC -STATE PRIMARY PE CONSULTANTS	1,626	0	0	0	0	0	0	1,626
DDR -DISTRICT DEDICATED REVENUE	2,553,843	0	0	0	0	0	0	2,553,843
DIH -STATE IN-HOUSE PRODUCT SUPPORT	32,010	0	0	0	0	0	0	32,010
DS -STATE PRIMARY HIGHWAYS & PTO	138,155	0	0	0	0	0	0	138,155
CONSTRUCTION / MANAGED BY FDOT								
ACID -ADV CONSTRUCTION SAFETY (HSID)	0	1,413,509	0	0	0	0	0	1,413,509
DDR -DISTRICT DEDICATED REVENUE	0	3,256,839	0	0	0	0	0	3,256,839
DIH -STATE IN-HOUSE PRODUCT SUPPORT	0	212,278	0	0	0	0	0	212,278
DS -STATE PRIMARY HIGHWAYS & PTO	1,464	0	0	0	0	0	0	1,464
GFSA -GF STPBG ANY AREA	0	1,919,062	0	0	0	0	0	1,919,062

NHRE -NAT HWY PERFORM - RESURFACING	0	2,181,385	0	0	0	0	0	2,181,385
SA -STP, ANY AREA	0	6,513,200	0	0	0	0	0	6,513,200
Item 437514 1 Totals:	**2,727,098**	**15,496,273**	**0**	**0**	**0**	**0**	**0**	**18,223,371**

LRTP Objectives: 2.2, 2.3, 3.4, 3.5, 3.9 (pages 6-8 through 6-10)								
Item Number: 437514 2 Project Description: **US 19/US 98/SR 55/S SUNCOAST BLVD FR HERNANDO CO LN TO W GREEN ACRES. *SIS***								
District: 07 County: **CITRUS** Type of Work: BIKE PATH/TRAIL Project Length: 6.811								
Extra Description: DESIGN AND CONSTRUCT 10FT SHARED USE PATH ON EAST SIDE OF 19								
PRELIMINARY ENGINEERING / MANAGED BY FDOT								
DIH -STATE IN-HOUSE PRODUCT SUPPORT	3,000	0	0	0	0	0	0	3,000
DS -STATE PRIMARY HIGHWAYS & PTO	1,116,345	0	0	0	0	0	0	1,116,345
RIGHT OF WAY / MANAGED BY FDOT								
DIH -STATE IN-HOUSE PRODUCT SUPPORT	509	0	0	0	0	0	0	509
CONSTRUCTION / MANAGED BY FDOT								
DDR -DISTRICT DEDICATED REVENUE	0	0	8,691,957	0	0	0	0	8,691,957
DIH -STATE IN-HOUSE PRODUCT SUPPORT	0	0	125,109	0	0	0	0	125,109
Item 437514 2 Totals:	**1,119,854**	**0**	**8,817,066**	**0**	**0**	**0**	**0**	**9,936,920**
Project Total:	**3,846,952**	**15,496,273**	**8,817,066**	**0**	**0**	**0**	**0**	**28,160,291**

Fund	**<2020**	**2020**	**2021**	**2022**	**2023**	**2024**	**>2024**	**All Years**
LRTP Objectives: 2.3, 3.4, 3.5 (pages 6-8 through 6-9)								
Item Number: 439698 1 Project Description: **FOREST RIDGE ELEM FR CR486/NORVELL BRYANT HWY TO W LAKE BEVERLY DR *NON-SIS***								
District: 07 County: **CITRUS** Type of Work: SIDEWALK Project Length: 1.605								
Extra Description: CONSTRUCT 5'SIDEWALK FOREST RIDGE BLVD-SAFE ROUTES TO SCHOOL								
PRELIMINARY ENGINEERING / MANAGED BY FDOT								
SR2T -SAFE ROUTES - TRANSFER	539,548	0	0	0	0	0	0	539,548
CONSTRUCTION / MANAGED BY FDOT								
SR2T -SAFE ROUTES - TRANSFER	0	0	1,613,721	0	0	0	0	1,613,721

Item 439698 1 Totals:	**539,548**	**0**	**1,613,721**	**0**	**0**	**0**	**0**	**2,153,269**
Project Total:	**539,548**	**0**	**1,613,721**	**0**	**0**	**0**	**0**	**2,153,269**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objectives: 2.3, 3.4, 3.5 (pages 6-8 through 6-9)								
Item Number: 439699 1 Project Description: **PLEASANT GROVE ELEMENTARY - PLEASANT GROVE RD AND DRUID RD *NON-SIS***								
District: 07 County: **CITRUS** Type of Work: SIDEWALK Project Length: 11.897								
Extra Description: 5' SIDEWALK GROVE TO SR 44/LAKE REGION/CR 581 - SRTS								
PRELIMINARY ENGINEERING / MANAGED BY FDOT								
SR2T -SAFE ROUTES - TRANSFER	384,292	0	0	0	0	0	0	384,292
CONSTRUCTION / MANAGED BY FDOT								
SR2T -SAFE ROUTES - TRANSFER	0	648,898	0	0	0	0	0	648,898
Item 439699 1 Totals:	**384,292**	**648,898**	**0**	**0**	**0**	**0**	**0**	**1,033,190**
Project Total:	**384,292**	**648,898**	**0**	**0**	**0**	**0**	**0**	**1,033,190**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objectives: 2.2, 2.3, 3.4, 3.5, 3.9 (pages 6-8 through 6-10)								
Item Number: 439706 1 Project Description: **S CANARY PALM TERRACE FROM W GREEN ACRE ST TO W OAKLAWN ST *NON-SIS***								
District: 07 County: **CITRUS** Type of Work: RESURFACING Project Length: .253								
Extra Description: 2 LANES								
CONSTRUCTION / RESPONSIBLE AGENCY NOT AVAILABLE								
LFP -LOCAL FUNDS FOR PARTICIPATING	0	0	31,125	0	0	0	0	31,125
SCWR -2015 SB2514A-SMALL CO OUTREACH	0	0	93,375	0	0	0	0	93,375
Item 439706 1 Totals:	**0**	**0**	**124,500**	**0**	**0**	**0**	**0**	**124,500**
Project Total:	**0**	**0**	**124,500**	**0**	**0**	**0**	**0**	**124,500**

**Effective Date: 04/03/2019 Florida Department of Transportation Run: 04/05/2019 14.58.54*

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objectives: 2.2, 2.3, 3.4, 3.5, 3.9 (pages 6-8 through 6-10)								
Item Number: 439707 1 Project Description: **N DELTONA BLVD FROM W HOMEWAY LOOP TO W CITRUS SPRINGS BLVD *NON-SIS***								
District: 07 County: **CITRUS** Type of Work: RESURFACING Project Length: .617								
Extra Description: 2 LANES								
CONSTRUCTION / RESPONSIBLE AGENCY NOT AVAILABLE								
GRSC -GROWTH MANAGEMENT FOR SCOP	0	0	10,610	0	0	0	0	10,610
LFP -LOCAL FUNDS FOR PARTICIPATING	0	0	122,500	0	0	0	0	122,500
SCED -2012 SB1998-SMALL CO OUTREACH	0	0	154,170	0	0	0	0	154,170
SCOP -SMALL COUNTY OUTREACH PROGRAM	0	0	3,876	0	0	0	0	3,876
SCWR -2015 SB2514A-SMALL CO OUTREACH	0	0	198,844	0	0	0	0	198,844
Item 439707 1 Totals:	**0**	**0**	**490,000**	**0**	**0**	**0**	**0**	**490,000**
Project Total:	**0**	**0**	**490,000**	**0**	**0**	**0**	**0**	**490,000**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objectives: 2.2, 2.3, 3.4, 3.5, 3.9 (pages 6-8 through 6-10)								
Item Number: 439829 7 Project Description: **US 41/N FLORIDA AVE AT E NORVELL BRYANT HWY/E PARSONS PT ROAD *NON-SIS***								
District: 07 County: **CITRUS** Type of Work: LIGHTING Project Length: .040								
Extra Description: INTERSECTION LIGHTING								
CONSTRUCTION / MANAGED BY FDOT								
ACSS -ADVANCE CONSTRUCTION (SS,HSP)	0	71,732	0	0	0	0	0	71,732
Item 439829 7 Totals:	**0**	**71,732**	**0**	**0**	**0**	**0**	**0**	**71,732**
Project Total:	**0**	**71,732**	**0**	**0**	**0**	**0**	**0**	**71,732**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years

LRTP Objectives: 2.2, 2.3, 3.4, 3.5, 3.9 (pages 6-8 through 6-10) Item Number: 441090 1 Project Description: **E WITHLACOOCHEE TR (CR 39) FROM E SCOTT LN TO SR 200 *NON-SIS***								
District: 07 County: **CITRUS** Type of Work: RESURFACING Project Length: .868								
Extra Description: 2 LANES								
CONSTRUCTION / RESPONSIBLE AGENCY NOT AVAILABLE								
GRSC -GROWTH MANAGEMENT FOR SCOP	0	0	0	270,768	0	0	0	270,768
LFP -LOCAL FUNDS FOR PARTICIPATING	0	0	0	90,256	0	0	0	90,256
Item 441090 1 Totals:	**0**	**0**	**0**	**361,024**	**0**	**0**	**0**	**361,024**
Project Total:	**0**	**0**	**0**	**361,024**	**0**	**0**	**0**	**361,024**

Fund	**<2020**	**2020**	**2021**	**2022**	**2023**	**2024**	**>2024**	**All Years**
LRTP Objectives: 2.2, 2.3, 3.4, 3.5, 3.9 (pages 6-8 through 6-10) Item Number: 441091 1 Project Description: **E TURNER CAMP RD (CR 581) FROM E BANKS RD TO E MATTHEW MEADOW CT *NON-SIS***								
District: 07 County: **CITRUS** Type of Work: RESURFACING Project Length: 2.418								
Extra Description: 2 LANES								
CONSTRUCTION / RESPONSIBLE AGENCY NOT AVAILABLE								
GRSC -GROWTH MANAGEMENT FOR SCOP	0	0	0	407,745	0	0	0	407,745
LFP -LOCAL FUNDS FOR PARTICIPATING	0	0	0	188,678	0	0	0	188,678
SCOP -SMALL COUNTY OUTREACH PROGRAM	0	0	0	158,287	0	0	0	158,287
Item 441091 1 Totals:	**0**	**0**	**0**	**754,710**	**0**	**0**	**0**	**754,710**
Project Total:	**0**	**0**	**0**	**754,710**	**0**	**0**	**0**	**754,710**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objectives: 2.2, 2.3, 3.4, 3.5, 3.9 (pages 6-8 through 6-10)								
Item Number: 441092 1 Project Description: **W YULEE DRIVE (CR 490) FROM W BRADSHAW ST TO US 19 *NON-SIS***								
District: 07 County: **CITRUS** Type of Work: RESURFACING Project Length: .690								
Extra Description: 2 LANES								
CONSTRUCTION / RESPONSIBLE AGENCY NOT AVAILABLE								
LFP -LOCAL FUNDS FOR PARTICIPATING	0	0	0	88,580	0	0	0	88,580
SCWR -2015 SB2514A-SMALL CO OUTREACH	0	0	0	265,739	0	0	0	265,739
Item 441092 1 Totals:	**0**	**0**	**0**	**354,319**	**0**	**0**	**0**	**354,319**
Project Total:	**0**	**0**	**0**	**354,319**	**0**	**0**	**0**	**354,319**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objectives: 2.2, 2.3, 3.4, 3.5, 3.9 (pages 6-8 through 6-10)								
Item Number: 441093 1 Project Description: **S GREAT OAKS DRIVE FROM FLORAL PARK DR TO E ORANGE AVE *NON-SIS***								
District: 07 County: **CITRUS** Type of Work: RESURFACING Project Length: 1.756								
Extra Description: 2 LANES								
CONSTRUCTION / RESPONSIBLE AGENCY NOT AVAILABLE								
LFP -LOCAL FUNDS FOR PARTICIPATING	0	0	0	121,419	0	0	0	121,419
SCED -2012 SB1998-SMALL CO OUTREACH	0	0	0	256,410	0	0	0	256,410
SCOP -SMALL COUNTY OUTREACH PROGRAM	0	0	0	93,397	0	0	0	93,397
SCWR -2015 SB2514A-SMALL CO OUTREACH	0	0	0	14,449	0	0	0	14,449
Item 441093 1 Totals:	**0**	**0**	**0**	**485,675**	**0**	**0**	**0**	**485,675**
Project Total:	**0**	**0**	**0**	**485,675**	**0**	**0**	**0**	**485,675**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years

LRTP Objectives: 2.2, 2.3, 3.4, 3.5, 3.9 (pages 6-8 through 6-10) Item Number: 441095 1 Project Description: **E WITHLACOOCHEE TRL/CR 39 FROM W OF E TASHA CT TO E SCOTT LANE *NON-SIS***								
District: 07 County: **CITRUS** Type of Work: RESURFACING Project Length: 1.518								
Extra Description: 2 LANES								
CONSTRUCTION / RESPONSIBLE AGENCY NOT AVAILABLE								
GRSC -GROWTH MANAGEMENT FOR SCOP	0	0	0	0	731,923	0	0	731,923
LFP -LOCAL FUNDS FOR PARTICIPATING	0	0	0	0	293,358	0	0	293,358
SCED -2012 SB1998-SMALL CO OUTREACH	0	0	0	0	148,151	0	0	148,151
Item 441095 1 Totals:	**0**	**0**	**0**	**0**	**1,173,432**	**0**	**0**	**1,173,432**
Project Total:	**0**	**0**	**0**	**0**	**1,173,432**	**0**	**0**	**1,173,432**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objectives: 2.2, 2.3, 3.4, 3.5, 3.9 (pages 6-8 through 6-10) Item Number: 441104 1 Project Description**: N TURKEY OAK DR FROM US 19 TO SR 44 *NON-SIS***								
District: 07 County: **CITRUS** Type of Work: SIDEWALK Project Length: 3.284								
Extra Description: CONSTRUCT 5' SIDEWALK. CRYSTAL RIVER HIGH SCHOOL SRTS								
PRELIMINARY ENGINEERING / MANAGED BY FDOT								
SA -STP, ANY AREA	364,000	0	0	0	0	0	0	364,000
SR2T -SAFE ROUTES - TRANSFER	343,705	0	0	0	0	0	0	343,705
CONSTRUCTION / MANAGED BY FDOT								
SR2T -SAFE ROUTES - TRANSFER	0	0	620,795	0	0	0	0	620,795
Item 441104 1 Totals:	**707,705**	**0**	**620,795**	**0**	**0**	**0**	**0**	**1,328,500**
Project Total:	**707,705**	**0**	**620,795**	**0**	**0**	**0**	**0**	**1,328,500**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objectives: 2.2, 2.3, 3.4, 3.5, 3.9 (pages 6-8 through 6-10)								
Item Number: 441665 1 Project Description: **SR 44/NE 5TH FROM US 19/US 98/SR 55/SUNCOAST BLVD TO E OF NE 10TH AVE *SIS***								
District: 07 County: **CITRUS** Type of Work: RESURFACING Project Length: .604								
Extra Description: 4 LANES								
PRELIMINARY ENGINEERING / MANAGED BY FDOT								
DIH -STATE IN-HOUSE PRODUCT SUPPORT	1,000	0	0	0	0	0	0	1,000
DS -STATE PRIMARY HIGHWAYS & PTO	1,927	677,909	0	0	0	0	0	679,836
CONSTRUCTION / MANAGED BY FDOT								
DDR -DISTRICT DEDICATED REVENUE	0	0	0	1,429,050	0	0	0	1,429,050
DIH -STATE IN-HOUSE PRODUCT SUPPORT	0	0	0	19,848	0	0	0	19,848
Item 441665 1 Totals:	**2,927**	**677,909**	**0**	**1,448,898**	**0**	**0**	**0**	**2,129,734**

LRTP Objectives: 2.2, 2.3, 3.4, 3.5, 3.9 (pages 6-8 through 6-10)								
Item Number: 441665 2 Project Description: **SR 44/NE 5TH FROM US 19/US 98/SR 55/SUNCOAST BLVD TO E OF NE 10TH AVE. *SIS***								
District: 07 County: **CITRUS** Type of Work: URBAN CORRIDOR IMPROVEMENTS Project Length: .604								
CONSTRUCTION / MANAGED BY FDOT								
DDR -DISTRICT DEDICATED REVENUE	0	0	0	316,361	0	0	0	316,361
DIH -STATE IN-HOUSE PRODUCT SUPPORT	0	0	0	4,394	0	0	0	4,394
Item 441665 2 Totals:	**0**	**0**	**0**	**320,755**	**0**	**0**	**0**	**320,755**
Project Total:	**2,927**	**677,909**	**0**	**1,769,653**	**0**	**0**	**0**	**2,450,489**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objectives: 2.2, 2.3, 3.4, 3.5, 3.9 (pages 6-8 through 6-10)								
Item Number: 443358 1 Project Description: **WITHLACOOCHEE TRAIL FROM HERNANDO CL TO MARION CL *NON-SIS***								
District: 07 County: **CITRUS** Type of Work: BIKE PATH/TRAIL Project Length: .000								
Extra Description: RESURFACING STUDY								
PRELIMINARY ENGINEERING / MANAGED BY FDOT								
TALN -TRANSPORTATION ALTS- < 5K	0	54,693	0	0	0	0	0	54,693
TALT -TRANSPORTATION ALTS- ANY AREA	0	195,307	0	0	0	0	0	195,307
Item 443358 1 Totals:	**0**	**250,000**	**0**	**0**	**0**	**0**	**0**	**250,000**
Project Total:	**0**	**250,000**	**0**	**0**	**0**	**0**	**0**	**250,000**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objectives: 2.2, 2.3, 3.4, 3.5, 3.9 (pages 6-8 through 6-10)								
Item Number: 443411 1 Project Description: **E TRAILS END/CR 39 FROM E WYMAR TR TO S WITHLAPOPKA DR *NON-SIS***								
District: 07 County: **CITRUS** Type of Work: RESURFACING Project Length: 1.666								
Extra Description: 2 LANES								
CONSTRUCTION / RESPONSIBLE AGENCY NOT AVAILABLE								
LFP -LOCAL FUNDS FOR PARTICIPATING	0	0	0	0	193,070	0	0	193,070
SCED -2012 SB1998-SMALL CO OUTREACH	0	0	0	0	108,259	0	0	108,259
SCOP -SMALL COUNTY OUTREACH PROGRAM	0	0	0	0	167,618	0	0	167,618
SCWR -2015 SB2514A-SMALL CO OUTREACH	0	0	0	0	303,333	0	0	303,333
Item 443411 1 Totals:	**0**	**0**	**0**	**0**	**772,280**	**0**	**0**	**772,280**
Project Total:	**0**	**0**	**0**	**0**	**772,280**	**0**	**0**	**772,280**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objectives: 5.2, 5.5 (pages 6-12 through 6-13); Table 5-5 (page 5-11); Table 4-1 (page 4-2) Appendix H								
Item Number: 411011 8 Project Description: **I-75 (SR 93) FM S OF US98/SR50/CORTEZ TO N OF US98/SR50/CORTEZ. *SIS***								
District: 07 County: HERNANDO Type of Work: LANDSCAPING Project Length: 2.986								
Extra Description: LANDSCAPE ONLY PROJECT. FUNDS FROM SEGMENT 4 FOR LANDSCAPE ITEMS.								
PRELIMINARY ENGINEERING / MANAGED BY FDOT								
DIH -STATE IN-HOUSE PRODUCT SUPPORT	2,599	0	0	0	0	0	0	2,599
DS -STATE PRIMARY HIGHWAYS & PTO	263,907	0	0	0	0	0	0	263,907
CONSTRUCTION / MANAGED BY FDOT								
DDR -DISTRICT DEDICATED REVENUE	0	1,309,112	0	0	0	0	0	1,309,112
DIH -STATE IN-HOUSE PRODUCT SUPPORT	10,960	5,130	0	0	0	0	0	16,090
Item 411011 8 Totals:	**277,466**	**1,314,242**	**0**	**0**	**0**	**0**	**0**	**1,591,708**
Project Total:	**277,466**	**1,314,242**	**0**	**0**	**0**	**0**	**0**	**1,591,708**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objectives: 1.1, 1.2, 1.4, 1.6, 1.8, 1.9, 2.3, 3.7, 3.9, 3.10, 4.1 (Pages 6-6 through 6-11); Table 4-1 (page 4-2)								
Item Number: 416732 3 Project Description: **SR 50 FROM E OF US 98/MCKETHAN RD TO E OF US 301 *SIS***								
District: 07 County: HERNANDO Type of Work: ADD LANES & REHABILITATE PVMNT Project Length: 4.308								
Extra Description: 2 TO 4 LANES								
PRELIMINARY ENGINEERING / MANAGED BY FDOT								
DDR -DISTRICT DEDICATED REVENUE	771,225	0	0	0	0	0	0	771,225
DIH -STATE IN-HOUSE PRODUCT SUPPORT	16,588	0	0	0	0	0	0	16,588
DS -STATE PRIMARY HIGHWAYS & PTO	1,719,662	0	0	0	0	0	0	1,719,662
SA -STP, ANY AREA	2,522,418	0	0	0	0	0	0	2,522,418
SL -STP, AREAS <= 200K	31,040	0	0	0	0	0	0	31,040
RIGHT OF WAY / MANAGED BY FDOT								
DDR -DISTRICT DEDICATED REVENUE	1,542,983	0	0	0	0	0	0	1,542,983

DIH -STATE IN-HOUSE PRODUCT SUPPORT	464,315	0	0	0	0	0	0	464,315
DS -STATE PRIMARY HIGHWAYS & PTO	753,930	0	0	0	0	0	0	753,930
SL -STP, AREAS <= 200K	2,384,359	0	0	0	0	0	0	2,384,359
RAILROAD & UTILITIES / MANAGED BY FDOT								
LF -LOCAL FUNDS	0	2,088,673	0	0	0	0	0	2,088,673
CONSTRUCTION / MANAGED BY FDOT								
ACNP -ADVANCE CONSTRUCTION NHPP	0	24,100,362	0	0	0	0	0	24,100,362
DIH -STATE IN-HOUSE PRODUCT SUPPORT	0	332,468	0	0	0	0	0	332,468
DS -STATE PRIMARY HIGHWAYS & PTO	521	0	0	0	0	0	0	521
LF -LOCAL FUNDS	0	48,704	0	0	0	0	0	48,704
ENVIRONMENTAL / MANAGED BY FDOT								
DDR -DISTRICT DEDICATED REVENUE	55,000	0	0	0	0	0	0	55,000
DS -STATE PRIMARY HIGHWAYS & PTO	0	20,000	0	0	0	0	0	20,000
SA -STP, ANY AREA	46,032	0	0	0	0	0	0	46,032
SL -STP, AREAS <= 200K	39,732	0	0	0	0	0	0	39,732
Item 416732 3 Totals:	**10,347,805**	**26,590,207**	**0**	**0**	**0**	**0**	**0**	**36,938,012**

LRTP Objectives: 1.1, 1.2, 1.4, 1.6, 1.8, 1.9, 2.3, 3.7, 3.9, 3.10, 4.1 (Pages 6-6 through 6-11); Map 5-2; Table 4-1 (page 4-2) Item Number: 416732 4 Project Description: **SR 50 FM WINDMERE RD/BRONSON BL TO E OF US 98/MCKETHAN RD *SIS***								
District: 07 County: HERNANDO Type of Work: ADD LANES & REHABILITATE PVMNT Project Length: 3.488								
Extra Description: 4 TO 6 LANES								
PRELIMINARY ENGINEERING / MANAGED BY FDOT								
ACSA -ADVANCE CONSTRUCTION (SA)	10,000	0	0	0	0	0	0	10,000
DDR -DISTRICT DEDICATED REVENUE	1,161,555	0	0	0	0	0	0	1,161,555
DIH -STATE IN-HOUSE PRODUCT SUPPORT	16,451	0	0	0	0	0	0	16,451
DS -STATE PRIMARY HIGHWAYS & PTO	448,993	0	0	0	0	0	0	448,993
SA -STP, ANY AREA	2,848,518	0	0	0	0	0	0	2,848,518
SL -STP, AREAS <= 200K	751,256	0	0	0	0	0	0	751,256
RIGHT OF WAY / MANAGED BY FDOT								
DDR -DISTRICT DEDICATED REVENUE	1,542,844	511,532	0	0	0	0	0	2,054,376
DIH -STATE IN-HOUSE PRODUCT SUPPORT	402,641	0	0	0	0	0	0	402,641
DS -STATE PRIMARY HIGHWAYS & PTO	884,448	0	0	0	0	0	0	884,448
RAILROAD & UTILITIES / MANAGED BY FDOT								
LF -LOCAL FUNDS	0	4,893,272	0	0	0	0	0	4,893,272
CONSTRUCTION / MANAGED BY FDOT								
ACNP -ADVANCE CONSTRUCTION NHPP	0	36,802,223	0	0	0	0	0	36,802,223
DIH -STATE IN-HOUSE PRODUCT SUPPORT	28,288	518,986	0	0	0	0	0	547,274
DS -STATE PRIMARY HIGHWAYS & PTO	2,322	0	0	0	0	0	0	2,322
GFSA -GF STPBG ANY AREA	0	2,529,225	0	0	0	0	0	2,529,225
LF -LOCAL FUNDS	0	177,901	0	0	0	0	0	177,901
CONTRACT INCENTIVES / MANAGED BY FDOT								
DDR -DISTRICT DEDICATED REVENUE	0	0	0	2,500,000	0	0	0	2,500,000
ENVIRONMENTAL / MANAGED BY FDOT								
DDR -DISTRICT DEDICATED REVENUE	5,698	0	0	0	0	0	0	5,698
Item 416732 4 Totals:	**8,103,014**	**45,433,139**	**0**	**2,500,000**	**0**	**0**	**0**	**56,036,153**
Project Total:	**18,450,819**	**72,023,346**	**0**	**2,500,000**	**0**	**0**	**0**	**92,974,165**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objectives: 1.1, 1.2, 1.4, 1.6, 1.8, 2.3, 3.7, 3.9, 3.10, 4.1 (Pages 6-6 through 6-11); Map 5-2 (Pages 5-10); Table 5-5 (Page 5-11)								
Item Number: 416733 2 Project Description: **SR 50/CORTEZ BLVD FROM COBB RD TO W OF BUCK HOPE RD *SIS***								
District: 07 County: HERNANDO Type of Work: ADD LANES & RECONSTRUCT Project Length: 1.273								
Extra Description: 4 TO 6 LANES								
PRELIMINARY ENGINEERING / MANAGED BY FDOT								
DDR -DISTRICT DEDICATED REVENUE	23,654	0	0	0	0	0	0	23,654
DI -ST. - S/W INTER/INTRASTATE HWY	600,000	0	0	0	0	0	0	600,000
DIH -STATE IN-HOUSE PRODUCT SUPPORT	64,251	0	0	0	0	0	0	64,251
DS -STATE PRIMARY HIGHWAYS & PTO	123,154	0	0	0	0	0	0	123,154
GMR -GROWTH MANAGEMENT FOR SIS	2,417,000	0	0	0	0	0	0	2,417,000
RIGHT OF WAY / MANAGED BY FDOT								
DI -ST. - S/W INTER/INTRASTATE HWY	1,758,000	0	0	0	0	0	0	1,758,000
DIH -STATE IN-HOUSE PRODUCT SUPPORT	79,999	0	0	0	0	0	0	79,999
DS -STATE PRIMARY HIGHWAYS & PTO	4,283	0	0	0	0	0	0	4,283
CONSTRUCTION / MANAGED BY FDOT								
DI -ST. - S/W INTER/INTRASTATE HWY	0	0	0	0	8,564,545	0	0	8,564,545
DIH -STATE IN-HOUSE PRODUCT SUPPORT	0	0	0	0	118,953	0	0	118,953
ENVIRONMENTAL / MANAGED BY FDOT								
DDR -DISTRICT DEDICATED REVENUE	25,000	0	0	144,974	0	0	0	169,974
Item 416733 2 Totals:	**5,095,341**	**0**	**0**	**144,974**	**8,683,498**	**0**	**0**	**13,923,813**
Project Total:	**5,095,341**	**0**	**0**	**144,974**	**8,683,498**	**0**	**0**	**13,923,813**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objectives: 1.1, 1.2, 1.4, 1.6, 1.8, 2.3, 3.7, 3.9, 3.10, 4.1 (Pages 6-6 through 6-11); Map 5-2 (Pages 5-10); Table 5-5 (Page 5-11) Item Number: 416735 1 Project Description: **SR 50/CORTEZ BLVD FROM W OF BUCK HOPE RD TO W OF JEFFERSON STREET *SIS***								
District: 07 County: HERNANDO Type of Work: ADD LANES & REHABILITATE PVMNT Project Length: 2.517								
Extra Description: 4 TO 6 LANES								
PRELIMINARY ENGINEERING / MANAGED BY FDOT								
ACNP -ADVANCE CONSTRUCTION NHPP	3,400,000	0	0	0	0	0	0	3,400,000
ACSA -ADVANCE CONSTRUCTION (SA)	523,181	0	0	0	0	0	0	523,181
ACSL -ADVANCE CONSTRUCTION (SL)	29,902	0	0	0	0	0	0	29,902
DDR -DISTRICT DEDICATED REVENUE	53,226	0	0	0	0	0	0	53,226
DIH -STATE IN-HOUSE PRODUCT SUPPORT	62,417	0	0	0	0	0	0	62,417
DS -STATE PRIMARY HIGHWAYS & PTO	116,500	0	0	0	0	0	0	116,500
SL -STP, AREAS <= 200K	1,939,227	0	0	0	0	0	0	1,939,227
RIGHT OF WAY / MANAGED BY FDOT								
DDR -DISTRICT DEDICATED REVENUE	0	347,600	420,000	0	0	0	0	767,600
DIH -STATE IN-HOUSE PRODUCT SUPPORT	0	120,000	9,221	0	0	0	0	129,221
SL -STP, AREAS <= 200K	0	0	3,249,979	0	0	0	0	3,249,979
CONSTRUCTION / MANAGED BY FDOT								
ACNP -ADVANCE CONSTRUCTION NHPP	0	0	0	0	0	36,932,171	0	36,932,171
ENVIRONMENTAL / MANAGED BY FDOT								
DDR -DISTRICT DEDICATED REVENUE	41,944	0	0	0	111,446	0	0	153,390
Item 416735 1 Totals:	**6,166,397**	**467,600**	**3,679,200**	**0**	**111,446**	**36,932,171**	**0**	**47,356,814**
Project Total:	**6,166,397**	**467,600**	**3,679,200**	**0**	**111,446**	**36,932,171**	**0**	**47,356,814**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objectives: 1.1, 1.2, 1.4, 1.6, 1.8, 1.9, 2.3, 3.7, 3.9, 3.10, 4.1 (pages 6-12 through 6-13); Table 4-1 (page 4-2) Appendix H Item Number: 430051 2 Project Description: SR 50 FROM LOCKHART RD TO E OF REMINGTON RD *SIS*								
District: 07 County: HERNANDO Type of Work: ADD LANES & REHABILITATE PVMNT Project Length: .355								
Extra Description: 4 TO 6 LANES								
PRELIMINARY ENGINEERING / MANAGED BY FDOT								
ACNP -ADVANCE CONSTRUCTION NHPP	145,395	0	0	0	0	0	0	145,395
DDR -DISTRICT DEDICATED REVENUE	92,256	0	0	0	0	0	0	92,256
DIH -STATE IN-HOUSE PRODUCT SUPPORT	49,804	0	0	0	0	0	0	49,804
DS -STATE PRIMARY HIGHWAYS & PTO	55,169	0	0	0	0	0	0	55,169
NHPP -IM, BRDG REPL, NATNL HWY-MAP21	821,170	0	0	0	0	0	0	821,170
RAILROAD & UTILITIES / MANAGED BY FDOT								
LF -LOCAL FUNDS	0	350,000	0	0	0	0	0	350,000
CONSTRUCTION / MANAGED BY FDOT								
CM -CONGESTION MITIGATION - AQ	0	73,503	0	0	0	0	0	73,503
DDR -DISTRICT DEDICATED REVENUE	0	1,750,784	0	0	0	0	0	1,750,784
DIH -STATE IN-HOUSE PRODUCT SUPPORT	0	78,637	0	0	0	0	0	78,637
DS -STATE PRIMARY HIGHWAYS & PTO	6,091	0	0	0	0	0	0	6,091
GFSL -GF STPBG <200K<5K (SMALL URB)	0	1,836,008	0	0	0	0	0	1,836,008
SL -STP, AREAS <= 200K	0	2,001,602	0	0	0	0	0	2,001,602
Item 430051 2 Totals:	**1,169,885**	**6,090,534**	**0**	**0**	**0**	**0**	**0**	**7,260,419**
Project Total:	**1,169,885**	**6,090,534**	**0**	**0**	**0**	**0**	**0**	**7,260,419**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objectives: 2.3, 3.4, 3.5 (Pages 6-8 through 6-9); Appendix D-2								
Item Number: 433714 1 Project Description: **LINDEN DR FROM CORONADO DR TO SPRING HILL DR *NON-SIS***								
District: 07 County: HERNANDO Type of Work: SIDEWALK Project Length: .953								
Extra Description: DESIGN AND CONSTRUCT 5' SIDEWALK								
PRELIMINARY ENGINEERING / MANAGED BY HERNANDO COUNTY BOARD OF COUNTY								
TALT -TRANSPORTATION ALTS- ANY AREA	46,000	0	0	0	0	0	0	46,000
CONSTRUCTION / MANAGED BY HERNANDO COUNTY BOARD OF COUNTY								
TALL -TRANSPORTATION ALTS- <200K	0	0	338,573	0	0	0	0	338,573
TALT -TRANSPORTATION ALTS- ANY AREA	0	0	193,688	0	0	0	0	193,688
Item 433714 1 Totals:	**46,000**	**0**	**532,261**	**0**	**0**	**0**	**0**	**578,261**
Project Total:	**46,000**	**0**	**532,261**	**0**	**0**	**0**	**0**	**578,261**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objectives: 2.3, 3.4, 3.5 (Pages 6-8 through 6-9); Appendix D-2								
Item Number: 436709 1 Project Description: **WESTSIDE ELEMENTARY - KENLAKE, APPLEGATE, AIRMONT, TYLER, HALSTEAD *NON-SIS***								
District: 07 County: HERNANDO Type of Work: SIDEWALK Project Length: .000								
Extra Description: DESIGN AND CONSTRUCT 5'SIDEWALKS								
PRELIMINARY ENGINEERING / MANAGED BY FDOT								
SR2T -SAFE ROUTES - TRANSFER	951	0	0	0	0	0	0	951
PRELIMINARY ENGINEERING / MANAGED BY HERNANDO COUNTY BOARD OF COUNTY								
SR2T -SAFE ROUTES - TRANSFER	64,528	0	0	0	0	0	0	64,528
CONSTRUCTION / MANAGED BY HERNANDO COUNTY BOARD OF COUNTY								
TALL -TRANSPORTATION ALTS- <200K	0	23,635	0	0	0	0	0	23,635
TALT -TRANSPORTATION ALTS- ANY AREA	0	289,602	0	0	0	0	0	289,602
Item 436709 1 Totals:	**65,479**	**313,237**	**0**	**0**	**0**	**0**	**0**	**378,716**
Project Total:	**65,479**	**313,237**	**0**	**0**	**0**	**0**	**0**	**378,716**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objectives: 2.3, 3.4, 3.5 (Pages 6-8 through 6-9); Appendix D-2								
Item Number: 436710 1 Project Description: **JD FLOYD ELEMENTARY SCHOOL - CORONADO DR, WHITEWOOD AVE, ALDORO AVE *NON-SIS***								
District: 07 County: HERNANDO Type of Work: SIDEWALK Project Length: .000								
Extra Description: DESIGN AND CONSTRUCT 5' SIDEWALKS								
PRELIMINARY ENGINEERING / MANAGED BY FDOT								
SR2T -SAFE ROUTES - TRANSFER	1,890	0	0	0	0	0	0	1,890
PRELIMINARY ENGINEERING / MANAGED BY HERNANDO COUNTY BOARD OF COUNTY								
SR2T -SAFE ROUTES - TRANSFER	69,272	0	0	0	0	0	0	69,272
CONSTRUCTION / MANAGED BY HERNANDO COUNTY BOARD OF COUNTY								
TALL -TRANSPORTATION ALTS- <200K	0	27,862	0	0	0	0	0	27,862
TALT -TRANSPORTATION ALTS- ANY AREA	0	467,232	0	0	0	0	0	467,232
Item 436710 1 Totals:	**71,162**	**495,094**	**0**	**0**	**0**	**0**	**0**	**566,256**
Project Total:	**71,162**	**495,094**	**0**	**0**	**0**	**0**	**0**	**566,256**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objectives: 2.3, 3.4, 3.5 (Pages 6-8 through 6-9); Appendix D-2								
Item Number: 436712 1 Project Description: **BROOKSVILLE ELEMENTARY - HOWELL AVE FROM CROOM RD TO US 41/BROAD ST *NON-SIS***								
District: 07 County: HERNANDO Type of Work: SIDEWALK Project Length: .819								
Extra Description: 5' SIDEWALKS SAFE ROUTES TO SCHOOL								
PRELIMINARY ENGINEERING / MANAGED BY FDOT								
SR2T -SAFE ROUTES - TRANSFER	951	0	0	0	0	0	0	951
PRELIMINARY ENGINEERING / MANAGED BY HERNANDO COUNTY BOARD OF COUNTY								
SR2S -SAFE ROUTES - INFRASTRUCTURE	34,746	0	0	0	0	0	0	34,746
SR2T -SAFE ROUTES - TRANSFER	19,102	0	0	0	0	0	0	19,102
CONSTRUCTION / MANAGED BY HERNANDO COUNTY BOARD OF COUNTY								
TALL -TRANSPORTATION ALTS- <200K	0	293,056	0	0	0	0	0	293,056
TALT -TRANSPORTATION ALTS- ANY AREA	0	18,275	0	0	0	0	0	18,275
Item 436712 1 Totals:	**54,799**	**311,331**	**0**	**0**	**0**	**0**	**0**	**366,130**
Project Total:	**54,799**	**311,331**	**0**	**0**	**0**	**0**	**0**	**366,130**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objectives:1.2, 1.7, 2.3, 3.2, 3.4, 3.5 (Pages 6-8 through 6-9); Map 4-9 (Page 4-20; Appendix D-1								
Item Number: 437264 2 Project Description: **GOOD NEIGHBOR TRAIL GAP FR W OF SR 50/CORTEZ BLVD TO GOOD NEIGHBOR TR *SIS***								
District: 07 County: HERNANDO Type of Work: BIKE PATH/TRAIL Project Length: 2.179								
Extra Description: CONNECT 12' TRAIL FR SUNCOAST TRL TO GOOD NEIGHOR TRL-C2C								
P D & E / MANAGED BY FDOT								
TLWR -2015 SB2514A-TRAIL NETWORK	549,619	0	0	0	0	0	0	549,619
PRELIMINARY ENGINEERING / MANAGED BY FDOT								
DIH -STATE IN-HOUSE PRODUCT SUPPORT	22,060	0	0	0	0	0	0	22,060
DS -STATE PRIMARY HIGHWAYS & PTO	120,333	0	0	0	0	0	0	120,333
TLWR -2015 SB2514A-TRAIL NETWORK	2,029,842	0	0	0	0	0	0	2,029,842
RIGHT OF WAY / MANAGED BY FDOT								
DIH -STATE IN-HOUSE PRODUCT SUPPORT	0	220,000	0	0	0	0	0	220,000
TLWR -2015 SB2514A-TRAIL NETWORK	1,162,970	2,537,830	0	0	0	0	0	3,700,800
RAILROAD & UTILITIES / MANAGED BY FDOT								
DDR -DISTRICT DEDICATED REVENUE	20,000	0	0	103,123	0	0	0	123,123
CONSTRUCTION / MANAGED BY FDOT								
DIH -STATE IN-HOUSE PRODUCT SUPPORT	0	0	0	211,863	0	0	0	211,863
TALT -TRANSPORTATION ALTS- ANY AREA	0	0	0	929,858	0	0	0	929,858
TLWR -2015 SB2514A-TRAIL NETWORK	0	0	0	14,376,388	0	0	0	14,376,388
Item 437264 2 Totals:	**3,904,824**	**2,757,830**	**0**	**15,621,232**	**0**	**0**	**0**	**22,283,886**
Project Total:	**3,904,824**	**2,757,830**	**0**	**15,621,232**	**0**	**0**	**0**	**22,283,886**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objectives: 2.3, 3.4, 3.5 (Pages 6-8 through 6-9); Appendix D-2								
Item Number: 437484 1 Project Description: **W LANDOVER BLVD FROM NORTHCLIFFE BLVD TO ELGIN BLVD *NON-SIS***								
District: 07 County: HERNANDO Type of Work: SIDEWALK Project Length: 1.233								
Extra Description: DESIGN AND CONSTRUCT 5' SIDEWALK								
PRELIMINARY ENGINEERING / MANAGED BY HERNANDO COUNTY BOARD OF COUNTY								
TALT -TRANSPORTATION ALTS- ANY AREA	0	0	95,367	0	0	0	0	95,367
CONSTRUCTION / MANAGED BY HERNANDO COUNTY BOARD OF COUNTY								
TALL -TRANSPORTATION ALTS- <200K	0	0	0	0	348,774	0	0	348,774
TALT -TRANSPORTATION ALTS- ANY AREA	0	0	0	0	246,242	0	0	246,242
Item 437484 1 Totals:	**0**	**0**	**95,367**	**0**	**595,016**	**0**	**0**	**690,383**
Project Total:	**0**	**0**	**95,367**	**0**	**595,016**	**0**	**0**	**690,383**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objectives: 2.3, 3.4, 3.5 (Pages 6-8 through 6-9); Appendix D-2								
Item Number: 438651 1 Project Description: **S LINDEN DR SIDEWALK FROM COUNTY LINE RD TO SPRING HILL DR *NON-SIS***								
District: 07 County: HERNANDO Type of Work: SIDEWALK Project Length: 2.610								
Extra Description: CONSTRUCT SIDEWALK ON WEST SIDE OF S LINDEN								
PRELIMINARY ENGINEERING / MANAGED BY HERNANDO COUNTY BOARD OF COUNTY								
TALT -TRANSPORTATION ALTS- ANY AREA	0	0	0	93,610	0	0	0	93,610
CONSTRUCTION / MANAGED BY HERNANDO COUNTY BOARD OF COUNTY								
TALL -TRANSPORTATION ALTS- <200K	0	0	0	0	0	348,387	0	348,387
TALT -TRANSPORTATION ALTS- ANY AREA	0	0	0	0	0	314,982	0	314,982
Item 438651 1 Totals:	**0**	**0**	**0**	**93,610**	**0**	**663,369**	**0**	**756,979**
Project Total:	**0**	**0**	**0**	**93,610**	**0**	**663,369**	**0**	**756,979**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objective: 2.2, 2.3, 3.4, 3.5, 3.9, 5.5 (Pages 6-8 through 6-13)								
Item Number: 439448 1 Project Description: **US 98/SR 700/PONCE DE LEON FR S OF CITRUS WAY/CR491 TO N OF CITRUS WAY *NON-SIS***								
District: 07 County: HERNANDO Type of Work: ROUNDABOUT Project Length: .669								
Extra Description: DESIGN AND CONSTRUCT ROUNDABOUT								
PRELIMINARY ENGINEERING / MANAGED BY FDOT								
ACID -ADV CONSTRUCTION SAFETY (HSID)	0	1,000	0	0	0	0	0	1,000
DS -STATE PRIMARY HIGHWAYS & PTO	127,782	0	0	0	0	0	0	127,782
HSP -SAFETY (HIWAY SAFETY PROGRAM)	100,709	0	0	0	0	0	0	100,709
CONSTRUCTION / MANAGED BY FDOT								
ACSS -ADVANCE CONSTRUCTION (SS,HSP)	0	0	2,296,421	0	0	0	0	2,296,421
Item 439448 1 Totals:	**228,491**	**1,000**	**2,296,421**	**0**	**0**	**0**	**0**	**2,525,912**
Project Total:	**228,491**	**1,000**	**2,296,421**	**0**	**0**	**0**	**0**	**2,525,912**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objectives: 2.3, 3.4, 3.5 (Pages 6-8 through 6-9); Appendix D-2								
Item Number: 439508 1 Project Description: **ELGIN BLVD FROM DELTONA BLVD TO MARINER BLVD *NON-SIS***								
District: 07 County: HERNANDO Type of Work: SIDEWALK Project Length: 2.540								
Extra Description: DESIGN AND CONSTRUCT 5' SIDEWALK ALONG SOUTH SIDE OF ELGIN								
PRELIMINARY ENGINEERING / MANAGED BY HERNANDO COUNTY BOARD OF COUNTY								
TALT -TRANSPORTATION ALTS- ANY AREA	0	102,070	0	0	0	0	0	102,070
CONSTRUCTION / MANAGED BY HERNANDO COUNTY BOARD OF COUNTY								
TALL -TRANSPORTATION ALTS- <200K	0	0	0	132,682	0	0	0	132,682
TALT -TRANSPORTATION ALTS- ANY AREA	0	0	0	783,036	0	0	0	783,036
Item 439508 1 Totals:	**0**	**102,070**	**0**	**915,718**	**0**	**0**	**0**	**1,017,788**
Project Total:	**0**	**102,070**	**0**	**915,718**	**0**	**0**	**0**	**1,017,788**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objectives: 2.3, 3.4, 3.5 (Pages 6-8 through 6-9); Appendix D-2								
Item Number: 439509 1 Project Description: DELTONA BLVD FROM ELGIN BLVD TO SR 50 (CORTEZ BLVD) *NON-SIS*								
District: 07 County: HERNANDO Type of Work: SIDEWALK Project Length: .524								
Extra Description: DESIGN AND CONSTRUCT 5' SIDEWALK ON WEST SIDE OF DELTONA								
PRELIMINARY ENGINEERING / MANAGED BY HERNANDO COUNTY BOARD OF COUNTY								
TALT -TRANSPORTATION ALTS- ANY AREA	58,680	0	0	0	0	0	0	58,680
CONSTRUCTION / MANAGED BY HERNANDO COUNTY BOARD OF COUNTY								
TALT -TRANSPORTATION ALTS- ANY AREA	0	0	236,727	0	0	0	0	236,727
Item 439509 1 Totals:	**58,680**	**0**	**236,727**	**0**	**0**	**0**	**0**	**295,407**
Project Total:	**58,680**	**0**	**236,727**	**0**	**0**	**0**	**0**	**295,407**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objective: 2.2, 2.3, 3.4, 3.5, 3.9, 5.5 (Pages 6-8 through 6-13)								
Item Number: 440064 1 Project Description: US 98/SR700/PONCE DE LEON BLVD FROM N OF LANDFILL RD TO CITRUS CO LINE *SIS*								
District: 07 County: HERNANDO Type of Work: RESURFACING Project Length: 2.074								
Extra Description: 2 LANES								
PRELIMINARY ENGINEERING / MANAGED BY FDOT								
DDR -DISTRICT DEDICATED REVENUE	0	280,274	0	0	0	0	0	280,274
DIH -STATE IN-HOUSE PRODUCT SUPPORT	2,000	0	0	0	0	0	0	2,000
CONSTRUCTION / MANAGED BY FDOT								
DIH -STATE IN-HOUSE PRODUCT SUPPORT	0	0	0	36,763	0	0	0	36,763
DS -STATE PRIMARY HIGHWAYS & PTO	0	0	0	2,646,879	0	0	0	2,646,879
Item 440064 1 Totals:	**2,000**	**280,274**	**0**	**2,683,642**	**0**	**0**	**0**	**2,965,916**
Project Total:	**2,000**	**280,274**	**0**	**2,683,642**	**0**	**0**	**0**	**2,965,916**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objectives: 2.3, 3.4, 3.5 (Pages 6-8 through 6-9)								
Item Number: 441103 1 Project Description: FOX CHAPEL MS FREEPORT DR FROM DELTONA BLVD TO NORTHCLIFFE BLVD *NON-SIS*								
District: 07 County: HERNANDO Type of Work: SIDEWALK Project Length: 1.550								
Extra Description: CONSTRUCT 5' SIDEWALK, SAFE ROUTES TO SCHOOL								
PRELIMINARY ENGINEERING / MANAGED BY HERNANDO COUNTY BOARD OF COUNTY								
SR2T -SAFE ROUTES - TRANSFER	0	0	0	270,555	0	0	0	270,555
Item 441103 1 Totals:	**0**	**0**	**0**	**270,555**	**0**	**0**	**0**	**270,555**
Project Total:	**0**	**0**	**0**	**270,555**	**0**	**0**	**0**	**270,555**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objectives: 2.3, 3.4, 3.5 (Pages 6-8 through 6-9)								
Item Number: 441107 1 Project Description: EAST SIDE ELEMENTARY RALEY RD FROM US 98/SR 50/CORTEZ BLVD TO ROPER RD *NON-SIS*								
District: 07 County: HERNANDO Type of Work: SIDEWALK Project Length: .782								
Extra Description: 5' SIDEWALK, SAFE ROUTES TO SCHOOL								
PRELIMINARY ENGINEERING / MANAGED BY HERNANDO COUNTY BOARD OF COUNTY								
SR2T -SAFE ROUTES - TRANSFER	0	0	0	239,996	0	0	0	239,996
Item 441107 1 Totals:	**0**	**0**	**0**	**239,996**	**0**	**0**	**0**	**239,996**
Project Total:	**0**	**0**	**0**	**239,996**	**0**	**0**	**0**	**239,996**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objective: 2.2, 2.3, 3.4, 3.5, 3.9, 5.5 (Pages 6-8 through 6-13)								
Item Number: 441386 1 Project Description: US 41/SR 45/BROAD ST FR N OF INGRAM ST TO S OF OAKS MHP *NON-SIS*								
District: 07 County: HERNANDO Type of Work: RESURFACING Project Length: 1.862								
Extra Description: 6 LANES, CONCRETE INTERSECTION @ WISCON RD								
PRELIMINARY ENGINEERING / MANAGED BY FDOT								
DDR -DISTRICT DEDICATED REVENUE	160,000	0	0	0	0	0	0	160,000
DIH -STATE IN-HOUSE PRODUCT SUPPORT	9,241	0	0	0	0	0	0	9,241
DS -STATE PRIMARY HIGHWAYS & PTO	1,013,223	0	0	0	0	0	0	1,013,223
CONSTRUCTION / MANAGED BY FDOT								

ACNP -ADVANCE CONSTRUCTION NHPP	0	0	6,055,711	0	0	0	0	6,055,711
DDR -DISTRICT DEDICATED REVENUE	0	0	5,786,677	0	0	0	0	5,786,677
DIH -STATE IN-HOUSE PRODUCT SUPPORT	0	0	159,853	0	0	0	0	159,853
ENVIRONMENTAL / MANAGED BY FDOT								
DDR -DISTRICT DEDICATED REVENUE	0	25,000	0	0	0	0	0	25,000
Item 441386 1 Totals:	**1,182,464**	**25,000**	**12,002,241**	**0**	**0**	**0**	**0**	**13,209,705**
Project Total:	**1,182,464**	**25,000**	**12,002,241**	**0**	**0**	**0**	**0**	**13,209,705**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objectives: 1.1, 1.2, 1.4, 1.6, 1.8, 2.3, 3.7, 3.9, 3.10, 4.1 (Pages 6-6 through 6-11); Map 5-2 (Pages 5-10); Table 5-5 (Page 5-11)								
Item Number: 442835 1 Project Description: SR 50 FROM US 301/SR 35 TO HERNANDO/SUMTER COUNTY LINE *SIS*								
District: 07 County: HERNANDO Type of Work: ADD LANES & RECONSTRUCT Project Length: 4.771								
Extra Description: 2 TO 4 LANES								
RIGHT OF WAY / MANAGED BY FDOT								
DDR -DISTRICT DEDICATED REVENUE	0	0	0	2,035,859	0	0	0	2,035,859
DIH -STATE IN-HOUSE PRODUCT SUPPORT	0	0	0	200,000	0	0	0	200,000
DS -STATE PRIMARY HIGHWAYS & PTO	0	0	0	2,428,841	0	0	0	2,428,841
ENVIRONMENTAL / MANAGED BY FDOT								
DDR -DISTRICT DEDICATED REVENUE	0	1,000,000	0	0	0	0	0	1,000,000
Item 442835 1 Totals:	**0**	**1,000,000**	**0**	**4,664,700**	**0**	**0**	**0**	**5,664,700**
Project Total:	**0**	**1,000,000**	**0**	**4,664,700**	**0**	**0**	**0**	**5,664,700**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objectives: 5.2, 5.5 (pages 6-12 through 6-13); Table 5-5 (page 5-11); Table 4-1 (page 4-2) Appendix H								
Item Number: 444420 1 Project Description: I-75/SR 93 FR S END OF SR 50 NB OFF RAMP TO N END OF SR 50 NB ON RAMP *SIS*								
District: 07 County: HERNANDO Type of Work: LANDSCAPING Project Length: 1.603								
Extra Description: INSTALLATION OF PLANTS AND RELATED MATERIALS								
PRELIMINARY ENGINEERING / MANAGED BY FDOT								
DDR -DISTRICT DEDICATED REVENUE	186,508	0	0	0	0	0	0	186,508
DS -STATE PRIMARY HIGHWAYS & PTO	255	0	0	0	0	0	0	255

CONSTRUCTION / MANAGED BY FDOT								
DDR -DISTRICT DEDICATED REVENUE	0	1,450,278	0	0	0	0	0	1,450,278
DIH -STATE IN-HOUSE PRODUCT SUPPORT	0	21,754	0	0	0	0	0	21,754
DS -STATE PRIMARY HIGHWAYS & PTO	0	116,022	0	0	0	0	0	116,022
Item 444420 1 Totals:	**186,763**	**1,588,054**	**0**	**0**	**0**	**0**	**0**	**1,774,817**
Project Total:	**186,763**	**1,588,054**	**0**	**0**	**0**	**0**	**0**	**1,774,817**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objectives: 5.2, 5.5 (pages 6-12 through 6-13); Table 5-5 (page 5-11); Table 4-1 (page 4-2) Appendix H								
Item Number: 444425 2 Project Description: I-75/SR 93 FROM PASCO CO LINE TO N OF CHURCH RD *SIS*								
District: 07 County: HERNANDO Type of Work: LANDSCAPING Project Length: 1.725								
Extra Description: INSTALLATION OF PLANTS AND RELATED MATERIALS								
CONSTRUCTION / MANAGED BY FDOT								
DDR -DISTRICT DEDICATED REVENUE	0	774,623	0	0	0	0	0	774,623
DIH -STATE IN-HOUSE PRODUCT SUPPORT	0	11,619	0	0	0	0	0	11,619
DS -STATE PRIMARY HIGHWAYS & PTO	0	61,970	0	0	0	0	0	61,970
Item 444425 2 Totals:	**0**	**848,212**	**0**	**0**	**0**	**0**	**0**	**848,212**
Project Total:	**0**	**848,212**	**0**	**0**	**0**	**0**	**0**	**848,212**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
TURNPIKE								
LRTP Objectives: 1.3, 1.4, 1.8, 1.9 (Pages 6-6 through 6.10); Appendix H Item Number: 405270 3 Project Description: SUNCOAST PARKWAY 2 - HERNANDO C/L TO SOUTH OF W GROVER CLEVELAND BLVD *SIS*								
District: 07 County: CITRUS Type of Work: NEW ROAD CONSTRUCTION Project Length: 7.410								
Extra Description: S/O FROM 405270-1								
PRELIMINARY ENGINEERING / MANAGED BY FDOT								
PKYI -TURNPIKE IMPROVEMENT	6,562,019	0	0	0	0	0	0	6,562,019
RIGHT OF WAY / MANAGED BY FDOT								
PKYI -TURNPIKE IMPROVEMENT	17,209,094	0	0	0	0	0	0	17,209,094
RAILROAD & UTILITIES / MANAGED BY FDOT								
PKYI -TURNPIKE IMPROVEMENT	11,605,553	0	0	0	0	0	0	11,605,553
CONSTRUCTION / MANAGED BY FDOT								
PKBD -TURNPIKE MASTER BOND FUND	63,258,502	0	0	0	0	0	0	63,258,502
PKYI -TURNPIKE IMPROVEMENT	5,922,844	0	1,800,000	0	0	0	0	7,722,844
PKYO -TURNPIKE TOLL COLLECTION/OPER.	0	82,080	0	0	0	0	0	82,080
ENVIRONMENTAL / MANAGED BY FDOT								
PKYI -TURNPIKE IMPROVEMENT	200,000	0	0	0	0	0	0	200,000
Item 405270 3 Totals:	**104,758,012**	**82,080**	**1,800,000**	**0**	**0**	**0**	**0**	**106,640,092**
Project Total:	**104,758,012**	**82,080**	**1,800,000**	**0**	**0**	**0**	**0**	**106,640,092**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objectives: 1.3, 1.4, 1.8, 1.9 (Pages 6-6 through 6.10); Appendix H Item Number: 442764 1 Project Description: SUNCOAST II (SR589) - SR 44 TO CR 486 *SIS*								
District: 07 County: CITRUS Type of Work: NEW ROAD CONSTRUCTION Project Length: 3.000								
PRELIMINARY ENGINEERING / MANAGED BY FDOT								
PKED -2012 SB1998-TURNPIKE FEEDER RD	6,524,808	0	0	0	0	0	0	6,524,808
PKYI -TURNPIKE IMPROVEMENT	64,342	1,000,000	0	0	0	0	0	1,064,342

RIGHT OF WAY / MANAGED BY FDOT								
PKYI -TURNPIKE IMPROVEMENT	1,548,367	3,194,372	0	7,041,004	0	0	0	11,783,743
RAILROAD & UTILITIES / MANAGED BY FDOT								
PKBD -TURNPIKE MASTER BOND FUND	0	0	0	12,000,000	0	0	0	12,000,000
PKYI -TURNPIKE IMPROVEMENT	0	0	400,000	0	0	0	0	400,000
CONSTRUCTION / MANAGED BY FDOT								
PKBD -TURNPIKE MASTER BOND FUND	0	0	0	0	0	64,714,000	0	64,714,000
PKYI -TURNPIKE IMPROVEMENT	1,135	0	0	0	0	0	0	1,135
Item 442764 1 Totals:	**8,138,652**	**4,194,372**	**400,000**	**19,041,004**	**0**	**64,714,000**	**0**	**96,488,028**
Project Total:	**8,138,652**	**4,194,372**	**400,000**	**19,041,004**	**0**	**64,714,000**	**0**	**96,488,028**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objectives: 1.3, 1.4, 1.8, 1.9 (Pages 6-6 through 6.10); Appendix H Item Number: 405270 1 Project Description: SUNCOAST PARKWAY 2 - US 98 TO HERNANDO/CITRUS COUNTY LINE *SIS*								
District: 07 County: HERNANDO Type of Work: NEW ROAD CONSTRUCTION Project Length: 1.451								
PLANNING / MANAGED BY FDOT								
PKYI -TURNPIKE IMPROVEMENT	958	0	0	0	0	0	0	958
P D & E / MANAGED BY FDOT								
PKYI -TURNPIKE IMPROVEMENT	3,189,295	0	0	0	0	0	0	3,189,295
PRELIMINARY ENGINEERING / MANAGED BY FDOT								
DI -ST. - S/W INTER/INTRASTATE HWY	19,400,000	0	0	0	0	0	0	19,400,000
PKYI -TURNPIKE IMPROVEMENT	12,700,684	0	0	0	0	0	0	12,700,684
PKYR -TURNPIKE RENEWAL & REPLACEMENT	4,145	0	0	0	0	0	0	4,145
RIGHT OF WAY / MANAGED BY FDOT								
DI -ST. - S/W INTER/INTRASTATE HWY	650,597	0	0	0	0	0	0	650,597
PKYI -TURNPIKE IMPROVEMENT	20,541,808	1,084,000	0	0	0	0	0	21,625,808
RAILROAD & UTILITIES / MANAGED BY FDOT								
PKYI -TURNPIKE IMPROVEMENT	40,209	0	0	0	0	0	0	40,209
CONSTRUCTION / MANAGED BY FDOT								
DDR -DISTRICT DEDICATED REVENUE	761	0	0	0	0	0	0	761

PKBD -TURNPIKE MASTER BOND FUND	29,217,812	0	0	0	0	0	0	29,217,812
PKYI -TURNPIKE IMPROVEMENT	3,399,241	0	0	0	0	0	0	3,399,241
ENVIRONMENTAL / MANAGED BY FDOT								
PKYI -TURNPIKE IMPROVEMENT	706,489	690,000	0	0	0	0	0	1,396,489
Item 405270 1 Totals:	**89,851,999**	**1,774,000**	**0**	**0**	**0**	**0**	**0**	**91,625,999**
Project Total:	**89,851,999**	**1,774,000**	**0**	**0**	**0**	**0**	**0**	**91,625,999**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
TRANSPORTATION PLANNING								
LRTP Objectives: 1.1, 1.8, 2.1, 3.1, 3.2 (Pages 6-6 through 6-9) Item Number: 438747 5 Project Description: CITRUS PLANNING MODEL STUDIES *NON-SIS*								
District: 07 County: CITRUS Type of Work: PLANNING MODELS/DATA UPDATE Project Length: .000								
Extra Description: CONDUCT SURVEYS TO UPDATE PLANNING MODELS/DATA								
PLANNING / MANAGED BY FDOT								
D -UNRESTRICTED STATE PRIMARY	37,500	12,500	12,500	12,500	12,500	12,500	0	100,000
SN -STP, MANDATORY NON-URBAN <= 5K	37,500	12,500	12,500	12,500	12,500	12,500	0	100,000
Item 438747 5 Totals:	**75,000**	**25,000**	**25,000**	**25,000**	**25,000**	**25,000**	**0**	**200,000**
Project Total:	**75,000**	**25,000**	**25,000**	**25,000**	**25,000**	**25,000**	**0**	**200,000**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objectives: 1.1, 1.8, 2.1, 3.1, 3.2 (Pages 6-6 through 6-9) Item Number: 438747 4 Project Description: HERNANDO PLANNING MODEL STUDIES *NON-SIS*								
District: 07 County: HERNANDO Type of Work: PLANNING MODELS/DATA UPDATE Project Length: .000								
Extra Description: CONDUCT SURVEYS TO UPDATE PLANNING MODELS/DATA								
PLANNING / MANAGED BY FDOT								
ACSL -ADVANCE CONSTRUCTION (SL)	2,000	0	0	0	0	0	0	2,000
D -UNRESTRICTED STATE PRIMARY	37,500	12,500	12,500	12,500	12,500	12,500	0	100,000
SL -STP, AREAS <= 200K	35,500	12,500	12,500	12,500	12,500	12,500	0	98,000
Item 438747 4 Totals:	**75,000**	**25,000**	**25,000**	**25,000**	**25,000**	**25,000**	**0**	**200,000**

Project Total:	**75,000**	**25,000**	**25,000**	**25,000**	**25,000**	**25,000**	**0**	**200,000**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objectives: 1.1, 1.8, 2.1, 3.1, 3.2 (Pages 6-6 through 6-9) Item Number: 439335 2 Project Description: HERNANDO/CITRUS FY 2018/2019-2019/2020 UPWP *NON-SIS*								
District: 07 County: HERNANDO Type of Work: TRANSPORTATION PLANNING Project Length: .000								
PLANNING / RESPONSIBLE AGENCY NOT AVAILABLE								
PL -METRO PLAN (85% FA; 15% OTHER)	896,637	507,012	0	0	0	0	0	1,403,649
Item 439335 2 Totals:	**896,637**	**507,012**	**0**	**0**	**0**	**0**	**0**	**1,403,649**
LRTP Objectives: 1.1, 1.8, 2.1, 3.1, 3.2 (Pages 6-6 through 6-9) Item Number: 439335 3 Project Description: HERNANDO/CITRUS FY 2020/2021-2021/2022 UPWP *NON-SIS*								
District: 07 County: HERNANDO Type of Work: TRANSPORTATION PLANNING Project Length: .000								
PLANNING / RESPONSIBLE AGENCY NOT AVAILABLE								
PL -METRO PLAN (85% FA; 15% OTHER)	0	0	507,012	507,012	0	0	0	1,014,024
Item 439335 3 Totals:	**0**	**0**	**507,012**	**507,012**	**0**	**0**	**0**	**1,014,024**
LRTP Objectives: 1.1, 1.8, 2.1, 3.1, 3.2 (Pages 6-6 through 6-9) Item Number: 439335 4 Project Description: HERNANDO/CITRUS FY 2022/2023-2023/2024 UPWP *NON-SIS*								
District: 07 County: HERNANDO Type of Work: TRANSPORTATION PLANNING Project Length: .000								
PLANNING / RESPONSIBLE AGENCY NOT AVAILABLE								
PL -METRO PLAN (85% FA; 15% OTHER)	0	0	0	0	507,012	0	0	507,012
Item 439335 4 Totals:	**0**	**0**	**0**	**0**	**507,012**	**0**	**0**	**507,012**
Project Total:	**896,637**	**507,012**	**507,012**	**507,012**	**507,012**	**0**	**0**	**2,924,685**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
MAINTENANCE								
LRTP Objectives: 2.1, 3.1, 4.2 (Pages 6-8 through 6-11) Item Number: 259756 1 Project Description: CITRUS CO (02) *NON-SIS*								
District: 07 County: CITRUS Type of Work: ROUTINE MAINTENANCE Project Length: .000								

BRDG/RDWY/CONTRACT MAINT / MANAGED BY FDOT								
D -UNRESTRICTED STATE PRIMARY	3,565,332	70,000	70,000	70,000	70,000	70,000	0	3,915,332
Item 259756 1 Totals:	**3,565,332**	**70,000**	**70,000**	**70,000**	**70,000**	**70,000**	**0**	**3,915,332**
Project Total:	**3,565,332**	**70,000**	**70,000**	**70,000**	**70,000**	**70,000**	**0**	**3,915,332**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objectives: 2.1, 3.1, 4.2 (Pages 6-8 through 6-11) Item Number: 405298 1 Project Description: CITRUS CO (02) ASSET MANAGEMENT CONTRACT *NON-SIS*								
District: 07 County: CITRUS Type of Work: ROUTINE MAINTENANCE Project Length: .000								
BRDG/RDWY/CONTRACT MAINT / MANAGED BY FDOT								
D -UNRESTRICTED STATE PRIMARY	13,550,880	1,040,000	1,120,000	1,120,000	1,120,000	1,120,000	0	19,070,880
Item 405298 1 Totals:	**13,550,880**	**1,040,000**	**1,120,000**	**1,120,000**	**1,120,000**	**1,120,000**	**0**	**19,070,880**
Project Total:	**13,550,880**	**1,040,000**	**1,120,000**	**1,120,000**	**1,120,000**	**1,120,000**	**0**	**19,070,880**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objectives: 2.1, 3.1, 4.2 (Pages 6-8 through 6-11) Item Number: 400490 1 Project Description: HERNANDO CO (08) *NON-SIS*								
District: 07 County: HERNANDO Type of Work: ROUTINE MAINTENANCE Project Length: .000								
BRDG/RDWY/CONTRACT MAINT / MANAGED BY FDOT								
D -UNRESTRICTED STATE PRIMARY	32,772,900	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	0	42,772,900
Item 400490 1 Totals:	**32,772,900**	**2,000,000**	**2,000,000**	**2,000,000**	**2,000,000**	**2,000,000**	**0**	**42,772,900**
Project Total:	**32,772,900**	**2,000,000**	**2,000,000**	**2,000,000**	**2,000,000**	**2,000,000**	**0**	**42,772,900**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objectives: 2.1, 3.1, 4.2 (Pages 6-8 through 6-11) Item Number: 401185 1 Project Description: HERNANDO CO (08) *SIS*								
District: 07 County: HERNANDO Type of Work: ROUTINE MAINTENANCE Project Length: .000								
Extra Description: NONE								
BRDG/RDWY/CONTRACT MAINT / MANAGED BY FDOT								
D -UNRESTRICTED STATE PRIMARY	141,794	15,000	15,000	15,000	15,000	15,000	0	216,794
Item 401185 1 Totals:	**141,794**	**15,000**	**15,000**	**15,000**	**15,000**	**15,000**	**0**	**216,794**

Project Total:	**141,794**	**15,000**	**15,000**	**15,000**	**15,000**	**15,000**	**0**	**216,794**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
FLP: AVIATION								
LRTP Objective: 4.1 (Page 6-11) Item Number: 432997 1 Project Description: INVERNESS AIRPORT - CONSTRUCT ACCESS AND UTILITIES TO HANGARS *NON-SIS*								
District: 07 County: CITRUS Type of Work: AVIATION PRESERVATION PROJECT Project Length: .000								
CAPITAL / RESPONSIBLE AGENCY NOT AVAILABLE								
DPTO -STATE - PTO	0	0	0	0	136,000	0	0	136,000
LF -LOCAL FUNDS	0	0	0	0	34,000	0	0	34,000
Item 432997 1 Totals:	**0**	**0**	**0**	**0**	**170,000**	**0**	**0**	**170,000**
Project Total:	**0**	**0**	**0**	**0**	**170,000**	**0**	**0**	**170,000**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objective: 4.1 (Page 6-11) Item Number: 436828 1 Project Description: INVERNESS AIRPORT - CONSTRUCT TAXIWAY TO T HANGERS (PHASE 1 OF 2) *NON-SIS*								
District: 07 County: CITRUS Type of Work: AVIATION CAPACITY PROJECT Project Length: .000								
Extra Description: DESIGN AND CONSTRUCT								
CAPITAL / RESPONSIBLE AGENCY NOT AVAILABLE								
DPTO -STATE - PTO	0	55,000	0	0	0	0	0	55,000
FAA -FEDERAL AVIATION ADMIN	0	990,000	0	0	0	0	0	990,000
LF -LOCAL FUNDS	0	21,326	0	0	0	0	0	21,326
Item 436828 1 Totals:	**0**	**1,066,326**	**0**	**0**	**0**	**0**	**0**	**1,066,326**
Project Total:	**0**	**1,066,326**	**0**	**0**	**0**	**0**	**0**	**1,066,326**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objective: 4.1 (Page 6-11) Item Number: 436829 1 Project Description: INVERNESS AIRPORT - MAINTENANCE AND REMARKING OF RUNWAY/TAXIWAY *NON-SIS*								

District: 07 County: CITRUS Type of Work: AVIATION PRESERVATION PROJECT Project Length: .000								
CAPITAL / RESPONSIBLE AGENCY NOT AVAILABLE								
DPTO -STATE - PTO	0	165,000	0	0	0	0	0	165,000
LF -LOCAL FUNDS	0	41,250	0	0	0	0	0	41,250
Item 436829 1 Totals:	**0**	**206,250**	**0**	**0**	**0**	**0**	**0**	**206,250**
Project Total:	**0**	**206,250**	**0**	**0**	**0**	**0**	**0**	**206,250**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objective: 4.1 (Page 6-11)								
Item Number: 436830 1 Project Description: INVERNESS AIRPORT - DESIGN AND CONSTRUCT VEHICLE PARKING FOR T-HANGERS *NON-SIS*								
District: 07 County: CITRUS Type of Work: AVIATION REVENUE/OPERATIONAL Project Length: .000								
CAPITAL / RESPONSIBLE AGENCY NOT AVAILABLE								
DPTO -STATE - PTO	0	124,800	0	0	0	0	0	124,800
LF -LOCAL FUNDS	0	31,200	0	0	0	0	0	31,200
Item 436830 1 Totals:	**0**	**156,000**	**0**	**0**	**0**	**0**	**0**	**156,000**
Project Total:	**0**	**156,000**	**0**	**0**	**0**	**0**	**0**	**156,000**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objective: 4.1 (Page 6-11)								
Item Number: 438511 1 Project Description: INVERNESS AIRPORT - REHABILITATE AIRFIELD SECURITY FENCING AND GATES *NON-SIS*								
District: 07 County: CITRUS Type of Work: AVIATION SECURITY PROJECT Project Length: .000								
CAPITAL / RESPONSIBLE AGENCY NOT AVAILABLE								
DPTO -STATE - PTO	0	0	409,600	0	0	0	0	409,600
LF -LOCAL FUNDS	0	0	102,400	0	0	0	0	102,400
Item 438511 1 Totals:	**0**	**0**	**512,000**	**0**	**0**	**0**	**0**	**512,000**
Project Total:	**0**	**0**	**512,000**	**0**	**0**	**0**	**0**	**512,000**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objective: 4.1 (Page 6-11)								
Item Number: 440559 1 Project Description: INVERNESS AIRPORT - TAXILANES FOR T-HANGARS *NON-SIS*								
District: 07 County: CITRUS Type of Work: AVIATION REVENUE/OPERATIONAL Project Length: .000								

Extra Description: DESIGN AND CONSTRUCT								
CAPITAL / RESPONSIBLE AGENCY NOT AVAILABLE								
DPTO -STATE - PTO	0	0	0	84,880	0	0	0	84,880
FAA -FEDERAL AVIATION ADMIN	0	0	0	954,900	0	0	0	954,900
LF -LOCAL FUNDS	0	0	0	21,220	0	0	0	21,220
Item 440559 1 Totals:	**0**	**0**	**0**	**1,061,000**	**0**	**0**	**0**	**1,061,000**
Project Total:	**0**	**0**	**0**	**1,061,000**	**0**	**0**	**0**	**1,061,000**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objective: 4.1 (Page 6-11) Item Number: 444482 1 Project Description: CRYSTAL RIVER - CAPTAIN TOM DAVIS FIELD - RUNWAY 9-27 EXTENSION *NON-SIS*								
District: 07 County: CITRUS Type of Work: AVIATION PRESERVATION PROJECT Project Length: .000								
Extra Description: CONSTRUCT 645 FT EXTENSION ON EAST END OF RUNWAY								
CAPITAL / RESPONSIBLE AGENCY NOT AVAILABLE								
DPTO -STATE - PTO	0	0	0	0	0	323,354	0	323,354
LF -LOCAL FUNDS	0	0	0	0	0	80,840	0	80,840
Item 444482 1 Totals:	**0**	**0**	**0**	**0**	**0**	**404,194**	**0**	**404,194**
Project Total:	**0**	**0**	**0**	**0**	**0**	**404,194**	**0**	**404,194**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objective: 4.1 (Page 6-11) Item Number: 444483 1 Project Description: CRYSTAL RIVER - CAPTAIN TOM DAVIS FIELD - REPLACE AIRPORT BEACON *NON-SIS*								
District: 07 County: CITRUS Type of Work: AVIATION SAFETY PROJECT Project Length: .000								
CAPITAL / RESPONSIBLE AGENCY NOT AVAILABLE								
DPTO -STATE - PTO	0	8,160	0	0	0	0	0	8,160
FAA -FEDERAL AVIATION ADMIN	0	91,800	0	0	0	0	0	91,800
LF -LOCAL FUNDS	0	2,040	0	0	0	0	0	2,040
Item 444483 1 Totals:	**0**	**102,000**	**0**	**0**	**0**	**0**	**0**	**102,000**
Project Total:	**0**	**102,000**	**0**	**0**	**0**	**0**	**0**	**102,000**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years

LRTP Objective: 4.1 (Page 6-11) Item Number: 438513 1 Project Description: BROOKSVILLE-TAMPA BAY REGIONAL AIRPORT - WESTSIDE INFRASTRUCTURE *NON-SIS*								
District: 07 County: HERNANDO Type of Work: AVIATION PRESERVATION PROJECT Project Length: .000								
Extra Description: IMPROVEMENTS								
CAPITAL / RESPONSIBLE AGENCY NOT AVAILABLE								
DPTO -STATE - PTO	0	0	600,000	0	0	0	0	600,000
LF -LOCAL FUNDS	0	0	150,000	0	0	0	0	150,000
Item 438513 1 Totals:	**0**	**0**	**750,000**	**0**	**0**	**0**	**0**	**750,000**
Project Total:	**0**	**0**	**750,000**	**0**	**0**	**0**	**0**	**750,000**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objective: 4.1 (Page 6-11) Item Number: 438514 1 Project Description: BROOKSVILLE-TAMPA BAY REGIONAL AIRPORT - WILDLIFE HAZARD REMEDIATION *NON-SIS*								
District: 07 County: HERNANDO Type of Work: AVIATION PRESERVATION PROJECT Project Length: .000								
CAPITAL / RESPONSIBLE AGENCY NOT AVAILABLE								
DPTO -STATE - PTO	0	0	43,200	0	0	0	0	43,200
FAA -FEDERAL AVIATION ADMIN	0	0	486,000	0	0	0	0	486,000
LF -LOCAL FUNDS	0	0	10,800	0	0	0	0	10,800
Item 438514 1 Totals:	**0**	**0**	**540,000**	**0**	**0**	**0**	**0**	**540,000**
Project Total:	**0**	**0**	**540,000**	**0**	**0**	**0**	**0**	**540,000**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objective: 4.1 (Page 6-11) Item Number: 444468 1 Project Description: BROOKSVILLE - TAMPA BAY REGIONAL AIRPORT - RUNWAY 9-27 RECONSTRUCTION *NON-SIS*								
District: 07 County: HERNANDO Type of Work: AVIATION PRESERVATION PROJECT Project Length: .000								
CAPITAL / RESPONSIBLE AGENCY NOT AVAILABLE								
DPTO -STATE - PTO	0	0	0	617,500	0	0	0	617,500
FAA -FEDERAL AVIATION ADMIN	0	0	0	11,265,000	0	0	0	11,265,000
LF -LOCAL FUNDS	0	0	0	617,500	0	0	0	617,500
Item 444468 1 Totals:	**0**	**0**	**0**	**12,500,000**	**0**	**0**	**0**	**12,500,000**
Project Total:	**0**	**0**	**0**	**12,500,000**	**0**	**0**	**0**	**12,500,000**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objective: 4.1 (Page 6-11) Item Number: 444774 1 Project Description: BROOKSVILLE - TAMPA BAY REGIONAL AIRPROT EXTENSION OF TAXIWAY A *NON-SIS*								
District: 07 County: HERNANDO Type of Work: AVIATION CAPACITY PROJECT Project Length: .000								
CAPITAL / RESPONSIBLE AGENCY NOT AVAILABLE								
DDR -DISTRICT DEDICATED REVENUE	0	0	0	522,299	0	0	0	522,299
DPTO -STATE - PTO	0	0	0	477,701	0	0	0	477,701
LF -LOCAL FUNDS	0	0	0	250,000	0	0	0	250,000
Item 444774 1 Totals:	**0**	**0**	**0**	**1,250,000**	**0**	**0**	**0**	**1,250,000**
Project Total:	**0**	**0**	**0**	**1,250,000**	**0**	**0**	**0**	**1,250,000**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objective: 4.1 (Page 6-11) Item Number: 444806 1 Project Description: BROOSKVILLE - TAMPA BAY REGIONAL AIRPORT - TAXIWAY A RECONSTRUCTION *NON-SIS*								
District: 07 County: HERNANDO Type of Work: AVIATION PRESERVATION PROJECT Project Length: .000								
CAPITAL / RESPONSIBLE AGENCY NOT AVAILABLE								
DPTO -STATE - PTO	0	577,473	0	0	0	0	0	577,473
FAA -FEDERAL AVIATION ADMIN	0	6,312,500	0	0	0	0	0	6,312,500
LF -LOCAL FUNDS	0	126,250	0	0	0	0	0	126,250
Item 444806 1 Totals:	**0**	**7,016,223**	**0**	**0**	**0**	**0**	**0**	**7,016,223**
Project Total:	**0**	**7,016,223**	**0**	**0**	**0**	**0**	**0**	**7,016,223**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
FLP: TRANSIT								
LRTP Objectives: 3.1, 3.2, 3.6 (Page 6-9) Item Number: 402628 1 Project Description: FTA SECTION 5311 OPERATING *NON-SIS*								
District: 07 County: CITRUS Type of Work: CAPITAL FOR FIXED ROUTE Project Length: .000								
Extra Description: CITRUS COUNTY BOCC - FTA SECTION 5311 OPERATING								

OPERATIONS / MANAGED BY BOARD CO COMMISSNRS CITRUS CO								
DDR -DISTRICT DEDICATED REVENUE	31,314	0	0	0	0	0	0	31,314
DU -STATE PRIMARY/FEDERAL REIMB	4,660,550	178,393	99,785	107,509	108,000	124,034	0	5,278,271
LF -LOCAL FUNDS	4,746,139	178,393	99,785	107,509	108,000	124,034	0	5,363,860
Item 402628 1 Totals:	**9,438,003**	**356,786**	**199,570**	**215,018**	**216,000**	**248,068**	**0**	**10,673,445**

LRTP Objectives: 3.1, 3.2, 3.6 (Page 6-9) Item Number: 402628 2 Project Description: FTA SECTION 5311 *NON-SIS*								
District: 07 County: CITRUS Type of Work: OPERATING/ADMIN. ASSISTANCE Project Length: .000								
Extra Description: CITRUS COUNTY BOCC - FTA SECTION 5311								
OPERATIONS / MANAGED BY BOARD CO COMMISSNRS CITRUS CO								
DU -STATE PRIMARY/FEDERAL REIMB	393,063	0	95,745	115,309	116,000	122,535	0	842,652
LF -LOCAL FUNDS	393,063	0	95,745	115,309	116,000	122,535	0	842,652
CAPITAL / MANAGED BY BOARD CO COMMISSNRS CITRUS CO								
DU -STATE PRIMARY/FEDERAL REIMB	3,640,457	0	0	0	0	0	0	3,640,457
LF -LOCAL FUNDS	596,494	0	0	0	0	0	0	596,494
Item 402628 2 Totals:	**5,023,077**	**0**	**191,490**	**230,618**	**232,000**	**245,070**	**0**	**5,922,255**
LRTP Objectives: 3.1, 3.2, 3.6 (Page 6-9) Item Number: 402628 4 Project Description: CITRUS COUNTY BOCC - FTA SECTION 5307 *NON-SIS*								
District: 07 County: CITRUS Type of Work: OPERATING/ADMIN. ASSISTANCE Project Length: .000								
Extra Description: SMALL URBANIZED AREA GOVERNOR'S APPORTIONMENT								
CAPITAL / MANAGED BY CITRUS COUNTY TRANSIT								
FTA -FEDERAL TRANSIT ADMINISTRATION	3,445,165	900,000	900,000	900,000	0	0	0	6,145,165
LF -LOCAL FUNDS	3,445,165	900,000	900,000	900,000	0	0	0	6,145,165
Item 402628 4 Totals:	**6,890,330**	**1,800,000**	**1,800,000**	**1,800,000**	**0**	**0**	**0**	**12,290,330**
Project Total:	**21,351,410**	**2,156,786**	**2,191,060**	**2,245,636**	**448,000**	**493,138**	**0**	**28,886,030**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objectives: 3.1, 3.2, 3.6 (Page 6-9) Item Number: 438845 1 Project Description: CITRUS COUNTY BOCC - STATE TRANSIT BLOCK GRANT *NON-SIS*								
District: 07 County: CITRUS Type of Work: OPERATING/ADMIN. ASSISTANCE Project Length: .000								

Extra Description: HOMOSSASSA SPRINGS								
OPERATIONS / MANAGED BY CITRUS COUNTY TRANSIT								
DDR -DISTRICT DEDICATED REVENUE	8,884	279,417	0	308,059	0	0	0	596,360
DPTO -STATE - PTO	764,344	0	293,390	0	326,532	339,635	0	1,723,901
LF -LOCAL FUNDS	773,228	279,417	293,390	308,059	326,532	339,635	0	2,320,261
Item 438845 1 Totals:	**1,546,456**	**558,834**	**586,780**	**616,118**	**653,064**	**679,270**	**0**	**4,640,522**
Project Total:	**1,546,456**	**558,834**	**586,780**	**616,118**	**653,064**	**679,270**	**0**	**4,640,522**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objectives: 3.1, 3.2, 3.6 (Page 6-9) Item Number: 401982 1 Project Description: HERNANDO COUNTY SECTION 5311 *NON-SIS*								
District: 07 County: HERNANDO Type of Work: OPERATING/ADMIN. ASSISTANCE Project Length: .000								
Extra Description: FTA SECTION 5311								
OPERATIONS / MANAGED BY HERNANDO								
DU -STATE PRIMARY/FEDERAL REIMB	1,827,471	141,617	242,992	250,588	283,104	296,293	0	3,042,065
LF -LOCAL FUNDS	1,856,922	141,617	242,992	250,588	283,104	296,293	0	3,071,516
CAPITAL / MANAGED BY HERNANDO								
LF -LOCAL FUNDS	22,000	0	0	0	0	0	0	22,000
Item 401982 1 Totals:	**3,706,393**	**283,234**	**485,984**	**501,176**	**566,208**	**592,586**	**0**	**6,135,581**
LRTP Objectives: 3.1, 3.2, 3.6 (Page 6-9) Item Number: 401982 2 Project Description: HERNANDO COUNTY BOCC - FTA SECTION 5311 *NON-SIS*								
District: 07 County: HERNANDO Type of Work: CAPITAL FOR FIXED ROUTE Project Length: .000								
Extra Description: THE BUS								
OPERATIONS / MANAGED BY HERNANDO COUNTY MPO								
DU -STATE PRIMARY/FEDERAL REIMB	7,159	132,258	98,778	117,246	117,406	131,040	0	603,887
LF -LOCAL FUNDS	7,159	132,258	98,778	117,246	117,406	131,040	0	603,887
Item 401982 2 Totals:	**14,318**	**264,516**	**197,556**	**234,492**	**234,812**	**262,080**	**0**	**1,207,774**
Project Total:	**3,720,711**	**547,750**	**683,540**	**735,668**	**801,020**	**854,666**	**0**	**7,343,355**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objectives: 3.1, 3.2, 3.6 (Page 6-9)								

Item Number: 401983 1 Project Description: HERNANDO COUNTY MPO TRANSIT PLANNING FUNDS SECTION 5303 *NON-SIS*								
District: 07 County: HERNANDO Type of Work: PTO STUDIES Project Length: .000								
Extra Description: SECTION 5305 MPO TRANSPORTATION PLANNING								
PLANNING / MANAGED BY HERNANDO COUNTY MPO								
DDR -DISTRICT DEDICATED REVENUE	69,633	9,159	9,587	9,875	0	0	0	98,254
DPTO -STATE - PTO	62,932	0	0	0	10,172	7,596	0	80,700
DS -STATE PRIMARY HIGHWAYS & PTO	5,176	0	0	0	0	0	0	5,176
DU -STATE PRIMARY/FEDERAL REIMB	1,104,698	73,275	76,701	79,004	81,374	60,769	0	1,475,821
LF -LOCAL FUNDS	139,056	9,159	9,587	9,875	10,172	7,596	0	185,445
Item 401983 1 Totals:	**1,381,495**	**91,593**	**95,875**	**98,754**	**101,718**	**75,961**	**0**	**1,845,396**
Project Total:	**1,381,495**	**91,593**	**95,875**	**98,754**	**101,718**	**75,961**	**0**	**1,845,396**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objectives: 3.1, 3.2, 3.6 (Page 6-9) Item Number: 408104 1 Project Description: HERNANDO COUNTY BLOCK GRANT *NON-SIS*								
District: 07 County: HERNANDO Type of Work: OPERATING FOR FIXED ROUTE Project Length: .000								
Extra Description: HERNANDO COUNTY BOCC - STATE TRANSIT BLOCK GRANT - THE BUS								
OPERATIONS / MANAGED BY HERNANDO COUNTY MPO								
DDR -DISTRICT DEDICATED REVENUE	1,618,531	300,000	379,134	398,091	0	0	0	2,695,756
DPTO -STATE - PTO	1,713,929	61,077	0	0	415,402	438,895	0	2,629,303
DS -STATE PRIMARY HIGHWAYS & PTO	1,397,737	0	0	0	0	0	0	1,397,737
LF -LOCAL FUNDS	4,697,094	361,077	379,134	398,091	415,402	438,895	0	6,689,693
Item 408104 1 Totals:	**9,427,291**	**722,154**	**758,268**	**796,182**	**830,804**	**877,790**	**0**	**13,412,489**
Project Total:	**9,427,291**	**722,154**	**758,268**	**796,182**	**830,804**	**877,790**	**0**	**13,412,489**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objectives: 3.1, 3.2, 3.6 (Page 6-9) Item Number: 408715 1 Project Description: HERNANDO COUNTY BOCC - FTA SECTION 5307 *NON-SIS*								
District: 07 County: HERNANDO Type of Work: TRANSIT IMPROVEMENT Project Length: .000								
Extra Description: THE BUS - SMALL URBANIZED GOV. APPROPRIATION								
CAPITAL / MANAGED BY HERNANDO								

FTA -FEDERAL TRANSIT ADMINISTRATION	6,648,621	900,000	900,000	900,000	900,000	0	0	10,248,621
Item 408715 1 Totals:	**6,648,621**	**900,000**	**900,000**	**900,000**	**900,000**	**0**	**0**	**10,248,621**
Project Total:	**6,648,621**	**900,000**	**900,000**	**900,000**	**900,000**	**0**	**0**	**10,248,621**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
MISCELLANEOUS								
LRTP Objectives: 2.3, 3.4, 3.5 (Pages 6-8 through 6-9); Map 4-9 (Page 4-20); Appendix D-1 Item Number: 435720 1 Project Description: GOOD NEIGHBOR TRL CONNECTOR FM W OF SUNCOAST PKWY TO SR 50/CORTEZ BLVD *SIS*								
District: 07 County: HERNANDO Type of Work: BIKE PATH/TRAIL Project Length: 4.075								
Extra Description: 12'-15' MULTI USE TRAIL - C2C								
PRELIMINARY ENGINEERING / MANAGED BY FDOT								
DDR -DISTRICT DEDICATED REVENUE	14,153	0	0	0	0	0	0	14,153
DIH -STATE IN-HOUSE PRODUCT SUPPORT	88,763	0	0	0	0	0	0	88,763
DS -STATE PRIMARY HIGHWAYS & PTO	169,546	0	0	0	0	0	0	169,546
EB -EQUITY BONUS	1,009,491	0	0	0	0	0	0	1,009,491
PKYI -TURNPIKE IMPROVEMENT	3,704	0	0	0	0	0	0	3,704
RED -REDISTR. OF FA (SEC 1102F)	48,983	0	0	0	0	0	0	48,983
TALL -TRANSPORTATION ALTS- <200K	15,626	0	0	0	0	0	0	15,626
TALT -TRANSPORTATION ALTS- ANY AREA	658,199	0	0	0	0	0	0	658,199
TLWR -2015 SB2514A-TRAIL NETWORK	475,358	0	0	0	0	0	0	475,358
RIGHT OF WAY / MANAGED BY FDOT								
DIH -STATE IN-HOUSE PRODUCT SUPPORT	120,000	0	0	0	0	0	0	120,000
DS -STATE PRIMARY HIGHWAYS & PTO	545,445	0	0	0	0	0	0	545,445
TLWR -2015 SB2514A-TRAIL NETWORK	1,335,830	0	0	0	0	0	0	1,335,830
CONSTRUCTION / MANAGED BY FDOT								

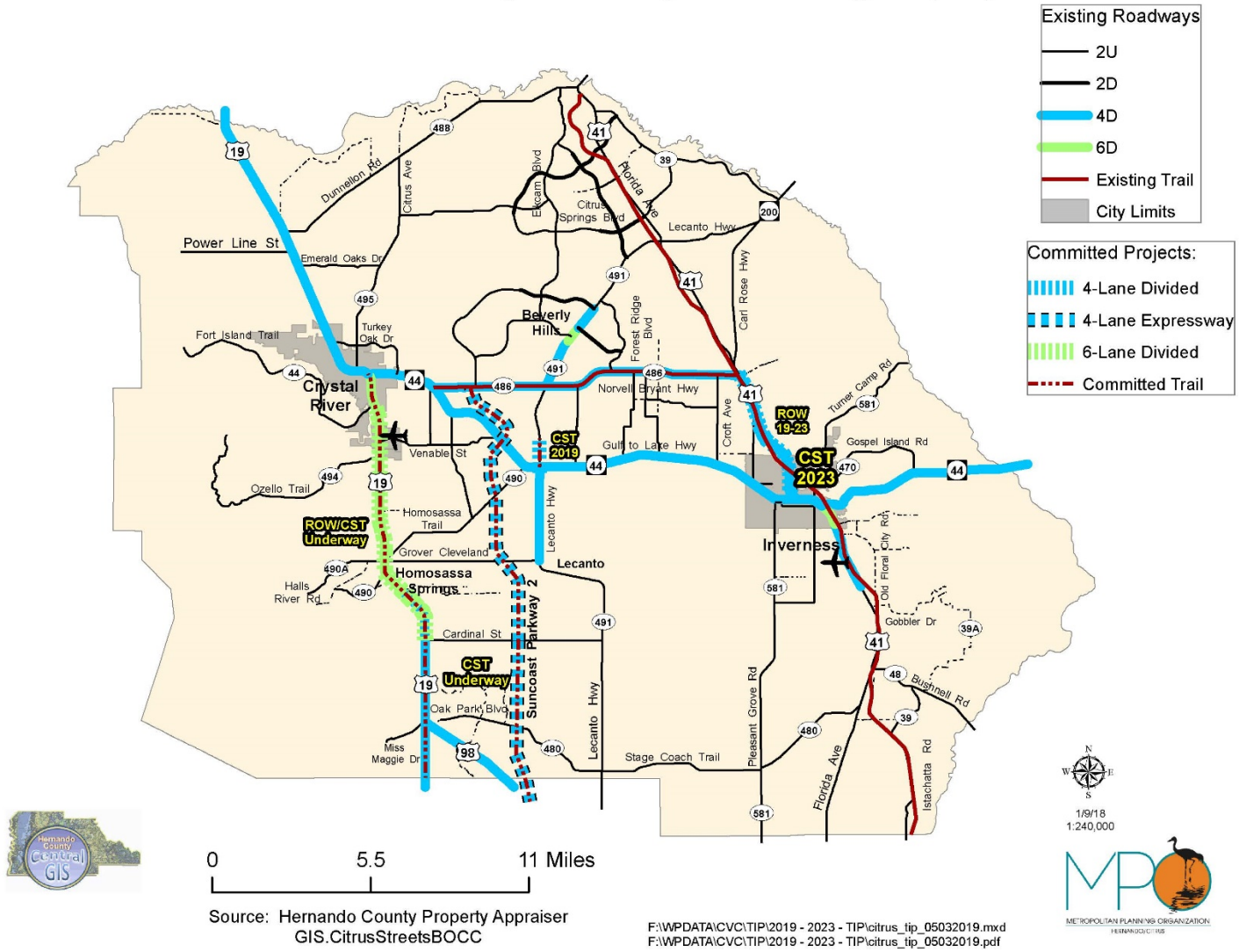
DIH -STATE IN-HOUSE PRODUCT SUPPORT	0	68,657	0	0	0	0	0	68,657
DS -STATE PRIMARY HIGHWAYS & PTO	834	0	0	0	0	0	0	834
TLWR -2015 SB2514A-TRAIL NETWORK	0	5,217,455	0	0	0	0	0	5,217,455
ENVIRONMENTAL / MANAGED BY FDOT								
TALT -TRANSPORTATION ALTS- ANY AREA	0	37,058	0	0	0	0	0	37,058
Item 435720 1 Totals:	**4,485,932**	**5,323,170**	**0**	**0**	**0**	**0**	**0**	**9,809,102**
Project Total:	**4,485,932**	**5,323,170**	**0**	**0**	**0**	**0**	**0**	**9,809,102**

Fund	<2020	2020	2021	2022	2023	2024	>2024	All Years
LRTP Objectives: 2.3, 3.4, 3.5 (Pages 6-8 through 6-9); Appendix D-2								
Item Number: 436711 1 Project Description: EXPLORER K8 SCHOOL VARIOUS LOCATIONS *NON-SIS*								
District: 07 County: HERNANDO Type of Work: SIDEWALK Project Length: .000								
Extra Description: DESIGN AND CONSTRUCT 5' SIDEWALKS								
PRELIMINARY ENGINEERING / MANAGED BY FDOT								
DS -STATE PRIMARY HIGHWAYS & PTO	3,322	0	0	0	0	0	0	3,322
SR2T -SAFE ROUTES - TRANSFER	3,974	0	0	0	0	0	0	3,974
PRELIMINARY ENGINEERING / MANAGED BY HERNANDO COUNTY BOARD OF COUNTY								
SR2T -SAFE ROUTES - TRANSFER	105,300	0	0	0	0	0	0	105,300
CONSTRUCTION / MANAGED BY HERNANDO COUNTY BOARD OF COUNTY								
TALL -TRANSPORTATION ALTS- <200K	1,000	0	0	215,554	0	0	0	216,554
TALT -TRANSPORTATION ALTS- ANY AREA	0	0	0	664,212	0	0	0	664,212
Item 436711 1 Totals:	**113,596**	**0**	**0**	**879,766**	**0**	**0**	**0**	**993,362**
Project Total:	**113,596**	**0**	**0**	**879,766**	**0**	**0**	**0**	**993,362**
District 07 Totals:	**348,178,927**	**144,541,298**	**51,969,626**	**84,374,787**	**31,351,727**	**109,621,517**	**0**	**770,037,882**

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CITRUS AND HERNANDO COUNTY CAPITAL IMPROVEMENT PROGRAM

Draft Citrus County
FY 2020 - FY 2024: Transportation Improvement Program (TIP)



CITRUS COUNTY PROGRAM PROJECTS TABLE

June 18, 2019

CAPACITY AND REHABILITATION PROJECTS

No.	Name	Description	Phase	Fund	2019/20	2020/21	2021/22	2022/23	2023/24
1	**CR 491 (N. Lecanto Hwy.)** From: Audubon Park Path to To: Horace Allen St.	4-lane divided urban with sidewalk and multiuse path	PE ROW CST	 gas tax Grants	$225,000 $12,000,000	$175,000 $500,000 $14,300,000			
		CATEGORY EXPENDITURE			**$12,225,000**	**$14,975,000**		**$0**	

SURFACE TREATMENTS

No.	Name	Description	Phase	Fund	2019/20	2020/21	2021/22	2022/23	2023/24
1	**W. Citrus Springs Blvd.** From: N. Santos Dr. To: US 41 (N. Florida Ave.)	resurface	PE ROW CST	SCOP, gas tax		 $1,836,931			
2	**N. Deltona Blvd.** From: W. Homeway Loop To: W. Citrus Springs Blvd.	resurface	PE ROW CST	SCOP, gas tax gas tax		 $539,000			

No.	Name	Description	Phase	Fund	2019/20	2020/21	2021/22	2022/23	2023/24
3	**CR 491 (S. Lecanto Hwy.)** From: Grover Cleveland Blvd To: Ocala St.	resurface	PE ROW CST	SCOP, gas tax	$2,121,483				
4	**S.Canary Palm Terrace** From: W. Green Acres St. To: Oaklawn	resurface	PE ROW CST	SCOP, gas tax		$136,950			
5	**E. Withlacoochee Trail (Ph 1)** From: Scott Ln To: SR 200	resurface	PE ROW CST	SCOP gas tax			$397,125		
6	**W. Yulee Drive** From: W. Bradshaw St To: US 19	resurface	PE ROW CST	SCOP, gas tax gas tax			$389,750		
7	**S. Great Oaks Drive** From: E. Floral Park Dr To: E. Orange Ave	resurface	PE ROW CST	SCOP gas tax			$534,241		
8	**E. Turner Camp Road** From: E. Banks Ct. To: Matthew Meadows Ct	resurface	PE ROW CST	SCOP gas tax		-	$830,180		
9	**E. Trails End Road** From: E. Wymar Trail	resurface	PE ROW	SCOP					

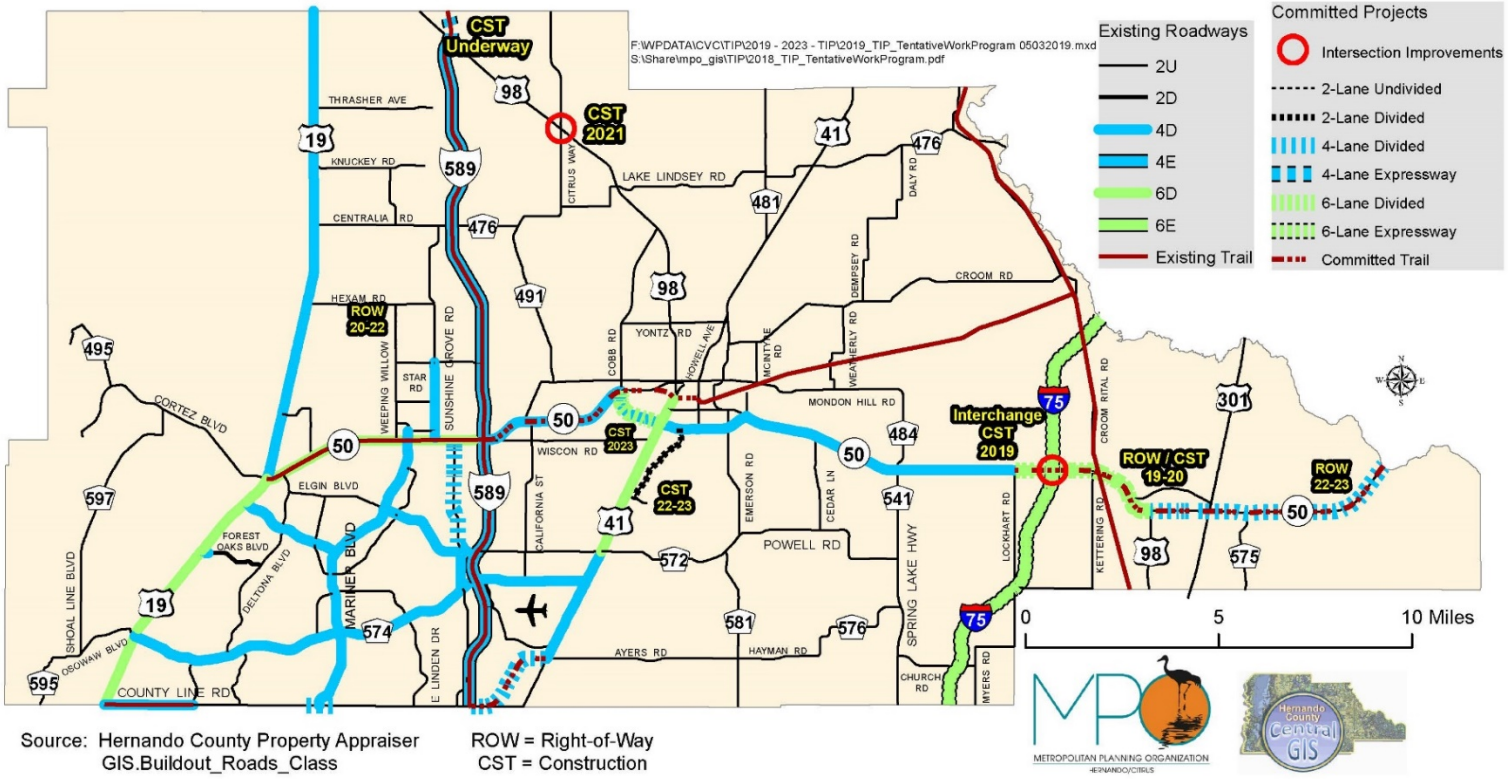
No.	Name	Description	Phase	Fund	2019/20	2020/21	2021/22	2022/23	2023/24
	To: S. Withlapopka Dr		CST	gas tax		-		$849,508	
10	**E. Withlacoochee Trail (Phase II)** From: W. of E. Tasha Ct To: Scott Lane	resurface	PE ROW CST	SCOP gas tax		-		$1,290,775	
11	**N. Dunkenfield Ave** From: W. Venable St. to To: 250 LF N of Marion Way	resurface	PE ROW CST	SCOP gas tax			-		$2,450,719
	CATEGORY EXPENDITURE				**$2,121,483**	**$2,512,881**	**$2,151,296**	**$2,140,283**	**2,450,719**

City of Crystal River

No.	Name	Description	Phase	Fund	2019/20	2020/21	2021/22	2022/23	2023/24
1	**Three Sisters** Infrastructure Improvement (bike path/trail, pier, restrooms)	Infrastructure Improvement	PE ROW CST						
	CATEGORY EXPENDITURE				**$0**	**$0**	**$0**	**$0**	

Hernando County

FY 2020 - FY 2024: Transportation Improvement Program (TIP)



Source: Hernando County Property Appraiser GIS.Buildout_Roads_Class

ROW = Right-of-Way
CST = Construction

Project Name	Fund	Notes	FY20	FY21	FY22	FY23	FY24	FY 2020-24
			$18,113,275	**$16,609,974**	**$8,837,544**	**$7,380,696**	**$2,413,369**	**$51,950,858**
Capacity			**$3,223,000**	**$7,863,500**	**$1,597,500**	**$1,750,000**	**$1,750,000**	**$14,684,000**
Barclay Ave Multilaning	3334	R/W (Powell to N San An)	$750,000					
		Design Update (Powell to N San An)	$50,000					
		Construction (Powell to N San An)		$6,600,000				
		Design (San Antonio to Lucky)			$520,000			
		R/W (San Antonio to Lucky)				$1,250,000	$1,250,000	$9,170,000
Coastal Way Int Imp	3331	Construction	$649,000					$649,000
Forest Oaks @ US19 Int Imp	3334	Construction (on-hold due to FDOT)	$990,000					$990,000
Mariner @ Landover S Int Imp	3334	Design	$125,000					
	3334	Construction		$495,000				$620,000
Mariner W Frontage Rd (Evergreen Woods to Mariner)	3334	Design	$129,000					
		Land Acquisition (5606101)		$345,000				
		Construction (5606309)			$577,500			$1,051,500
SR50 Frontage Rd W of Mariner (Kadri to Evergreen)	3334	R/W	$530,000					
	03324-5909967	Construction		$423,500				$953,500
Star Rd Imp	3331	R/W			$250,000	$250,000	$250,000	$500,000
Weeping Willow Rd Imp	3331	R/W			$250,000	$250,000	$250,000	$750,000

Project Name	Fund	Notes	FY20	FY21	FY22	FY23	FY24	FY 2020-24
Surface Treatment			**$1,018,870**	**$811,920**	**$1,139,710**	**$902,180**	**$0**	**$3,872,680**
Arbor	1013	Design/Construction			$187,620			$187,620
Arlainie	1013	Design/Construction		$378,420				$378,420
Benes Roush	1013	Design/Construction				$247,100		$247,100
Chimney Rock	1013	Design/Construction				$400,680		$400,680
Dusky Warbler	1013	Design/Construction	$591,480					$591,480
Emerald	1013	Design/Construction			$227,050			$227,050
English Sparrow	1013	Design/Construction		$286,200				$286,200
Eskimo Curlew	1013	Design/Construction		$147,300				$147,300
Glenchester	1013	Design/Construction			$470,640			$470,640
Nodoc	1013	Design/Construction			$254,400			$254,400
Pomp Parkway	1013	Design/Construction	$427,390					$427,390
San Antonio	1013	Design/Construction				$254,400		$254,400
MSBU			**$621,300**	**$0**	**$0**	**$0**	**$0**	**$621,300**
Hurricane Paving MSBU	1013	Design						
		Construction	$315,850					$315,850
Johnathan Paving MSBU	1013	Design						
		Construction	$56,350					$56,350
Michigan Paving MSBU	1013	Design						
		Construction	$249,100					$249,100
Phesant Area Paving MSBU	1013	Design						
		Construction	$738,030					$738,030

Project Name	Fund	Notes	FY20	FY21	FY22	FY23	FY24	FY 2020-24

Project Name	Fund	Notes	FY20	FY21	FY22	FY23	FY24	FY 2020-24
Signal Systems/Sidewalks (non-grant)			**$2,194,770**	**$1,200,000**	**$598,380**	**$0**	**$0**	**$4,033,150**
Cobblestone@SH Int Imp	1017	Design	$63,000					
	03231-5909967	Construction		$175,000				$238,000
Fiber Optic-Spring Hill (Aerial to US41)	1015	Construction	$320,000					$320,000
Fiber Optic-Forest Oaks (US19 to Deltona)	1015	Construction	$350,000					$350,000
Fiber Optic-Northcliffe (Deltona-Explorer)	1015	Design	$152,000					
	03221-5909967	Construction		$823,000				$975,000
Fiber Optic-Spring Hill Dr(Mariner-Coronado)	1015	Design	$31,000					
	03221-5909967	Construction		$107,000				$138,000
Fiber Optic-SR50(Wiscon-Cobb)	1015	Design			$129,980			
	1015	Construction			$468,400			$598,380
Howell Ave@US41 Int Imp	1017	Construction (schedule w/LAP project)	$75,000					$75,000
Mariner @ Elgin Signage/Markings Upgrade	1017	Construction	$80,000					$80,000
Mariner Blvd Sidewalk ADA	1022	Construction	$272,800					$272,800
School Zone Upgrade-Brksv Elem/Hernando Hgh	1017	Design						
		Construction	$60,000					$60,000
School Zone Upgrade-Challenger K8	1017	Design						
		Construction	$85,000					$85,000

Project Name	Fund	Notes	FY20	FY21	FY22	FY23	FY24	FY 2020-24
School Zone Upgrade-Chocachatti/Nature Coast	1017	Design						
		Construction	$50,000					$50,000
School Zone Upgrade-Explorer K8	1017	Design						
		Construction	$119,000					$119,000
School Zone Upgrade-Fox Chapel Middle	1017	Design						
		Construction	$50,000					$50,000
School Zone Upgrade-JD Floyd	1017	Design	$8,000					
03221-5909967		Construction		$45,000				$53,000
School Zone Upgrade-Pine Grv/W Hrnd/Cntrl	1017	Design						
		Construction	$80,000					$80,000
School Zone Upgrade-Spring Hill Elem	1017	Design						
		Construction	$119,000					$119,000
School Zone Upgrade-Springstead High	1017	Construction	$62,000					$62,000
School Zone Upgrade-Suncoast Elem	1017	Construction	$58,000					$58,000
Seven Hills Sidewalk ADA Improvement	1017	Construction	$59,970					$59,970
Traffic Signal Timing - Elgin (Barclay to Mariner)	1015	Construction						$40,000
Traffic Signal Timing - Mariner (Nrthclf to Cty Line)	1015	Construction	$100,000					$100,000

Project Name	Fund	Notes	FY20	FY21	FY22	FY23	FY24	FY 2020-24
Traffic Signal Timing - Spring Hill Dr (Waterfall-US19)	1015	Construction		$50,000				$50,000

Project Name	Fund	Notes	FY20	FY21	FY22	FY23	FY24	FY 2020-24
Pavement Mgmt-Collector			**$5,504,700**	**$2,200,000**	**$2,667,500**	**$2,304,500**	**$0**	**$12,732,700**
California Rd	1022	Design/Construction	$1,254,000					$1,254,000
Cobb Rd	1022	Design/Construction			$1,985,500			$1,985,500
Corporate Blvd	1022	Construction	$220,000					$220,000
Croom Rd (Broad-Jacobson)	1022	Design/Construction	$808,500					$808,500
Croom Rd (Jacobson-Withrow)	1022	Design/Construction				$918,500		$918,500
Culbreath Rd (Powell to Pasco)	1022	Design	$500,000					
03241-5909967		Construction		$2,200,000				$2,700,000
Dr MLK Blvd	1022	Design/Construction	$275,000					$275,000
Lake Lindsey Resurface Phase 4	1022	Design			$154,000			
	1022	Construction				$1,386,000		$1,540,000
Shoal Line Phase I (Calienta to WW Bridge)	1022	Design						
		Construction	$505,000					$507,000
Shoal Line Phase II (WW Bridge to Cortez)	1022	Design						
		Construction	$1,053,000					$1,056,000
Snow Hill Rd	1022	Construction	$330,000					$330,000
Thrasher Ave (Mellon to Pomp)	1022	Design	$51,000					

Project Name	Fund	Notes	FY20	FY21	FY22	FY23	FY24	FY 2020-24
03241-5909967		Construction			$528,000			$579,000
Thrasher Ave (US19-Mellon)	1022	Design						
		Construction	$508,200					$559,200
Pavement Mgmt-Residential			**$902,000**	**$701,600**	**$833,800**	**$1,529,000**	**$0**	**$3,966,400**
Cassandra Way	1022	Design/Construction			$73,700			$73,700
Cimarron Way	1022	Design/Construction			$31,900			$31,900
Clayton Rd	1022	Design/Construction		$105,600				$105,600
Endsley Rd	1022	Design/Construction			$577,500			$577,500
Garden Grove	1022	Design/Construction				$451,000		$451,000
Green Hammock Sub	1022	Construction	$110,000					$110,000
Hope Hill Rd	1022	Design/Construction		$220,000				$220,000
Jones Rd	1022	Construction	$121,000					$121,000
Lambeth Rd	1022	Design/Construction		$90,000				$90,000
Old Trilby Rd	1022	Design/Construction		$187,000				$187,000
Olympia Rd	1022	Construction	$242,000					$242,000
Pocahontas Dr	1022	Design/Construction			$29,700			$29,700
Ranchette Rd	1022	Design/Construction			$121,000			$121,000
Redfox Ln	1022	Design/Construction		$99,000				$99,000
Skyview Circle	1022	Construction	$429,000					$429,000
Spring Hill Area 4B	1022	Design/Construction				$1,078,000		$1,078,000

Project Name	Fund	Notes	FY20	FY21	FY22	FY23	FY24	FY 2020-24
Grants			**$2,929,885**	**$662,954**	**$1,850,654**	**$595,016**	**$663,369**	**$6,701,878**
Brooksville Elem (Howell Ave) LAP	1015	Construction	$293,056					$293,056
Cyril Bypass Rdwy	1013	Design						

Project Name	Fund	Notes	FY20	FY21	FY22	FY23	FY24	FY 2020-24
		Construction	$1,825,000					$1,825,000
Deltona Blvd SW LAP(Elgin-SR50)	1011	Design						
		Construction		$165,683				$165,683
E Linden SW LAP(Coronado to SH Dr)		Construction		$401,904				$401,904
Elgin Blvd SW LAP(Deltona to Mariner)		Design	$101,070					
		Construction			$874,453			$975,523
Explorer K8 SW LAP		Construction			$880,766			$880,766
JD Floyd SW LAP		Construction	$433,742					$433,742
S Linden SW LAP(Spring Hill to County Line)		Design			$95,435			
		Construction					$663,369	$758,804
W Landover SW LAP (Northcliffe to Elgin)		Design		$95,367				
		Construction				$595,016		$690,383
Westside Elem LAP		Construction	$277,017					$277,017
Eastside Elem LAP (Raley from SR 50 to Roper)		Design			$239,996			
		Construction					$209,414	$239,996
Fox Chapel MS LAP (Freeport from Dltna to Nrthclf)		Design			$270,555			
		Construction					$473,083	$270,555

TRANSPORTATION DISADVANTAGED

TRANSPORTATION DISADVANTAGED FIVE YEAR WORK PROGRAM
FISCAL YEARS 2020-2024

PROJECT DESCRIPTION	FISCAL YEARS				
	2020	2021	2022	2023	2024
Citrus County					
Section 5311 - Capital for fixed route	$605,734	$0	$644,022	$0	$650,000
Section 5311 – Operating/Admin. assistance	$825,000	$850,000	$875,000	$900,000	$900,000
Section 5310 – Operating assistance	$0	$0	$0	$0	$0
Commission for the Transportation Disadvantaged – Planning Grant	MISC $22,447 TDTF	MISC $22,447 TDTF	MISC $22,447 TDTF	MISC $22,447 TDTF	MISC $22,447 TDTF
Hernando County					
Section 5311 – Operating/Administrative Assistance	$250,000	$250,000	$250,000	$250,000	$250,000
Section 5310 – Operating Assistance	$300,000	$325,000	$350,000	$375,000	$375,000
CTD Trip & Equipment Grant	$650,000	$700,000	$800,000	$800,000	$825,000
CTD Mobility Enhancement Grant	$0	$0	$0	$0	$0
Shirley Conroy Grant	$132,000	$0	$132,000	$0	$132,000
Commission for the Transportation Disadvantaged – Planning Grant	MISC $23,237 TDTF	MISC $23,237 TDTF	MISC $23,237 TDTF	MISC $23,237 TDTF	MISC $23,237 TDTF

LIST OF TRANSPORTATION PRIORITY PROJECTS

HERNANDO/CITRUS MPO STATE HIGHWAY SYSTEM
LIST OF PRIORITY PROJECTS

It is the policy of the Hernando/Citrus MPO that the following projects on the State Highway System should be implemented consistent with the attached List of Priority Projects, which were adopted by the MPO Board on September 18, 2018 .

The MPO recognizes that actual construction dates will be a function of:

1. project development activities completed to date;
2. the complexity of the project development activities; and
3. available funding by eligible funding categories.

However, all efforts should be put forward to advance State highway projects with the following priority sequence:

The following List of Priority Projects was developed for providing the FDOT with a sequence of projects for advancement in their work program for the respective Urban Areas. These lists include projects on the State, County and City transportation networks, and must be considered flexible to respond to the results of the requested Corridor Studies, continuing technical evaluations, and public comment. It is the intent of the MPO to periodically reevaluate priority lists as appropriate.

HERNANDO/ CITRUS MPO
MAJOR IMPROVEMENT and CONGESTION MANAGEMENT PROGRAMS
FY 2019/2020 LIST OF PRIORITY PROJECTS
Amended: September 18, 2018

RANK	FPN	Agency	FACILITY	FROM	TO	ACTIVITY	PROJECT PHASE/ COST ESTIMATE
			↓ FUNDED FOR CONSTRUCTION ↓				
PRODUCTION	411011 2,3,4	FDOT	**I-75 (SR 93)**	Pasco County	Sumter County	Add 2 lanes (existing 4)	Design Build/ $140.379,975
	405270 1	FTE	**Suncoast Parkway II (SR 589)**	US 98	CR 486 / Norvell Bryant Highway	New 4 lane Toll Road	CONST/ $ 41,335,232
	405270 3	"	"	Hernando/Citrus Co. Line	S. of W. Grover Cleveland Blvd.	"	CONST/ $ 89,774,831
	405270 4	"	"	S. of W. Grover Cleveland Blvd.	SR 44 (W. Gulf to Lake Hwy.)	"	CONST/ $ 59,975,115
	430051 2	FDOT	**SR 50/US 98 (Cortez Blvd.)**	Lockhart Road	E. of Remington Road	Add 2 lanes (existing 4)	CONST/ $ 4,931,393
	416732 4	FDOT	**SR 50/US 98 (Cortez Blvd.)**	Windmere Rd.	US 98 (McKethan Rd.)	Add 2 lanes (existing 4)	CONST/ $ 23,493,112
	416732 3	FDOT	**SR 50 (Cortez Blvd.)**	US 98 (McKethan Rd.)	US 301 (Treiman Blvd.)	Add 2 lanes (existing 2)	CONST/ $ 22,462,315
	257298 5	FDOT	**CR 578 (County Line Rd.)**	Toll 589 (Suncoast Pkwy.)	US 41 (Broad St.)	Construct 4 lanes	CONST/ $ 28,333,252
	257298 6	FDOT	**CR 578 (County Line Rd.)**	Springtime St.	E. of Mariner Blvd.	Construct 4 lanes	CONST/ $10,785,542
	4058220 2	FDOT	**US 19 (SR 55)/US 98**	W. Green Acres St.	W. Jump Ct.	Add 2 lanes (existing 4)	CONST/ $ 29,268,982
	4058220 3	FDOT	**US 19 (SR 55)/US 98**	W. Jump Ct.	W. Fort Island Trail	Add 2 lanes (existing 4)	CONST/ $ 37,962,912
	4344981	Citrus Co.	**CR 491 (N. Lecanto Hwy.) Phase 1**	W. Laurel St.	S. of W. Audubon Park Path	Add 2 lanes (existing 2)	CONST/$17,866,368
	416733 2	FDOT	**SR 50 Bypass**	CR 485 (Cobb Rd.)	W. of Buck Hope Road	Add 2 lanes (existing 4)	CONST/$13,488,428
	416735 1	FDOT	**SR 50 Bypass**	W. of Buck Hope Road	Jefferson Street (50A)	Add 2 lanes (existing 4)	CONST/$34,053,371
	257165 1	FDOT	**US 41 (SR 45) (N. Florida Ave.)**	SR 44 (E. Gulf to Lake Hwy.)	E. Arlington St.	Add 2 lanes (existing 2)	PE ONLY
	257165 3	FDOT	**US 41 (SR 45) (N. Florida Ave.)**	SR 44 (E. Gulf to Lake Hwy.)	S of Withlacoochee Trail Bridge	Add 2 lanes (existing 2)	CONST/$15,808,500
			↓ NOT FUNDED FOR CONSTRUCTION ↓				
1	257165 4	FDOT	**US 41 (SR 45) (N. Florida Ave.)**	S of Withlacoochee Trail Bridge	Live Oak Ln.	Add 2 lanes (existing 2)	
	257165 5	FDOT	**US 41 (SR 45) (N. Florida Ave.)**	Live Oak Ln.	Arlington St.	Add 2 lanes (existing 2)	
	257165 2	FDOT	**US 41 (SR 45) (N. Florida Ave.)**	E. Arlington St.	SR 200 (N. Carl G Rose Hwy.)	Add 2 lanes (existing 2)	
2		Hernando Co.	**Frontage Rd.**	Weeping Willow Street	Sunshine Grove Road	Congestion Project	
3		Citrus Co.	**US 41 (N. Florida Ave.) (SR 45)**	N. Independence Hwy.	Intersection	Congestion Project	
4	442835 1	FDOT	**SR 50 (Cortez Blvd.)**	US 301/SR 35 (Treiman Blvd.)	Hernando/Sumter Co. Line	Add 2 lanes (existing 2)	
5		FDOT	**US 41/SR 50A One Way Pairs**	W. of Mildred Ave.	US 41/SR 50A intersection	Complete Streets	
6		Citrus Co.	**Croft Ave.**	SR 44 (E. Gulf to Lake Hwy.)	E. Hayes St.	Add 2 lanes (existing 2)	
7		FDOT	**US 98 Realignment to (CR 485)**	US 98 (Ponce de Leon Blvd.)	SR 50 (Cortez Blvd.)	Add 2 lanes (existing 2)	
8		Citrus Co.	**CR 490A (W. Grover Cleveland Blvd.)**	US 19 (SR 55)/US 98	CR 491 (S. Lecanto Hwy.)	Add 2 lanes (existing 2)	
9		Citrus Co.	**CR 491 (N. Lecanto Hwy.)**	W. Pine Bridge Blvd.	US 41/SR 45	Add 2 lanes (existing 2)	
10	438613 1	FDOT	**US 41 (SR 45) (Broad St.)**	Spring Hill Dr.	Powell Rd.	Add 2 lanes (existing 4)	
11		Citrus Co.	**CR 490 (Homosassa Trail)**	US 19 (SR 55)/US 98	SR 44 (W. Gulf to Lake Hwy.)	Add 2 lanes (existing 2)	
12	405822 5	Citrus Co.	**US 19 (SR 55)/US 98**	Cardinal Street	Green Acres	Add 2 lanes (existing 4)	

Blue - Hernando County
Orange - Citrus County

Terms Key

CONST	Construction
PD&E	Project Development and Environment
PE	Preliminary Engineering/Design
ROW	Right-of-Way

HERNANDO/ CITRUS MPO
CONGESTION MANAGEMENT PROGRAM
FY 2019/2020 LIST OF PRIORITY PROJECTS

Adoption June 19, 2018

PRIORITY	FPN/ Agency	Agency	ROADWAY	LOCATION	PROJECT DESCRIPTION
FULLY FUNDED					
	257298 6	FDOT	**CR 578** (County Line Rd.)	CR 587 (Mariner Blvd. Intersection)	Multi-Lane Intersection Improvement
UNFUNDED/PARTIALLY FUNDED					
1			**SR 50** (Cortez Blvd.)	Weeping Willow St. to Sunshine Grove Rd.	Traffic management and frontage road action plan
2			**CR 578 (County Line Rd.)**	Waterfall Blvd. Intersection	Signalization with turn lanes

PRIORITY			ROADWAY	LOCATION	PROJECT DESCRIPTION
UNFUNDED/PARTIALLY FUNDED					
1			**US 41** (N. Florida Ave.) (SR 45) **N. Independence Hwy.**	Inverness	Intersection Improvement
2			**US 41** (S. Florida Ave.) (SR 45)/**SR 48** (E. Orange Ave.)	Floral City	Intersection Improvement
3			**US 41/SR 44/E. Highland Blvd.**	Inverness	Intersection Improvement

Blue - Hernando County
Orange - Citrus County

TRANSPORTATION ALTERNATIVES PROGRAM

Federal transportation legislation provides specific set-aside funds designated for the construction of non-highway projects to enhance the quality of the local transportation system. The following Transportation Alternatives Program Priority (TAP) List depicts those projects which are eligible under the single funding source provided via that TAP. The projects listed below were selected through a ranking process. The Technical Advisory, Bicycle/Pedestrian Advisory, and Citizens Advisory committees suggested projects and provided comment on each project in relation to the overall goals, objectives, and policies of the comprehensive bicycle and pedestrian plans. The MPO Board selected the final ranking of the projects, as shown on the attached Complete Streets Project Priority List.

A small portion of Highway Trust Funds were earmarked for transportation alternative (TA) projects. TA funds are formula driven and allocated based on population. These funds cannot be expended on traditional highway construction projects. The new list of eligible projects which qualify for transportation alternative fund allocations include:

1) Construction, planning, and design of on-road and off-road trail facilities for pedestrians, bicyclists, and other non-motorized forms of transportation;
2) Construction, planning, and design of infrastructure-related projects and systems that will provide safe routes for non-drivers, including children, older adults, and individuals with disabilities to access daily needs;
3) Conversion and use of abandoned railroad corridors for trails for pedestrians, bicyclists, or other non-motorized transportation users;
4) Construction of turnouts, overlooks, and viewing area;
5) Community improvement activities, including:
    - inventory, control, or removal of outdoor advertising;
    - historic preservation and rehabilitation of historic transportation facilities;
    - vegetation management practices in transportation rights-of-way to improve roadway safety, prevent against invasive species, and provide erosion control; and
    - archaeological activities relating to impacts from implementation of a transportation project eligible under 23 USC;
6) Any environmental mitigation activity, including pollution prevention and pollution abatement activities and mitigation to:
    - address stormwater management, control, and water pollution prevention or abatement related to highway construction or due to highway runoff; or

- reduce vehicle-caused wildlife mortality or to restore and maintain connectivity among terrestrial or aquatic habitats.

Citrus County
FY 2019/2020
Complete Streets Priority Projects
Amended: September 18, 2018

Project Rank	Previous Rank	FPN / Resp. Agency	Project/Description	From	To	Area	Project Type	Project Phase/ Year
PRODUCTION		4325811 / FDOT	W. Yulee Dr. - Sidewalk	W. Central St.	US 19 (S Suncoast Blvd.)	CC	TA	CST 2018
		4375141 / FDOT	US 19/SR 55/S. Suncoast Blvd. - Multi-Use Trail	Hernando/Citrus County Line	W. Green Acres St.	CCR	RRR	CST 2020
		4058223 / FDOT	US 19/SR 55/S. Suncoast Blvd. - Multi-Use Trail	W. Jump Ct.	Ft. Island Trail	CC/CR	RRR	CST 2018
		4396981 / FDOT	Forest Ridge Elementary - Phase I Sidewalk	W. Norvell Bryant Hwy (CR 486)	W. Lake Beverly Dr.	CC	SRTS	CST 2021
		4373491 / FDOT	Withlacoochee State Trail (WST) Connector	WST Northern Terminus	Dunnellon Trailhead	CC	ST	CST 2019
		4396991 / FDOT	Pleasant Grove Elementary (CR 581) - Sidewalk	Pleasant Grove Rd.	W. Gulf to Lake Hwy (SR 44)	CC/INV	SRTS	CST 2020
		4411041 / FDOT	N Turkey Oak Dr.	SR 44	US 19	CC/INV	SRTS	CST 2021
1			Withlacoochee State Trail (WST) - Rehabilitation	Hernando/Citrus County Line	Citrus/Marion County Line	CC	ST	Application Submitted
2			Forest Ridge Elementary - Phase II Sidewalk	W. Lake Beverly Dr.	N. Lecanto Hwy (CR 491)	CC	TA	Application Submitted
Deleted	3		Crystal River Middle School - Covered Sidewalk	On-Site		CCR	SRTS	
3			Rock Crusher Elementary - Sidewalk	W. Homosassa Trail (CR 490)	Duval Island Boat Ramp	CC	TA	
4			Three Sisters Springs Connector - Multi-Use Trail	US 19/Kings Bay Drive	486 Trail	CC/CCR	TA	Consultant Study Complete
5			Ft. Island Trail - Multi-Use Trail	Gulf of Mexico	Three Sisters Trail	CC/CCR	TA	Consultant Study Complete
6			Floral City Sidewalks/Bicycle Route	Floral City	Floral City	CC	TA	Under Review
7			Sugarmill Woods - Multi-Use Trail along US 98	Oak Village Blvd.	Trailhead/Parking lot near the Suncoast Parkway I	CC	TA	
8			W. Cardinal St. - Sidewalk	US 19 (S. Suncoast Blvd.)	S. Lecanto Hwy (CR 491)	CC	TA	
9			E. Vine St.& E. Gospel Is. Rd.- Sidewalk	N. Apopka Ave.	W. Gulf to Lake Hwy (SR 44)	CC	TA	
10			N. Independence Hwy. - PS/Sidewalk	E. Gulf to Lake Hwy (SR 44)	N. Florida Ave (US 41)	CC	TA	
11			US 19 Trailhead & Crossing	Crosstown Trail at US 19 - (In City of Crystal River)		CR	TA	
12			South Apoka Connector - Phase I	Dampier St.	Highland Blvd.	CC/INV	TA	
13			W. Halls River Rd. (CR 490A) - Sidewalk	S. Riverview Circle	US 19 (S. Suncoast Blvd.)	CC	TA	
14			Eden Dr. Connector/Sidewalk	WST	Martinis Dr.	CC/INV	TA	
15			Forest Dr. Sidewalk	W. Main St. (SR44)	Independence Hwy.	CC	TA	
16			Turner Camp Rd./Ella Ave. - PS/Sidewalk	US 41	Inverness MS	CC	TA	
17			Citrus Springs Blvd. - Bicycle Lane/PS	Dunklin Blvd.	W. Deltona Blvd.	CC	TA	
18			Elkcam Blvd. - Bicycle Lane/PS	Pine Ridge Blvd	N Citrus Springs Blvd.	CC	TA	
19			Pine Ridge Blvd. - Bicycle Lane/PS	CR 486	CR 491	CC	TA	
20			South Apoka Connector - Phase II	Highland Blvd.	E Anna Jo Dr.	CC/INV	TA	
21			Mossy Oak Sidewalk	US 41 and Eden Dr.	WST	WST	TA	
22			Sugarmill Woods Bicycle Lane along:			CC	TA	
			a. W. Oak Park Blvd.	Shoppes at Sugarmill Woods	Corkwood Blvd.	CC	TA	
			b. Cypress Blvd. E	W. Oak Park Blvd.	Cypress Circle E	CC	TA	
			c. Corkwood Blvd.	W. Oak Park Blvd.	Cypress Blvd. E	CC	TA	
U			Suncoast Parkway - Ext. to 486	CR 491 - possible trail extension	CR 486 trail	CC	TA	ROW issues
U			W. Miss Maggie Dr. (CR 480) - Sidewalk/PS	Chassowitzka River Campground	US 19 (S. Suncoast Blvd.)	CC	TA	ROW issues

Terms Key

CC	Citrus County	**P**	Programmed for a production phase	**ST**	SunTrail Funding
CCR	City of Crystal River	**PE**	Preliminary Engineering/Design	**TA**	Transportation Alternatives
CR	Crystal River	**PS**	Paved Shoulders	**U**	Unranked
CST	Construction	**ROW**	Right-of-Way	**WST**	Withlacoochee State Trail
INV	Inverness	**RRR**	Resurfacing, Restoration and Rehabilitation	**RED**	New Projects
OGT	Office of Greenways & Trails	**SRTS**	Safe Routes to School	**REHAB**	Rehabilitation (funding TBD)

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Hernando County
FY 2019/2020
Complete Streets Priority Projects
Amended: September 18, 2018

Project Rank	Previous Rank	FPN Resp. Agency	Project/Corridor	From	To	Area	Project Type	Project Phase/Year
PRODUCTION		4343091 FDOT	Spring Hill Elementary - Sidewalk (SRTS Application)	w/n 2-mile radius of school		HC	SRTS	CST 2018
		4336951 FDOT	Deltona Blvd. - Sidewalk	Deltona Elem. School	Philatelic Dr.	HC	TA	CST 2018
		4279963 FDOT	Powell Rd. - Sidewalk/Multi-Use Trail	Spring Park Way	California St.	HC	TA	CST 2018
		4344991 FDOT	Quality Dr./Medical Blvd. - Sidewalk	Mariner Blvd.	Farnsworth Blvd.	HC	TA	CST 2018
		4367111 FDOT	Explorer K-8 - Sidewalks (SRTS Application)	w/n 2-mile radius of school		HC	SRTS	CST 2022
		4367101 FDOT	JD Floyd K-8 - Sidewalks (SRTS Application)	w/n 2-mile radius of school		HC	SRTS	CST 2023
		4367121 FDOT	Brooksville Elementary - Sidewalk (SRTS Application)	w/n 2-mile radius of school		COB	SRTS	CST 2020
		4367091 FDOT	Westside Elementary - Sidewalk (SRTS application)	w/n 2-mile radius of school		HC	SRTS	CST 2020
		4372642 FDOT	GNT Gap Connector Trail - Multi-Use Trail	SR50/Cortez Blvd.	GNT Trailhead	HC/COB	ST	CST 2020
		4357201 FDOT	West GNT Trail Connector - Multi-Use Trail	W Suncoast PKWY	SR 50/Cortez Blvd.	HC/COB	ST	CST 2020
		4395091 FDOT	Deltona Blvd. - Sidewalk	Elgin Blvd.	SR 50	HC	TA	CST 2021
		4367081 FDOT	Deltona Blvd. - Sidewalk	Spring Hill Dr.	Begonia St.	HC	TA	CST 2021
		4337141 FDOT	E. Linden Dr.- Sidewalk	Coronado Dr.	Spring Hill Dr.	HC	TA	CST 2021
		4395081 FDOT	Elgin Blvd. - Sidewalk	Deltona Blvd.	Mariner Blvd.	HC	TA	CST 2022
1	Production	4411071 FDOT	Eastside Elementary - Sidewalk	w/n 2-mile radius of school		HC	SRTS	PE 2022
2	Production	4411031 FDOT	Fox Chapel Middle School - Sidewalk	w/n 2-mile radius of school		HC	SRTS	PE 2022
3	Production	4386511 FDOT	S Linden Dr. - Sidewalk	County Line Rd.	Spring Hill Dr.	HC	TA	PE 2022
4	Production	4374841 FDOT	W. Landover Blvd.	Northcliffe Blvd.	Elgin Blvd.	HC	TA	PE 2021
5	1		Sunshine Grove Rd. - Sidewalk	Ken Austin Pkwy.	Hexam Rd.	HC	TA	Application Submitted
6	2		California St./Powell Rd. - Sidewalk	Spring Hill Dr./California St.	Powell Rd./Rowan Rd.	HC	TA	Application Submitted
7	3		Cobblestone Dr. - Sidewalk	Pinehurst Dr.	County Line Rd.	HC	TA	Application Submitted
8	4		W. Linden Dr. - Sidewalk	Spring Hill Dr.	Mariner Blvd.	HC	TA	Application Submitted
9	5		Amero Ln. - Sidewalk	Coronado Dr.	Anderson Snow Rd.	HC	TA	Application Submitted
10	6		Nightwalker Rd. - Sidewalk	Cortez Blvd. (SR 50)	Madrid Rd.	HC	TA	Application Submitted
11	7		Good Neighbor Trail (GNT) - Rehabilitation	Jefferson St.	Jasmine St.	COB	TA	Application Submitted
12	8		Withlacoochee State Trail (WST) - Reconstruction	Pasco/Hernando County Line	Citrus/Marion County Line	HC	TA	No Application
13	9		Suncoast Trail/U.S. 98 - Trailhead/Restroom	Suncoast Trail/US 98		HC	TA	No Application
14	10		Spring Hill Dr. - Sidewalk	US 19	Ken Lake Ave.	HC	TA	No Application
15	11		Spring Hill Dr. - Sidewalk	Spring Park Way	US 41	HC	TA	Application Submitted
16	12		North Ave. - Sidewalk	Howell Ave.	Zoller St.	COB	TA	ROW issues
17	13		Kass Circle Improvements	Kass Circle		HC	TA	Under Review
18	14		Suncoast Trail (SCT) - Rehabilitation	County Line Rd	US 98	HC	TA	Application Submitted

Terms Key

CST	Construction	**P**	Programmed for a production phase	**SRTS**	Safe Routes to School	**WST**	Withlacoocheee State Trail
COB	City of Brooksville	**PE**	Preliminary Engineering/Design	**ST**	SunTrail Funding	**RED**	New Projects
GNT	Good Neighbor Trail	**PS**	Paved Shoulders	**TA**	Transportation Alternatives	**REHAB**	Rehabilitation (funding TBD)
HC	Hernando County	**ROW**	Right-of-Way	**TBD**	To Be Determined		
OGT	Office of Greenways & Trails	**RRR**	Resurfacing, Restoration and Rehabilitation	**U**	Unranked		

TRANSIT

TRANSPORTATION IMPROVEMENT PROGRAM AMENDMENTS

APPEND TIP AMENDMENTS HERE AS APPROVED

Transportation Definitions and Acronyms

ADA – Americans with Disabilities Act of 1990: Federal law that requires public facilities (including transportation services) to be accessible to persons with disabilities including those with mental disabilities, temporary disabilities, and the conditions related to substance abuse.

BPAC - Bicycle/Pedestrian Advisory Committee: The Bicycle/Pedestrian Advisory Committee (BPAC) was established to provide a continuing forum with which to analyze and promote bicycle and pedestrian issues and projects as an integral part of a multi-modal transportation planning process. The BPAC initiates updates on the prioritization of transportation enhancement projects. The BPAC meets on a quarterly basis.

CAC - Citizens Advisory Committee: The Citizens Advisory Committee (CAC) provides a formal framework for continuing public input on the Unified Planning Work Program (UPWP), the Transportation Improvement Program (TIP), and the Long Range Transportation Plan (LRTP), as well as other elements of the transportation planning process. The CAC meets on a quarterly basis to provide public input at all stages of the planning process.

CIP - CAPITAL IMPROVEMENT PROGRAM: A multi-year schedule of capital improvement projects, including priorities and cost estimates, budgeted to fit the financial resources of the community. This plan is updated annually and is part of the County's Comprehensive Plan.

CTD – Commission for the Transportation Disadvantaged: State-level policy board for the coordination of transportation services for persons who because of disability, age or income are unable to transport themselves. The CTD adheres to the policies and procedures as set out in Chapter 427 F.S. and Rule 41-2, F.A.C.

ETDM – Efficient Transportation Decision Making: Florida's ETDM process defines the procedures for planning transportation projects, conducting environmental reviews, and developing and permitting projects.

FAST-ACT – Fixing America's Surface Transportation Act: Signed into law in December of 2015 by President Obama that provided long-term funding for surface transportation and infrastructure, planning and investment.

FDOT – Florida Department of Transportation: The State of Florida's multi-modal transportation agency. Organizationally, it is composed of one Central Office in Tallahassee, seven District Offices, and the Florida's Turnpike Enterprise.

FHWA – Federal Highway Administration: Division of the U.S. Department of Transportation responsible for administrating federal highway transportation programs under Title 23 U.S.C. and Title 49 U.S.C.

FTA – Federal Transit Administration: Federal entity responsible for transit planning and programs under Title 49 U.S.C.

ITS – Intelligent Transportation System: Use of computer and communications technology to facilitate the flow of information between travelers and system operators to improve mobility and transportation productivity, enhance safety, maximize the use of existing transportation facilities, conserve energy resources and reduce adverse environmental effects; includes concepts such as "freeway management systems," "automated fare collection," and "transit information kiosks."

LOS – Level of Service: A qualitative assessment of a road's operating condition, generally described using a scale of A (little congestion) to E/F (severe congestion).

LRTP – Long Range Transportation Plan: A 25-year forecast plan required of state planning agencies and MPOs, which must consider a wide range of social, environmental, energy, and economic factors in determining overall regional goals and consider how transportation can best meet these goals.

MPO – Metropolitan Planning Organization: The forum for cooperative transportation decision-making, required for urbanized areas with populations over 50,000.

NHS – National Highway System: Specific major roads to be designated September 30, 1995; the NHS will consist of 155,000 (plus or minus 15%) miles of road and represents one category of roads eligible for Federal funds under ISTEA.

PD&E – Project Development and Environmental Study: A corridor study to establish conceptual design for a roadway and to determine its compliance with Federal, State, and local environmental permits, as required.

PPP - Public Participation Plan: One of the required elements under MAP-21 that (i) shall be developed in consultation with all interested parties, and (ii) shall provide that all interested parties have reasonable opportunities to comment on the contents of the transportation plan.

ROW – Right-of-Way: Real property that is used for transportation purposes, defines the extent of the corridor that can be used for the road and

associated drainage.

SIS – Strategic Intermodal System: The SIS is a Florida network of high-priority transportation facilities, including the State's largest and most significant commercial service airports, spaceport, deep-water seaports, freight rail terminals, passenger rail and intercity bus terminals, rail corridors, waterways and highways.

STIP – State Transportation Improvement Program: The FDOT's Five-Year Work Program as prescribed by Federal law.

TAC – Technical Advisory Committee: A standing committee of most MPOs, function is to provide advice on plans or actions of the MPO from planners, engineers and other staff members (not general citizens).

TA - Transportation Alternatives: As defined under 23 U.S.C. 101(a)(29) (MAP-21 1103), these are specific activities which can be funded with Surface Transportation Program (STP) funds; activities include pedestrian/bicycle facilities, recreational trails program, Safe Routes to School (SRTS) activities, railway corridor preservation, construction of turnouts, overlooks and viewing areas, control/removal of outdoor advertising, historic preservation and rehabilitation of historic transportation facilities, invasive species control, archeological activities relating to impacts from eligible transportation projects, mitigation of highway storm water runoff water pollution, and reduce vehicle-caused wildlife mortality, planning, designing and construction of boulevards and other roadways largely in the right-of-way of former Interstate System routes or other divided highways.

TD - Transportation Disadvantaged: Persons who are unable to transport themselves or to purchase transportation due to disability, income status or age.

TDLCB - Transportation Disadvantaged Local Coordinating Board: The Transportation Disadvantaged Local Coordinating Board (TDLCB)s are the technical level review Boards established, consistent with Florida Statute, Chapter 427. The respectiveBoards oversee the activities of the Community Transportation Coordinator (CTC) and the overall Transportation Disadvantaged (TD) service program. The MPO serves as the Official Planning Agency (OPA) for the transportation disadvantaged program for both Hernando and Citrus County and functions as the appointing authority for the both Boards The TDLCBs meet on a quarterly basis.

TIP – Transportation Improvement Program: A priority list of transportation projects developed by an MPO that is to be carried out within the four-year period following its adoption; must include documentation of Federal and State funding sources for each project and be consistent with adopted MPO Long Range Transportation Plan (LRTP) and local government comprehensive plans.

APPENDIX A ANNUAL OBLIGATIONS LIST

FLORIDA DEPARTMENT OF TRANSPORTATION
OFFICE OF WORK PROGRAM
ANNUAL OBLIGATIONS REPORT
HIGHWAYS

ITEM NUMBER:405822 3 PROJECT DESCRIPTION:US 19 (SR 55) FROM W JUMP COURT TO W FORT ISLAND TRAIL *SIS*
DISTRICT:07 COUNTY:CITRUS TYPE OF WORK:ADD LANES & RECONSTRUCT
ROADWAY ID:02030000 PROJECT LENGTH: 4.805MI LANES EXIST/IMPROVED/ADDED: 6/ 4/ 2

FUND CODE	2018
PHASE: CONSTRUCTION / RESPONSIBLE AGENCY: MANAGED BY FDOT	
SE	145,000
SN	2,526
TOTAL 405822 3	**147,526**
TOTAL 405822 3	**147,526**

ITEM NUMBER:405822 5 PROJECT DESCRIPTION:US 19 FROM CARDINAL ST TO GREEN ACRES ST *SIS*
DISTRICT:07 COUNTY:CITRUS TYPE OF WORK:ADD LANES & RECONSTRUCT
ROADWAY ID:02030000 PROJECT LENGTH: 2.045MI LANES EXIST/IMPROVED/ADDED: 4/ 4/ 2

FUND CODE	2018
PHASE: PRELIMINARY ENGINEERING / RESPONSIBLE AGENCY: MANAGED BY FDOT	
SA	1,704,062
TOTAL 405822 5	**1,704,062**
TOTAL 405822 5	**1,704,062**

ITEM NUMBER:430021 1 PROJECT DESCRIPTION:CR490A/HALLS RIVER FROM W OF HALLS RIVER TO E OF HALLS RIVER *NON-SIS*
DISTRICT:07 COUNTY:CITRUS TYPE OF WORK:BRIDGE REPLACEMENT
ROADWAY ID:02610000 PROJECT LENGTH: .333MI LANES EXIST/IMPROVED/ADDED: 2/ 2/ 0

FUND CODE	2018
PHASE: RIGHT OF WAY / RESPONSIBLE AGENCY: MANAGED BY FDOT	
SA	8,000
PHASE: CONSTRUCTION / RESPONSIBLE AGENCY: MANAGED BY FDOT	
BB	71,922
NHBR	2,329,162
SA	67,651
TOTAL 430021 1	**2,476,735**
TOTAL 430021 1	**2,476,735**

ITEM NUMBER:432581 1 PROJECT DESCRIPTION:YULEE DRIVE SIDEWALK FROM W CENTRAL STREET TO US 19 *NON-SIS*
DISTRICT:07 COUNTY:CITRUS TYPE OF WORK:SIDEWALK
ROADWAY ID:02550000 PROJECT LENGTH: 2.759MI LANES EXIST/IMPROVED/ADDED: 2/ 0/ 0

FUND CODE	2018
PHASE: CONSTRUCTION / RESPONSIBLE AGENCY: MANAGED BY CITRUS COUNTY BOCC	
TALN	44,077
TALT	627,659
PHASE: CONSTRUCTION / RESPONSIBLE AGENCY: MANAGED BY FDOT	
TALN	11,791
TALT	1,000
TOTAL 432581 1	**684,527**
TOTAL 432581 1	**684,527**

ITEM NUMBER:438719 1 PROJECT DESCRIPTION:W DUNKLIN ST, DUNNELLON AT FLORIDA NORTHERN RR, NGCN 622624J *NON-SIS*
DISTRICT:07 COUNTY:CITRUS TYPE OF WORK:RAIL SAFETY PROJECT
ROADWAY ID: PROJECT LENGTH: .000 LANES EXIST/IMPROVED/ADDED: 0/ 0/ 0

FUND CODE	2018
PHASE: RAILROAD AND UTILITIES / RESPONSIBLE AGENCY: MANAGED BY FDOT	
RHP	-1,028
TOTAL 438719 1	**-1,028**
TOTAL 438719 1	**-1,028**

ITEM NUMBER:438724 1 PROJECT DESCRIPTION:NG MARTINELLI, DUNNELLON AT FNR CROSSING NGCN 628007L,ARD371,MP778.27 *NON-SIS*
DISTRICT:07 COUNTY:CITRUS TYPE OF WORK:RAIL SAFETY PROJECT
ROADWAY ID: PROJECT LENGTH: .000 LANES EXIST/IMPROVED/ADDED: 0/ 0/ 0

FUND CODE	2018
PHASE: RAILROAD AND UTILITIES / RESPONSIBLE AGENCY: MANAGED BY FDOT	
RHP	-971
TOTAL 438724 1	**-971**
TOTAL 438724 1	**-971**

ITEM NUMBER:439698 1 PROJECT DESCRIPTION:FOREST RIDGE ELEM FR CR486/NORVELL BRYANT HWY TO W LAKE BEVERLY DR *NON-SIS*
DISTRICT:07 COUNTY:CITRUS TYPE OF WORK:SIDEWALK
ROADWAY ID:02000027 PROJECT LENGTH: 1.605MI LANES EXIST/IMPROVED/ADDED: 2/ 0/ 0

FUND CODE	2018
PHASE: PRELIMINARY ENGINEERING / RESPONSIBLE AGENCY: MANAGED BY FDOT	
SR2T	536,359
TOTAL 439698 1	**536,359**
TOTAL 439698 1	**536,359**

ITEM NUMBER:439699 1 PROJECT DESCRIPTION:PLEASANT GROVE ELEMENTARY - PLEASANT GROVE RD AND DRUID RD *NON-SIS*
DISTRICT:07 COUNTY:CITRUS TYPE OF WORK:SIDEWALK
ROADWAY ID:02520000 PROJECT LENGTH: 11.897MI LANES EXIST/IMPROVED/ADDED: 2/ 0/ 0

FUND CODE	2018
PHASE: PRELIMINARY ENGINEERING / RESPONSIBLE AGENCY: MANAGED BY FDOT	
SR2T	384,097
TOTAL 439699 1	**384,097**
TOTAL 439699 1	**384,097**

FLORIDA DEPARTMENT OF TRANSPORTATION
OFFICE OF WORK PROGRAM
ANNUAL OBLIGATIONS REPORT
HIGHWAYS

ITEM NUMBER:257298 4 PROJECT DESCRIPTION:CR 578 (CO LINE RD) FROM E OF MARINER BLVD TO W OF SUNCOAST PARKWAY *NON-SIS*
DISTRICT:07 COUNTY:HERNANDO TYPE OF WORK:ADD LANES & RECONSTRUCT
ROADWAY ID:08000050 PROJECT LENGTH: 2.955MI LANES EXIST/IMPROVED/ADDED: 2/ 2/ 2

FUND CODE	2018
PHASE: PRELIMINARY ENGINEERING / RESPONSIBLE AGENCY: MANAGED BY FDOT	
SL	3,000
TOTAL 257298 4	**3,000**
TOTAL 257298 4	**3,000**

ITEM NUMBER:257298 5 PROJECT DESCRIPTION:CR 578 (CO LINE RD) FROM SUNCOAST PARKWAY TO US41 AT AYERS RD *NON-SIS*
DISTRICT:07 COUNTY:HERNANDO TYPE OF WORK:NEW ROAD CONSTRUCTION
ROADWAY ID:08000050 PROJECT LENGTH: 1.492MI LANES EXIST/IMPROVED/ADDED: 4/ 4/ 4

FUND CODE	2018
PHASE: PRELIMINARY ENGINEERING / RESPONSIBLE AGENCY: MANAGED BY FDOT	
SA	588,929
SL	141,848
PHASE: RIGHT OF WAY / RESPONSIBLE AGENCY: MANAGED BY FDOT	
SA	-24,751
SL	-50,116
TOTAL 257298 5	**655,910**
TOTAL 257298 5	**655,910**

ITEM NUMBER:257298 6 PROJECT DESCRIPTION:CR 578 @ MARINER INT FM SPRINGTIME STREET TO EAST OF MARINER BLVD *NON-SIS*
DISTRICT:07 COUNTY:HERNANDO TYPE OF WORK:INTERSECTION IMPROVEMENT
ROADWAY ID:08000050 PROJECT LENGTH: .674MI LANES EXIST/IMPROVED/ADDED: 2/ 2/ 0

FUND CODE	2018
PHASE: RIGHT OF WAY / RESPONSIBLE AGENCY: MANAGED BY FDOT	
SA	2,398,773
SL	-71,548
PHASE: CONSTRUCTION / RESPONSIBLE AGENCY: MANAGED BY FDOT	
SA	387,133
SL	1,124,416
TOTAL 257298 6	**3,838,774**
TOTAL 257298 6	**3,838,774**

ITEM NUMBER:411011 4 PROJECT DESCRIPTION:I-75 (SR 93) FM S OF US98/SR50/CORTEZ TO N OF US98/SR50/CORTEZ *SIS*
DISTRICT:07 COUNTY:HERNANDO TYPE OF WORK:ADD LANES & RECONSTRUCT
ROADWAY ID:08150000 PROJECT LENGTH: 2.986MI LANES EXIST/IMPROVED/ADDED: 4/ 4/ 2

FUND CODE	2018
PHASE: CONSTRUCTION / RESPONSIBLE AGENCY: MANAGED BY FDOT	
NHPP	34,757,383
SA	327,969
TOTAL 411011 4	**35,085,352**
TOTAL 411011 4	**35,085,352**

FLORIDA DEPARTMENT OF TRANSPORTATION
OFFICE OF WORK PROGRAM
ANNUAL OBLIGATIONS REPORT
HIGHWAYS

ITEM NUMBER:411012 2 PROJECT DESCRIPTION:I-75 (SR 93) FROM N OF SR 50 TO HERNANDO/SUMTER CO/L *SIS*
DISTRICT:07 COUNTY:HERNANDO TYPE OF WORK:ADD LANES & REHABILITATE PVMNT
ROADWAY ID:08150000 PROJECT LENGTH: 3.271MI LANES EXIST/IMPROVED/ADDED: 4/ 4/ 2

FUND CODE	2018
PHASE: CONSTRUCTION / RESPONSIBLE AGENCY: MANAGED BY FDOT	
NHPP	15,061,333
TOTAL 411012 2	**15,061,333**
TOTAL 411012 2	**15,061,333**

ITEM NUMBER:416732 3 PROJECT DESCRIPTION:SR 50 FROM US 98/MCKETHAN RD TO US 301 *NON-SIS*
DISTRICT:07 COUNTY:HERNANDO TYPE OF WORK:ADD LANES & REHABILITATE PVMNT
ROADWAY ID:08070000 PROJECT LENGTH: 2.231MI LANES EXIST/IMPROVED/ADDED: 4/ 4/ 2

FUND CODE	2018
PHASE: PRELIMINARY ENGINEERING / RESPONSIBLE AGENCY: MANAGED BY FDOT	
SA	18,992
TOTAL 416732 3	**18,992**
TOTAL 416732 3	**18,992**

ITEM NUMBER:416732 4 PROJECT DESCRIPTION:SR 50 FM WINDMERE RD/BRONSON BL TO US 98/MCKETHAN RD *NON-SIS*
DISTRICT:07 COUNTY:HERNANDO TYPE OF WORK:ADD LANES & REHABILITATE PVMNT
ROADWAY ID:08070000 PROJECT LENGTH: 3.548MI LANES EXIST/IMPROVED/ADDED: 5/ 5/ 2

FUND CODE	2018
PHASE: PRELIMINARY ENGINEERING / RESPONSIBLE AGENCY: MANAGED BY FDOT	
SA	42,418
TOTAL 416732 4	**42,418**
TOTAL 416732 4	**42,418**

ITEM NUMBER:416735 1 PROJECT DESCRIPTION:SR 50/CORTEZ BLVD FROM W OF BUCK HOPE RD TO W OF JEFFERSON STREET *SIS*
DISTRICT:07 COUNTY:HERNANDO TYPE OF WORK:ADD LANES & REHABILITATE PVMNT
ROADWAY ID:08002000 PROJECT LENGTH: 2.517MI LANES EXIST/IMPROVED/ADDED: 4/ 4/ 2

FUND CODE	2018
PHASE: PRELIMINARY ENGINEERING / RESPONSIBLE AGENCY: MANAGED BY FDOT	
SL	159,079
TOTAL 416735 1	**159,079**
TOTAL 416735 1	**159,079**

ITEM NUMBER:427996 3 PROJECT DESCRIPTION:POWELL RD FROM SPRING PARK WAY TO W OF CALIFORNIA ST *NON-SIS*
DISTRICT:07 COUNTY:HERNANDO TYPE OF WORK:SIDEWALK
ROADWAY ID:08000036 PROJECT LENGTH: .790MI LANES EXIST/IMPROVED/ADDED: 2/ 0/ 0

FUND CODE	2018
PHASE: PRELIMINARY ENGINEERING / RESPONSIBLE AGENCY: MANAGED BY FDOT	
TALT	2,000
PHASE: CONSTRUCTION / RESPONSIBLE AGENCY: MANAGED BY FDOT	
TALT	12,597

FLORIDA DEPARTMENT OF TRANSPORTATION
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PHASE: CONSTRUCTION / RESPONSIBLE AGENCY: MANAGED BY HERNANDO COUNTY BOARD OF COUNTY

TALL	358,562
TALT	750,674
TOTAL 427996 3	**1,123,833**
TOTAL 427996 3	**1,123,833**

ITEM NUMBER:430051 2 PROJECT DESCRIPTION:SR 50 FROM LOCKHART RD TO E OF REMINGTON RD *SIS*
DISTRICT:07 COUNTY:HERNANDO TYPE OF WORK:ADD LANES & REHABILITATE PVMNT
ROADWAY ID:08070000 PROJECT LENGTH: .355MI LANES EXIST/IMPROVED/ADDED: 4/ 4/ 2

FUND CODE	2018
PHASE: PRELIMINARY ENGINEERING / RESPONSIBLE AGENCY: MANAGED BY FDOT	
NHPP	3,325
TOTAL 430051 2	**3,325**
TOTAL 430051 2	**3,325**

ITEM NUMBER:432720 1 PROJECT DESCRIPTION:US 19 (SR 55) FROM S OF TOUCAN TRL TO CORTEZ BLVD *SIS*
DISTRICT:07 COUNTY:HERNANDO TYPE OF WORK:RESURFACING
ROADWAY ID:08020000 PROJECT LENGTH: 3.428MI LANES EXIST/IMPROVED/ADDED: 6/ 6/ 0

FUND CODE	2018
PHASE: CONSTRUCTION / RESPONSIBLE AGENCY: MANAGED BY FDOT	
SA	120,715
TOTAL 432720 1	**120,715**
TOTAL 432720 1	**120,715**

ITEM NUMBER:433695 1 PROJECT DESCRIPTION:DELTONA BLVD FROM S OF FOUNDER RD TO PHILATELIC DR *NON-SIS*
DISTRICT:07 COUNTY:HERNANDO TYPE OF WORK:SIDEWALK
ROADWAY ID:08000010 PROJECT LENGTH: 1.723MI LANES EXIST/IMPROVED/ADDED: 2/ 0/ 0

FUND CODE	2018
PHASE: PRELIMINARY ENGINEERING / RESPONSIBLE AGENCY: MANAGED BY FDOT	
TALT	1,500
PHASE: CONSTRUCTION / RESPONSIBLE AGENCY: MANAGED BY FDOT	
TALT	11,597
PHASE: CONSTRUCTION / RESPONSIBLE AGENCY: MANAGED BY HERNANDO COUNTY BOARD OF COUNTY	
TALL	4,418
TALT	507,568
TOTAL 433695 1	**525,083**
TOTAL 433695 1	**525,083**

ITEM NUMBER:433714 1 PROJECT DESCRIPTION:LINDEN DR FROM CORONADO DR TO SPRING HILL DR *NON-SIS*
DISTRICT:07 COUNTY:HERNANDO TYPE OF WORK:SIDEWALK
ROADWAY ID:08900002 PROJECT LENGTH: .953MI LANES EXIST/IMPROVED/ADDED: 2/ 0/ 0

FUND CODE	2018
PHASE: PRELIMINARY ENGINEERING / RESPONSIBLE AGENCY: MANAGED BY FDOT	
TALT	1,000

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PHASE: PRELIMINARY ENGINEERING / RESPONSIBLE AGENCY: MANAGED BY HERNANDO COUNTY BOARD OF COUNTY

FUND CODE	2018
TALT	45,000
TOTAL 433714 1	**46,000**
TOTAL 433714 1	**46,000**

ITEM NUMBER:434499 1 PROJECT DESCRIPTION:QUALITY DR/MED BLVD FM MARINER TO FARNSWORTH FM QUALITY DR TO CR 578 *NON-SIS*
DISTRICT:07 COUNTY:HERNANDO TYPE OF WORK:SIDEWALK
ROADWAY ID:08900005 PROJECT LENGTH: 1.186MI LANES EXIST/IMPROVED/ADDED: 1/ 0/ 0

FUND CODE	2018
PHASE: PRELIMINARY ENGINEERING / RESPONSIBLE AGENCY: MANAGED BY FDOT	
TALL	-441
PHASE: PRELIMINARY ENGINEERING / RESPONSIBLE AGENCY: MANAGED BY HERNANDO COUNTY BOARD OF COUNTY	
TALT	-27,509
PHASE: CONSTRUCTION / RESPONSIBLE AGENCY: MANAGED BY FDOT	
TALT	-3,728
TOTAL 434499 1	**-31,678**
TOTAL 434499 1	**-31,678**

ITEM NUMBER:436708 1 PROJECT DESCRIPTION:DELTONA BLVD FROM SPRING HILL DR TO BEGONIA ST *NON-SIS*
DISTRICT:07 COUNTY:HERNANDO TYPE OF WORK:SIDEWALK
ROADWAY ID:08000010 PROJECT LENGTH: .634MI LANES EXIST/IMPROVED/ADDED: 2/ 0/ 0

FUND CODE	2018
PHASE: PRELIMINARY ENGINEERING / RESPONSIBLE AGENCY: MANAGED BY FDOT	
SR2T	5,000
TOTAL 436708 1	**5,000**
TOTAL 436708 1	**5,000**

ITEM NUMBER:436709 1 PROJECT DESCRIPTION:WESTSIDE ELEMENTARY - KENLAKE, APPLEGATE, AIRMONT, TYLER, HALSTEAD *NON-SIS*
DISTRICT:07 COUNTY:HERNANDO TYPE OF WORK:SIDEWALK
ROADWAY ID: PROJECT LENGTH: .000 LANES EXIST/IMPROVED/ADDED: 0/ 0/ 0

FUND CODE	2018
PHASE: PRELIMINARY ENGINEERING / RESPONSIBLE AGENCY: MANAGED BY FDOT	
SR2T	1,000
PHASE: PRELIMINARY ENGINEERING / RESPONSIBLE AGENCY: MANAGED BY HERNANDO COUNTY BOARD OF COUNTY	
SR2T	64,479
TOTAL 436709 1	**65,479**
TOTAL 436709 1	**65,479**

ITEM NUMBER:436712 1 PROJECT DESCRIPTION:BROOKSVILLE ELEMENTARY - HOWELL AVE FROM CROOM RD TO US 41/BROAD ST *NON-SIS*
DISTRICT:07 COUNTY:HERNANDO TYPE OF WORK:SIDEWALK
ROADWAY ID:08000007 PROJECT LENGTH: .819MI LANES EXIST/IMPROVED/ADDED: 2/ 0/ 0

FUND CODE	2018
PHASE: PRELIMINARY ENGINEERING / RESPONSIBLE AGENCY: MANAGED BY FDOT	
SR2T	1,000

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PHASE: PRELIMINARY ENGINEERING / RESPONSIBLE AGENCY: MANAGED BY HERNANDO COUNTY BOARD OF COUNTY		
	SR2S	34,746
	SR2T	19,053
TOTAL 436712 1		**54,799**
TOTAL 436712 1		**54,799**

ITEM NUMBER:439448 1 PROJECT DESCRIPTION:US 98/SR 700/PONCE DE LEON FR S OF CITRUS WAY/CR491 TO N OF CITRUS WAY *NON-SIS*
DISTRICT:07 COUNTY:HERNANDO TYPE OF WORK:ROUNDABOUT
ROADWAY ID:08080000 PROJECT LENGTH: .669MI LANES EXIST/IMPROVED/ADDED: 2/ 2/ 0

	FUND CODE	2018
PHASE: PRELIMINARY ENGINEERING / RESPONSIBLE AGENCY: MANAGED BY FDOT		
	HSP	100,000
TOTAL 439448 1		**100,000**
TOTAL 439448 1		**100,000**
TOTAL DIST: 07		**62,808,721**
TOTAL HIGHWAYS		**62,808,721**

HERNANDO-CITRUS MPO

FLORIDA DEPARTMENT OF TRANSPORTATION
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==========
PLANNING
==========

DATE RUN: 10/02/2018
TIME RUN: 08.45.25
MBROBLTP

ITEM NUMBER:437264 1 PROJECT DESCRIPTION:COAST TO COAST (C2C) TRAIL ALTERNATE ROUTE FEASIBILITY STUDY *NON-SIS*
DISTRICT:07 COUNTY:HERNANDO TYPE OF WORK:BIKE PATH/TRAIL
ROADWAY ID: PROJECT LENGTH: .000 LANES EXIST/IMPROVED/ADDED: 0/ 0/ 0

FUND CODE	2018
PHASE: PRELIMINARY ENGINEERING / RESPONSIBLE AGENCY: MANAGED BY HERNANDO COUNTY BOCC	
SA	146,066
TOTAL 437264 1	**146,066**
TOTAL 437264 1	**146,066**

ITEM NUMBER:439335 1 PROJECT DESCRIPTION:HERNANDO/CITRUS FY 2016/2017-2017/2018 UPWP *NON-SIS*
DISTRICT:07 COUNTY:HERNANDO TYPE OF WORK:TRANSPORTATION PLANNING
ROADWAY ID: PROJECT LENGTH: .000 LANES EXIST/IMPROVED/ADDED: 0/ 0/ 0

FUND CODE	2018
PHASE: PRELIMINARY ENGINEERING / RESPONSIBLE AGENCY: RESPONSIBLE AGENCY NOT AVAILABLE	
PL	540,599
TOTAL 439335 1	**540,599**
TOTAL 439335 1	**540,599**

ITEM NUMBER:439335 2 PROJECT DESCRIPTION:HERNANDO/CITRUS FY 2018/2019-2019/2020 UPWP *NON-SIS*
DISTRICT:07 COUNTY:HERNANDO TYPE OF WORK:TRANSPORTATION PLANNING
ROADWAY ID: PROJECT LENGTH: .000 LANES EXIST/IMPROVED/ADDED: 0/ 0/ 0

FUND CODE	2018
PHASE: PRELIMINARY ENGINEERING / RESPONSIBLE AGENCY: RESPONSIBLE AGENCY NOT AVAILABLE	
PL	150,157
TOTAL 439335 2	**150,157**
TOTAL 439335 2	**150,157**
TOTAL DIST: 07	**836,822**
TOTAL PLANNING	**836,822**

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HERNANDO-CITRUS MPO

MISCELLANEOUS

ITEM NUMBER:437349 1 PROJECT DESCRIPTION:WITHLACOOCHEE-DUNNELLON TRAIL CONNECTOR FM N END WITHLA. TO S END DUNN *NON-SIS*
DISTRICT:07 COUNTY:CITRUS TYPE OF WORK:BIKE PATH/TRAIL
ROADWAY ID: PROJECT LENGTH: .000 LANES EXIST/IMPROVED/ADDED: 0/ 0/ 0

FUND CODE	2018
PHASE: PRELIMINARY ENGINEERING / RESPONSIBLE AGENCY: MANAGED BY FDOT	
TALT	85,000
TOTAL 437349 1	**85,000**
TOTAL 437349 1	**85,000**

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HERNANDO-CITRUS MPO

MISCELLANEOUS

ITEM NUMBER:435720 1 PROJECT DESCRIPTION:GOOD NEIGHBOR TRL CONNECTOR FM W OF SUNCOAST PKWY TO SR 50/CORTEZ BLVD *SIS*
DISTRICT:07 COUNTY:HERNANDO TYPE OF WORK:BIKE PATH/TRAIL
ROADWAY ID:08040000 PROJECT LENGTH: 4.075MI LANES EXIST/IMPROVED/ADDED: 6/ 0/ 0

FUND CODE	2018
PHASE: PRELIMINARY ENGINEERING / RESPONSIBLE AGENCY: MANAGED BY FDOT	
EB	24,474
TALL	15,626
TALT	262,889
TOTAL 435720 1	**302,989**
TOTAL 435720 1	**302,989**

ITEM NUMBER:436711 1 PROJECT DESCRIPTION:EXPLORER K8 SCHOOL VARIOUS LOCATIONS *NON-SIS*
DISTRICT:07 COUNTY:HERNANDO TYPE OF WORK:SIDEWALK
ROADWAY ID: PROJECT LENGTH: .000 LANES EXIST/IMPROVED/ADDED: 0/ 0/ 0

FUND CODE	2018
PHASE: PRELIMINARY ENGINEERING / RESPONSIBLE AGENCY: MANAGED BY FDOT	
SR2T	4,000
TOTAL 436711 1	**4,000**
TOTAL 436711 1	**4,000**
TOTAL DIST: 07	**391,989**
TOTAL MISCELLANEOUS	**391,989**
GRAND TOTAL	64,037,532

APPENDIX B
2017 FDOT
PERFORMANCE REPORT

Florida Department of Transportation



2017 Performance Report

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FDOT Performance Report

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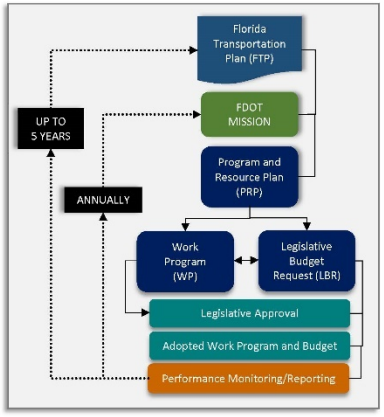
About This Report

This report provides a snapshot of select measures that are used to inform decisions and provide feedback on the performance of FDOT, our partners, and Florida's transportation system. While the direct impact of the Department's efforts on individual measures varies, the suite of measures reported here collectively provides a high-level overview of performance. Some of the activities included here are measured and reported in other contexts. For example, certain measures presented in this report are similar to those included in the Florida Transportation Commission's (FTC) *Annual Performance Review* pursuant to s. 334.045, Florida Statutes. Others help to define broader systemwide performance in support of Florida Transportation Plan implementation. This report draws from those other contexts to provide an at-a-glance overview of key measures.

Performance in Context

The mission of the FDOT is to provide a safe transportation system that ensures the mobility of people and goods, enhances economic prosperity and preserves the quality of our environment and communities. Because Florida's transportation system needs exceed available funding, performance measures are used and integrated into FDOT's business practices to ensure resources are invested in the most strategic, effective and efficient ways possible.

Figure 1: Policy Framework for Investment Decisions



Performance measures are indicators of progress toward attaining a goal, objective or target (a desired level of future performance).

It is the policy of the Department to link performance measures to investment policies and project programming decision-making. This informs decisions and provides feedback on transportation system performance, agency operations and program outcomes. Performance measures also reflect the Department's priorities for accountability and stewardship of resources.

Figure 1 illustrates FDOT'S policy framework for investment decisions.

The **Florida Transportation Plan (FTP)** is the single overarching statewide plan that guides Florida's transportation future. It is a plan for all of Florida; providing policy direction to FDOT and all statewide, regional, and local partners involved in planning, implementing, and managing Florida's transportation system.

The Strategic Intermodal System (SIS) is a primary focus for implementing the FTP. It is Florida's primary network for ensuring a strong link between transportation and economic competitiveness. These facilities are the workhorses of Florida's transportation system and account for a dominant share of the people and freight movement to, from and within Florida. Therefore, they are the state's highest priority for transportation capacity investments. And while state law (s. 339.135, F.S.) directs FDOT to allocate at least 50 percent of new discretionary highway capacity funds to the SIS, the Department has set a target to allocate up to 75 percent.

The **Program and Resource Plan (PRP)** provides the link between the FTP, the Department's numerous programs (as reflected in the project specific Work Program), and the Department's Legislative Budget Request (LBR). It contains the specific long-range goals and objectives from the FTP, as well as selected operating policies and performance measures, which guide the development of each program in the Department.

The PRP is produced annually, and is a ten-year allocation of projected funding for all major agency functions and programs. Fund allocations and program targets are established based on FDOTs finance plan program and resource planning process, which produces a PRP balanced to anticipated revenues. This is the programming framework by which the Work Program is developed.

As a five-year plan, the **Work Program (WP)** provides details on when and where specific projects and services will be provided and how these projects and services will be funded using available revenue.

The **Legislative Budget Request (LBR)** is the Department's request to the Governor and Legislature for spending authority to do the work of the agency for the next fiscal year. It includes a balanced 36-month forecast of cash and expenditures and a five-year finance plan. For every $1 invested through FDOT's Work Program, an estimated $4.40 in economic benefits is generated.

Performance Monitoring is conducted using both qualitative and quantitative measures to show progress towards the attainment of the Department's goals and objectives. For this report, only quantitative measures will be reported.

Performance At a Glance

● goal met or exceeded ▲ needs improvement ⟷ unchanged since last report

FDOT Performance Measures	Page	Previous Result	Current Result	Goal	Progress Made
INFRASTRUCTURE					
Percent of lane miles on the state highway system (SHS) having a **pavement condition** rating of either excellent or good.	Pg. 4	91.5%	92.0%	> 80%	●
Percent of **bridge structures** on the state highway system (SHS) having a **condition rating** of either excellent or good.	Pg. 5	95.1%	96.0%	> 90%	●
Achieve the acceptable **maintenance standard** on the state highway system (SHS).	Pg. 6	86	86	> 80	●
MOBILITY					
Vehicle hours of delay (thousands) on the state highway system (SHS) during the peak hour.	Pg. 8	106.38	121.16	decrease each year	▲
Combination truck hours of delay (thousands) on the state highway system (SHS) during the peak hour.	Pg. 9	16.7	18.2	decrease each year	▲
Annual **transit revenue miles (millions)**.	Pg. 9	145.7	148.2	increase/maintain each year	●
SAFETY					
Number of fatalities on all public roads.	Pg. 10	2,494	2,939	0	▲
Number of serious injuries on all public roads.	Pg. 10	20,912	21,551	0	▲
ACCOUNTABILITY					
Percent of **construction projects completed on time**.	Pg. 11	85.6%	87.8%	> 80%	●
Percent of **construction projects completed within budget**.	Pg. 12	92.0%	91.7%	> 90%	●

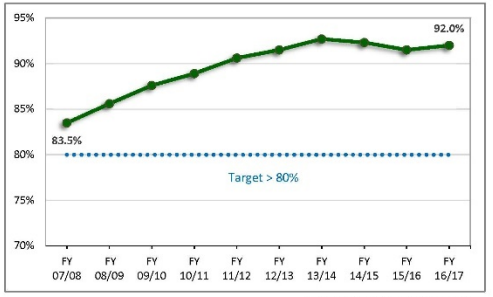
INFRASTRUCTURE

INFRASTRUCTURE

FDOT continues to make substantial investments to meet established standards for highway pavement, bridges, and routine maintenance to keep state highways and bridges in acceptable condition. Regular maintenance and improvements keep assets operating efficiently, extending their useful life, and delaying the substantial cost of reconstruction or replacement.

Figure 2: Percent of Pavement on the SHS Meeting FDOT Standards

The pavement on the SHS is in excellent condition, with 92.0 percent currently exceeding FDOT standards.



Source: FDOT Roadway Design Office.

Pavement Condition

FDOT has primary jurisdiction over the State Highway System (SHS) which carries over half of all traffic within Florida. This system includes major roads such as interstates and highways with U.S. or state road numbers.

Resurfacing needs are identified through FDOT's annual pavement condition survey. This survey evaluates pavement conditions in terms of ride quality, crack severity, and average depth of wheel-path ruts. "Ride quality" is what the motorist experiences (i.e., smoothness of the ride). Crack severity or "cracking" refers to the deterioration of the pavement, which leads to loss of smoothness and ultimately, deterioration of the road base by water seepage if not corrected. Wheel-path ruts or "rutting" are pavement depressions caused mainly by heavy use. These depressions or ruts can collect water, creating potential safety hazards.

Figure 2 shows the SHS is in excellent condition, with 92 percent currently exceeding FDOT standards (s. 334.046(4), F.S.). This trend is expected to remain above the 80 percent target, as it has throughout the last decade. Many national surveys consistently rate Florida as having the nation's best pavements when compared to other states.

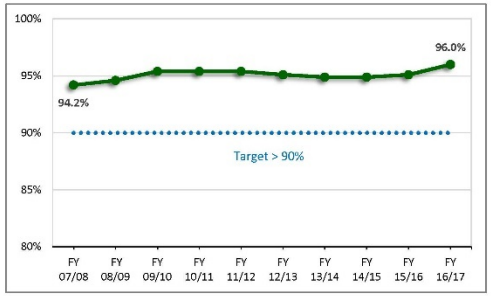
INFRASTRUCTURE

Bridge Condition

FDOT's core bridge measure is percent of bridges on the SHS meeting FDOT standards. The target is to have at least 90 percent of bridges maintained by the Department achieve a National Bridge Inventory (NBI) rating of 6 or higher.

Figure 3: Percent of Bridges on the SHS Meeting FDOT Standards

Since 1996, bridges on the SHS have consistently met or exceeded FDOT's condition standard of 90 percent.



Source: FDOT Office of Maintenance.

The NBI is a Federal Highway Administration (FHWA) requirement for evaluating bridge conditions, based on a 0 to 9 scale with 0 indicating a failed condition and 9 indicating an excellent condition. An NBI rating of 6 or 7 means a bridge is in good condition.

Figure 3 shows that 96 percent of all FDOT-maintained bridges meet the standard (i.e., an NBI rating of 6 or higher), which substantially exceeds the Department's 90 percent target (s. 334.046(4), F.S.). This means most of FDOT-maintained bridges do not show evidence of structural deterioration nor are they weight restricted.

The Department takes a proactive approach to bridge maintenance, which has proven to be cost-effective. Preventative maintenance and repairs are performed so that bridges will not deteriorate and require greater repair costs. This helps to ensure that FDOT-maintained bridges meet or exceed their life expectancy, resulting in a lower frequency of replacements.

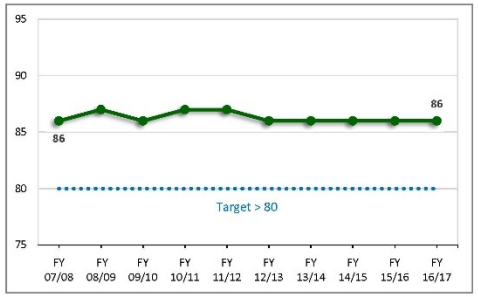
INFRASTRUCTURE

Maintenance

FDOT is responsible for scheduling and performing routine maintenance on the SHS to preserve its condition. The primary measure is to achieve an overall Maintenance Rating Program score of at least 80 for the SHS (s. 334.046(4), F.S.).

Figure 4: Maintenance Rating of the SHS

FDOT has met or exceeded its roadway maintenance standard every year since 1994.



Source: FDOT Office of Maintenance.

To determine the maintenance rating, field conditions are evaluated by rating each highway component to develop an overall maintenance condition score. Conditions are compared to FDOT standards and a composite state score is set. The maintenance condition rating system evaluates five highway components:

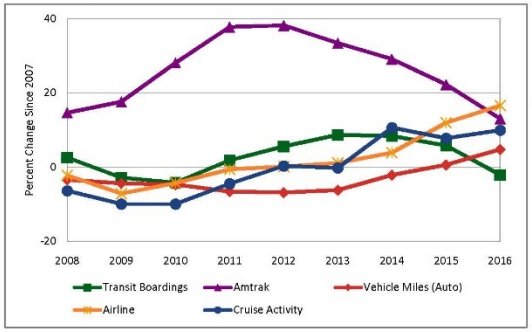
- Roadway – potholes, pavement joints, paved shoulders, and pavement distress
- Roadside – unpaved shoulders, slopes, sidewalks, and fences
- Traffic services – signs, lighting, guardrails, striping, attenuators, handrail, and pavement markers
- Drainage – storm drains, ditches, roadway sweeping, inlets, and pavement edge drain outlets
- Vegetation/aesthetics – landscaping, litter removal, turf condition, and tree trimming

As shown in Figure 4, FDOT consistently exceeds its roadway maintenance standard year after year, preserving roads at an optimal level for driver safety, mobility, and comfort.

MOBILITY

Mobility, the movement of people and goods, is transportation's essential function. Florida travel is diverse. People use various modes to commute to jobs, conduct business and obtain services for many other purposes. By providing mobility, FDOT and other transportation system operators make a significant contribution to Florida's economic competitiveness and quality of life. Therefore, measuring mobility performance is essential.

Figure 5: Change in Travel by Mode



As public confidence was slowly restored following the recession, Amtrak and transit boarding began to decline and the number of vehicle miles traveled steadily increased.

Sources: FDOT Transit Office, Roadway Characteristics Inventory, Traffic Characteristics Inventory; Florida Ports Council; Amtrak Fact Sheet; U.S. Department of Transportation's Aviation Administration, Air Carrier Activity Information System (ACAIS).

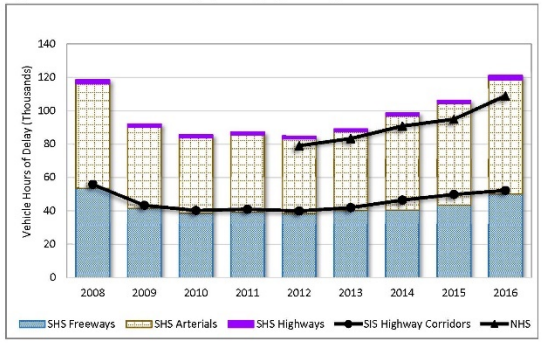
Vehicle Hours of Delay

Delay is any additional travel time beyond some norm experienced by a traveler. Delay is important to evaluate because ultimately it equates to cost in time and money for individuals and businesses.

As shown in Figure 6 below, vehicle hours of delay statewide on the SHS and the Strategic Intermodal System (SIS) had been declining over the past decade, but since 2013, have gradually started to increase. While an increase in delay is undesirable from a transportation perspective, it may indicate an economic upturn (which did occur around that period after the 2008 recession).

In the seven most populous metropolitan areas (see Figure 7), vehicle hours of delay have steadily but slowly increased, indicative of the economic recovery and population growth. However, the hours of delay are still well below the levels of the early 2000's even though population growth and vehicle miles of travel have surpassed previous peaks. As such, Florida's transportation system appears to be accommodating economic development with sufficient capacity to support further economic growth.

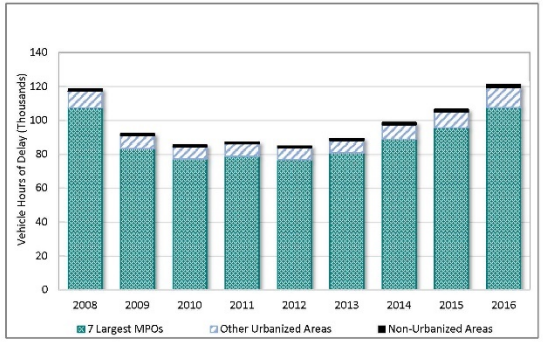
Figure 6: Vehicle Hours of Delay by Facility Type During Peak Hour



Since 2013, vehicle hours of delay on the SHS and SIS have started to increase.

Source: The FDOT Source Book.

Figure 7: Vehicle Hours of Delay on the SHS by Area Type During Peak Hour



In response to the upturn in the economy and growing population, vehicle hours of delay are increasing in the most populous metropolitan areas.

Note: the seven largest Metropolitan Planning Organizations (MPOs) are Broward, Hillsborough, MetroPlan Orlando, Miami-Dade, North Florida, Palm Beach and Forward Pinellas.
Source: The FDOT Source Book.

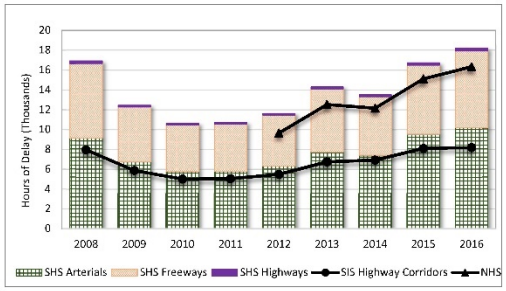
MOBILITY

Combination Truck Hours of Delay

A combination truck is a vehicle type consisting of a tractor and a trailer. Since 2011, combination truck hours of delay have generally been trending upwards (see Figure 8). This is notable with respect to efficient goods movement where time does translate into money – additional cost to shippers, carriers, and consumers or cost saving for each.

Figure 8: Combination Truck Hours of Delay by Facility Type

Over the last several years, combination truck hours of delay have been trending upwards.



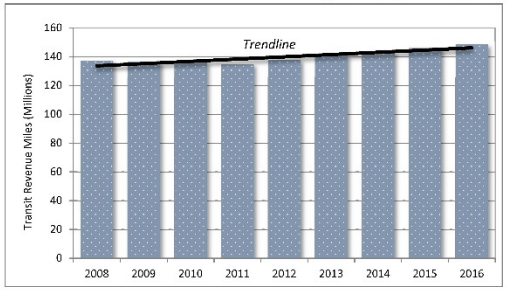
Source: The FDOT Source Book.

Transit Revenue Miles

Figure 9 shows that the annual number of trips per transit revenue mile has remained almost level over the past ten years. However, there has been a slight increase since 2013. This measure reflects the importance of productivity and efficiency for transit providers.

Figure 9: Transit Revenue Miles

Transit revenue miles have remained almost level for the past several years.



Source: The FDOT Source Book.

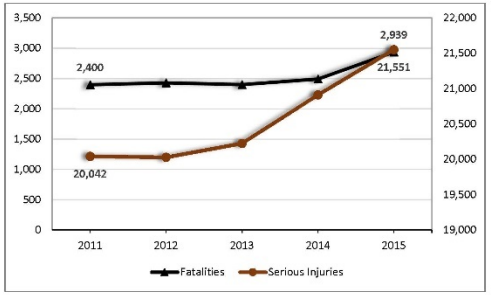
SAFETY

SAFETY

Transportation safety and security are among the Department's highest commitments to residents, businesses and visitors. Safety improvements and promotion save lives, enhance quality of life and support the state's economic competitiveness. Safety spans all transportation modes. It is affected by many factors, such as driver behaviors, infrastructure conditions, innovations in technology, enforcement and education, and even weather and the natural environment.

Figure 10: Number of Fatalities and Serious Injuries

Fatalities and serious injuries in 2015 increased over the prior year; possibly a result of the increase in vehicle miles traveled during the same period.



Source: The FDOT Source Book.

Fatalities and Serious Injuries

FDOT's core measures for transportation safety are the number of fatalities and serious injuries. As shown in Figure 10, the number of fatalities and serious injuries are increasing. The Department's long-term aspirational vision is zero deaths on Florida's roadways. To advance this vision, safety is addressed in numerous FDOT plans, including the FTP, the Florida Strategic Highway Safety Plan (SHSP), the Florida Highway Safety Plan (HSP), and the Highway Safety Improvement Plan (HSIP).

It is essential that federal, state, regional and local safety partners and other stakeholders work together to improve safety. Therefore, FDOT collaborates with its safety partners to implement Florida's SHSP to reduce fatalities and serious injuries by strategically targeting resources to the areas with the greatest potential for improvement.

Despite safer highway design, safer motor vehicles, increased safety belt use, improved public education, vigorous enforcement of laws, and improved emergency response and trauma treatment, there is obviously more work to do. Driver behavior, for example, is a safety challenge requiring continuous attention and safety improvements often take several years to properly evaluate.

ACCOUNTABILITY

ACCOUNTABILITY

As travel demand increases and changes, Florida continues to improve the management and operation of our multimodal transportation system. This improvement is achieved through consistent performance evaluation. FDOT continuously monitors its own performance to ensure that it is working as efficiently and effectively as possible to help deliver that system. A key component of monitoring is the monthly Performance Review where key production and organizational measures are tracked by the Department's executive leadership. While FDOT monitors these measures to ensure predictability and stability of project delivery, the Department also simultaneously looks for innovations to improve processes.

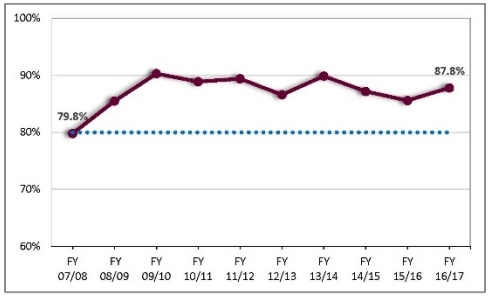
For example, FDOT increasingly uses recycled materials in roadway construction and reconstruction for cost savings and environmental benefits. The Department has also made significant progress in using the nationally recognized Efficient Transportation Decision-Making (ETDM) project screening process. ETDM screenings occur in the planning and programming stages as an integral part of project delivery. In 2017, 38 screening events were completed, providing early coordination and collaboration with environmental resource agencies and stakeholders. These are just a couple of the many innovations and improvements that FDOT implements every day.

One of the best means to evaluate the Department's accountability and success as a steward of public resources is to monitor project delivery performance. Key measures include the timeliness and efficiency of the Department in constructing projects.

Construction Projects Completed On-Time

This core measure is the percent of FDOT highway and bridge construction contracts that are completed within 20 percent of the original schedule. Figure 13 shows that of the 327 construction contracts completed in fiscal year 2016/17, 87.8 percent were completed within 20 percent of the original schedule estimate, which surpassed FDOT's 80 percent goal.

Figure 11: Construction Projects Completed On-Time



In fiscal year 2016/17 FDOT continues to surpass its 80 percent target for construction projects completed on-time.

Source: FDOT Office of Construction, Quarterly Performance Measures Reports

ACCOUNTABILITY

By completing projects on time, FDOT and its contractors save time and money for freight shippers and the industries that depend on them, as well as for other road users. Completing projects on time also helps reduce the extent of time delays and cost associated with travel through construction work zones. This reflects FDOT's emphasis on responding to customer needs and priorities.

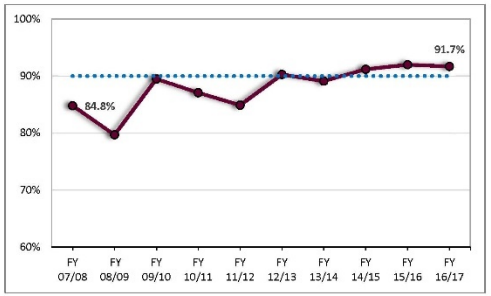
Construction Projects Completed Within Budget

This core measure is the percent of construction contracts that have been completed at a cost within 10 percent of the original contract amount. Figure 14 shows that of the 327 construction contracts completed in fiscal year 2016/17, 91.7 percent were completed within the 10 percent standard, exceeding FDOT's 90 percent goal.

The ability to complete projects within budget helps to ensure that FDOT can deliver more transportation projects with its limited resources, getting a greater "bang" out of every transportation dollar expended.

Figure 12: Construction Projects Completed Within Budget

Construction projects continue to be completed within budget.



Source: FDOT Office of Construction, Quarterly Performance Measures Reports.

NEW FEDERAL LEGISLATION

NEW FEDERAL REQUIREMENTS

In addition to the measures that FDOT proactively tracks to monitor performance, there are additional federal requirements that all state DOT's must report. In July 2012, Congress enacted legislation titled Moving Ahead for Progress in the 21st Century or more commonly referred to as MAP-21. The stated primary objectives of MAP-21 are to increase the transparency and accountability related to states' investment of federal taxpayer dollars into transportation infrastructure and services nationwide, and to ensure that states distribute funds to transportation projects that collectively make progress toward the achievement of national goals.

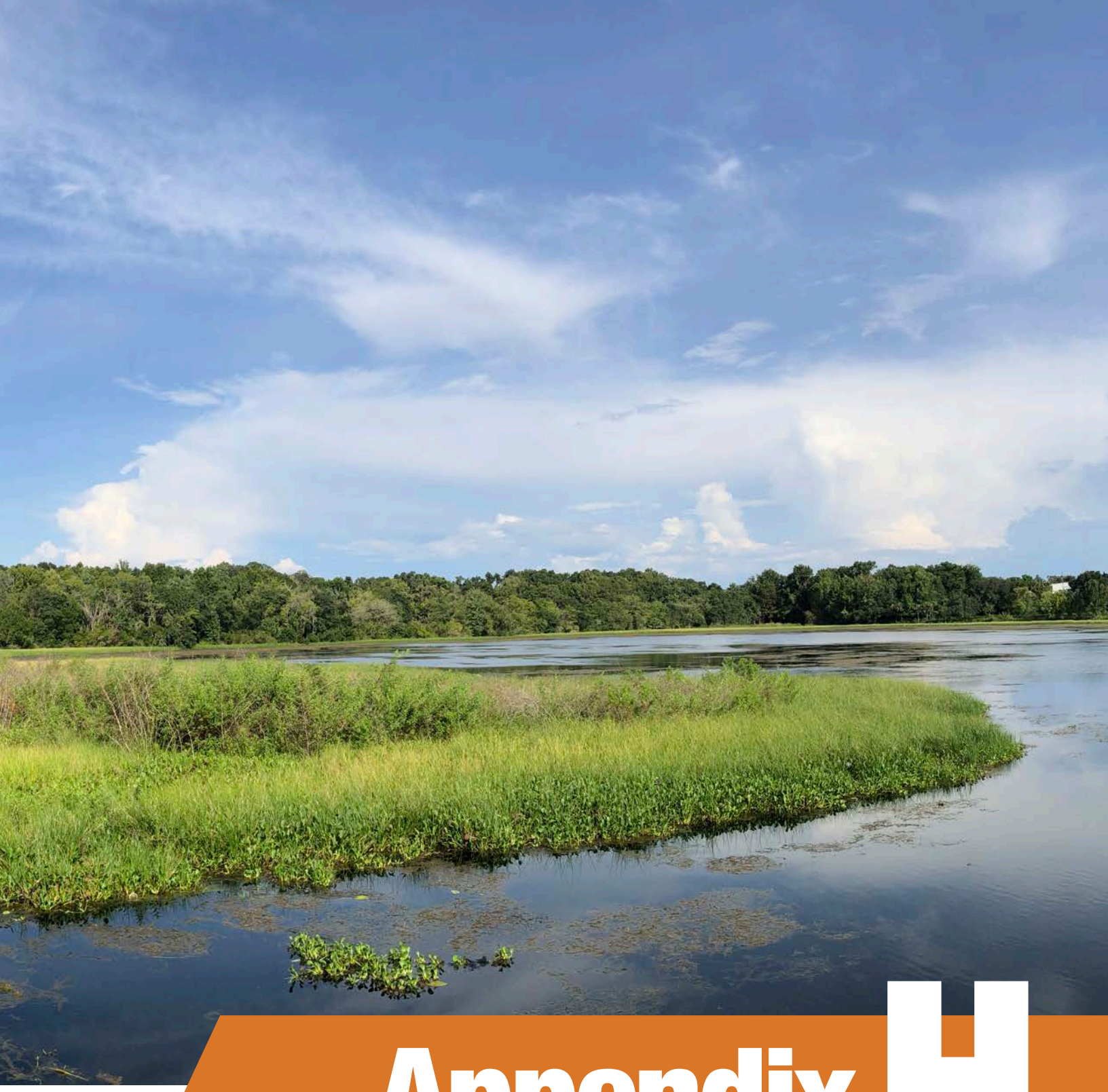
The national goal areas identified were:

- Safety;
- Infrastructure Condition;
- System Reliability;
- Freight Movement and Economic Vitality;
- Environmental Sustainability; and
- Reduced Project Delivery Delays

Other legislation followed in December 2015 titled Fixing America's Surface Transportation (FAST) Act. It supported and continued the goals and overall performance management approach of MAP-21.

To assess states' progress, performance measures were established through rule-making that address each of the national goal areas. State departments of transportation (DOTs) are required to establish targets for the performance measures prescribed by the rules within one year of their release date. The Metropolitan Planning Organizations (MPOs) then have 180 additional days after the State DOT establishes targets to report targets for their jurisdictions. The State DOT may incur penalties and be held accountable if the FHWA determines significant progress toward established targets has not been met.

FDOT is currently working in collaboration with the MPOs and providers of public transportation, to the extent practicable, to establish statewide targets by the required deadlines.



Appendix H

CONGESTION MANAGEMENT PLAN

METROPOLITAN PLANNING ORGANIZATION
HERNANDO / CITRUS

Congestion Management Process

POLICY AND PROCEDURES HANDBOOK





JANUARY 2017

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METROPOLITAN PLANNING ORGANIZATION
HERNANDO/CITRUS

Congestion Management Process

POLICY AND PROCEDURES HANDBOOK

Chapter 1
Introduction

Chapter 1
Introduction

Maintenance of a CMP is a requirement for all MPOs under Florida law and for MPOs in Transportation Management Areas (TMAs) under federal law. Consistent with the guidance from the Final Rule on the CMP, the intent of the CMP Update is to "address congestion management through a process that provides for safe and effective integrated management and operation of the multimodal transportation system." A vibrant congestion management process can serve a valuable role in addressing the region's transportation needs in light of the following:

- Funding levels limit the number of new large scale projects which can be planned and constructed
- Transportation safety is becoming an increasingly important planning consideration

Although the Hernando/Citrus MPO is not in a TMA, which is defined as an urbanized area with a population over 200,000, both counties have developed and implemented congestion management efforts "to provide the information needed to make informed decisions regarding the proper allocation of transportation resources" as required by Florida law.

In 2011, the formally known Hernando County MPO developed a significantly updated Congestion Management Process. After release of data from the 2010 Census, Citrus County qualified as an urbanized area and thus there was coordination of the merger with the Hernando County MPO (HCMPO) by the Citrus County TPO. The first step was to expand the HCMPO to include the Homosassa Springs-Beverly Hills-Citrus Springs Urbanized Area by expanding the Metropolitan Planning Area Boundary (MPAB). Hernando County developed a reapportionment plan that involved the Citrus County membership, the MPAB expansion, and the resolutions of support from the affected city and county jurisdictions. Hernando and Citrus County planning organizations approved the merger in December of 2013, thereby creating the Hernando/Citrus MPO.

Typically, the Congestion Management Process Policy and Procedures Handbook needs to be updated every five years concurrent with or following the development of the MPO's Long Range Transportation Plan which is also updated on a five year cycle. This Hernando-Citrus MPO Congestion Management Process Policy and Procedures Handbook addresses the following changes since the Hernando MPO's 2012 report:

1. Includes Citrus County for a consolidated Hernando-Citrus MPO planning area.
2. Addresses changes in Federal Transportation Legislation resulting from the passage of MAP-21 (June 2012) and the FAST Act (December 2015) and the subsequent rulemaking available at the time when this Policy and Procedures Handbook was developed in late 2016. In some cases, anticipated rulemaking regarding transportation performance measures has been incorporated to potentially reduce the need for interim updates outside of the five-year cycle.
3. Integrate Complete Streets into the Congestion Management Process and in support of other planning efforts by the MPO. This is consistent with the ongoing implementation of complete streets being undertaken by the Florida Department of Transportation.

Congestion Management Process

The Congestion Management Process (CMP) is a management system and process conducted by metropolitan planning organizations (MPO), such as the Hernando/Citrus MPO, to improve traffic operations and safety through the use of either strategies that reduce travel demand or the implementation of operational improvements. The Hernando/Citrus MPO is required by the federal government to implement a CMP as part of its routine planning efforts. The public will benefit from having a functional CMP in place because it can improve travel conditions through the use of low cost improvements or strategies. The improvements can be implemented in a relatively short timeframe (within 5-10 years) compared to more traditional capacity improvements, such as adding additional travel lanes, which can take more than 10 years to implement and cost significantly more. Projects identified through the CMP process may also be added to future updates of the Long Range Transportation Plan should they require additional funding or a longer timeframe for implementation.

The Federal Highway Administration (FHWA) defines a CMP as "a systematic approach collaboratively developed and implemented throughout a metropolitan region, that provides for the safe and effective management and operation of new and existing transportation facilities through the use of demand reduction and operational management strategies."

The CMP has evolved from what was previously known as the Congestion Management System (CMS). Key highlights of the Hernando/Citrus CMP include:

- Routine completion of a technical process undertaken (typically each year) to identify projects that are needed to reduce congestion and that are prioritized for funding in the County's Capital Improvement element.
- Routine meetings by the MPO's Technical Advisory Committee (TAC)/Transportation Systems Operations Committee (TSOC).

Causes of Congestion

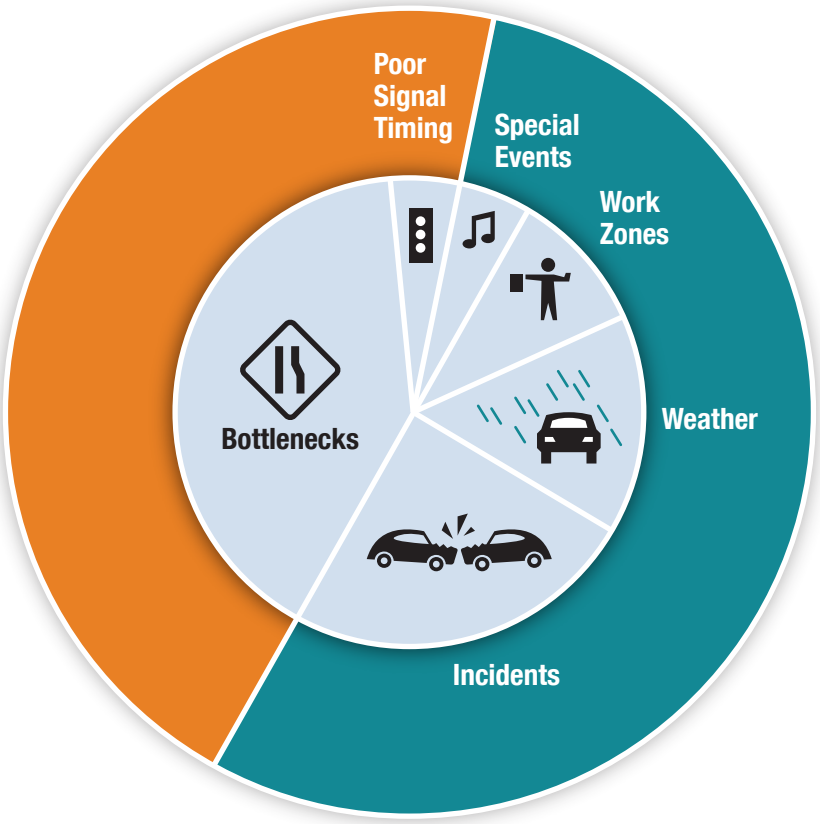
The process of congestion management begins by understanding the cause of the problem. **Figure 1** illustrates the results of a national study presented by FHWA on the sources of congestion. Six major causes of congestion are identified:

- **Bottlenecks** – points where the roadway narrows or regular traffic demands (typically at traffic signals) cause traffic to back up; these are the largest source of congestion and typically cause a roadway to operate below its adopted level of service standards.
- **Traffic Incidents** – crashes, stalled vehicles, debris on the road; these incidents cause about one quarter of congestion problems. A focus of the Hernando/Citrus MPO's CMP will be reducing crashes that can cause congestion and expediting incident response to clear incidents where Intelligent Transportation Systems (ITS) surveillance is in place.
- **Work Zones** – for new road building and maintenance activities, such as filling potholes; caused by necessary activities, but the amount of congestion caused by these actions can be reduced through a variety of strategies.
- **Bad Weather** – cannot be controlled, but travelers can be notified of the potential for increased congestion and signal systems can adapt to improve safety.

- **Poor Traffic Signal Timing** – the faulty operation of traffic signals or green/red lights where the time allocation for a road does not match the volume on that road; poor signal timings are a source of congestion on major and minor streets.
- **Special Events** – cause "spikes" in traffic volumes and changes in traffic patterns; these irregularities either cause or increase delay on days, times, or locations where there usually is none.

As shown in **Figure 1-1**, bottlenecks are the largest cause of congestion nationally, followed by traffic incidents and bad weather. Adverse weather cannot be controlled, but policies and improvements can be implemented to control traffic incidents and bottlenecks. Due to the lack of comprehensive local studies on the causes of congestion, these national data are widely used in CMP updates. The data suggest that local causes are likely to be similar, with bottlenecks and traffic incidents typically being the top two causes of congestion.

Figure 1-1: Causes of Congestion



Federal Requirements

Public Law 112-141, the Moving Ahead for Progress in the 21st Century Act (MAP-21), was signed into law on July 6, 2012 and provided federal transportation funding for fiscal years 2013 and 2014. MAP-21 was the first transportation legislation enacted since 2005 and provides updated policy and programmatic framework for investments to guide the growth and development of the country's vital transportation infrastructure. It was the intent of MAP-21 to create a streamlined, performance-based, multi-modal program to address the needs of the national transportation system as outlined in the National Goals listed below. Fundamental aspects of this legislation extended to future fiscal years through continuing legislation and through a new transportation bill. On December 4, 2015, Public Law 114-94, the Fixing America's Surface Transportation Act (FAST Act) was signed into law. The FAST Act will likely fund transportation programs for fiscal years 2016 through 2020 and is the first long-term surface transportation authorization enacted in a decade that provides funding certainty for surface transportation. The FAST Act will support critical transportation projects to ease congestion and facilitate freight movement on major roads by establishing and funding new policies and programs.

National Goals

- **Safety** – to achieve a significant reduction in traffic fatalities and serious injuries on all public roads.
- **Infrastructure condition** – to maintain the highway infrastructure asset system in a state of good repair.
- **Congestion reduction** – to achieve a significant reduction in congestion on the National Highway System.
- **System reliability** – to improve the efficiency of the surface transportation system.
- **Freight movement and economic vitality** – to improve the National Highway Freight Network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development.
- **Environmental sustainability** – to enhance the performance of the transportation system while protecting and enhancing the natural environment.
- **Reduced project delivery delays** – to reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project completion through eliminating delays in the project development and delivery process, including reducing regulatory burdens and improving agencies' work practices.

Federal Regulations

The following section summarizes the Federal requirements for a Congestion Management Process in Transportation Management Areas. This guidance is codified in the Code of Federal Regulations (CFR (Section 450.322) — Statewide Transportation Planning; Metropolitan Transportation Planning; Final Rule).

a. The transportation planning process in a TMA shall address congestion management through a process that provides for safe and effective integrated management and operation of the multimodal transportation system.
   - Cooperatively developed and implemented
   - Travel reduction strategies
   - Operational management strategies

b. The CMP should result in multimodal system performance measures and strategies that can be reflected in the metropolitan transportation plan and the TIP.

c. Acceptable levels of service may vary from area to area. In addition, consideration should be given to the following strategies:
   - Manage demand
   - Reduce single occupant vehicle travel
   - Improve transportation system management and operations
   - Improve efficient service integration within and across the following modes:
     I. Highway
     II. Transit
     III. Passenger and freight rail operations
     IV. Non-motorized transport
   - Where general purpose lanes are determined to be appropriate, must give explicit consideration to features that facilitate future demand management strategies.

d. The CMP shall be developed, established, and implemented in coordination with Transportation Systems Management (TSM) and operations activities. The CMP shall include:
   - Methods to monitor and evaluate the performance of the multimodal transportation system
     I. Identify the underlying causes of congestion
     II. Identify and evaluate alternative strategies
     III. Provide information supporting the implementation of actions
     IV. Evaluate the effectiveness of implemented actions
   - Definitions of congestion management objectives and appropriate performance measures to assess the extent of congestion and support the evaluation of the effectiveness of strategies. Performance measures should be tailored to the specific needs of an area and established cooperatively by the State, MPOs, and operators of major modes of transportation, including providers of public transportation.
   - Establishment of a coordinated program for data collection and system performance monitoring to define the extent and duration of congestion. To the extent possible, this program should be coordinated with existing sources, including providers of public transportation.
   - Identification and evaluation of the anticipated performance and expected benefits of congestion management strategies that will contribute to the more effective use and improved safety of the existing and future transportation system. Examples of strategies to consider include:
     I. Demand management measures, including growth management and congestion pricing
     II. Traffic operational improvements
     III. Public Transit improvements
     IV. Information Technology Services (ITS) technologies
     V. Where necessary, additional system capacity

- Identification of an implementation schedule, implementation responsibilities, and possible funding sources for each strategy.
- Implementation of process for periodic assessment of the effectiveness of implemented strategies. Results of this assessment shall be provided to decision makers and the public to provide guidance on the selection of effective strategies for future implementation.

e. TMA designated nonattainment for ozone or carbon monoxide may not program Federal funds for any project that will result in a significant increase in the carrying capacity of Single Occupant Vehicles (SOVs), with the exception of safety improvements or the elimination of bottlenecks (within the limits of the appropriate projects that can be implemented).

f. In TMAs designated nonattainment for ozone or carbon monoxide, the CMP shall provide an appropriate analysis of reasonable (including multimodal) travel demand reduction and operational management strategies for a corridor in which a project with a significant increase in SOV capacity is proposed to move forward with Federal funds.

g. State laws, rules, and regulations pertaining to congestion management systems or programs may constitute the congestion management process, if FHWA and FTA find that these are consistent with the intent of this process.

h. Congestion management plan. A MPO serving a TMA may develop a plan that includes projects and strategies that will be considered in the TIP of such MPO. Such plan shall:

- Develop regional goals to reduce miles traveled during peak commuting hours and improve transportation connections between areas with high job concentration and areas with high concentrations of low-income households;
- Identify existing public transportation services, employer based commuter programs, and other existing transportation services that support access to jobs in the region; and
- Identify proposed projects and programs to reduce congestion and increase job access opportunities.

In developing the CMP, an MPO shall consult with employers, private and nonprofit providers of public transportation, transportation management organizations, and organizations that provide job access reverse commute projects or job-related services to low-income individuals.

Congestion Management Process: A Guidebook

Federal Eight-Step Congestion Management Process

In April 2011, the FHWA released the Congestion Management Process: A Guidebook document which provides additional detail and guidance to MPOs in the development and implementation of a congestion management process. This guidebook includes an eight-step process that summarizes the key parts of an ongoing congestion management process. These steps are summarized in **Figure 1-2**.

Figure 1-2: Federal Eight Step Congestion Management Process



Incorporating Travel-Time Reliability in the CMP: A Primer

Travel-time reliability is defined as the consistency and dependability in travel times that are measured from day-to-day and/or across different times of the day. Travel-time reliability is significant to the CMP because it incorporates a systematic method to address the issue of traffic congestion caused by non-recurring events. Non-recurring events include:


Traffic Incidents


Weather


Road Work Zones



Special Events

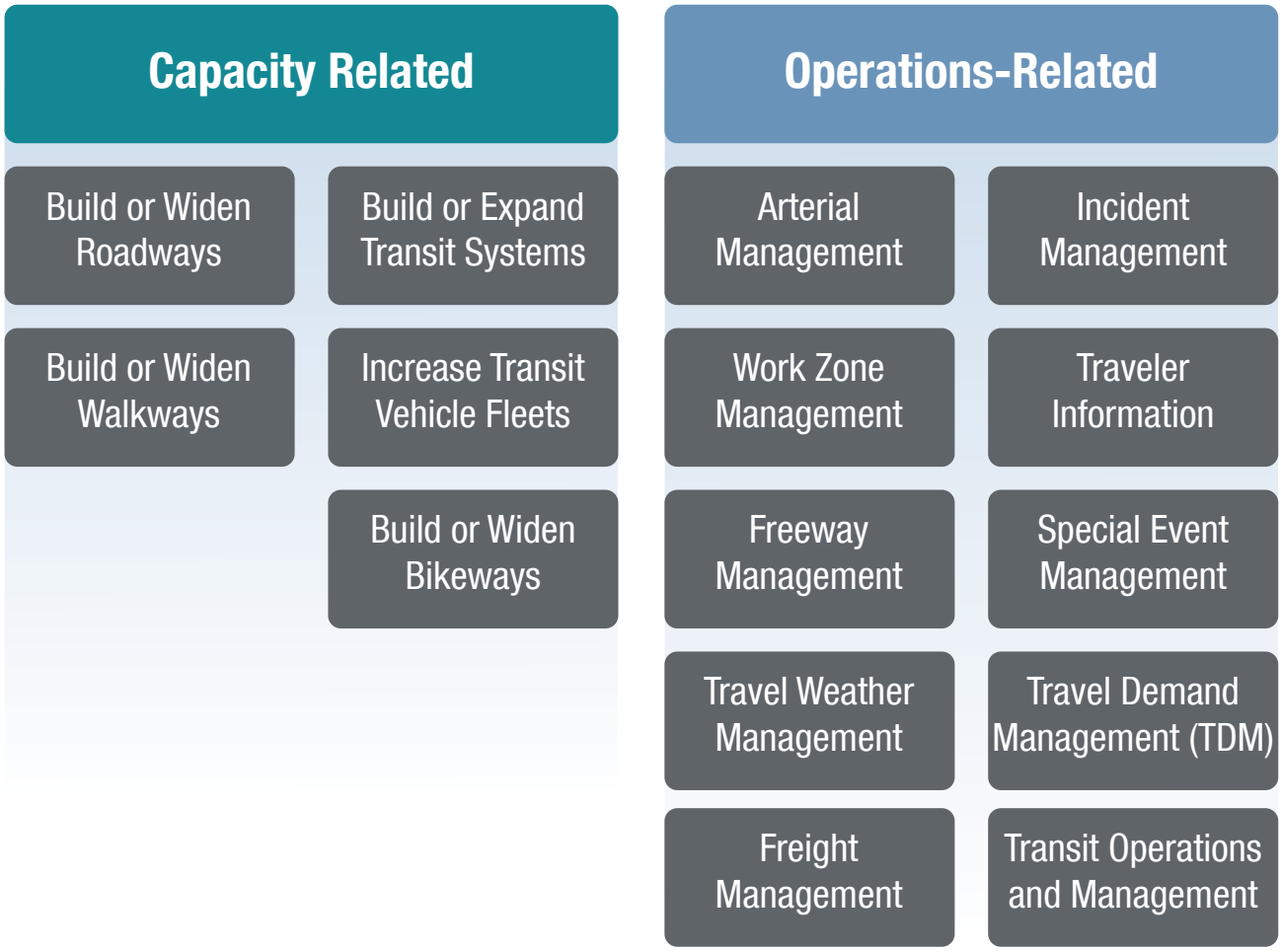
Non-recurring events account for a majority of total traffic congestion-related delay in the United States and not until recently were there cost-effective data collection opportunities. In addition to more inexpensive travel-time monitoring technologies, there are three factors that have contributed to a greater focus on travel-time reliability in MPOs. These factors include:

- **Constraints on Expansion of the Transportation System** – New roadway construction and roadway expansion has largely ended in the United States due to high costs, the built-out nature of urbanized areas, and the community desire for multimodal streets.
- **Expectations of the Traveling Public** – Surveys have shown that the traveling public often values travel-time reliability more than speed.
- **Federal Surface transportation Reauthorization Law** – When MAP-21 was signed into law, a process that involved performance measurement, target setting, and transportation investment reporting was established and seven national goals were set. Three years later, the FAST Act was signed into law and included the same national goals. One of the seven goals is:

  System reliability – to improve the efficiency of the surface transportation system.

The benefits of incorporating travel-time reliability into the CMP include a superior understanding of the regional transportation system that contains capacity expansion strategies. The inclusion of travel-time reliability will take the CMP a step further by also featuring a heavier concentration of operation strategies, such as signal retiming or traveler information as appropriate by the area and type of transportation corridor.

Figure 1-3: Typical Capacity and Operations Related Strategies



CMP Policy and Procedures Handbook Overview

As mentioned previously, the Hernando-Citrus MPO is required by the Florida Statute to implement a CMP as part of its routine planning efforts. This handbook outlines the policies and procedures that will ensure that the federal and state requirements are addressed. Specific performance evaluation information on the Hernando and Citrus County networks will be included in future State-of-the System Reports.

This handbook is outlined to follow the eight-step CMP, based on federal guidelines. The main purpose of this handbook is to (1) Develop CMP Goals and Objectives, (2) Define the Regional CMP Network, (3) Develop Multimodal Performance Measures, (4) Identify the potential sources of data to monitor system performance, (5) identify policies and procedures for the update of the CMP. The report chapters found in this handbook are described in more detail below.

Chapter 1, Introduction – The purpose of the CMP (based on federal requirements), an introduction to the causes of congestion, and an overview of the handbook are provided.

Chapter 2, CMP Overview – The eight-step CMP is described and a general overview of the process is provided as well as the update schedule for the Annual State of the System Report.

Chapter 3, Goals and Objectives – The remainder of the chapters in this handbook discuss specific steps from the eight-step CMP. The Goals and Objectives of the CMP are documented in this chapter. This Chapter also includes policies associated with the implementation of Complete Streets.

Chapter 4, Network Identification – A description of the area of application and transportation network used for the CMP process is provided.

Chapter 5, Development of Performance Measures – A brief summary is provided of congestion related measures that can be used to monitor the effectiveness of the CMP.

Chapter 6, System Performance Monitoring Plan – This chapter describes how to evaluate and monitor the system, identify congested corridors and select corridors for evaluation, evaluate corridors and potential strategies (described in Chapter 7), and prioritize and program improvements.

Chapter 7, Congested Corridor Selection and CMP Strategies – This chapter describes how congested corridors are typically identified and strategies that can be used to reduce congestion and different strategies that can be used to improve identified congested corridors.

Chapter 8, Monitor Strategy Effectiveness – This chapter describes monitoring of strategies implemented; as well as, information that can be found in the Annual State of the System report.

Congestion Management Process

POLICY AND PROCEDURES HANDBOOK

Chapter 2
CMP Overview

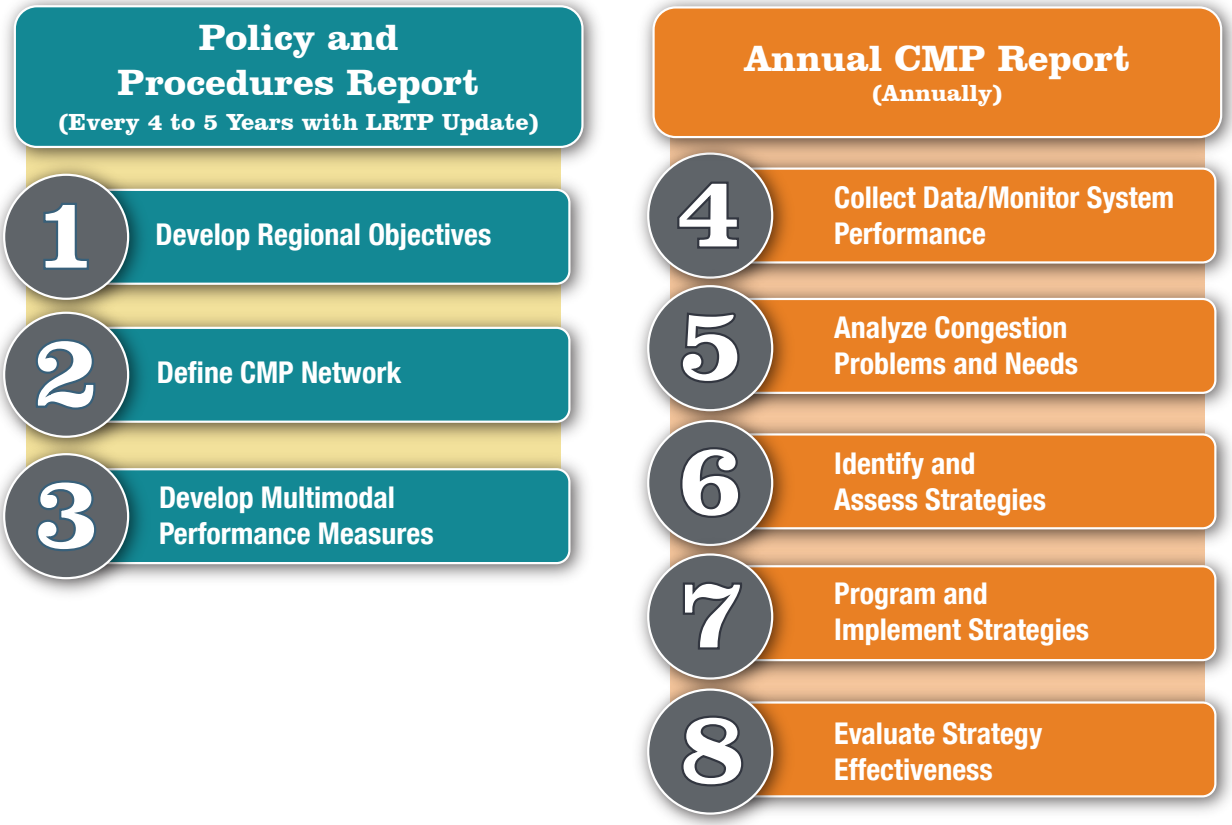
Chapter 2
CMP Overview

Hernando/Citrus MPO Eight-Step Congestion Management Process

This section documents the revised Congestion Management Process for the Hernando/Citrus MPO that will be used to address the Federal requirements and unique local needs and opportunities of the communities in Hernando/Citrus Counties. This process closely matches the Federal Eight-Step Process and includes additional detail in specific sections where appropriate.

Figure 2-1 demonstrates the Eight-Step process that will be used by the Hernando/Citrus MPO. As noted, the first three steps will typically be updated concurrent with each update of the Long Range Transportation Plan which takes place every four to five years. Steps 4 to 8 will potentially be updated on an annual basis. The remainder of this section details the Eight-Steps and how they will be implemented.

Figure 2-1: Hernando/Citrus MPO's Approach to the Federal Eight Step Process



Complete Streets

Complete Streets policies and guidelines are being established at the Federal, State, and local levels. The safety and mobility benefits of using a complete streets approach is consistent with the goals and objectives of the Congestion Management Process. Currently the Florida Department of Transportation (FDOT) is close to completing a two-year process to implement Complete Streets in all aspects of their ongoing efforts to accommodate transportation needs in the state. The FDOT Complete Streets policy adopted in September 2014 states that:

> *"…the Department will routinely plan, design, construct, reconstruct and operate a context sensitive system of 'Complete Streets.' While maintaining safety and mobility, Complete Streets shall serve the transportation needs of transportation system users of all ages and abilities, including but not limited to: cyclists, freight handlers, motorists, pedestrians, and transit riders."*

The establishment of a vision and policy to take a Complete Streets approach in Hernando and Citrus Counties by the MPO is consistent with the partnership the MPO has with the FDOT and local agencies to provide efficient and safe transportation options.

Figure 2-3 illustrates how taking a Complete Streets approach encompasses all aspects of the Congestion Management Process: Balancing safety, mobility, and capacity.

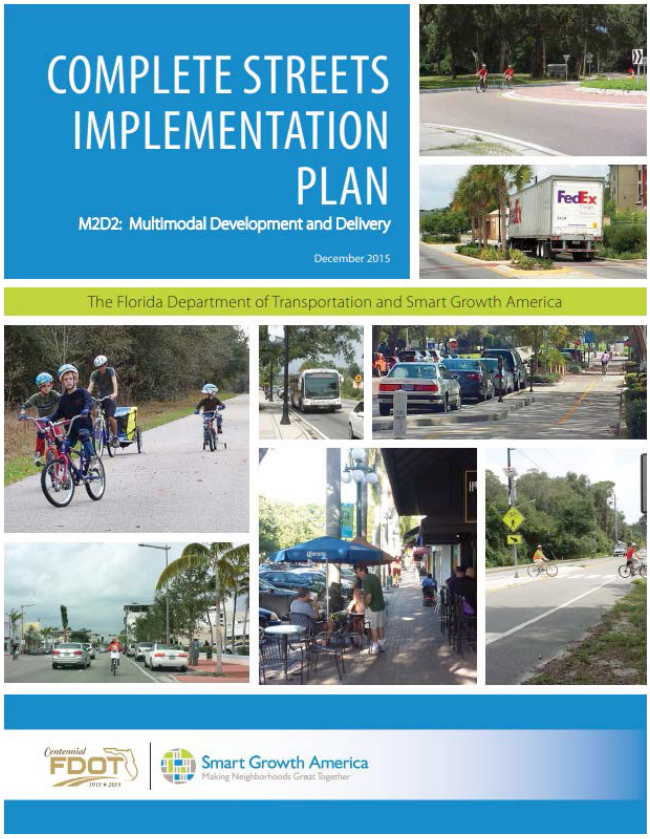
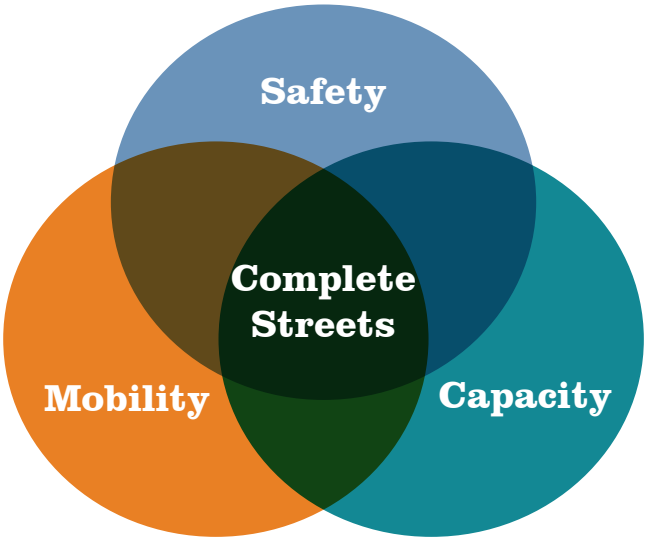


Figure 2-2: FDOT Complete Streets Implementation Plan

Figure 2-3: Complete Streets Approach



Complete Streets Vision

The Hernando/Citrus MPO envisions streets and highways that take a context sensitive approach to provide safe travel for all appropriate modes of travel and users, regardless of their age or abilities; to promote economic development through the creation of a livable community with a sense of place that also promotes public health and fitness.

Complete Streets Definition

Complete streets are streets for everyone. They are context sensitive streets or roadways that are designed and operated for safe access and travel by all appropriate users of all ages and abilities, including, but not limited to motorists, bicyclists, pedestrians, transit users, technology and other mobility providers, freight haulers. Complete streets allow the public to safely cross the street, walk or bicycle to shops and/or work. They support safe and convenient access to transit services.

Complete Streets Action Plan

In cooperation with the FDOT and member judications, the MPO will:

1. Establish a "Complete Street Network": to consist of planned and existing arterial and collector roads (excluding limited access facilities) where complete streets design is appropriate (typically within urban or other developed areas).
2. Define street segments based on logical termini and/or roadway context, urban and rural areas (based on Census data), existing and future transit corridors and transfer centers (based on the Long Range Transportation Plan).
3. Establish standards for roadway segments on the Complete Streets Network.
4. Modify its current roadway network database to create a "Complete Streets Database" with appropriate data related to complete streets, i.e., bicycle and pedestrian features and access to transit service.
5. Develop performance standards for complete streets in the 2045 Long Range Transportation Plan.
6. Develop a prioritization process for the identification of corridors to be considered for and receive complete street improvements.
7. Develop Complete Streets guidance to serve as a resource for local governments in the planning, design, construction, operation, and maintenance of complete streets.
8. Develop model project review guidelines for new development consistent with guidance from the Complete Streets Handbook.
9. Make use of the Complete Streets Matrix included with the Congestion Management Process for the review of corridors for complete streets improvements.
10. The MPO will perform a Complete Streets Review for maintenance projects programmed in the Florida Department of Transportation (FDOT) Five-year Work Program as part of its "Early and Continuing Process for the Review of Resurfacing Projects." Where applicable and feasible, additional complete street features will be added to maintenance projects using supplemental funding from the MPO's set-aside for Congestion Management Projects.
11. The MPO includes a set-aside of approximately $500,000 per county for Complete Streets Projects as part of its annual Priority Transportation Projects to include:
    a. Traffic operation and safety improvements such as traffic signal upgrades, the addition of turn lanes, lighting and crossing improvements;
    b. Transit route access improvements such as concrete landing pads; and
    c. Bicycle and pedestrian improvements such as the construction of new sidewalks, bicycle facilities, multi-use trails, or enhanced street crossings;
    d. Facilitation of goods movement.
12. In cooperation with FDOT, and its member jurisdictions, the Hernando/Citrus MPO will perform complete street corridor studies to identify candidate projects for funding on a corridor level.

Figure 2-4: Illustrative Complete Street Corridor



CMP in the Metropolitan Planning Process

The CMP is a working tool that needs to be effectively integrated into the MPO's project prioritization process, Transportation Improvement Plan (TIP), and Long Range Transportation Plan (LRTP). The objectives- driven, performance-based CMP starts with the monitoring and evaluation of current conditions to identify where congestion exists. Based on the identified goals and objectives and the established performance measures of the CMP, this evaluation leads to the identification of potential mitigation strategies, implementation of appropriate strategies, and the development of a monitoring plan.

The outputs of the CMP, such as identified congested corridors/ locations and their recommended mitigation measures, then proceed through the CMP process where they are evaluated and projects or programs are selected for implementation. The projects or programs that are identified for implementation through the CMP are then moved into project development and programmed into the TIP for funding and implementation. The implemented projects are then monitored to evaluate the

strategy effectiveness on a system-wide basis. In Hernando and Citrus County, CMP projects typically are funded using boxed funds identified in the LRTP along with other local revenues. This allows the MPO to add annually the most important strategies for implementation and expand funding levels to address local needs.

Public Involvement Process

The purpose of CMP public involvement activities is to provide the public with information on congestion monitoring activities that are in place in Hernando and Citrus County as well as planned improvements to mitigate congestion. Previously, significant progress has been made in Hernando County toward identifying congested corridors and alternative transportation improvement strategies to alleviate congestion and enhance the mobility of persons and goods at key locations through prior CMP updates. This approach will now expand to Citrus County.

As recent federal regulations warrant involvement of the public during all key stages of transportation projects, it is important to involve the public in all key stages of transportation improvement projects within and beyond the CMP. Otherwise, lack of public support and awareness may adversely impact the success of any potential transportation project. Therefore, the proposed CMP improvement projects/strategies will be presented to the citizens of Hernando and Citrus County at various public involvement activities.

The MPO's TAC/TSOC serves as the advisory group for the CMP update and includes the following jurisdictions/agencies:

- Hernando County Planning Department
- Citrus County Planning Department
- Hernando County Department of Public Works
- Citrus County Public Works Department
- Hernando County School District
- Citrus County School District
- City of Brooksville
- City of Inverness
- City of Crystal River
- Hernando County Transit "The BUS"
- Citrus County Transit

Other stakeholders as the need merits, such as CSX Railroad, goods movement representatives, etc. Typically, these additional members would serve on an ad hoc basis to address specific issues.

The Technical Advisory Committee (TAC)/Transportation Systems Operations Committee (TSOC) convenes for the MPO on CMP related matters. This ensures that CMP issues are addressed routinely as an ongoing activity of the MPO. A key contribution of the Hernando County TAC/TSOC is to identify, track, and evaluate potential congestion- or safety-related issues on the roadway network.

CMP Actions/Recommendations

A list of recommendations and actions is presented to enhance the CMP and become more efficient in the overall MPO planning process. The actions/recommendations presented below will be reviewed and considered by MPO staff and the Hernando/Citrus County Congestion Management Plan Task Force for implementation as necessary.

- Update the CMP Policy and Procedures Handbook (CMP Steps 1-3) on a four- to five-year cycle consistent with the update cycle of the LRTP. Timing of the completion of CMP updates in advance of finalizing LRTP updates would benefit integration of CMP strategies into the LRTP.
- Develop an routine State of the System Report to track effectiveness of the implemented strategies, to the extent possible and to evaluate trends and conditions for the multi-modal transportation system in the CMP study area. The annual CMP State of the System Report will include steps 4 through 8 of the CMP process:
  - Step 4: Collect Data/Monitor System Performance
  - Step 5: Analyze Congestion Problems & Needs
  - Step 6: Identify and Assess Strategies
  - Step 7: Implement Selected Strategies
  - Step 8: Monitor Strategy Effectiveness (combined with Step 4)
- Enhance coordination with agencies participating in the CMP by framing desirable strategy types and defining roles in implementation. This is essential, as most congestion and mobility strategies are formulated and implemented by other agencies.
- Projects from the CMP process may identify projects for inclusion in the LRTP either through the four-year update cycle or through plan amendments.
- Identify and implement data collection recommendations on collecting key congestion data as well as closing any data gaps identified in this CMP.
- Perform outreach and education efforts to inform interested parties and stakeholders. These may include:
  - Maintain a CMP page on the MPO website.
  - Develop a brochure and/or newsletter on the CMP and its benefits.
- Continue monitoring changes to federal CMP regulations and modify/update CMP to reflect new requirements.

The general schedule for the development of the annual CMP State-of- the-System-Report is provided below (refer to **Figure 6-1**).

January to May

- Update roadway inventory data to support LOS analysis, travel time reliability, and safety evaualtion.
- Calculate Non-Highway Systemwide Performance Monitoring (Public Transportation, Bicycle, Pedestrian, TDM, etc.).
- Produce growth rates on Hernando and Citrus county roadways using county traffic counts and perform initial LOS analysis (existing conditions +1 year and existing + 5 years).*
- Produce preliminary growth rates on state roadways using older state traffic counts and perform initial LOS analysis (existing conditions and existing +5 years).*

May

- Hold TAC/TSOC meeting to review and identify potential operational issues that would not be identified through the technical screening process.
- Coordinate with goods movement stakeholders and providers to identify related needs (may occur earlier).

May to June

- Receive FDOT traffic counts.
- Produce updated growth rates on state roadways using state traffic counts and perform initial LOS analysis (existing conditions and existing + 5 years).
- Screen corridors (existing conditions and existing + 5 years).
- Select corridors for evaluation.

July

- Report to TAC/TSOC and CAC results of corridor screening and selection.
- Report to TAC/TSOC and CAC results from Non-Highway Systemwide Performance Monitoring (Public Transportation, Bicycle, Pedestrian, TDM, etc.).

July to August

- Identify strategies to be considered on selected corridors
- Evaluate strategies where appropriate and make improvement or program recommendations for implementation
- Report to the TAC/TSOC and CAC recommended strategies for implementation

September to October

- Finalize technical recommendations on strategy implementation.
- Program improvement recommendations in CIE and identify other priority projects or programs for TIP.
- Finalize performance monitoring summary.
- Obtain endorsement from TAC/TSOC and CAC on programmed projects in CIE and priorities for TIP.
- Adopt CMP Project Priority List through Public Hearing of MPO Board.

October to November

- Finalize CMP Annual State-of-the-State Report.

Chapter 3

Goals and Objectives

Chapter 3
Goals and Objectives

Introduction

A series of CMP goals and objectives was developed to guide the process of monitoring congestion and improving the mobility of persons and goods for the area served by the Hernando/Citrus MPO. These were compiled based on the previously adopted CMP goals and objectives developed previously by the Hernando MPO and modified based on MAP-21/FAST Act rulemaking associated with performance measurement.

The goals and objectives are presented below. They will be used as a tool for selecting strategies and performance measures for strategy monitoring and evaluation.

CMP Goals and Objectives

GOAL #1: Improve and increase transit as a viable transportation alternative.

Objective 1.1 Improve transit service in congested corridors by increasing service in congested corridors with existing service and implementing service in congested corridors currently not served by transit.

Objective 1.2 Develop multimodal strategies that reduce dependency on the single occupant vehicle (SOV).

Objective 1.3 Increase efficiency of transit system through the use of appropriate new and advanced technologies that are feasible.

GOAL #2: Identify and implement strategies to mitigate congestion and improve the safety and mobility of people and goods and maintain the region's air quality.

Objective 2.1 Identify and implement congestion management strategies to enhance the existing transportation system and relieve congestion, improve travel time reliability, improve safety, and improve mobility of persons and goods, where large capital improvements may not be necessary.

Objective 2.2 Encourage using demand management and/or operations management strategies to solve congestion problems before adding capacity through general purpose lanes or new roadways where these strategies may eliminate the need to construct additional lanes.

Objective 2.3 Increase the efficiency of the transportation system through the use of low-cost TDM alternatives such as carpooling, vanpooling, telecommuting, and flexible work hours.

Objective 2.4 Improve the mobility of people and goods by using strategies in advanced technologies such as Intelligent Transportation Systems (ITS).

GOAL #3: Develop, maintain, and expand bicycle, pedestrian, and multi-use trail facilities for efficient and safe movement of people.

Objective 3.1 Coordinate transit services with bicycle, pedestrian, and multi-use trail improvement projects.

Objective 3.2 Provide for pedestrian, multi-use trail, transit, and bicycle facilities to encourage employees to use these facilities to get to work.

GOAL #4: Integrate CMP and its improvements into the LRTP and TIP and help guide land use policies and land development regulations.

Objective 4.1 Incorporate projects identified through the CMP in the Five-Year TIP.

Objective 4.2 Develop land use policies and land development regulations that support public transit, ridesharing, walking, and bicycling, especially for travel to work.

Chapter 4
Network Identification

Chapter 4
Network Identification

Introduction

This chapter of the CMP component presents an overview of the geographic area of application and the transportation network for the Hernando/Citrus MPO CMP.

Area of Application

The CMP area of application includes the transportation system that needs to be evaluated and monitored and where congestion management policies and procedures need to be applied. The geographic area of application for this CMP Update consists of Hernando and Citrus Counties in their entirety.

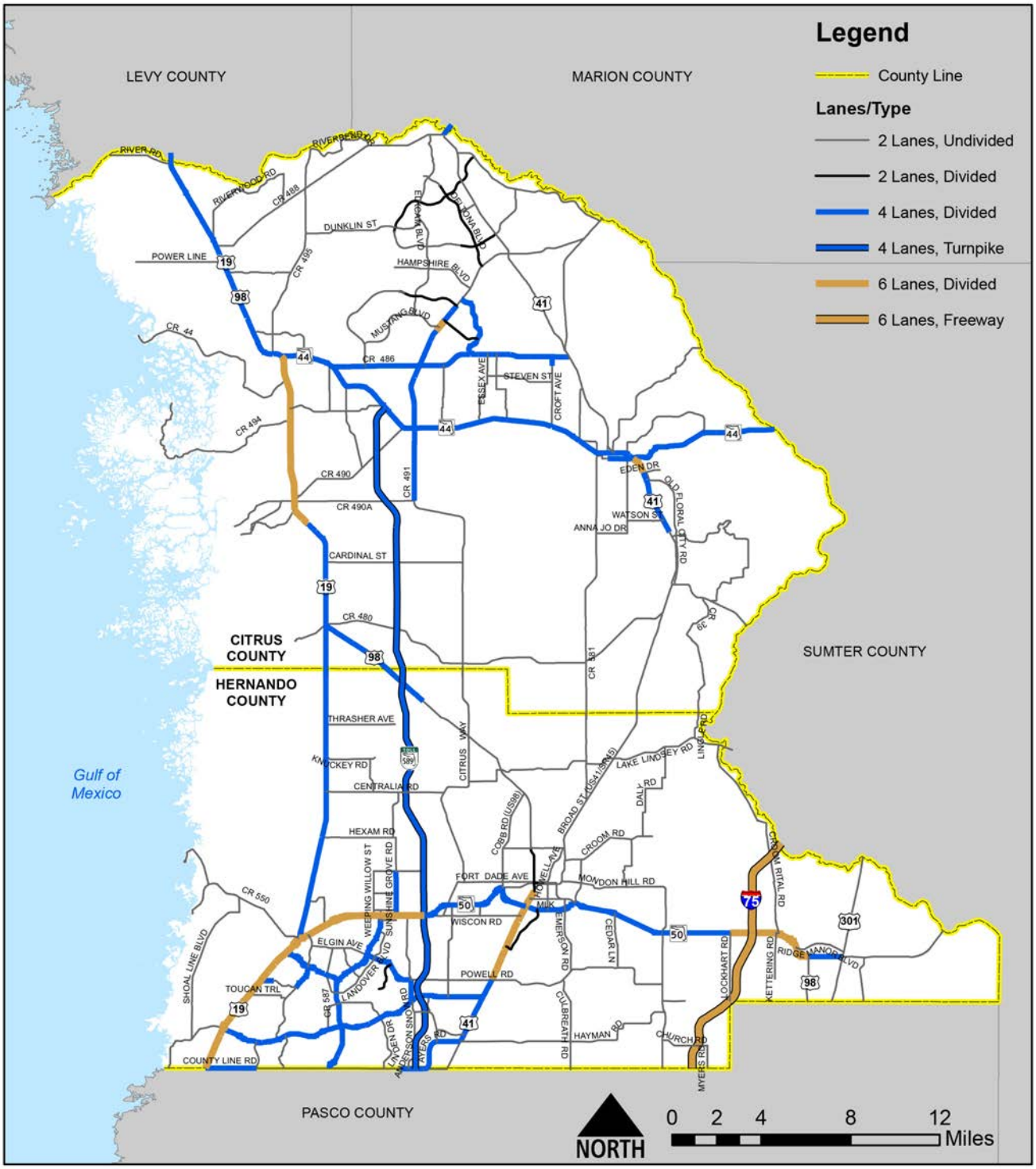
Transportation Network

Consistent with federal guidelines, the Hernando/Citrus MPO CMP covers a multimodal transportation network. In addition to evaluating congestion on the roadway network, the Hernando/Citrus MPO CMP Update evaluates transit, bicycle/pedestrian/trail, and freight movement networks within its designated area of application. The CMP roadway network is described below.

Roadway Network

The Hernando/Citrus MPO CMP roadway network includes all functionally classified roadways included in the adopted LRTP and/or the existing plus committed (E+C) five-year road network (typically, the existing condition plus five years). For example, the map in **Figure 4-1** illustrates the existing plus committed roadway network at the time that this handbook was developed and includes roadways through 2016. This represents the study area and network for the Hernando/Citrus MPO CMP. Chapter 7 provides further information on congested corridors and strategies.

Figure 4-1: Hernando/Citrus County Existing and Committed Projects



Chapter 5
Development of Performance Measures

Chapter 5
Development of Performance Measures

Introduction

Performance measures are used as tools to measure and monitor the effectiveness of the transportation system in the CMP. They assist in identifying and tracking as areas progress in monitoring congestion. However, these measures are dependent upon the transportation network and the availability of data. They typically are used to measure the extent and severity of congestion and for the evaluation of the effectiveness of the implemented strategies.

As identified by FHWA, a set of good performance measures:

- Includes quantifiable data that are simple to present and interpret and have professional credibility,
- Describes existing conditions and can be used to identify problems and to predict changes,
- Can be calculated easily and with existing field data, uses techniques available for estimating the measure, and achieves consistent results, and
- Applies to multiple modes and is meaningful at varying scales and settings.

Performance Measures

The performance measures for the Hernando/Citrus MPO CMP were selected to address the existing conditions for the multimodal network in Hernando and Citrus Counties. The measures are organized into six major categories:

1. Roadway Capacity
2. Roadway Reliability
3. Goods Movement.
4. Public Transit
5. Bicycle/Pedestrian/Multi-Use Trail Facilities
6. Travel Demand Management (TDM)

These performance measures were identified based on numerous monitoring activities currently conducted and/or planned by various local and state agencies responsible for providing or supporting transportation facilities and services in Hernando and Citrus Counties. Detailed descriptions of each of these measures, together with an explanation of how the required data are or will be collected, are presented in the remainder of this chapter.

Safety Performance Measures (5 Year Rolling Average)

- Number of Fatalities
- Fatality Rate
- Serious Injuries
- Serious Injury Rate
- Non-Motorized Safety (Fatalities + Serious Injuries)

Roadway Capacity Performance Measures

- Percent of VMT and Roadway Miles below adopted Level of Service Standard
- V/C Ratio
- V/MSV Ratio

Reliable Travel Time Performance Measures

- Percent of the Interstate System providing for Reliable Travel Times
- Percent of the non-Interstate NHS providing for Reliable Travel Times
- Percent of the Interstate System where Peak Hour Travel Times meet expectations (Optional)
- Percent of the non-Interstate NHS where Peak Hour Travel Times meet expectations (Optional)

Goods Movement Performance Measures

- Vehicle Miles Traveled (VMT) Below LOS Standard on Designated Truck Routes
- Percent of the Interstate System Mileage providing for Reliable Truck Travel Times
- Percent of the Interstate System Mileage Uncongested
- Number of Crashes Involving Heavy Vehicles

Public Transit Performance Measures

- Percent of Congested Roadway Centerline Miles with Transit Service
- Passenger Trips per Revenue Hour
- Average Peak Service Frequency
- On-Time Performance
- Annual Ridership

Bicycle/Pedestrian/Trail Facility Performance Measures

- Percent of Congested Roadway Centerline Miles with Bicycle and/or Sidewalk Facilities
- Miles of Multi-Use Trails

TDM Performance Measures

- Number of Registered Carpools or Vanpools

System Preservation (Optional – Non-CMP)

- Percent of pavements of the Interstate System in Good condition
- Percent of pavements of the non-Interstate NHS in Good condition
- Percent of pavements of the Interstate System in Poor condition
- Percent of pavements of the non-Interstate NHS in Poor condition
- Percent of NHS Bridges Classified as in “Good” Condition
- Percent of NHS Bridges Classified as in “Poor” Condition

Safety Performance Measures (5 Year Rolling Average)

Crashes at intersections and roadway segments are used as an indicator of congestion. Considered a measure of non-recurring congestion, this measure uses data that are widely available through the many local and state agencies that track them on an ongoing basis throughout the CMP application area. All data is collected and summarized in the form of a 5 year rolling average

Number of Fatalities

This is a summary of the number of fatalities from motor vehicle crashes. This is measured by the number of fatalities and not the number of fatality crashes.

Fatality Rate

This is a summary of the number of fatalities from motor vehicle crashes normalized by exposure in the form of vehicle miles of travel (100,000). This is measured by the number of fatalities and not the number of fatality crashes.

Serious Injuries

This is a summary of the number of incapacitating injuries from motor vehicle crashes. This is measured by the number of persons receiving incapacitating injuries and not the number of incapacitating injury crashes.

Serious Injury Rate

This is a summary of the number of incapacitating injuries from motor vehicle crashes normalized by exposure in the form of vehicle miles of travel (100,000). This is measured by the number of persons receiving incapacitating injuries and not the number of incapacitating injury crashes.

Non-Motorized Safety (Fatalities + Serious Injuries)

This is a summary of the number of fatalities and incapacitating injuries from motor vehicle crashes that involve pedestrians or bicyclists. This is measured by the sum of the number of fatalities and incapacitating injuries and not the number of fatality or incapacitating injury crashes.

Data Collection/Availability – Crash data in Hernando and Citrus Counties are collected through various law enforcement Agencies. The data for fatality and incapacitating injury crashes are provided by the FDOT.

Roadway Performance Measures

Percent of Vehicle Miles of Travel (VMT) and Roadway Miles Below the Adopted Level of Service (LOS) Standard

These measures summarize the proportion of vehicle miles of travel and roadway miles below the adopted level of service standard to help quantify the level of congestion within the county.

Data Collection/Availability – Hernando and Citrus Counties collects traffic volume and capacity data and performs LOS analysis on an annual basis for various planning purposes. The County publishes the data into Geographic Information System (GIS) shape files, spreadsheets, and reports once the data are finalized.

V/C Ratio and V/MSV Ratio

The volume-to-capacity (V/C) ratio is used as the major tool in measuring roadway conditions and is a measure of the amount of traffic on a given roadway in relation to the amount of traffic the roadway was designed to handle. The volume to maximum service volume (V/MSV) is used to measure the amount of traffic on a roadway in relation to the adopted acceptable amount of traffic the roadway should handle.

Data Collection/Availability – As mentioned above, Hernando and Citrus Counties collects traffic volume and capacity data and performs LOS analysis on an annual basis for various planning purposes. The County publishes the data into Geographic Information System (GIS) shape files, spreadsheets, and reports once the data are finalized.

Reliable Travel Time Performance Measures

Travel time reliability in Florida's Mobility Performance Measures Program is based on a benchmarking technique and is referred to as the Florida Reliability Method. The Florida Reliability Method was derived from the Department's definition of reliability of a highway system as the percent of travel on a corridor that takes no longer than the expected travel time plus a certain acceptable additional time. In this context, it is necessary to define the three major components of reliability:

1. Travel time - The time it takes a typical commuter to move from the beginning to the end of a corridor. Since speed is determined along each segment as the traveler moves through the corridor, this travel time is a function of both time and distance. This is representative of the typical commuter's experience in the corridor.
2. Expected travel time - The median travel time across the corridor during the time period being analyzed. The median is used rather than the mean so that the value of the expected travel time is not influenced by any unusual major incidents that may have occurred during the sampling period. These major incidents will be accounted for in the percentage of how often the travel takes longer than expected, but will not change the baseline to which that unusually high travel time is being compared.
3. Acceptable additional time- The amount of additional time, beyond the expected travel time, that a commuter would find acceptable during a commute. The acceptable additional time is expressed as a percentage of the expected travel time during the period being analyzed.

Percent of the Interstate System providing for Reliable Travel Times

Percent of the Interstate System providing reliable travel times.

Percent of the non-Interstate NHS providing for Reliable Travel Times

Percent of the non-Interstate NHS System providing reliable travel times. This will typically only be measured on the State Highway system and a limited number of non-State Highway System facilities.

Percent of the Interstate System where Peak Hour Travel Times meet expectations (Optional)

Percent of the Interstate System providing reliable travel times during the peak hour relive to an established standard. This measure will likely only be required of urban areas over 1 million population and will likely not be required for the Hernando/ Citrus MPO.

Percent of the non-Interstate NHS where Peak Hour Travel Times meet expectations (Optional)

Percent of the Non-Interstate National Highway System providing reliable travel times during the peak hour relive to an established standard. This measure will likely only be required of urban areas over 1 million population and will likely not be required for the Hernando/Citrus MPO.

Data Collection/Availability – Travel Time Reliability Data will be summarized by FDOT for the State Highway System. Data for non-state roadways will only be available on a limited number of roadway corridors and may be of limited quality.

Goods Movement Performance Measures

Vehicle Miles Traveled (VMT) Below LOS Standard on Designated Truck Routes

This measures the total vehicle miles of travel below the adopted LOS standard in Hernando and Citrus Counties on designated truck routes. The VMT for a roadway segment is calculated by multiplying the AADT of that segment by the length of the segment in miles.

Data Collection/Availability – VMT performance data are updated annually by the MPO.

Percent of the Interstate System Mileage providing for Reliable Truck Travel Times

Percent of the Interstate System providing reliable truck travel times.

Data Collection/Availability – Truck Travel Time Reliability Data will be summarized by FDOT for the Interstate System.

Percent of the Interstate System Mileage Uncongested

This measures the total vehicle miles of travel below the adopted LOS standard in Hernando County on Interstate 75.

Data Collection/Availability – Level of service performance data are updated annually by the MPO.

Number of Crashes involving Heavy Vehicles

The number of crashes involving heavy vehicles is considered to be a measure of non-recurring congestion that is often more significant when it involves heavy vehicles. This measure uses data that are widely available through the many local and state agencies that track them on an ongoing basis throughout the CMP application area.

Data Collection/Availability – FDOT has a comprehensive traffic crash database that aids in summarizing roadway traffic crash data. The system specifically provides crash information that is used for the congestion management process.

Bicycle/Pedestrian/Trail Facility Performance Measures

Percent of Congested CMP Roadway Centerline Miles with Bicycle Facilities

This measure identifies the proportion of congested CMP centerline miles where some type of bicycle facility exists, as defined by the respective planning agencies. Some communities consider paved shoulders and wide curb lanes to be bicycle facilities, with the exception of interstates and toll facilities.

Data Collection/Availability – These data are collected and maintained regularly by Hernando/Citrus MPO and summarized in various plans.

Percent of Congested CMP Roadway Centerline Miles with Sidewalk Facilities

The proportion of congested CMP roadway network centerline miles on which a sidewalk is available is measured.

Data Collection/Availability – These data are collected and maintained regularly by Hernando/Citrus MPO and summarized in various plans.

Miles of Multi-Use Trails

This measure summarizes the total number of miles of multi-use trail facilities in Hernando and Citrus Counties. Multi-use trail facilities usually are off-street facilities designated for the exclusive use of non-motorized travel. They may be used by pedestrians, cyclists, wheelchair users, joggers, and other non-motorized users.

Data Collection/Availability – These data are collected and maintained with bicycle and sidewalk facility data in Hernando and Citrus Counties.

TDM Performance Measures

Number of Registered Carpools or Vanpools

This measure in the Hernando/Citrus MPO CMP summarizes the annual number of registered carpools and vanpools in CMP application area. A carpool is defined as a group of two or more people who commute to work or other destinations together in a private vehicle, while a vanpool is typically a prearranged group of 5 to 15 people who share their commute to work.

Data Collection/Availability – Currently, Tampa Bay Area Regional Transportation Authority (TBARTA), through a contracted operator, provides vanpool/carpool services in Hernando and Hernando Counties and neighboring areas. TBARTA maintains data on registered carpool/vanpool users to determine which carpools and vanpools are available them.

System Preservation (Optional – Non-CMP)

Federal legislation (MAP-21 & FAST Act) requires the reporting of pavement conditions and bridge conditions on the National Highway System (NHS). While this is not a CMP related performance measure, it is appropriate to include these performance measures in the CMP Annual State of the System report.

Percent of pavements of the Interstate System in Good condition
Percent of pavements of the non-Interstate NHS in Good condition
Percent of pavements of the Interstate System in Poor condition
Percent of pavements of the non-Interstate NHS in Poor condition
Percent of NHS Bridges Classified as in “Good” Condition
Percent of NHS Bridges Classified as in “Poor” Condition

Data Collection/Availability – Pavement condition data for the Interstate and Non-Interstate National Highway System roadways will be provided by FDOT. Non-State NHS pavement condition data will need to be provided by the appropriate jurisdiction and data availability may be limited. Bridge condition information will be provided by the FDOT for all NHS bridges.

Relationship of Performance Measures to the Goals and Objectives

As part of the CMP process, the performance measures have been related to the goals and objectives discussed earlier in the report. **Table 5-1** illustrates an example of the relationship between the performance measures identified above and the Goals and Objectives for the Congestion Management Process.

Figure 5-1: Relationship of Goals and Objectives to Performance Measures

Goals and Objectives	Performance Measures: Safety Performance Measures (5 Year Rolling Average)					Roadway Capacity Performance Measures			Travel Time Realiability Performance Measures			
	Number of Fatalities	Fatality Rate	Serious Injuries	Serious Injury Rate	Non-Motorized Safety (Fatalities + Serious Injuries)	Percent of VMT and Roadway Miles below adopted Level of Service Standard	V/C Ratio	V/MSV Ratio	Percent of the Interstate System providing for Reliable Travel Times	Percent of the Non-Interstate NHS providing for Reliable Travel Times	Percent of the Interstate System where Peak Hour Travel Times meet expectations (Optional	Percent of the non-Interstate NHS where Peak Hour Travel Times meet expectations (Optional)
GOAL #1: Improve and increase transit as a viable transportation alternative.												
Objective 1.1 Improve transit service in congested corridors by increasing service in congested corridors with existing service and implementing service in congested corridors currently not served by transit.												
Objective 1.2 Develop multimodal strategies that reduce dependency on the single occupant vehicle (SOV).						✓	✓	✓	✓	✓	✓	✓
Objective 1.3 Increase efficiency of transit system through the use of appropriate new and advanced technologies that are feasible.												
GOAL #2: Identify and implement strategies to mitigate congestion and improve the safety and mobility of people and goods and maintain the region's air quality.												
Objective 2.1 Identify and implement congestion management strategies to enhance the existing transportation system and relieve congestion, improve travel time reliability, improve safety, and improve mobility of persons and goods, where large capital improvements may not be necessary.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Objective 2.2 Encourage using demand management and/or operations management strategies to solve congestion problems before adding capacity through general purpose lanes or new roadways where these strategies may eliminate the need to construct additional lanes.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Objective 2.3 Increase the efficiency of the transportation system through the use of low-cost TDM alternatives such as carpooling, vanpooling, telecommuting, and flexible work hours.						✓	✓	✓				
Objective 2.4 Improve the mobility of people and goods by using strategies in advanced technologies such as Intelligent Transportation Systems (ITS).	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
GOAL #3: Develop, maintain, and expand bicycle, pedestrian, and multi-use trail facilities for efficient and safe movement of people.												
Objective 3.1 Coordinate transit services with bicycle, pedestrian, and multi-use trail improvement projects.	✓	✓	✓	✓	✓				✓	✓	✓	✓
Objective 3.2 Provide for pedestrian, multi-use trail, transit, and bicycle facilities to encourage employees to use these facilities to get to work.	✓	✓	✓	✓	✓				✓	✓	✓	✓
GOAL #4: Integrate CMP and its improvements into the LRTP and TIP and help guide land use policies and land development regulations.												
Objective 4.1 Incorporate projects identified through the CMP in the Five-Year TIP.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Objective 4.2 Develop land use policies and land development regulations that support public transit, ridesharing, walking, and bicycling, especially for travel to work.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Goals and Objectives	Performance Measures													
	Goods Movement Performance Measures				Public Transit Performance Measures					Bicycle/ Pedestrian/ Trail Facility Performance Measures		TDM Performance Measures	System Preservation (Optional – Non CMP)	
	Vehicle Miles Traveled (VMT) Below LOS Standard on Designated Truck Routes	Percent of the Interstate System Mileage Providing for Reliable Truck Travel Times	Percent of the Interstate System Mileage Uncongested	Number of Crashes Involving Heavy Vehicles	Percent of Congested Roadway Centerline Miles with Transit Service	Passenger Trips per Revenue Hour	Average Peak Service Frequency	On-Time Performance	Annual Ridership	Percent of Congested Roadway Centerline Miles with Bicycle and/or Sidewalk Facilities	Miles of Multi-Use Trails	Number of Registered Carpools or Vanpools	Percent of Interstate & Non-Interstate NHS Pavement in Good/Poor Condition	Percent of NHS Bridges in Good/Poor Condition
GOAL #1: Improve and increase transit as a viable transportation alternative.														
Objective 1.1 Improve transit service in congested corridors by increasing service in congested corridors with existing service and implementing service in congested corridors currently not served by transit.					✓	✓	✓	✓	✓					
Objective 1.2 Develop multimodal strategies that reduce dependency on the single occupant vehicle (SOV).					✓	✓	✓	✓	✓	✓	✓			
Objective 1.3 Increase efficiency of transit system through the use of appropriate new and advanced technologies that are feasible.					✓	✓	✓	✓	✓					
GOAL #2: Identify and implement strategies to mitigate congestion and improve the safety and mobility of people and goods and maintain the region's air quality.														
Objective 2.1 Identify and implement congestion management strategies to enhance the existing transportation system and relieve congestion, improve travel time reliability, improve safety, and improve mobility of persons and goods, where large capital improvements may not be necessary.	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
Objective 2.2 Encourage using demand management and/or operations management strategies to solve congestion problems before adding capacity through general purpose lanes or new roadways where these strategies may eliminate the need to construct additional lanes.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Objective 2.3 Increase the efficiency of the transportation system through the use of low-cost TDM alternatives such as carpooling, vanpooling, telecommuting, and flexible work hours.												✓		
Objective 2.4 Improve the mobility of people and goods by using strategies in advanced technologies such as Intelligent Transportation Systems (ITS).								✓						
GOAL #3: Develop, maintain, and expand bicycle, pedestrian, and multi-use trail facilities for efficient and safe movement of people.														
Objective 3.1 Coordinate transit services with bicycle, pedestrian, and multi-use trail improvement projects.				✓	✓	✓	✓	✓	✓	✓	✓	✓		
Objective 3.2 Provide for pedestrian, multi-use trail, transit, and bicycle facilities to encourage employees to use these facilities to get to work.					✓	✓	✓	✓	✓	✓	✓	✓		
GOAL #4: Integrate CMP and its improvements into the LRTP and TIP and help guide land use policies and land development regulations.														
Objective 4.1 Incorporate projects identified through the CMP in the Five-Year TIP.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Objective 4.2 Develop land use policies and land development regulations that support public transit, ridesharing, walking, and bicycling, especially for travel to work.				✓	✓	✓	✓	✓	✓	✓	✓	✓		

Chapter 6

System Performance Monitoring Plan

Chapter 6
System Performance Monitoring Plan

Overview of Monitoring Plan

FHWA identifies congestion monitoring as just one of the several aspects of transportation system performance that leads to more effective investment decisions for transportation improvements. Safety, physical condition, environmental quality, economic development, quality of life, and customer satisfaction are among the aspects of performance that also require monitoring.

The Final Rule on Metropolitan Transportation Planning identifies the requirement for "a coordinated program for data collection and system performance monitoring to assess the extent of congestion, to contribute in determining the causes of congestion, and evaluate the efficiency and effectiveness of implemented actions." In addition, it also indicates that "to the extent possible, this data collection program should be coordinated with existing data sources and coordinated with operations managers in the metropolitan area."

As a result, the goal of the Hernando/Citrus MPO CMP system monitoring plan, as presented in **Table 6-1** on the following page, is to develop an ongoing system of monitoring and reporting that relies primarily on data already collected or planned to be collected in the county. The components of the monitoring plan include roadways, public transit, bicycle/pedestrian/trail, TDM, and goods movement where:

- Roadways are monitored through annual LOS analysis using traffic counts and other related data constantly collected throughout the region.
- Crashes are monitored to identify potential non-recurring congestion.
- Transit performance is monitored continuously through various operating and capital plans.
- Bicycle/pedestrian/trail facility data are monitored and updated in various city and county databases.
- Significant goods movement corridors are evaluated to address mobility needs of the goods movement providers.

The Hernando County MPO CMP will make use of an Annual State of the System Report to document the performance of the transportation system as described in more detail in Chapter 8 of this report.

Table 6-1: System Performance Monitoring Plan

Performance Measure	Monitoring Activity	Responsible Agency	Frequency of Evaluation	Current Status
Level of Service	Level of Service Analysis	Hernando/Citrus MPO/ Cities/FDOT	Annually	Ongoing
Crash Frequency	Crash Data Analysis	Hernando County/ Citrus County	Annually	Ongoing
Passenger Trips per Revenue Hour, Average Service Frequency, Annual Ridership	NTD Report/Transit Development Plan	Hernando County/THE BUS	Monthly/Annually	Ongoing
Transit On-time Performance	Transit Quality of Service Evaluation	Citrus County Transit	Annually	Ongoing
Miles of Bicycle, Pedestrian, and Trail Facilities	Bicycle/Pedestrian/Trail Plans and Databases	Hernando/Citrus MPO	Annually	Ongoing
Number of Registered Carpools or Vanpools	Annual Reports and Interim Summaries by TBARTA.	TBARTA	Monthly/Annually	Ongoing
Truck VMT	Roadway Databases and LRTP	FDOT	Annually	Ongoing

The Hernando County MPO, as part of the system monitoring plan, will update the State of the System Report annually. Each year, the MPO will develop a preliminary congestion map early in the year and a final congestion map towards the end of the year. The process is summarized below.

- Between January and June, preliminary existing and five-year networks will be developed using the most recent County counts and the latest available FDOT counts, which will be behind the County counts. These networks will be used to create a preliminary congestion map.
- Between July and November, final existing and five-year networks will be developed once the latest FDOT counts have been received These networks will be used to create a final congestion map.

Chapter 7
Congested Corridor Selection and CMP Strategies

Chapter 7
Congested Corridor Selection and CMP Strategies

Implementation

This section summarizes the implementation and management of the CMP strategies. This includes the process for selecting corridors and projects for implementation in the future as well as an implementation schedule, implementation responsibilities, costs, and possible funding sources for each strategy currently proposed for implementation.

Congested Corridor Selection and Project Selection Process

The purpose of the CMP is to identify actual projects. The CMP process involves selecting congested corridors that will undergo detailed evaluation for identifying potential projects/programs that can be potentially implemented on the corridors. The process follows three phases (an overview illustration is provided in **Figure 7-1**):

Congested Corridor Network Identification (Phase 1)

Annual monitoring efforts are used to review the level of service on the roadway network to identify recurring congestion. Roadways that are congested today or forecasted to be congested in five years are considered for review through the CMP screening process. Corridors are identified as being "not congested," "approaching congestion or minimally congested," or "extremely congested," as summarized below (additional detail is provided in Appendix A).

- **Not Congested (currently or in five years without improvements):** Corridors that are not anticipated to operate below their adopted level of service standards in either the existing conditions or after committed improvements in the five-year program are implemented.
- **Approaching Congestion or Minimally Congested:** Corridors that are approaching congestion or are minimally congested based on one of the following three criteria (projects on these corridors may have the greatest impact):
  - ***Approaching Congestion*** – Corridors that are not congested but have segments that have traffic volumes that consume more than 90% of the roadway's capacity at the adopted level of service standard with either the existing conditions or forecasted five-year condition without improvement.
  - ***Congested Today*** – Existing corridors with traffic volumes that exceed the adopted level of service standard that do not exceed the physical capacity of the roadway.
  - ***Congestion in 5 Years*** – Corridors forecasted in five years to have traffic volumes that exceed the adopted level of service standard that do not exceed the physical capacity of the roadway.
- **Extremely Congested:** Roadways in the Existing + Committed (E+C) five-year network that have forecast volumes that are greater than the physical capacity (typically occurs when using detailed analysis and the volume-to-capacity ratio is 1.08 or greater) of the roadway and are considered severely congested.

Crash data management systems also are used to identify corridors or intersections with a high frequency of crashes that result in non-recurring congestion. Safety improvements not only reduce the potential harm to persons in our communities but also can reduce congestion.

Generally, non-congested corridors do not need to be addressed by the CMP; however, the other two categories typically will require one or more congestion-relieving strategies (project, mobility improving program, etc.). Extremely congested corridors typically will require either capacity improvements or a shift to other mobility strategies that rely significantly on public transportation or reductions in travel demand. In some cases, extremely congested corridors may respond favorably to the implementation of operational improvements; these would be considered on a case-by-case basis where appropriate. The corridors approaching congested or minimally congested typically represent the corridors that will be most responsive to CMP improvement strategies.

After the congested network and corridors have been identified, two to three corridors are selected for detailed analysis and project identification and implementation. The TAC/TSOC reviews the selection of corridors. Once corridors are selected and evaluated, they will not be reevaluated for three to five years. Corridors typically are selected based on the following:

1. If they are not in the 5-year work program or identified as projects in the 10-year plan and the corridors are forecasted to operate below their adopted level of service standard.
2. The two or three corridors that would receive the greatest mobility or operational benefit from the CMP process.
3. Roadways identified as Long Term Concurrency Roadways using mobility strategies that would be strengthened through the implementation of mobility improvements.

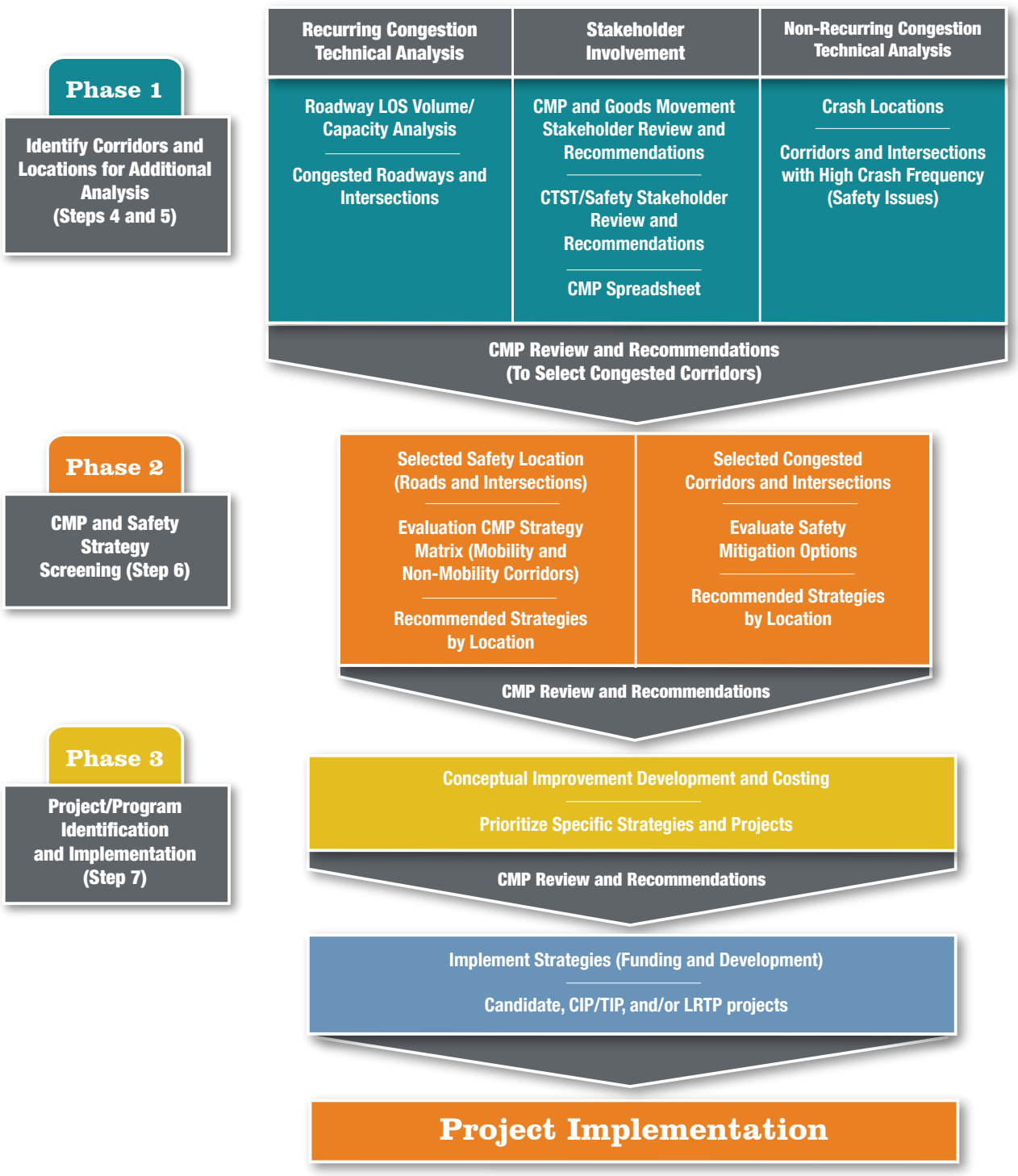
CMP and Safety Strategy Screening (Phase 2)

Once congested corridors are selected for review, they are screened to identify mitigation strategies appropriate to reduce congestion or improve safety to reduce crashes. The CMP Strategy Matrix (found in **Appendix B**) is used to address recurring congestion, and the Safety Mitigation Strategy Matrix (found in **Appendix C**) is used to address nonrecurring congestion. The matrix includes strategies in five tiers as identified in the Hernando/Citrus MPO CMP Strategy Toolbox. The CMP Strategy Matrix typically is used in a workshop setting to quickly review a corridor, and the Safety Mitigation Strategy Matrix is applied based on a review of crash data. Corridors may also be evaluated using the included Complete Streets Matrix (found in **Appendix D**).

Project and Identification and Implementation (Phase 3)

The congestion or safety mitigation strategies that are identified as having the greatest potential benefit are then evaluated in greater detail based on committee or technical recommendations. During this phase, additional analysis of potential projects is undertaken to identify the specific improvement, implementation issues, and costs. “Programs” such as demand-reducing programs or policy changes are evaluated to identify recommended action items. Recommendations then are made for the projects or programs to be implemented. This may result in a near-immediate refocusing of existing resources, such as existing rideshare programs or local maintenance crews where possible, programming improvements in the local agency capital improvement programs, or using boxed funds controlled by the MPO, and finally may be identified as candidate projects for implementation in future LRTPs.

Figure 7-1: Corridor/Strategy Selection Process



Congestion Management Strategies

This section of the CMP Update identifies and evaluates the strategies intended for mitigating existing and future congestion in the Hernando County roadway network. A Toolbox of Strategies is presented to help policy makers and planners effectively use these congestion reduction strategies. For MPOs with more than 200,000 people within their planning areas, SAFETEA-LU requires that the MPO "shall address congestion management … through the use of travel demand reduction and operational management strategies." In addition, the Final Rule on Statewide and Metropolitan Transportation Planning published on February 14, 2007, states that "development of a congestion management process should result in multimodal system performance measures and strategies that can be reflected in the metropolitan transportation plan and the Transportation Improvement Program (TIP)."

A full range of potential strategies has been identified for the Hernando/Citrus MPO in its multimodal CMP network. These strategies can be grouped into the following broad categories as presented in **Figure 7-2**.

Figure 7-3 summarizes the demand and operational management strategies included in the Hernando/Citrus MPO CMP toolbox of strategies, which is presented later in detail. A full range of demand and operational management strategies are identified in these tables for the MPO to assist in its efforts to mitigating existing and future congestion.

Figure 7-2: Congestion Management Strategies

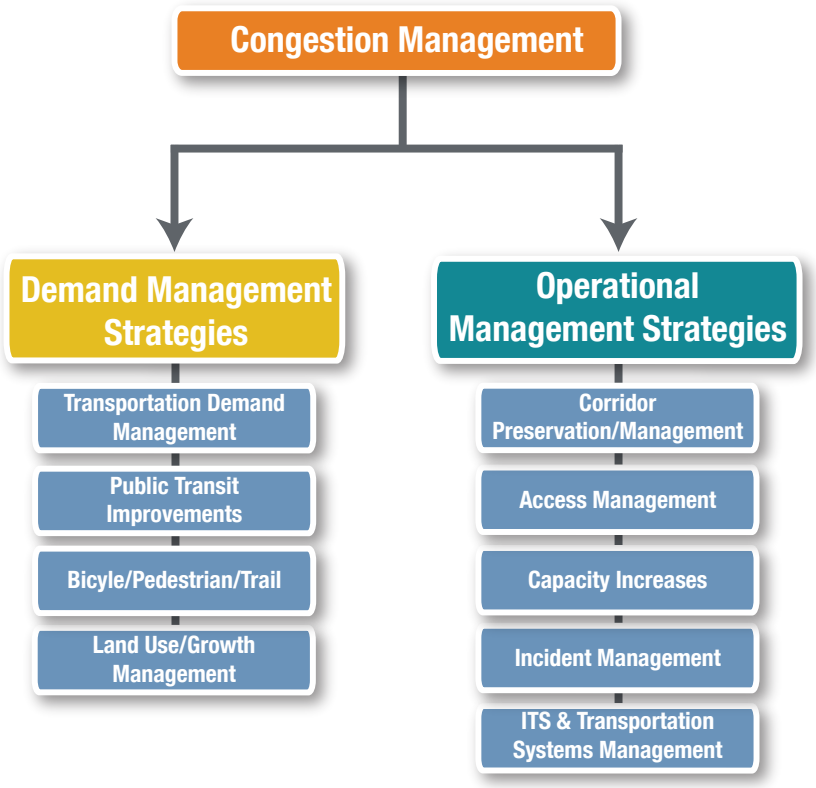
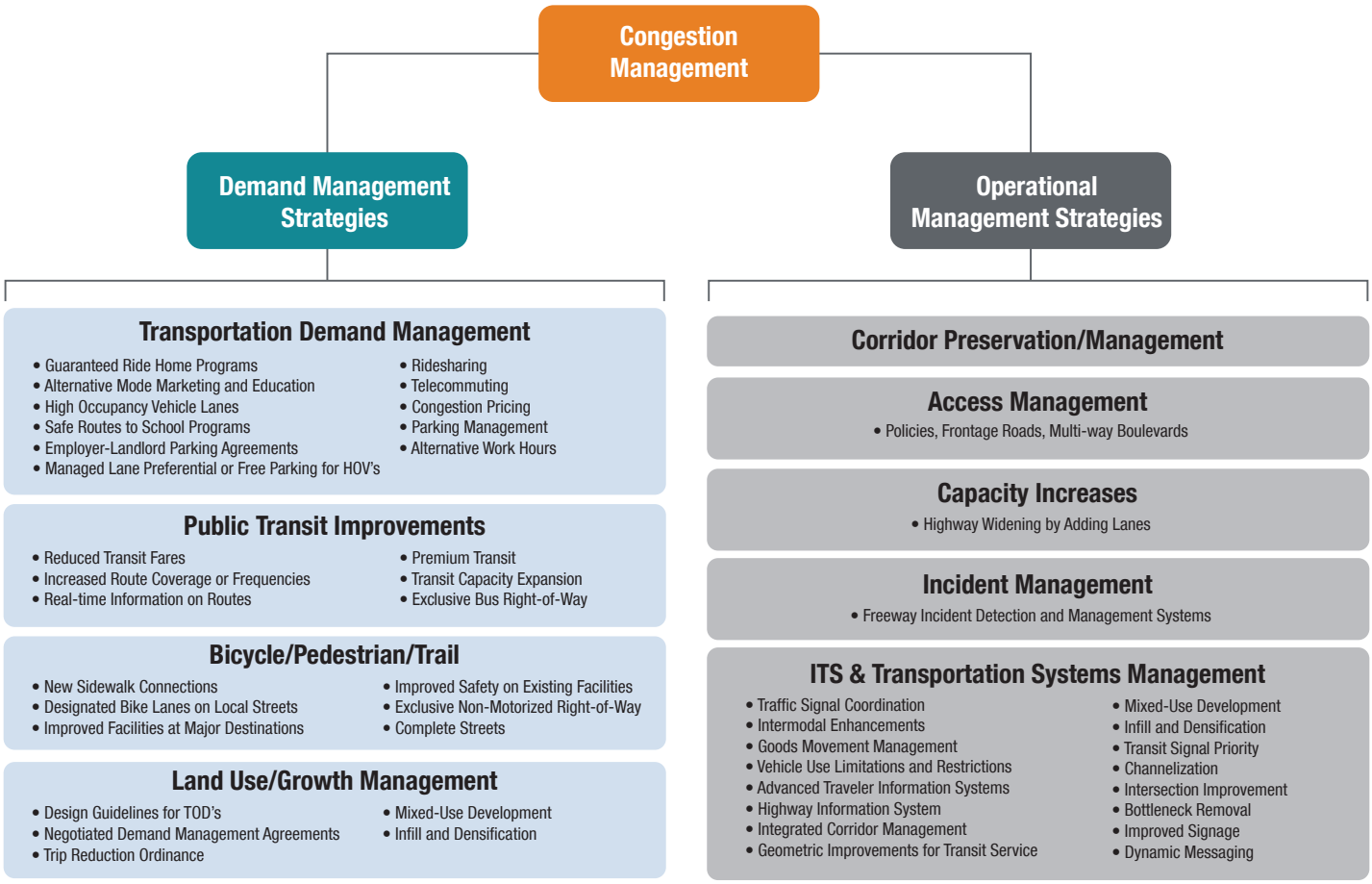


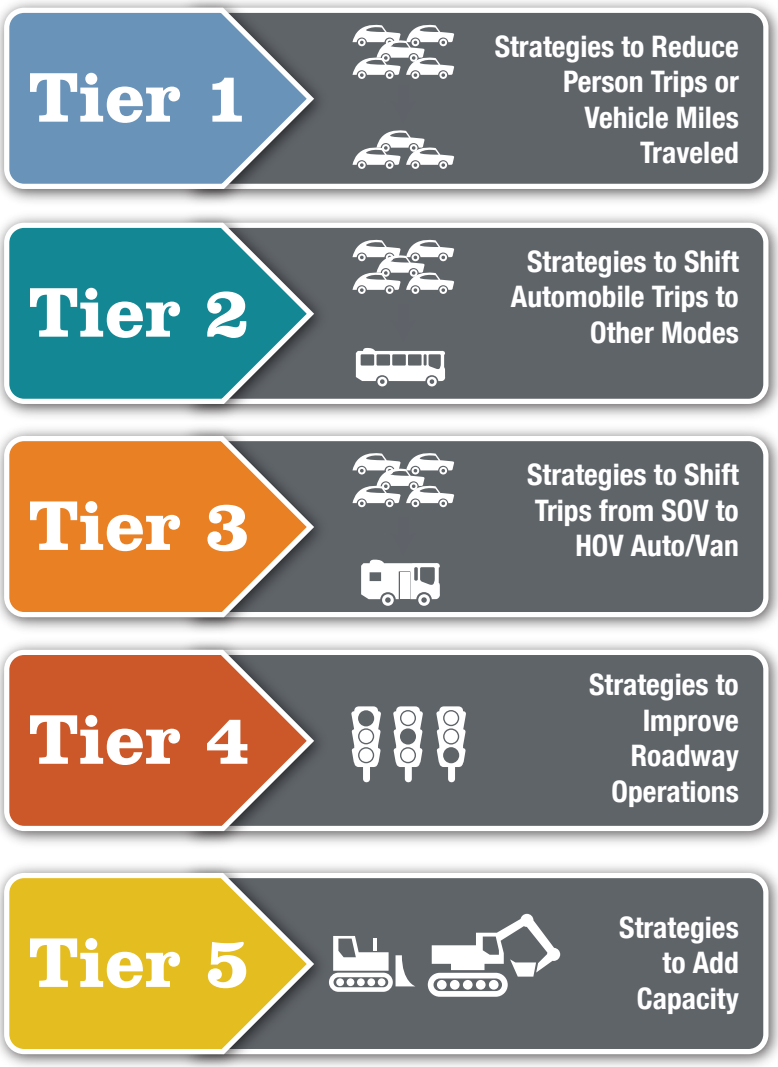
Figure 7-3: Demand and Operational Management Strategies



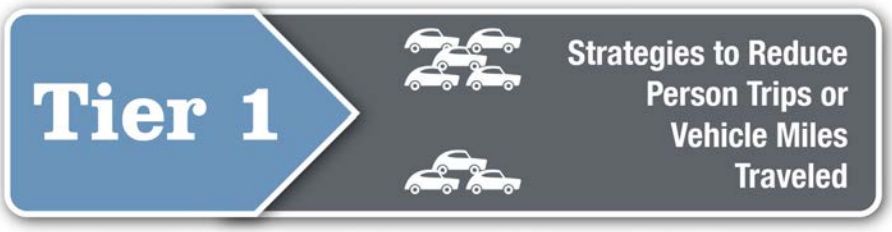
Toolbox of Strategies

The CMP uses a strategy toolbox with multiple tiers of strategies to support the congestion strategy or strategies for congested corridors. Following an approach used by other MPOs and promoted by FHWA, the toolbox of congestion mitigation strategies is arranged so that the measures at the top take precedence over those at the bottom. The toolbox is presented below.

Figure 7-4: Congestion Management Toolbox



The "top-down" approach promotes the growing sentiment in today's transportation planning arena and follows FHWA's clear direction to consider all available solutions before recommending additional roadway capacity. The Hernando/Citrus MPO CMP toolbox of strategies is presented in detail in the remainder of this section.



Transportation Demand Management Strategies

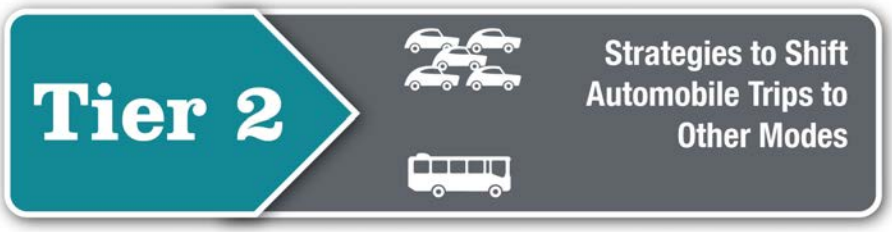
These strategies are used to reduce the use of single occupant motor vehicles, as the overall objective of TDM is to reduce the miles traveled by automobile. The following TDM strategies, not in any particular order, are available for consideration in the toolbox to potentially reduce travel in the peak hours. Strategies include:

- **Congestion Pricing:** Congestion pricing can be implemented statically or dynamically. Static congestion pricing requires that tolls are higher during traditional peak periods. Dynamic congestion pricing allows toll rates to vary depending upon actual traffic conditions. The more congested the road, the higher the cost to travel on the road. Dynamic congestion pricing works best when coupled with real-time information on the availability of other routes.
- **Alternative Work Hours:** There are three main variations: staggered hours, flex-time, and compressed work weeks. Staggered hours require employees in different work groups to start at different times to spread out their arrival/departure times. Flex-time allows employees to arrive and leave outside of the traditional commute period. Compressed work weeks involve reducing the number of days per week worked while increasing the number of hours worked per day.
- **Telecommuting:** Telecommuting policies allow employees to work at home or a regional telecommute center instead of going into the office, all the time or only one or more days per week.
- **Guaranteed Ride Home Programs:** These programs provide a safety net to those people who carpool or use transit to work so that they can get to their destination if unexpected work demands or an emergency arises.
- **Alternative Mode Marketing and Education:** Providing education on alternative modes of transportation can be an effective way of increasing demand for alternative modes. This strategy can include mapping Websites that compute directions and travel times for multiple modes of travel.
- **Safe Routes to Schools Program:** This federally-funded program provides 100 percent funding to communities to invest in pedestrian and bicycle infrastructure surrounding schools.
- **Preferential or Free Parking for HOVs:** This program provides an incentive for employees to carpool with preferred of free-of-charge parking for HOVs.

Land Use/Growth Management Strategies

The strategies in this category include policies and regulations that would decrease the total number of auto trips and trip lengths while promoting transit and non-motorized transportation options. These strategies include the following.

- **Negotiated Demand Management Agreements:** As a condition of development approval, local governments require the private sector to contribute to traffic mitigation agreements. The agreements typically set a traffic reduction goal (often expressed as a minimum level of ridesharing participation or a stipulated reduction in the number of automobile trips).
- **Trip Reduction Ordinance:** These ordinances use a locality's regulatory authority to limit trip generation from a development. They spread the burden of reducing trip generation among existing and future developments better than Negotiated Demand Management Agreements.
- **Infill Developments:** This strategy takes advantage of infrastructure that already exists, rather than building new infrastructure on the fringes of the urban area.
- **Transit Oriented Developments:** This strategy clusters housing units and/or businesses near transit stations in walkable communities. By providing convenient access to alternative modes, auto dependence can be reduced.
- **Design Guidelines for Pedestrian-Oriented Development:** Maximum block lengths, building setback restrictions, and streetscape enhancements are examples of design guidelines that can be codified in zoning ordinances to encourage pedestrian activity.
- **Mixed-Use Development:** This strategy allows many trips to be made without automobiles. People can walk to restaurants and services rather than use their vehicles.



Public Transit Strategies

Two types of strategies, capital improvements and operating improvements, are used to enhance the attractiveness of public transit services to shift auto trips to transit. Transit capital improvements generally modernize the transit systems and improve their efficiency; operating improvements make transit more accessible and attractive. The following strategies are included in the toolbox for consideration.

- **Transit Capacity Expansion:** This strategy adds new vehicles to expand transit services.
- **Increasing Bus Route Coverage or Frequencies:** This strategy provides better accessibility to transit to a greater share of the population. Increasing frequency makes transit more attractive to use.

- **Implementing Regional Premium Transit:** Premium transit such as Bus Rapid Transit (BRT) best serves dense urban centers where travelers can walk to their destinations. Premium regional transit from suburban areas can sometimes be enhanced by providing park-and-ride lots.
- **Providing Real-Time Information on Transit Routes:** Providing real-time information on bus progress either at bus stops, terminals, and/or personal wireless devices makes bus travel more attractive.
- **Reducing Transit Fares:** This relatively easy-to-implement strategy encourages additional transit use, to the extent that high fares are a real barrier to transit. However, due to the direct financial impact on the transit system operating budgets, reductions in selected fare categories may be a more feasible strategy to implement.
- **Provide Exclusive Bus Right-Of-Way**: Exclusive right-of-way includes bus ways, bus-only lanes, and bus bypass ramps. This strategy is applied to freeways and major highways that have routes with high ridership.

Non-Motorized Transportation Strategies

Non-motorized strategies include bicycle, pedestrian, and trail facility improvements that encourage non-motorized modes of transportation instead of single-occupant vehicle trips. The following strategies are included.

- **New Sidewalk Connections**: Increasing sidewalk connectivity encourages pedestrian traffic for short trips.
- **Designated Bicycle Facilities on Local Streets**: Enhancing the visibility of bicycle facilities increases the perception of safety. In many cases, bicycle lanes can be added to existing roadways through restriping.
- **Improved Bicycle Facilities at Transit Stations and Other Trip Destinations**: Bicycle racks and bicycle lockers at transit stations and other trip destinations increase security. Additional amenities such as locker rooms with showers at workplaces provide further incentives for using bicycles.
- **Improved Safety of Existing Bicycle and Pedestrian Facilities**: Maintaining lighting, signage, striping, traffic control devices, and pavement quality and installing curb cuts, curb extensions, median refuges, and raised crosswalks can increase bicycle and pedestrian safety.
- **Exclusive Non-Motorized ROW**: Abandoned rail rights-of-way and existing parkland can be used for medium- to long-distance bicycle trails, improving safety and reducing travel times.
- **Complete Streets**: Routinely designing and operating the entire right-of-way can enable safe access for all users including pedestrians, bicyclists, motorists, and transit. Elements that may be found on a complete street include sidewalks, bike facilities, special bus lanes, comfortable and accessible transit stops, frequent crossing opportunities, median islands, accessible pedestrian signals, curb extensions, support for changing mobility technologies, and more.



Transportation Demand Management Strategies

The following TDM strategies are recommended to encourage HOV use.

- **Ridesharing (Carpools & Vanpools)**: In ridesharing programs, participants are matched with potential candidates for sharing rides. This typically is arranged/encouraged through employers or transportation management agencies that provide ride-matching services. These programs are more effective if combined with HOV lanes, parking management, guaranteed ride home policies, and employer-based incentive programs.
- **High Occupancy Vehicle Lanes**: This increases corridor capacity while, at the same time, providing an incentive for single-occupant drivers to shift to ridesharing. These lanes are most effective as part of a comprehensive effort to encourage HOVs, including publicity, outreach, park-and-ride lots, rideshare matching services, and employer incentives.
- **Park-and-Ride Lots**: These lots can be used in conjunction with HOV lanes and/or express bus services. They are particularly helpful when coupled with other commute alternatives such as carpool/vanpool programs, transit, and/or HOV lanes.
- **Employer-Landlord Parking Agreements**: Employers can negotiate leases so that they pay for parking spaces used only by employees. In turn, employers can pass along parking savings by purchasing transit passes or reimbursing nondriving employees with the cash equivalent of a parking space.
- **Parking Management**: This strategy reduces the instance of free parking to encourage other modes of transportation. Options include reducing the minimum number of parking spaces required per development, increasing the share of parking spaces for HOVs, introducing or raising parking fees, providing cash-out options for employees not using subsidized parking spaces, and expanding parking at transit stations or park-and-ride lots.
- **Managed Lanes**: FHWA defines managed lanes as highway facilities or a set of lanes in which operational strategies are implemented and managed (in real time) in response to changing conditions. Examples of managed lanes may include high-occupancy toll (HOT) lanes with tolls that vary based on demand, exclusive bus-only lanes, HOV and clean air and/or energy-efficient vehicle lanes, and HOV lanes that could be changed into HOT lanes in response to changing levels of traffic and roadway conditions.



Intelligent transportation Systems (ITS) Strategies

The strategies in ITS use new and emerging technologies to mitigate congestion while improving safety and environmental impacts. Typically, these systems are made up of many components, including sensors, electronic signs, cameras, controls, and communication technologies. ITS strategies are sets of components working together to provide information and allow greater control of the operation of the transportation system. The following strategies are included in the toolbox.

- **Dynamic Messaging**: Dynamic messaging uses changeable message signs to warn motorists of downstream queues; it provides travel time estimates, alternate route information, and information on special events, weather, or accidents.
- **Advanced Traveler Information Systems (ATIS)**: ATIS provide an extensive amount of data to travelers, such as real-time speed estimates on the Web or over wireless devices and transit vehicle schedule progress. It also provides information on alternative route options.
- **Integrated Corridor Management (ICM)**: This strategy, built on an ITS platform, provides for the coordination of the individual network operations between parallel facilities creating an interconnected system. A coordinated effort between networks along a corridor can effectively manage the total capacity in a way that will result in reduced congestion.
- **Transit Signal Priority (TSP)**: This strategy uses technology located onboard transit vehicles or at signalized intersections to temporarily extend green time, allowing the transit vehicle to proceed without stopping at a red light.

Transportation Systems Management Strategies

Transportation Systems Management (TSM) strategies identify operational improvements to enhance the capacity of the existing system. These strategies typically are used together with ITS technologies to better manage and operate existing transportation facilities. The following strategies are included in the toolbox.

- **Traffic Signal Coordination**: Signals can be pre-timed and isolated, pre-timed and synchronized, actuated by events (such as the arrival of a vehicle, pedestrian, bus or emergency vehicle), set to adopt one of several pre-defined phasing plans based on current traffic conditions, or set to calculate an optimal phasing plan based on current conditions.
- **Channelization**: This strategy is used to optimize the flow of traffic for making left or right turns usually using concrete islands or pavement markings.
- **Intersection Improvements**: Intersections can be widened and lanes restriped to increase intersection capacity and safety. This may include auxiliary turn lanes (right or left) and widened shoulders.

- **Bottleneck Removal**: This strategy removes or corrects short, isolated, and temporary lane reductions, substandard design elements, and other physical limitations that form a capacity constraint that results in a traffic bottleneck.
- **Vehicle Use Limitations and Restrictions**: This strategy includes all-day or selected time-of-day restrictions of vehicles, typically trucks, to increase roadway capacity.
- **Improved Signage**: Improving or removing signage to clearly communicate location and direction information can improve traffic flow.
- **Geometric Improvements for Transit**: This strategy includes providing for transit stop locations that do not affect the flow of traffic, improve sight lines, and improve merging and diverging of buses and cars.
- **Intermodal Enhancements**: Coordinating modes makes movement from one mode to the other easier. These enhancements typically include schedule modification to reduce layover time or increase the opportunity for transfers, creation of multimodal facilities, informational kiosks, and improved amenities at transfer locations.
- **Goods Movement Management**: This strategy restricts delivery or pickup of goods in certain areas to reduce congestion.

Incident Management Strategies

- **Freeway Incident Detection and Management Systems**: This strategy addresses primarily non-recurring congestion, typically includes video monitoring and dispatch systems, and may also include roving service patrol vehicles.

Access Management Strategies

- **Access Management Policies**: This strategy includes adoption of policies to regulate driveways and limit curb cuts and/or policies that require continuity of pedestrian, bicycle, and trail facilities.

Corridor Preservation/Management Strategies

- **Corridor Preservation**: This strategy includes implementing, where applicable, land acquisition techniques such as full title purchases of future rights-of-way and purchase of easements to plan proactively in anticipation of future roadway capacity demands.
- **Corridor Management**: This strategy is applicable primarily in moderate- to high-density areas and includes strategies to manage corridor rights-of-way. The strategies range from land-use regulations to landowner agreements such as subdivision reservations, which are mandatory dedications of portions of subdivided lots that lie in the future right-of-way.



Strategies to add capacity are the most costly and least desirable strategies and should be considered last resort methods for reducing congestion. As the strategy of cities trying to "build" themselves out of congestion has not provided the intended results, capacity-adding strategies should be applied after determining the demand and operational management strategies identified earlier are not feasible solutions. The key strategy is to increase the capacity of congested roadways through additional general purpose travel lanes.

- **Increase the capacity of congested roadways through additional general purpose travel lanes.**

Congestion Mitigation Matrix

The CMP Strategy Matrix is used to address recurring congestion. The first page of the matrix is shown in **Figure 7-5** and the complete matrix is included in **Appendix B**. The matrix includes strategies in five tiers as identified in the CMP Strategy Toolbox. The CMP Strategy Matrix typically is used in a workshop setting with agency stakeholders to quickly screen through the strategies in order to identify appropriate strategies that may provide a benefit within the corridor. Following the screening of a corridor using the matrix, strategies which were identified as having a high level of potential benefit or medium level of potential benefit are considered for additional analysis where appropriate. The CMP Strategy Matrix identifies the general level of applicability by mode given the different trip types as follows:

- **Regional Trips**: Long distance trips and/or pass-through trips through the county. Typically these trips are auto dependent unless served by premium transit modes.
- **Regional Access Trips**: Moderate distance trips that have at least one trip end (origin or destination) within the corridor. Typically, these trips are auto dependent unless served by a mix of premium or fixed route transit.
- **Local Access Trips**: These are shorter trips with at least one trip end within the corridor. Typically transit and bicycle modes can compete favorably with the auto modes of travel relative to travel time.
- **Local Circulation Trips**: These are very short trips where both trip ends likely occur within close proximity to the corridor. Typically, walking and bicycling have travel times comparable to auto usage. Public transportation is typically not viable in the absence of frequent local circulator transit service since walking times are of relatively short duration.

Figure 7-5: Congestion Mitigation Matrix

Tier	Short-Term/ Long-Term	Congestion Mitigation Strategy	Distribution of Trip Types: Regional Traffic	Regional Access	Local Access	Local Circulation	Potential Effectiveness	Recommendations/ Comments
Strategies to Reduce Person Trips or Vehicle Miles Traveled	LT	**1.01 Congestion Pricing:** Congestion pricing can be implemented statically or dynamically. Static congestion pricing requires that tolls are higher during traditional peak periods. Dynamic congestion pricing allows toll rates to vary depending upon actual traffic conditions. The more congested the road, the higher the cost to travel on the road. Dynamic congestion pricing works best when coupled with real-time information on the availability of other routes.					0 1 2 3 4 5 6 7 8 9 10 LOW MEDIUM HIGH EXISTING N/A	
	ST/LT	**1.02 Alternative Work Hours:** There are three main variations: staggered hours, flex-time, and compressed work weeks. Staggered hours require employees in different work groups to start at different times to spread out their arrival/departure times. Flex-time allows employees to arrive and leave outside of the traditional commute period. Compressed work weeks involve reducing the number of days per week worked while increasing the number of hours worked per day.					0 1 2 3 4 5 6 7 8 9 10 LOW MEDIUM HIGH EXISTING N/A	
	ST/LT	**1.03 Telecommuting:** Telecommuting policies allow employees to work at home or a regional telecommute center instead of going into the office, all the time or only one or more days per week.					0 1 2 3 4 5 6 7 8 9 10 LOW MEDIUM HIGH EXISTING N/A	
	ST/LT	**1.04 Emergency Ride Home Programs:** These programs provide a safety net to those people who carpool or use transit to work so that they can get to their destination if unexpected work demands or an emergency arises.					0 1 2 3 4 5 6 7 8 9 10 LOW MEDIUM HIGH EXISTING N/A	

CMP Safety Mitigation Matrix

The Hernando/Citrus MPO CMP process also includes a "CMP Safety Mitigation Matrix" for use in streamlining the identification of potential safety issues identified in the identification of congested corridors by making use of crash data produced by the FDOT's Crash Data Management System (CDMS). This system produces maps and reports by crash type or cause which can be used to identify safety issues on the major roadway network for both congested and non-congested roadways. Reducing the number of crashes that occur on major roadways can reduce nonrecurring congestion. While the delay incurred resulting from crashes cannot be determined easily, it is a significant contribution of delay on major roadways. To support the integration of crash reduction as a means to reduce non-reoccurring congestion, a CMP Safety Mitigation Matrix was developed.

The CMP Safety Migration Matrix is provided in **Appendix C**. This Matrix is similar to the CMP Strategy Matrix in that it should be used to screen and identify potential strategies that would reduce congestion caused by specific crash types. The Matrix identifies crash types and the typical strategies that could be implemented to improve safety and reduce these crashes for the Safety Emphasis Areas identified in the State of Florida Strategic Highway Safety Plan. In most cases, additional detailed study will be required to identify the specific safety strategy or strategies to be implemented for a specific location.

Figure 7-6: Safety Mitigation Matrix

Key Safety Emphasis Areas for CMP Integration				
Intersection Crashes	**Vulnerable Road Users/Bicycles and Pedestrians**	**Vulnerable Road Users/Motorcycles**	**Lane-Departure Crashes**	**Traffic Records**
Crashes which occur at or within 250 feet of signalized and unsignalized intersections are defined as intersection related.	This emphasis area includes bicycle and pedestrian crashes which represent a disproportionate share of fatal crashes.	The emphasis area addresses crashes involving motorcyclists.	These crashes include running off the road, crossing the center median into an oncoming lane of traffic, and sideswipe crashes. Running off the road may also involve a rollover or hitting a fixed object. Head-on collisions are related to crashes involving departure from the roadway. One of the most severe types of crashes occurs when a vehicle crosses into an opposing traffic lane and crashes head on with an oncoming vehicle.	This addresses Federal requirements and funding for traffic records. This emphasis area was meant to ensure traffic records aligned with the overall SHSP where possible and appropriate.
Potential Strategies	**Potential Strategies**	**Potential Strategies**	**Potential Strategies**	**Potential Strategies**
■ Increase safety of intersections for all users ■ Identify systemic intersection safety improvements, update the Intersection Safety Plan, and encourage implementation at the local level ■ Promote improved access management at the State and local level ■ Consider including safety in the planning/value engineering manual ■ Update policies, guidelines, handbooks, and training based on the Highway Safety Manual (HSM) ■ Increase education programs designed to provide targeted information to drivers	■ Increase awareness and understanding of safety issues related to Vulnerable Road Users ■ Increase compliance with traffic laws and regulations related to pedestrian and bicycle safety through education and enforcement ■ Develop and use a systemic approach to identify locations and behaviors prone to pedestrian and bicycle crashes and implement multidisciplinary countermeasures ■ Encourage adequate funding levels for effective pedestrian and bicycle safety programs and initiatives ■ Promote, plan, and implement built environments (urban	■ Collect and analyze data on motorcycle crashes, injuries, and fatalities and provide local and state agencies with the best available data to make appropriate and timely decisions that improve motorcycle safety in Florida; ■ Manage motorcycle safety activities in Florida as part of a comprehensive plan that includes centralized program planning, implementation, coordination, and evaluation to maximize the effectiveness of programs and reduce duplication of effort ■ Promote personal protective gear and its value in reducing motorcyclist injury levels and increasing rider conspicuity ■ Ensure persons operating a motorcycle on public roadways hold an endorsement specifically authorizing motorcycle operation ■ Promote adequate rider training and preparation to new and experienced motorcycle riders by qualified instructors at state-approved training centers ■ Reduce the number of alcohol-, drug-, and speed-related motorcycle crashes in Florida ■ Support legislative initiatives that promote motorcycle-related traffic laws and regulations ■ Ensure state and local motorcycle safety programs include law enforcement and emergency services components ■ Incorporate motorcycle-friendly policies and practices into	■ Improve engineering practices to reduce lane-departure crashes ■ Improve law enforcement practices to better capture data related to lane-departure crashes ■ Increase public education to reduce lane-departure crashes ■ Partner with emergency responders to reduce severity of lane-departure crashes	■ Provide ongoing coordination in support of multi-agency initiatives and projects that improve traffic records information systems

Complete Streets Matrix

The 2017 update of the Hernando/Citrus MPO's CMP establish a vision and framework for the development of "Complete Streets" projects in Hernando and Citrus Counties. Complete Streets are streets that accommodate the needs of all modes of travel and all types of users. In many cases, this effort serves to improve balance in transportation solutions, especially in cases where only the automobile mode may currently be accommodated despite a demonstrated need on the part of other users such as pedestrians, bicyclists, and transit users. The Hernando/Citrus MPO's Congestion Management Process takes into consideration complete streets strategies on appropriate corridors where complete streets policies are being applied. A Complete Streets Matrix has been developed to support the application of complete streets principles to corridors being reviewed similar to the use and application of the CMP Matrix discussed above. The Complete Streets Strategy Matrix can be found in **Appendix D**. This matrix identifies detailed strategies at the travel way, side street, and intersection level that may be considered on complete street corridors.

Figure 7-7: Complete Streets Matrix

Tier	Strategy #	Strategy	Modal Benefit: Auto	Modal Benefit: Transit	Modal Benefit: Pedestrian	Modal Benefit: Bicycle	Potential Effectiveness	Recommendations/Comments
Tier 1: Traveled Way Strategy Checklist	1.01	**Road Diets:** A solution that can be applied to streets that are wider than necessary given the volume of traffic they carry during peak hours. A road diet reduces the number of travel lanes on a roadway, typically to one lane of traffic in each direction, in exchange for expanded sidewalks, bicycle lanes, on-street parking or landscaping.		✓	✓	✓	0 1 2 3 4 5 6 7 8 9 10 LOW MEDIUM HIGH EXISTING N/A	
	1.02	**Medians:** Raised separators in the center of the roadway with widths between 6-20 feet or more. Medians add prominence to a segment of road, can be used to add landscaping, and are often a safe haven for crossing pedestrians and bicyclists on multi-lane roadways.	✓	✓	✓	✓	0 1 2 3 4 5 6 7 8 9 10 LOW MEDIUM HIGH EXISTING N/A	
	1.03	**Paving Treatment:** One way to reduce speeds, or indicate special zones like bicycle lanes, bus stops or speed tables is to use a special paving treatment on the roadway surface. Some examples are colored or textured concrete, or stamped patterns.	✓	✓	✓	✓	0 1 2 3 4 5 6 7 8 9 10 LOW MEDIUM HIGH EXISTING N/A	
	1.04	**Bicycle Facilities:** Bicycle accommodations on the street to reduce conflicts and create a more comfortable traffic environment for everyone. Examples: Bicycle lane, shared roadway.	✓	✓	✓	✓	0 1 2 3 4 5 6 7 8 9 10 LOW MEDIUM HIGH EXISTING N/A	
	1.05	**Bicycle Lanes:** Lines and symbols on the roadway surface to delineate space for the exclusive use of bicyclists.	✓	✓	✓	✓	0 1 2 3 4 5 6 7 8 9 10 LOW MEDIUM HIGH EXISTING N/A	

Chapter 8
Monitoring and Strategy Effectiveness

Chapter 8
Monitoring and Strategy Effectiveness

Introduction

The FHWA guidelines call for CMPs to include provisions to monitor the performance of strategies implemented to address congestion. Regulations require "a process for periodic assessment of the efficiency and effectiveness of implemented strategies, in terms of the area's established performance measures." This step of the process helps determine whether operational or policy adjustments are needed to make the current strategies work better and provides information about how various strategies work in order to implement future approaches within the CMP study area.

Data collection and performance monitoring are ongoing with the various periodic assessments of roadway, transit, bicycle/pedestrian/trail, freight network performance in Hernando and Citrus Counties. However, this CMP also identifies the need for a process that supports an annual tracking of the effectiveness of the implemented congestion mitigation strategies and the multimodal transportation system as a whole. This annual process is described in detail below.

Annual State of the System Report

As a key tool in the Hernando County CMP, an Annual State of the System Report will be developed in the interim years until the next CMP update. This report will track the effectiveness of the implemented strategies, to the extent possible with the available project level data, and conditions of the multimodal transportation system as a whole. The same set of quantifiable performance measures established for the Hernando County CMP as described in Chapter 6 of this report will be used to measure system performance at corridor and system levels. The measures that will be used in the Annual State of the System Report on Hernando County CMP include:

- **Roadway Performance Measures**, including roadway traffic volume to capacity and crashes.
- **Public Transit Performance Measures**, including passenger trips per revenue hour, average peak service frequency, on-time performance, and annual ridership
- **Bicycle/Pedestrian/Trail Facility Performance Measures**, including percent of congested CMP roadway centerline miles with bicycle facilities, percent of congested CMP roadway centerline miles with sidewalk facilities, and miles of multi-use trails
- **TDM Performance Measures**, including the number of registered carpools or vanpools in the CMP study area
- **Goods Movement Performance Measures**, including the total truck vehicle miles traveled (VMT) in the study area

The commitment and schedule for preparing an Annual State of the System Report will be determined by the Hernando County TAC/TSOC.

Typically the Annual State of the System Report will be completed by the MPO during the years between LRTP updates and the report is contingent on available funding. In the future the Annual State of the System Report is anticipated to support the requirement of the Transportation Improvement Program (TIP) to the maximum extent practicable, provide a description of the anticipated effect of the TIP toward achieving the performance targets established in the Plan, and how the TIP links investment priorities to those performance targets.

Appendix A Congested Corridors and Hot Spots

Appendix A

Congested Corridors and Hot Spots

Various criteria that primarily use traffic volume and capacity are used to select and categorize the congested corridors in Hernando County. The methodology using these criteria to select congested corridors within the CMP application area is presented below. Thereafter, criteria used to identify congestion hot spots, i.e. intersections with recurring or non-recurring congestion, are also summarized.

Selection Methodology

This methodology summarizes the steps used to identify the congested roadways for the Hernando County CMP. As indicated earlier, the CMP road network includes all existing and committed roadway segments as identified by the 2035 LRTP.

The selection methodology consists of two main steps. First, five criteria are used to categorize the roadways into three sub-categories. The sub-categories and corresponding criteria are presented below.

Not Congested (currently or in five years without improvements) - The corridors in this category are selected based on applying the following criteria at road segment level:

$$\text{Not Congested Corridors} = \text{Existing or Existing + 5 Years Segments with } \left(\frac{\text{Segment}^i \text{ volume}}{\text{Segment}^i \text{ maximum service volume}} \right) < \text{Segment}^i \text{ maximum service volume x } 0.90$$

$$(i = 1, 2, 3, \ldots n)$$

Approaching Congestion or Minimally Congested – The corridors that are approaching congestion are analyzed at three levels. The criteria in each level of analysis are summarized below.

- **Approaching Congestion**: This includes corridors with segments that meet the following criteria, which are currently congested or congested in five years without improvements.

$$\text{Corridors Approaching Congestions} = \text{Existing or Existing + 5 Years Segments with } 1.00 > \left(\frac{\text{Segment}^i \text{ volume}}{\text{Segment}^i \text{ maximum service volume}} \right) > 0.90$$

$$(i = 1, 2, 3, \ldots n)$$

- **Congested Today**: As summarized below, this category uses two criteria to identify the corridors that are congested today.

$$\text{Corridors Congested Today} = \text{Existing Segments with } 1.08 > \left(\frac{\text{Segment}^i \text{ volume}}{\text{Segment}^i \text{ capacty}}\right) \& \left(\frac{\text{Segment}^i \text{ volume}}{\text{Segment}^i \text{ maximum service volume}}\right) > 1.00$$

$$(i = 1, 2, 3, \ldots n)$$

- **Extremely Congested**: This category includes roadways in the 2014 E+C network that meets the following criteria are considered severely congested.

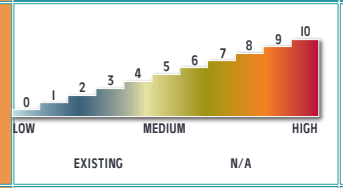
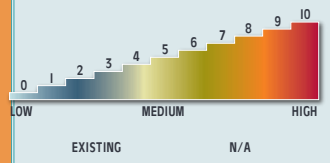
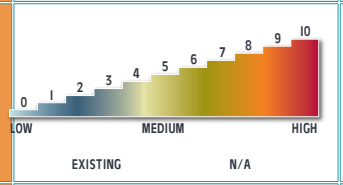
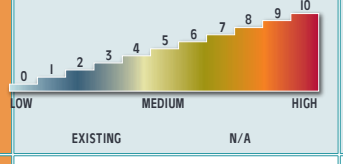
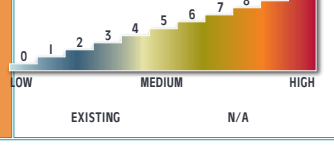
$$\text{Extremely Congested Corridors} = \text{Existing or Existing + 5 Years Segments with } \left(\frac{\text{Segment}^i \text{ volume}}{\text{Segment}^i \text{ capacty}}\right) > 1.08$$

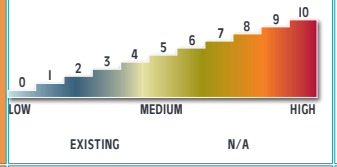
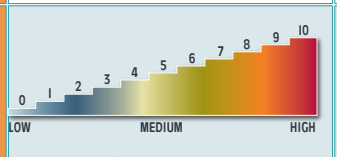
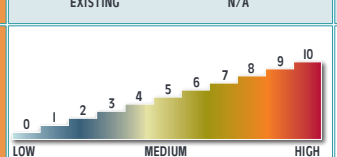
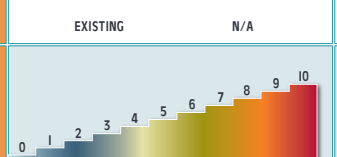
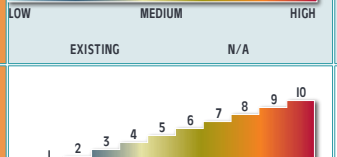
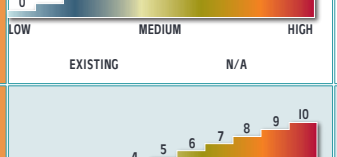
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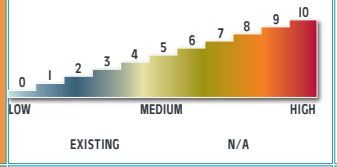
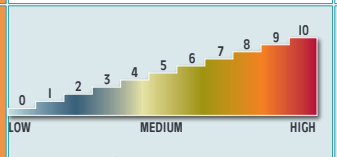
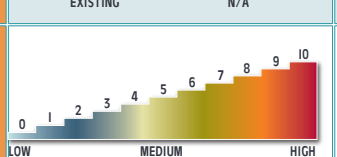
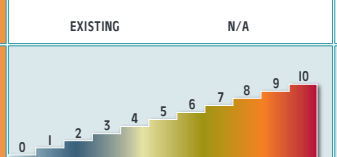
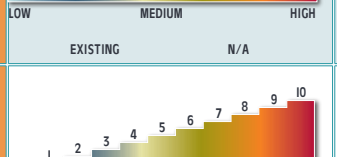
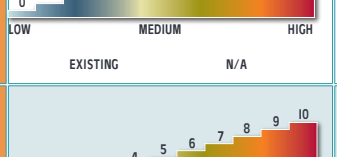
In addition to the congested roadways selected using the criteria presented above, high crash locations identified in crash data analysis reports and Mobility Management Systems Task Force recommendations of congested intersections are used to identify the congestion "Hot Spots."

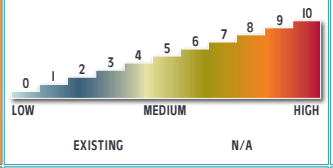
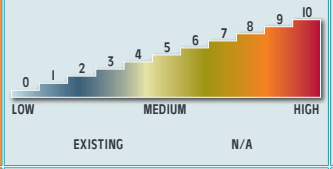
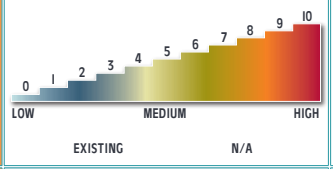
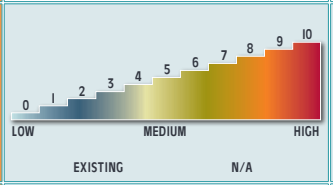
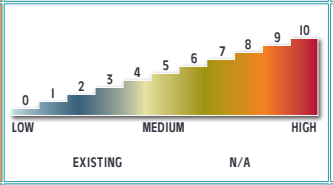
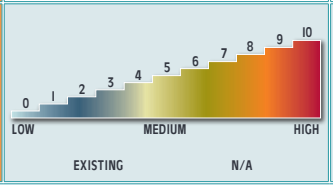
Appendix B
Congestion Mitigation Strategies Matrix

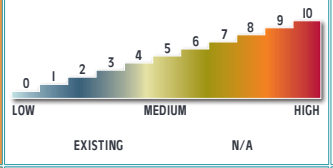
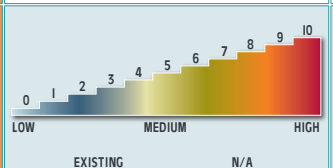
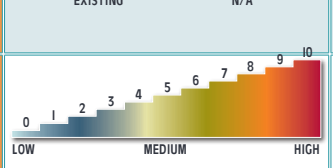
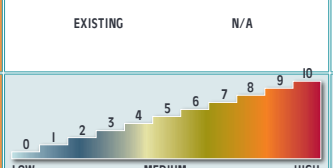
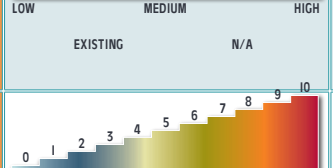
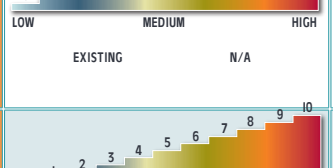
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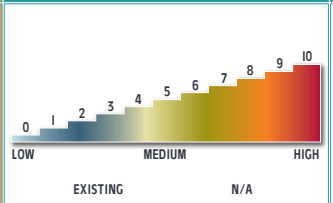
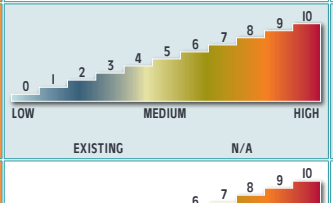
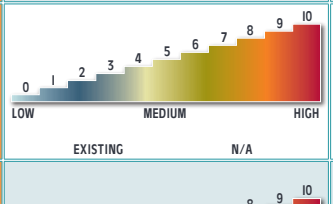
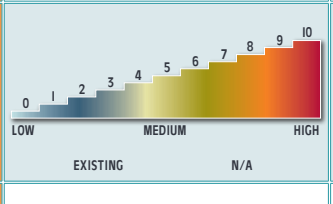
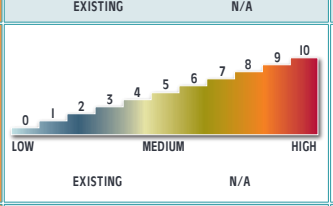
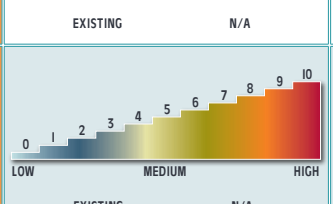
Tier	Short-Term/ Long-Term	Congestion Mitigation Strategy	Distribution of Trip Types				Potential Effectiveness	Recommendations/ Comments
			Regional Traffic	Regional Access	Local Access	Local Circulation		
Tier 1: Strategies to Reduce Person Trips or Vehicle Miles Traveled	LT	**1.01 Congestion Pricing:** Congestion pricing can be implemented statically or dynamically. Static congestion pricing requires that tolls are higher during traditional peak periods. Dynamic congestion pricing allows toll rates to vary depending upon actual traffic conditions. The more congested the road, the higher the cost to travel on the road. Dynamic congestion pricing works best when coupled with real-time information on the availability of other routes.						
	ST/LT	**1.02 Alternative Work Hours:** There are three main variations: staggered hours, flex-time, and compressed work weeks. Staggered hours require employees in different work groups to start at different times to spread out their arrival/departure times. Flex-time allows employees to arrive and leave outside of the traditional commute period. Compressed work weeks involve reducing the number of days per week worked while increasing the number of hours worked per day.						
	ST/LT	**1.03 Telecommuting:** Telecommuting policies allow employees to work at home or a regional telecommute center instead of going into the office, all the time or only one or more days per week.						
	ST/LT	**1.04 Emergency Ride Home Programs:** These programs provide a safety net to those people who carpool or use transit to work so that they can get to their destination if unexpected work demands or an emergency arises.						
	ST/LT	**1.05 Alternative Mode Marketing and Education:** Providing education on alternative modes of transportation can be an effective way of increasing demand for alternative modes. This strategy can include mapping websites that compute directions and travel times for multiple modes of travel.						

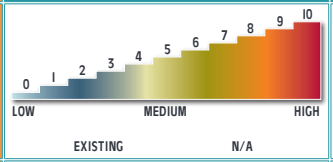
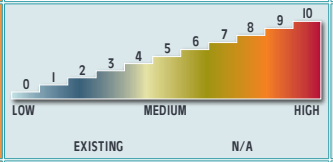
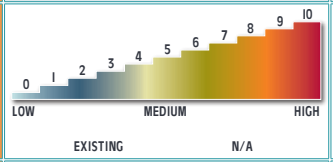
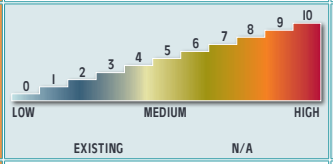
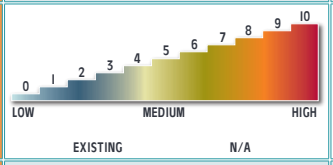
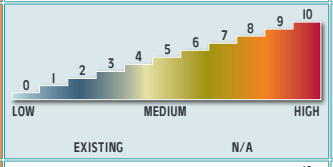
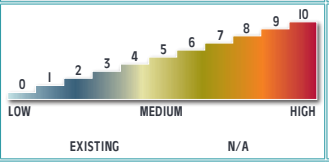
Tier	Short-Term/ Long-Term	Congestion Mitigation Strategy	Distribution of Trip Types								Potential Effectiveness	Recommendations/ Comments
			Regional Traffic		Regional Access		Local Access		Local Circulation			
Tier 1: Strategies to Reduce Person Trips or Vehicle Miles Traveled	ST/LT	**1.06 Safe Routes to Schools Program:** This program provides funding to communities to invest in pedestrian and bicycle infrastructure surrounding schools.										
	ST/LT	**1.07 Preferential for Free Parking for HOVs:** This program provides an incentive for employees to carpool with preferred of free-of-charge parking for HOVs.										
	ST/LT	**1.08 Negotiated Demand Management Agreements:** As a condition of development approval, local governments require the private sector to contribute to traffic mitigation agreements. The agreements typically set a traffic reduction goal (often expressed as a minimum level of ridesharing participation or a stipulated reduction in the number of automobile trips).										
	ST/LT	**1.09 Trip Reduction Ordinance:** These ordinances use a locality's regulatory authority to limit trip generation from a development. They spread the burden of reducing trip generation among existing and future developments better than Negotiated Demand Management Agreements.										
	ST	**1.10 Infill developments:** This strategy takes advantage of infrastructure that already exists, rather than building new infrastructure on the fringes of the urban area.										
	ST/LT	**1.11 Design Guidelines for Pedestrian-Oriented Development:** Maximum block lengths, building setback restrictions, and streetscape enhancements are examples of design guidelines that can be codified in zoning ordinances to encourage pedestrian activity.										

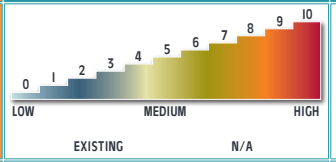
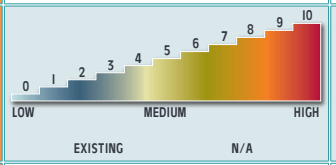
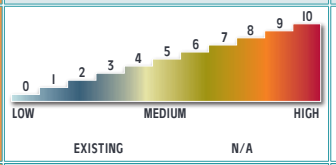
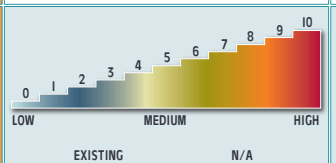
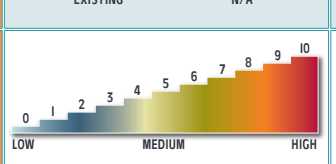
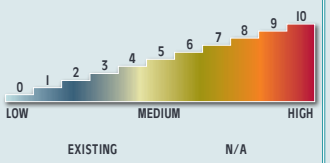
Tier	Short-Term/ Long-Term	Congestion Mitigation Strategy	Distribution of Trip Types								Potential Effectiveness	Recommendations/ Comments
			Regional Traffic		Regional Access		Local Access		Local Circulation			
Tier One	ST/LT	**1.12 Mixed-Use Development:** This strategy allows many trips to be made without automobiles. People can walk to restaurants and services rather than use their vehicles.										
Tier 2: Strategies to Shift Automobile Trips to Other Modes	ST/LT	**2.01 Transit Capacity Expansion:** This strategy adds new vehicles to expand transit services.										
	ST/LT	**2.02 Increasing Bus Route Coverage or Frequencies:** This strategy provides better accessibility to transit to a greater share of the population. Increasing frequency makes transit more attractive to use.										
	LT	**2.03 Implementing Regional Premium Transit:** Premium transit such as Bus Rapid Transit (BRT) best serves dense urban centers where travelers can walk to their destinations. Premium transit from suburban areas can sometimes be enhanced by providing park-and-ride lots.										
	ST/LT	**2.04 Providing Real-Time Information on Transit Routes:** Providing real-time information on bus progress either at bus stops, terminals, and/or personal wireless devices makes bus travel more attractive.										
	ST	**2.05 Reducing Transit Fares:** This relatively easy-to-implement strategy encourages additional transit use, to the extent that high fares are a real barrier to transit. However, due to the direct financial impact on the transit system operating budgets, reductions in selected fare categories may be a more feasible strategy to implement.										

Tier	Short-Term/ Long-Term	Congestion Mitigation Strategy	Distribution of Trip Types				Potential Effectiveness	Recommendations/ Comments
			Regional Traffic	Regional Access	Local Access	Local Circulation		
Tier 2: Strategies to Shift Automobile Trips to Other Modes	LT	**2.06 Provide Exclusive Bus Right-Of-Way:** Exclusive right-of-way includes bus ways, bus-only lanes, and bus bypass ramps. This strategy is applied to freeways and major highways that have routes with high ridership.						
	ST/LT	**2.07 New Sidewalk Connections:** Increasing sidewalk connectivity encourages pedestrian traffic for short trips.						
	ST/LT	**2.08 Designated Bicycle Lanes on Facilities or Routes:** Enhancing the visibility of bicycle facilities increases the perception of safety. In many cases, bicycle lanes can be added to existing roadways through restriping.						
	ST	**2.09 Improved Bicycle Facilities at Transit Stations and Other Trip Destinations:** Bicycle racks and bicycle lockers at transit stations and other trip destinations increase security. Additional amenities such as locker rooms with showers at workplaces provide further incentives for using bicycles.						
	ST	**2.10 Improved Safety of Existing Bicycle and Pedestrian Facilities:** Maintaining lighting, signage, striping, traffic control devices, and pavement quality and installing curb cuts, curb extensions, median refuges, and raised crosswalks can increase bicycle and pedestrian safety.						
	LT	**2.11 Exclusive Non-Motorized ROW:** Abandoned rail rights-of-way and existing parkland can be used for medium- to long-distance bicycle trails, improving safety and reducing travel times.						

Tier	Short-Term/ Long-Term	Congestion Mitigation Strategy	Distribution of Trip Types								Potential Effectiveness	Recommendations/ Comments
			Regional Traffic		Regional Access		Local Access		Local Circulation			
Tier 2	ST/LT	**2.12 Intermodal Enhancements:** Coordinating modes makes movement from one mode to the other easier. These enhancements typically includes schedule modification to reduce layover time or increase the opportunity for transfers, creation of multi-modal facilities, informational kiosks, and improved amenities at transfer locations.										
Tier 3: Strategies to Increase Vehicle Occupancy	LT	**3.01 Ridesharing (Carpools, Vanpools, Lyft, Uber):** In ridesharing programs, participants are matched with potential candidates for sharing rides. This is typically arranged/encouraged through employers or transportation management agencies, which provide ride-matching services. These programs are more effective if combined with HOV lanes, parking management, guaranteed ride home policies, and employer-based incentive programs.										
	ST/LT	**3.02 High Occupancy Vehicle Lanes:** This increases corridor capacity while at the same time providing an incentive for single-occupant drivers to shift to ridesharing. These lanes are most effective as part of a comprehensive effort to encourage HOVs, including publicity, outreach, park-and-ride lots, rideshare matching services, and employer incentives.										
	ST/LT	**3.03 Park-and-Ride Lots (Kiss N Ride):** These lots can be used in conjunction with HOV lanes and/or express bus services. They are particularly helpful when coupled with other commute alternatives such as carpool/ vanpool programs, transit, and/or HOV lanes.										
	ST/LT	**3.04 Employer-Landlord Parking Agreements:** Employers can negotiate leases so that they pay only for parking spaces used by employees. In turn, employers can pass along parking savings by purchasing transit passes or reimbursing non-driving employees with the cash equivalent of a parking space.										
	ST/LT	**3.05 Parking Management:** This strategy reduces the instance of free parking to encourage other modes of transportation. Options include reducing the minimum number of parking spaces required per development, increasing the share of parking spaces for HOVs, introducing or raising parking fees, providing cash-out options for employees not using subsidized parking spaces, and expanding parking at transit stations or park-and-ride lots.										

Tier	Short-Term/ Long-Term	Congestion Mitigation Strategy	Distribution of Trip Types								Potential Effectiveness	Recommendations/ Comments
			Regional Traffic		Regional Access		Local Access		Local Circulation			
Tier 3	LT	**3.06 Managed Lanes:** The Federal Highway Administration (FHWA) defines managed lanes as highway facilities or a set of lanes in which operational strategies are implemented and managed (in real time) in response to changing conditions. Examples of managed lanes may include the following: high-occupancy toll (HOT) lanes with tolls that vary based on demand; exclusive bus-only lanes; HOV and clean air and/or energy-efficient vehicle lanes; and HOV lanes that could be changed into HOT lanes in response to changing levels of traffic and roadway conditions.										
Tier 4: Strategies to Improve Roadway Operations	ST/LT	**4.01 Dynamic Messaging:** Dynamic messaging uses changeable message signs to warn motorists of downstream queues; it provides travel time estimates, alternate route information, and information on special events, weather, or accidents.										
	ST/LT	**4.02 Advanced Traveler Information Systems (ATIS):** ATIS provide an extensive amount of data to travelers, such as real-time speed estimates on the web or over wireless devices and transit vehicle schedule progress. It also provides information on alternative route options.										
	ST/LT	**4.03 Integrated Corridor Management (ICM):** This strategy, built on an ITS platform, provides for the coordination of the individual network operations between parallel facilities creating an interconnected system. A coordinated effort between networks along a corridor can effectively manage the total capacity in a way that will result in reduced congestion.										
	ST	**4.04 Transit Signal Priority (TSP):** This strategy uses technology located onboard transit vehicles or at signalized intersections to temporarily extend green time, allowing the transit vehicle to proceed without stopping at a red light.										
	ST	**4.05 Traffic Signal Coordination:** Signals can be pre-timed and isolated, pre-timed and synchronized, actuated by events (such as the arrival of a vehicle, pedestrian, bus or emergency vehicle), set to adopt one of several pre-defined phasing plans based on current traffic conditions, or set to calculate an optimal phasing plan based on current conditions.										

Tier	Short-Term/ Long-Term	Congestion Mitigation Strategy	Distribution of Trip Types				Potential Effectiveness	Recommendations/ Comments
			Regional Traffic	Regional Access	Local Access	Local Circulation		
Tier 4: Strategies to Improve Roadway Operations	ST/LT	**4.06 Channelization:** This strategy is used to optimize the flow of traffic for making left or right turns usually using concrete islands or pavement markings.						
	ST/LT	**4.07 Intersection Improvements:** Intersections can be widened and lanes restriped to increase intersection capacity and safety. This may include auxiliary turn lanes (right or left) and widened shoulders.						
	ST/LT	**4.08 Bottleneck Removal:** This strategy removes or corrects short, isolated, and temporary lane reductions, substandard design elements, and other physical limitations that form a capacity constraint that results in a traffic bottleneck.						
	LT	**4.09 Vehicle Use Limitations and Restrictions:** This strategy includes all-day or selected time-of-day restrictions of vehicles, typically trucks, to increase roadway capacity.						
	ST	**4.10 Improved Signage:** Improving or removing signage to clearly communicate location and direction information can improve traffic flow.						
	ST/LT	**4.11 Geometric Improvements for Transit:** This strategy includes providing for transit stop locations that do not affect the flow of traffic, improve sight lines, and improve merging and diverging of buses and cars.						
	ST/LT	**4.12 Goods Movement Management:** This strategy restricts delivery or pickup of goods in certain areas to reduce congestion.						

Tier	Short-Term/ Long-Term	Congestion Mitigation Strategy	Distribution of Trip Types								Potential Effectiveness	Recommendations/ Comments
			Regional Traffic		Regional Access		Local Access		Local Circulation			
Tier 4: Strategies to Improve Roadway Operations	ST/LT	**4.13 Freeway Incident Detection and Management Systems:** This strategy addresses primarily non-recurring congestion, typically includes video monitoring and dispatch systems, and may also include roving service patrol vehicles.										
	ST/LT	**4.14 Access Management Policies:** This strategy includes adoption of policies to regulate driveways and limit curb cuts and/or policies that require continuity of sidewalk, bicycle, and trail networks.										
	ST/LT	**4.15 Corridor Preservation:** This strategy includes implementing, where applicable, land acquisition techniques such as full title purchases of future rights-of-way and purchase of easements to plan proactively in anticipation of future roadway capacity demands.										
	ST/LT	**4.16 Corridor Management:** This strategy is applicable primarily in moderate- to high-density areas and includes strategies to manage corridor rights-of-way. The strategies range from land-use regulations to landowner agreements such as subdivision reservations, which are mandatory dedications of portions of subdivided lots that lie in the future right-of-way.										
	ST/LT	**4.17 Complete Streets:** Routinely design and operate the entire right of way to enable safe access for all users including pedestrians, bicyclists, motorists, and transit Element that may be found on a complete street include sidewalks, bike lanes (or wide paved shoulders), special bus lanes, comfortable and accessible transit stops, frequent crossing opportunities, median islands, accessible pedestrian signals, curb extensions, and more.										
Tier 5: Strategies to Add Capacity	LT	**5.01 Add General Purpose Travel Lanes:** Increase the capacity of congested roadways through additional general purpose travel lanes.										

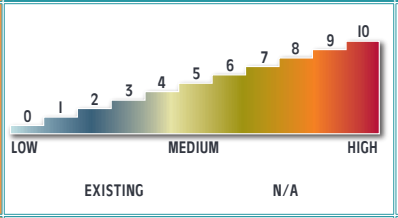
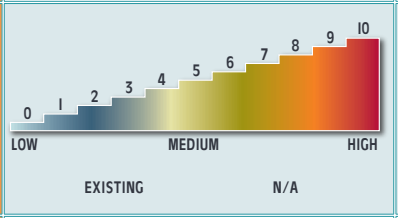
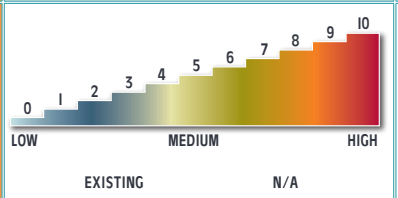
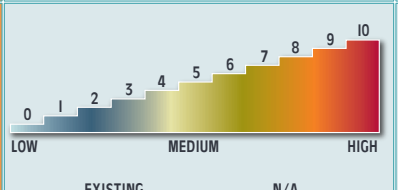
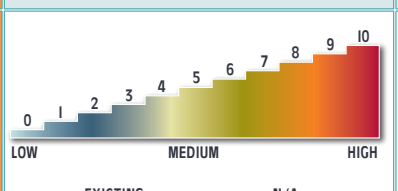
Appendix C
Safety Mitigation Matrix

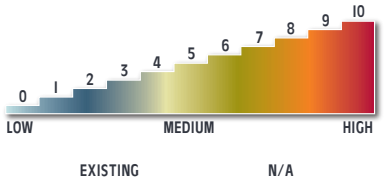
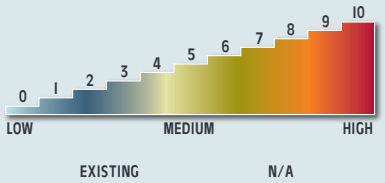
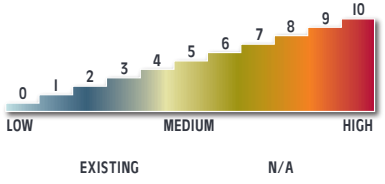
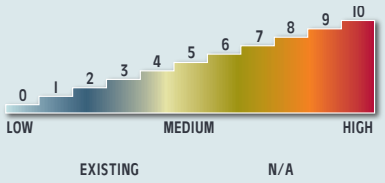
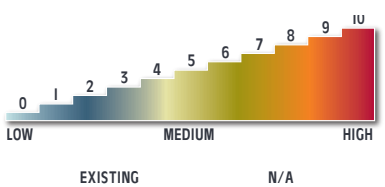
Key Safety Emphasis Areas for CMP Integration				
Intersection Crashes	**Vulnerable Road Users/Bicycles and Pedestrians**	**Vulnerable Road Users/Motorcycles**	**Lane-Departure Crashes**	**Traffic Records**
Crashes which occur at or within 250 feet of signalized and unsignalized intersections are defined as intersection related.	This emphasis area includes bicycle and pedestrian crashes which represent a disproportionate share of fatal crashes.	The emphasis area addresses crashes involving motorcyclists.	These crashes include running off the road, crossing the center median into an oncoming lane of traffic, and sideswipe crashes. Running off the road may also involve a rollover or hitting a fixed object. Head-on collisions are related to crashes involving departure from the roadway. One of the most severe types of crashes occurs when a vehicle crosses into an opposing traffic lane and crashes head on with an oncoming vehicle.	This addresses Federal requirements and funding for traffic records. This emphasis area was meant to ensure traffic records aligned with the overall SHSP where possible and appropriate.
Potential Strategies	**Potential Strategies**	**Potential Strategies**	**Potential Strategies**	**Potential Strategies**
■ Increase safety of intersections for all users ■ Identify systemic intersection safety improvements, update the Intersection Safety Plan, and encourage implementation at the local level ■ Promote improved access management at the State and local level ■ Consider including safety in the planning/value engineering manual ■ Update policies, guidelines, handbooks, and training based on the Highway Safety Manual (HSM) ■ Increase education programs designed to provide targeted information to drivers ■ Increase targeted enforcement activities at high-crash locations and increase public education on intersection safety	■ Increase awareness and understanding of safety issues related to Vulnerable Road Users ■ Increase compliance with traffic laws and regulations related to pedestrian and bicycle safety through education and enforcement ■ Develop and use a systemic approach to identify locations and behaviors prone to pedestrian and bicycle crashes and implement multidisciplinary countermeasures ■ Encourage adequate funding levels for effective pedestrian and bicycle safety programs and initiatives ■ Promote, plan, and implement built environments (urban, suburban, and rural) which encourage safe bicycling and walking ■ Support national, state, and local legislative initiatives and policies that promote bicycle and pedestrian safety	■ Collect and analyze data on motorcycle crashes, injuries, and fatalities and provide local and state agencies with the best available data to make appropriate and timely decisions that improve motorcycle safety in Florida; ■ Manage motorcycle safety activities in Florida as part of a comprehensive plan that includes centralized program planning, implementation, coordination, and evaluation to maximize the effectiveness of programs and reduce duplication of effort ■ Promote personal protective gear and its value in reducing motorcyclist injury levels and increasing rider conspicuity ■ Ensure persons operating a motorcycle on public roadways hold an endorsement specifically authorizing motorcycle operation ■ Promote adequate rider training and preparation to new and experienced motorcycle riders by qualified instructors at state-approved training centers ■ Reduce the number of alcohol-, drug-, and speed-related motorcycle crashes in Florida ■ Support legislative initiatives that promote motorcycle-related traffic laws and regulations ■ Ensure state and local motorcycle safety programs include law enforcement and emergency services components ■ Incorporate motorcycle-friendly policies and practices into roadway design, traffic control, construction, operation, and maintenance ■ Increase the visibility of motorcyclists by emphasizing rider conspicuity and motorist awareness of motorcycles ■ Develop and implement communications strategies that target high-risk populations and improve public awareness of motorcycle crash problems and programs	■ Improve engineering practices to reduce lane-departure crashes ■ Improve law enforcement practices to better capture data related to lane-departure crashes ■ Increase public education to reduce lane-departure crashes ■ Partner with emergency responders to reduce severity of lane-departure crashes	■ Provide ongoing coordination in support of multi-agency initiatives and projects that improve traffic records information systems

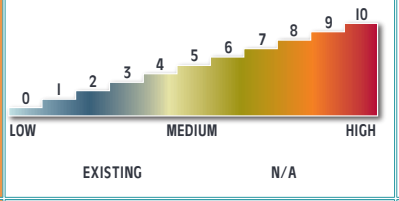
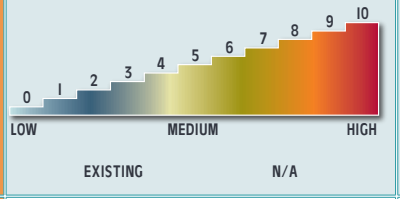
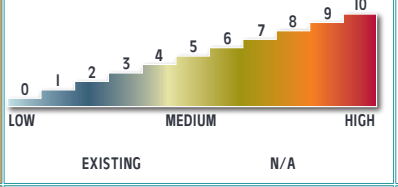
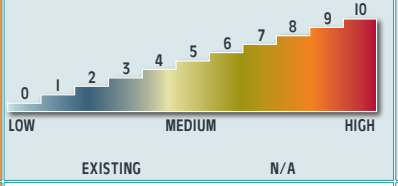
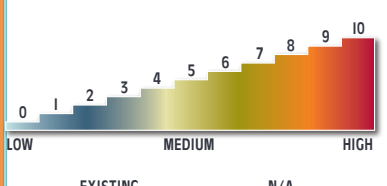
Other Safety Emphasis Areas for CMP Integration				
Aggressive Driving	**Impaired Driving**	**At-Risk Drivers/Aging Road Users**	**At-Risk Drivers/Teen Drivers**	**Distracted Driving**
Aggressive driving, as defined by State Statute, requires inclusion of at least two of the following contributing causes: speeding, unsafe or improper lane change, following too closely, failure to yield right-of-way, improper passing, and failure to obey traffic control devices.	Originally focused on alcohol impaired driving only, the state has expanded the focus to include drug impaired driving due to its prevalence and close association to alcohol impairment.	At-risk drivers, comprised of aging road users, is a new emphasis area for 2012. For data purposes in this emphasis area, aging road users are defined as 65-year-olds and older.	At-risk drivers, comprised of teen drivers, is a new emphasis area for 2012. For data purposes in this emphasis area, teen drivers are 15- to 19-year-olds.	Distracted driving occurs when a driver allows any mental or physical activity to take the driver's focus off the task of driving. There are three main types of distraction: manual – taking your hands off the wheel; visual – taking your eyes off the road; and cognitive – taking your mind off driving.
Potential Strategies	**Potential Strategies**	**Potential Strategies**	**Potential Strategies**	**Potential Strategies**
■ Support and promote effective law enforcement efforts to reduce aggressive driving ■ Increase training and education on the problem of aggressive driving ■ Identify initiatives within engineering to reduce instances of aggressive driving	■ Improve DUI enforcement ■ Improve prosecution and adjudication of impaired driving cases ■ Improve the DUI administrative suspension process ■ Improve prevention, public education, and training ■ Improve the treatment system (i.e., DUI programs, treatment providers, and healthcare providers) ■ Improve data collection and analysis ■ Enhance impaired driving legislation ■ Autonomous vehicles ■ Ride share programs	■ Manage and evaluate aging road user safety, access, and mobility activities to maximize the effectiveness of programs and resources ■ Provide the best available data to assist with decisions that improve aging road user safety, access, and mobility; ■ Provide information and resources regarding aging road user safety, access, and mobility ■ Inform public officials about the importance of and need to support national, state, regional, and local policy and program initiatives which promote and sustain aging road user safety, access, and mobility ■ Promote and encourage practices that support and enhance aging in place (i.e., improve the environment to better accommodate the safety, access, and mobility of aging road users) ■ Enhance aging road user safety and mobility through assessment, remediation, and rehabilitation ■ Promote safe driving and mobility for aging road users through licensing and enforcement ■ Promote the safe mobility of aging vulnerable road users (pedestrians, transit riders, bicyclists, and other non-motorized vehicles) ■ Promote the value of prevention strategies and early recognition of at-risk drivers to aging road users and stakeholders ■ Bridge the gap between driving retirement and mobility independence (i.e., alternative transportation mobility options, public transportation, and dementia-friendly transportation)	■ Expand the network of concerned individuals to build recognition and awareness as it relates to teen driver safety and supports the Florida Teen Safe Driving Coalition ■ Create a safe driving culture for teen drivers through outreach and education ■ Support initiatives that enhance safe teen driving-related traffic laws and regulations	■ Increase public awareness and outreach programs on distracted driving ■ Encourage companies, state agencies, and local governments to adopt and enforce policies to reduce distracted driving in company and government vehicles ■ Support legislative initiatives that enhance distracted driving-related traffic laws and regulations ■ Support Graduated Driver's License (GDL) restrictions to reduce distracted driving behaviors in teen drivers ■ Increase law enforcement officer understanding of Florida traffic crash report distracted driving data collection ■ Educate law enforcement, judges, and magistrates on the existing laws that can be applied to distracted driving (careless driving) ■ Deploy high-visibility enforcement mobilizations on distracted driving subject to appropriate/future legislation ■ Develop and maintain complete, accurate, uniform, and timely traffic records data ■ Provide the ability to link traffic records data ■ Facilitate access to traffic records data ■ Promote the use of traffic records data

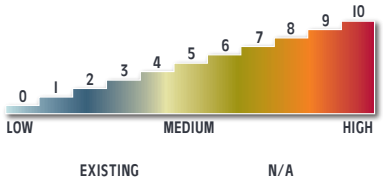
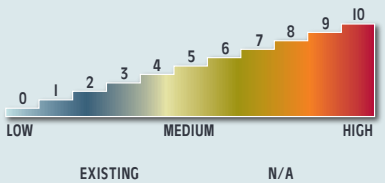
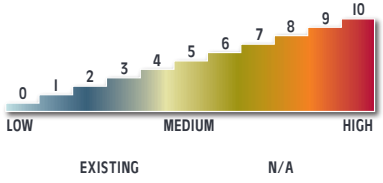
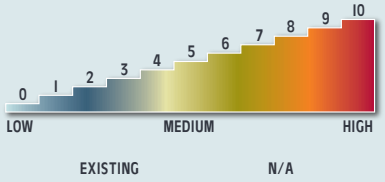
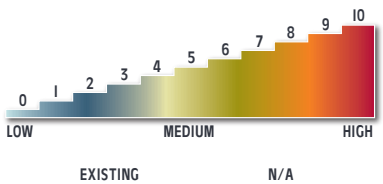
Appendix D
Complete Streets Strategy Matrix

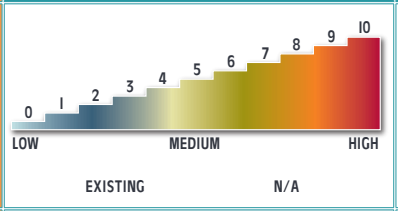
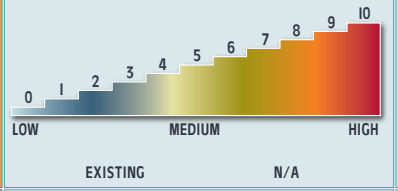
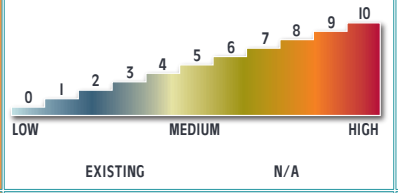
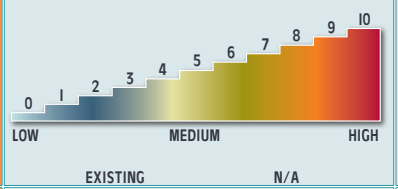
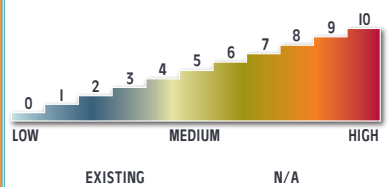
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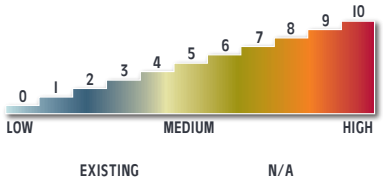
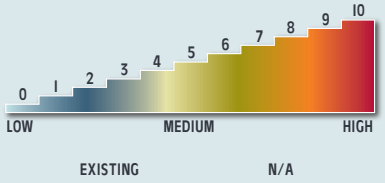
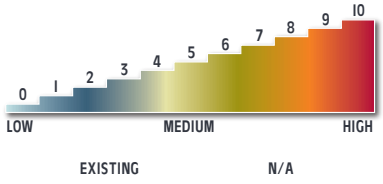
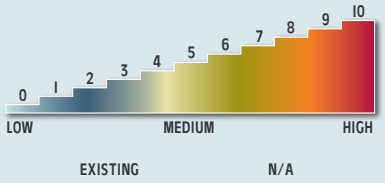
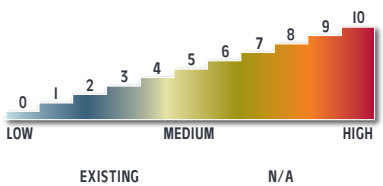
Tier	Strategy #	Strategy	Modal Benefit				Potential Effectiveness	Recommendations/Comments
			Auto	Transit	Pedestrian	Bicycle		
Tier 1: Traveled Way Strategy Checklist	1.01	**Road Diets:** A solution that can be applied to streets that are wider than necessary given the volume of traffic they carry during peak hours. A road diet reduces the number of travel lanes on a roadway, typically to one lane of traffic in each direction, in exchange for expanded sidewalks, bicycle lanes, on-street parking or landscaping.		✓	✓	✓		
	1.02	**Medians:** Raised separators in the center of the roadway with widths between 6-20 feet or more. Medians add prominence to a segment of road, can be used to add landscaping, and are often a safe haven for crossing pedestrians and bicyclists on multi-lane roadways.	✓	✓	✓	✓		
	1.03	**Paving Treatment:** One way to reduce speeds, or indicate special zones like bicycle lanes, bus stops or speed tables is to use a special paving treatment on the roadway surface. Some examples are colored or textured concrete, or stamped patterns.	✓	✓	✓	✓		
	1.04	**Bicycle Facilities:** Bicycle accommodations on the street to reduce conflicts and create a more comfortable traffic environment for everyone. Examples: Bicycle lane, shared roadway.	✓	✓	✓	✓		
	1.05	**Bicycle Lanes:** Lines and symbols on the roadway surface to delineate space for the exclusive use of bicyclists.	✓	✓	✓	✓		

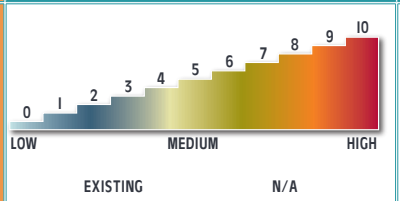
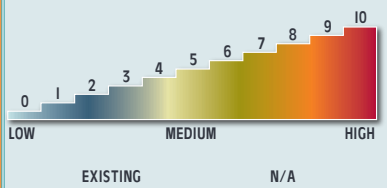
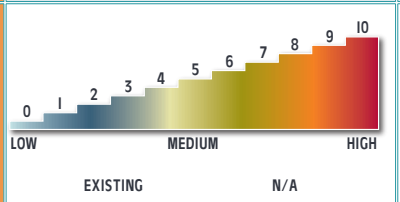
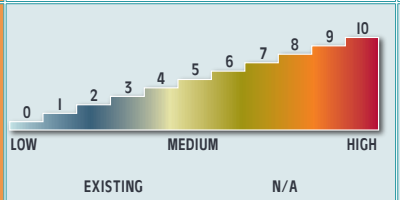
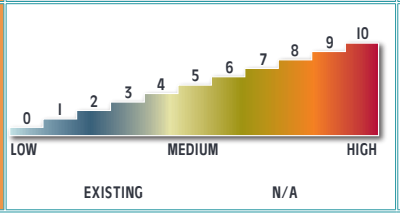
Tier	Strategy #	Strategy	Modal Benefit				Potential Effectiveness	Recommendations/Comments
			Auto	Transit	Pedestrian	Bicycle		
Tier 1: Traveled Way Strategy Checklist	1.06	**Bicycles at Signalized Intersections:** Special considerations are necessary to design traffic signals that serve both motorists and bicyclists because they require different operating characteristics. Signal progression should balance the needs of all users with appropriate design speeds and traffic signal coordination settings.						
	1.07	**Bicycle Boxes:** Dedicated space between the crosswalk and the motor vehicle stop line used to provide bicyclists a dedicated space to wait during a red light.						
	1.08	**Cycle Tracks:** Tracks reserved for the exclusive use of bicyclists and provide a physical separation between bicycles and vehicles. Tracks are often installed at a higher elevation than that the street, such as curb height.						
	1.09	**Transit Strategies:** Design strategies that improve transit operations and reduce delays for transit vehicles at intersections and present design guidance on the individual bus stops and sidewalk connections. Examples: signal coordination, signal priority for transit vehicles, with dedicated transit-only lanes, queue jump lanes						
	1.10	**Bus Stop Locations:** Safe, convenient, well-lit, clearly visible, and must be ADA-compliant. Proper spacing and siting of bus stops involves considerations, such as the bus route, population density, popular destinations, transfer locations, intersection operations and geometry, parking restrictions, and sightlines.						

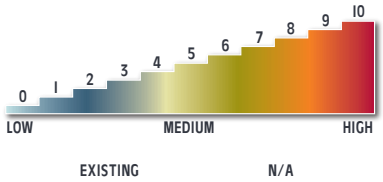
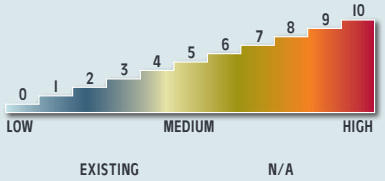
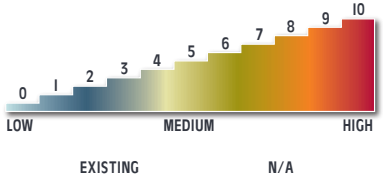
Tier	Strategy #	Strategy	Modal Benefit				Potential Effectiveness	Recommendations/Comments
			Auto	Transit	Pedestrian	Bicycle		
Tier 1: Traveled Way Strategy Checklist	1.11	**Transit Prioritization at Intersections:** Bus service becomes more reliable and efficient when transit is prioritized at the intersections. Transit prioritization strategies include signal coordination, signal priority, transit-only lanes, and queue jump or bypass lanes.		✓				
	1.12	**Bus Bulbs:** Curb extensions along the length of a bus stop that eliminate the need for buses to pull in and out of traffic.		✓	✓	✓		
	1.13	**On-Street Parking:** Serves the parking needs of local businesses, and as a buffer between pedestrians and passing traffic. Pedestrians feel more comfortable and parked cars help calm traffic by visually narrowing and increasing friction along the edge of the roadway.	✓		✓			
	1.14	**Modern Roundabouts:** Circular intersections designed for lower speeds and yield-controlled entry. Pedestrian crossing is only allowed across the legs of the roundabout behind the yield lines.	✓	✓	✓	✓		
Tier 2: Intersection Strategy Checklist	2.01	**Curb Radii:** The corner radius has a significant impact on an intersections. Larger curb radii encourages turns at higher speeds, while smaller curb radii reduce speeds, shorten crossing distances for pedestrians, and improve sight distances. Burb Radii should balance the needs of both the design vehicles and mix of multimodal traffic.	✓	✓	✓	✓		

Tier	Strategy #	Strategy	Modal Benefit				Potential Effectiveness	Recommendations/Comments
			Auto	Transit	Pedestrian	Bicycle		
Tier 2: Intersection Strategy Checklist	2.02	**Curb Ramps:** Provides a smooth transition from the sidewalk to the street. Appropriately designed curb ramps are critical for providing access across intersections for people with mobility and visibility disabilities.		✓	✓	✓		
	2.03	**Curb Extensions:** Also known as neck-downs or bulb-outs, reduce the effective crossing width of the street by extending the curb line across a parking lane to the adjacent travel lanes. They have many pedestrian benefits including reducing crossing distances, and enhancing visibility between pedestrian and other roadway users.		✓	✓	✓		
	2.04	**Crosswalks Markings at Uncontrolled Locations:** Marked crosswalks are appropriate at uncontrolled locations (no traffic control devices to regulate the movement of traffic) as well as where safety enhancements are needed to increase driver and pedestrian visibility and awareness.	✓	✓	✓	✓		
	2.05	**Crossing Islands:** Medians that provide protected areas within a crosswalk so pedestrians only have to focus on and cross one direction of traffic at a time.	✓	✓	✓	✓		
	2.06	**Raised Crossings and Intersections:** A type of speed table with marked crosswalk on the flat plateau and the top of the table. They act as a traffic calming devices that help improve sightlines between pedestrians and motorist as well as increasing yield compliance.		✓	✓	✓		

Tier	Strategy #	Strategy	Modal Benefit				Potential Effectiveness	Recommendations/Comments
			Auto	Transit	Pedestrian	Bicycle		
Tier 2: Intersection Strategy Checklist	2.07	**Advance Yield Markings and Signs:** Markings and signs that improve motorist expectations that a pedestrian my be present on a multilane roadway. They are placed further back from the crosswalk and used in conjunction with "Yield to Pedestrian" signs.	✓	✓	✓	✓		
	2.08	**In-street Yield to Pedestrian Signs:** Signs placed in the roadway to alert drivers to the crossing and remind them to yield to pedestrians.	✓	✓	✓	✓		
	2.09	**Rectangular Rapid-Flash Pedestrian Beacons:** Beacons that are placed curbside below the pedestrian crossing sign and above the indication arrow that are activated by a pedestrian call button with causes an irregular LED flash pattern.	✓	✓	✓	✓		
	2.10	**Pedestrian Signal Heads:** A phased signal for pedestrian traffic, often including "Walk", "Don't Walk" and countdown displays. All marked crosswalks at all signalized intersections should have pedestrian signal heads.	✓	✓	✓	✓		
	2.11	**Accessible Pedestrian Signals (APS):** Devices that communicate the "Walk" and "Don't Walk" intervals at signalized intersections to people with visual and/or hearing disabilities.	✓	✓	✓			

Tier	Strategy #	Strategy	Modal Benefit				Potential Effectiveness	Recommendations/Comments
			Auto	Transit	Pedestrian	Bicycle		
Tier 2: Intersection Strategy Checklist	2.12	**Exclusive Signal Phases for Pedestrians:** Concurrent pedestrian phase occurs when pedestrians have the "Walk" indicator. while parallel and turning traffic is permitted. Protected pedestrian phase occurs when pedestrians have the"Walk"" indicator while turning movements are prohibited by a signal or "No Turn on Red" sign. Exclusive pedestrian phase occurs when pedestrians have the "Walk" indicator which all other movements are prohibited by a signal or "No Turn on Red" sign.						
	2.13	**Signalization Strategies to Reduce Conflicts:** These strategies typically include separate movements and include: lagging protected left-turn phases, restricting turns on red, leading pedestrian intervals, exclusive and protected pedestrian signal phases.						
Tier 3: Streetside Strategy Checklist	3.01	**Seating:** Chairs, benches, seating walls, etc., that gives pedestrians a place to rest or wait for other modes inorder to make a multimodal trip.						
	3.02	**Bicycle Racks:** Bicycle parking is critical to encourage bicycling. Racks should be easy to use, simple in design, and support the frame at two points.						
	3.03	**Bicycle Shelters:** Secure, covered areas for bicycle parking often located a minimum of 50 feet from transit stations, building entrances, and other areas with high bicycle activity to encourage use.						

Tier	Strategy #	Strategy	Modal Benefit				Potential Effectiveness	Recommendations/Comments
			Auto	Transit	Pedestrian	Bicycle		
Tier 3: Streetside Strategy Checklist	3.04	**Bollards:** Permanent or temporary objects or pillars whose main functions are to protect pedestrians, bicyclists, buildings and other areas from vehicles and accentuate traffic calming. Large planters can also be used for this purpose.	✓	✓	✓	✓		
	3.05	**Recycling Bins and Garbage Cans:** Plentiful and convenient public receptacles for trash and recycling are important to keep streets and sidewalks clean.		✓	✓	✓		
	3.06	**Transit Nodes:** A collection of pedestrian services (bus shelters, crosswalks, RRFB, pedestrian sign) that have a greater visual impact benefitting drivers and pedestrians alike.		✓	✓	✓		
	3.07	**Bus Stops:** Comfortable, accessible, and safe bus stops improve the value of transit to the community. Amenities can include benches, trash receptacles, shelters, lighting, bicycle racks, bus schedules, maps, real time/next bus arrival information, newspaper boxes and public art.		✓	✓	✓		
	3.08	**Bus Shelters:** Comfortable, convenient bus shelters encourage transit use and should be provided on all key bus routes if sidewalk space allows. With the goal of benefitting the largest number of riders, bus shelters should be prioritized and installed based on ridership or economic development considerations.		✓	✓	✓		

Tier	Strategy #	Strategy	Modal Benefit				Potential Effectiveness	Recommendations/Comments
			Auto	Transit	Pedestrian	Bicycle		
Tier 3: Streetside Strategy Checklist	3.09	**Driveways:** Driveway design has a considerable influence on pedestrian safety and comfort since driveways typically cross pedestrian zones and put pedestrians in direct conflict with vehicles.	✓		✓	✓		
	3.10	**Plazas, Pocket Parks, and Parklets:** Urban Open Spaces encourage pedestrian and bicycle activity and are important to civic life, by serving as public "living rooms" for municipal events.		✓	✓	✓		
	3.11	**Sidewalk Cafes:** Sidewalk cafes add interest, enliven public space and should be encouraged. They involve private use of public space and must be regulated to ensure fire codes compliance and pedestrian access. Clear pedestrian paths at least 5 feet wide on the sidewalks must be maintained.		✓	✓	✓		



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Appendix I

FDOT REGIONAL ITS ARCHITECTURE SUMMARY

Regional ITS Architecture Summary

FDOT District 7 ITS Architecture Update

Version 3.0

December 31, 2015

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List of Acronyms and Abbreviations

AASHTO .....American Association of State Highway and Transportation Officials
AMBER ..... America's Missing: Broadcast Emergency Response
ANSI ..... American National Standards Institute
APTA ..... American Public Transportation Association
ATIS.....Advanced Traveler Information System
ASTM ..... American Society for Testing and Materials
AVL ..... Automated Vehicle Location
C2C ..... Center-to-Center
C2F.....Center to Field
CCTV ..... Closed-Circuit Television
CFR .....Code of Federal Regulations
CHEMTREC..... CHEMical TRansportation Emergency Center
DEP ..... Department of Environmental Protection
DMS.....Dynamic Message Sign
DOT .....Department of Transportation
DXFS .....Data Exchange Format Specification
EM..... Emergency Management
EMS .....Emergency Medical Services
EOC..... Emergency Operations Center
FDLE.....Florida Department of Law Enforcement
FDOT ..... Florida Department of Transportation
FHP .....Florida Highway Patrol
FHWA.....Federal Highway Administration
FMS.....Field Management Stations
FTA .....Federal Transit Administration
FTE .....Florida's Turnpike Enterprise
HAR ..... Highway Advisory Radio
HART.....Hillsborough Area Regional Transit

HAZMAT ..... Hazardous Materials
HOV ..... High-Occupancy Vehicle
HRI ..... Highway-Rail Intersection
IEEE ..... Institute of Electrical and Electronics Engineers
ISP ..... Information Service Provider
ITE ..... Institute of Transportation Engineers
ITS ..... Intelligent Transportation Systems
IVR ..... Interactive Voice Response
JPA ..... Joint Program Agreement
MOU ..... Memorandum of Understanding
MPO ..... Metropolitan Planning Organization
NEMA ..... National Equipment Manufacturers Association
NOAA ..... National Oceanic and Atmospheric Administration
OIS ..... Office of Information Services
PCPT ..... Pasco County Public Transportation
PIO ..... Public Information Office
PSTA ..... Pinellas Suncoast Transit Authority
PWD ..... Public Works Department
RTMC ..... Regional Traffic Management Center
RTSMIP ..... Real-Time System Management Information Program
SAE ..... Society of Automobile Engineers
SDO ..... Standards Development Organization
TBARTA ..... Tampa Bay Regional Transportation Authority
TD ..... Transportation Disadvantaged
TEA-21 ..... Transportation Equity Act for the 21st Century
TEAMS ..... Turnpike Enterprise Asset Management System
THEA ..... Tampa Hillsborough Expressway Authority
TMC ..... Traffic/Transportation Management Center
TOD ..... Traffic Operations Division
TRMS ..... Transit Management Subsystem

1 Introduction

The FDOT District 7 Regional Intelligent Transportation Systems (ITS) Architecture (also known as the Tampa Bay Regional ITS Architecture) is a roadmap for transportation systems integration in the Florida Department of Transportation (FDOT) over the next 20 years. The architecture has been updated through a cooperative effort by the regional transportation agencies, covering all modes and all roads. The architecture represents a shared vision of how each agency's systems will work together in the future, sharing information and resources to provide a safer, more efficient, and more effective transportation system for travelers in the region.

The architecture is an important tool that will be used by:

- Operating agencies to recognize and plan for transportation integration opportunities in the District;
- Planning agencies to better reflect integration opportunities and operational needs into the transportation planning process; and
- Other organizations and individuals that use the transportation system in the District.

The architecture provides an overarching framework that spans all of these organizations and individual transportation projects. Using the architecture, each transportation project can be viewed as an element of the overall transportation system, providing visibility into the relationship between individual transportation projects and ways to cost-effectively build an integrated transportation system over time. This architecture has been coordinated with the adjacent FDOT District 1 Regional ITS Architecture to ensure consistency at those jurisdictional and operational points where regionally based operations coincide and/or integrate with planning and operations in District 1.

1.1 Purpose

The FDOT District 7 Regional ITS Architecture represents a consensus blueprint for ITS investments in FDOT's District 7 region. This updated FDOT District 7 Regional ITS Architecture is an update of the previous version of the FDOT District 7 Regional ITS Architecture that was last updated in 2006. The development of this update began by reviewing the existing 2006 architecture and updated transportation planning documents that were available. With the participation of ITS agencies (stakeholders) in the region one-on-one interviews were held and then one stakeholder workshop, where the architecture was interactively updated. The architecture goes on to define possible integration opportunities between agencies within the region and adjoining regions and identifies how cooperation between the agencies in the deployment of ITS can be used to provide transportation services.

This architecture can be used to efficiently structure implementations of ITS technologies. By creating a long-range plan for implementation of these systems and technologies, agencies can:

- Prepare for future expansion,
- Develop coordinated deployments of ITS,
- Leverage funding, and
- Identify standard interfaces.

In addition to structuring implementations of ITS technologies, the FDOT District 7 Regional ITS Architecture allows the region to comply with the Federal Highway Administration's (FHWA) Rule/ Federal Transit Authority (FTA) Policy on Architecture and Standards. The FHWA Final Rule 23 Code of Federal Regulations (CFR) 940, (and corresponding FTA policy) to implement Section 5206(e) of the Transportation Equity Act for the 21st Century (TEA-21), requires that ITS projects funded through the Highway Trust Fund conform to the National ITS Architecture and applicable standards. The Rule/Policy requires that the National ITS Architecture be used to develop a local implementation of the National ITS Architecture, which is defined as a regional ITS architecture. This updated FDOT District 7 Regional ITS Architecture will bring the regional architecture into full compliance with this Rule/Policy, which will facilitate the approval of federal funds to support ITS projects in the region.

1.2 Document Overview

This document is organized into thirteen main sections and one Appendix. Section 1 provides introductory information on the purpose of the architecture, an overview of the document, and a discussion of the scope of the architecture. Section 2 describes the process used to develop the updated FDOT District 7 Regional ITS Architecture. Section 3 gives a brief introduction and overview of the National ITS Architecture, and how it relates to this regional ITS architecture. Stakeholders are identified in Section 4 and their systems are inventoried in Section 5. The ITS services that are currently deployed, or are planned for deployment, are covered in Section 6. The interfaces and information exchanges are described in Section 7. The definition of functional requirements for the elements of the architecture is described in Section 8. A discussion of ITS standards applicable to the region is provided in Section 9. The ITS projects planned in the region are discussed in Section 10. A discussion of agreements is provided in Section 11. Finally, Section 12 provides guidance on using the regional ITS architecture and Section 13 provides reference to the Statewide Architecture Maintenance Process. A list of acronyms is located at the front of this document. Appendix A contains a description of how the FDOT District 7 Regional ITS Architecture maps to Rule 23 CFR 511.

1.3 Scope of the Architecture

The geographic scope of the architecture is the five counties around Tampa Bay that comprise FDOT District 7, which is shown graphically in Figure **1**. There is one other ITS architecture, the

District 1 Regional ITS Architecture (the Southwest Florida Regional ITS Architecture), which borders geographically onto the District 7 architecture.

The FDOT District 1 Regional ITS Architecture update was done in parallel with the District 7 Regional ITS Architecture update so that the many and varied connections between the two architectures could be properly updated.

Two other ITS architectures provide connections to the FDOT District 7 Regional ITS Architecture through the nature of the services that they describe:

- Statewide ITS Architecture (which describes services that are delivered statewide, such as traveler information and commercial vehicle operations)
- FDOT Turnpike Regional ITS Architecture (which describes the Turnpike Operations that occur throughout the state).

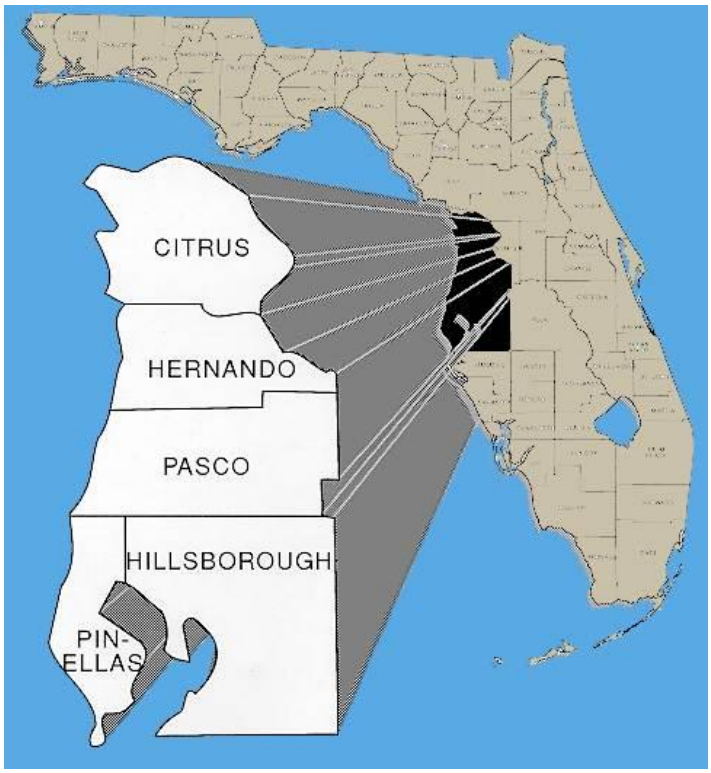


Figure 1. FDOT District 7

As mentioned in the introduction, the timeframe considered for the FDOT District 7 Regional ITS Architecture is a 20-year outlook for ITS activities in the region, with an emphasis on those ITS activities likely to be implemented in the next 20 years. This means that the architecture addresses existing ITS as well as those planned for development over the next 20 years. The regional ITS architecture represents a snapshot of the currently anticipated ITS and other projects

based on information gathered from stakeholders, and research from agency web sites or published agency documents.

The architecture covers services across a broad range of ITS, including traffic management, maintenance and construction operations, incident management, emergency services, transit management, traveler information, and archived data management.

2 FDOT District 7 Regional ITS Architecture Development Process

2.1 Process to Update the Architecture

The update of the FDOT District 7 Regional ITS Architecture relied heavily on stakeholder input to ensure that the ITS architecture reflected local and regional needs and plans. The development process used is illustrated in Figure 2.

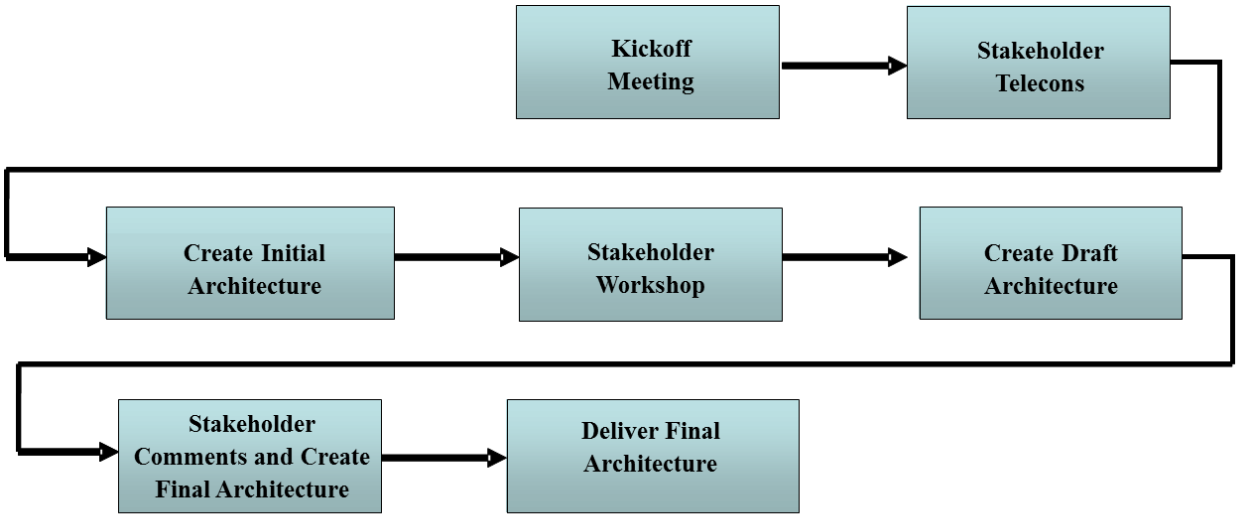


Figure 2. FDOT District 7 Regional ITS Architecture Update Process

The following process steps were used to develop the ITS architecture:

- Conduct a kickoff teleconference with the stakeholders to introduce them to the current architecture and discuss the update plans.
- Conduct telephone/webinar interviews with key stakeholders in the region to determine changes to their systems since the last architecture update and to identify ITS project plans for the future.
- Create an initial architecture update focusing on ITS elements and a draft set of customized ITS Services to be provided. This includes updating the architecture to version 7 of the National ITS Architecture.
- Conduct stakeholder outreach through a one-day workshop on October 8, 2014.
- Create a complete updated architecture definition for review (web-based).
- Allow stakeholder review of the draft regional ITS architecture and submit comments

- Finalize the ITS architecture based on review comments and provide a review webinar to the stakeholders.
- Deliver the final architecture following comment resolution.

2.1.1 Kickoff Meeting/ Conduct Stakeholder Teleconferences

A kickoff webinar was held on September 18, 2014, to introduce the stakeholders to the architecture and discuss the plans for the update. As a starting point for the FDOT District 7 Regional ITS Architecture update, teleconferences were conducted with key stakeholders. These included interviews with:

- FDOT District 7
- Pinellas County
- Pasco County
- Hillsborough Area Regional Transit (HART)
- City of St. Petersburg
- City of Tampa
- City of Clearwater
- Pinellas Suncoast Transit Authority (PSTA)

These agencies represent key stakeholders in District 7 and were, therefore, selected to be interviewed prior to creating the initial architecture update.

2.1.2 Create Initial Architecture Update

An updated set of ITS elements, services, and interconnections was created beginning with the FDOT District 7 Regional ITS Architecture updated in 2006. The previous version was in the format of version 5.1 of the National ITS Architecture. As part of the update, all components of the architecture were updated to version 7 of the National ITS Architecture, which is the current version.

The service package diagram (the collection of ITS elements, equipment packages, and functions that work together to perform a specific ITS service – see Section 3 for details on the National ITS Architecture) for each existing or future ITS service operating or expected in the region was edited so that each National ITS Architecture subsystem or terminator was associated with the local stakeholder element name. In some cases, multiple instances of the service package were developed where the service had more than one instance in the region. This would be the case if there were multiple agencies performing the same service within the region. This set of customized service packages, using the draft elements created previously, was created in preparation for stakeholder outreach so that each could be reviewed and further customized based on actual operating procedures (or theories) for each agency.

2.1.3 Stakeholder Workshop

A one-day stakeholder workshop was held on October 8, 2014. A key overall objective of the workshop was to develop a regional ITS architecture update that is a consensus architecture, which means an architecture that the participants understand and is agreed to by the stakeholders. This is not to say that the resulting ITS architecture has credible funding identified that would lead to full deployment. The ITS architecture only identifies the current set of ITS elements and interfaces that are agreed to by the stakeholders. Existing funding processes will continue to be used to decide how to allocate limited resources for ITS elements and interfaces for deployment.

The workshop also incorporated an overview or training in the National ITS Architecture and regional ITS architectures and a discussion of the scope of the architecture, so that stakeholders would understand and more fully participate in the ITS architecture development process. The first part of the workshop focused on understanding ITS: what an ITS architecture is; and the development approach for the regional ITS architecture update. After this basic training on ITS architectures, the focus shifted to the specific updates being made to the FDOT District 7 Regional ITS Architecture. Stakeholders reviewed the stakeholder definitions, operational concepts for each stakeholder, the ITS inventory and the planned ITS projects. The second part of the workshop was spent reviewing the customized service package diagrams and adding or deleting diagrams, elements, and interconnections when necessary.

2.1.4 Draft Architecture Update-1

Following the stakeholder workshop, the customized service packages were revised and a full draft architecture update was created. Using the customized service package diagrams (as modified during and post the workshop), the Turbo Architecture database was updated, and utilized to create a draft ITS architecture. This involved the following activities:

- Updating the ITS inventory, stakeholders list, and project list;
- Revising the customized service package diagrams;
- Updating the Stakeholder Roles and Responsibilities; and
- Creating a Turbo Architecture database that represents the sum of all of the customized service packages.

There was also a hypertext version of the complete Turbo Architecture database that was created and placed on a generally accessible web site (www.consystec.com). This web site describes each element of the ITS architecture and all of their interconnections with other elements. The web site was developed using additional software tools that go beyond the basic Turbo Architecture software.

2.1.5 Stakeholder Review

Stakeholders were notified by email (collected at the kick-off meeting, stakeholder interviews and the stakeholder meeting) that a review period for the updated FDOT District 7 Regional ITS Architecture had commenced and feedback was solicited. Stakeholders were encouraged to review the regional ITS architecture on the web site and provide feedback electronically from the web site.

2.1.6 Create Final Architecture

Following the stakeholder review period, the architecture parts were again updated to resolve the comments received during this time. An Architecture Summary document (this document) was created and the web site was updated. This document, along with an updated web site, forms a complete description of the FDOT District 7 Regional ITS Architecture that is compliant with the Architecture and Standards Rule. The architecture was presented in a final webinar to key stakeholders.

2.1.7 Deliver Final Architecture

Following the resolution of any comments obtained during the final webinar, the final architecture summary document and final updated web site will be developed (along with the Turbo Architecture) as the final deliverables on the architecture.

2.2 Requirements of the Final FHWA Rule and FTA Policy on Architecture

2.2.1 Specific Requirements of the Final FHWA Rule or FTA Policy

The FHWA Final Rule (23 CFR 940) and FTA Policy on Intelligent Transportation System Architecture and Standards, which took effect on April 8, 2001, defines a set of requirements that regional ITS architectures should meet. The following is a list of specific requirements from the FHWA Rule/FTA Policy:

- A description of the region (scope)
- Identification of participating agencies and their systems (inventory)
- Operations concepts
- Agreements required for implementation
- System functional requirements
- Interface requirements
- Identification of ITS Standards
- Sequence of projects required for implementation
- Develop a process for maintaining the regional ITS architecture

2.2.2 How the Final Rule and FTA Policy Requirements are Met

Table 1 shows how the requirements of the rule are met by the outputs developed for the FDOT District 7 Regional ITS Architecture:

Table 1. Mapping of Requirements to Architecture Outputs

Regional ITS Architecture Requirements	Where Requirements Are Documented
Description of region	Geographic definition, identification of services and a timeframe are given in Section 1 of this document.
Identification of participating agencies and other stakeholders	Listing of stakeholders and their definitions is given in Section 4 of this document. An inventory of the elements operated by the stakeholders is contained in Section 5 of this document. The same information is also available in the hyperlinked web site and in the Turbo Architecture database.
An operational concept that identifies the roles and responsibilities of participating agencies and stakeholders	The operational concept is defined in Section 4 of this document and is contained in the hyperlinked web site and in the Turbo Architecture database.
A list of any agreements (existing or new) required for operations	The discussion of existing and needed new agreements is given in Section 11 of this document.
System functional requirements	The functional requirements of the ITS are described in an overview in Section 8 of this document. They are also provided in detail in the hyperlinked web site and in the Turbo Architecture database.
Interface requirements and information exchanges with planned and existing systems and subsystems	The Interfaces and information flows are described in a general way in Section 7 of this document, and are described in detail in the hyperlinked web site and in the Turbo Architecture database.
Identification of ITS standards supporting regional and national interoperability	The general identification of standards for ITS in the District 7 region is contained in Section 9 of this document. The detailed descriptions of standards for each interface are described in the hyperlinked web site and in the Turbo Architecture database.
The sequence of projects required for implementation	Projects, and their sequencing, are covered in Section 10 of this document and are also contained on the hyperlinked web site and in the Turbo Architecture Database.
Develop and implement procedures and responsibilities for maintaining the architecture as needs evolve within the region.	The Maintenance Plan is referenced in Section 13 of this document.

2.3 How the Architecture Addresses Rule 23 CFR 511

The FDOT District 7 Regional ITS Architecture has been developed to address the requirements of Rule 23 CFR 511- Real-Time System Management Information Program (RTSMIP). The description of what this rule discusses and how the FDOT District 7 Regional ITS Architecture describes FDOT's RTSMIP in the District is contained in Appendix A.

3 ITS Architecture Concepts

The FDOT District 7 Regional ITS Architecture is an example of a regional ITS architecture, which has been defined by FHWA Rule 940 as a "regional framework for ensuring institutional agreement and technical integration for implementation of ITS projects." Regional ITS architectures, including the FDOT District 7 Regional ITS Architecture, are developed in order to provide a guide for the integration of transportation systems. The updated architecture is based upon the US National ITS Architecture Version 7. A complete description of this architecture can be found at http://www.iteris.com/itsarch. The FDOT District 7 Regional ITS Architecture uses a set of common concepts or terms drawn from the National ITS Architecture to describe the parts of the region. This section will provide a description of the most common concepts or terms as an aid to the understanding the remainder of the document.

What are some of the main parts of an ITS architecture? They are made of the following:

- Organizations
- Systems operated
- Services provided
- Functions performed
- Information exchanged

The organizations that operate systems in the region covered by the architecture are referred to as **stakeholders**. These are public agencies, private organizations, or the traveling public with a vested interest, or a "stake," in one or more transportation elements within a regional ITS architecture.

The systems operated by the stakeholders are referred to as **elements**. In the FDOT District 7 Regional ITS Architecture the elements represent actual systems, such as *FDOT SWIFT Center*. An element may also represent field devices, for example the element *City of Lakeland Field Equipment*. A more thorough discussion of the architecture elements is contained in Section 5. As mentioned above, the FDOT District 7 Regional ITS Architecture is based upon the National ITS Architecture, which contains general terms for these systems (elements). Since these National ITS Architecture terms show up repeatedly in later discussion they will be defined here.

The National ITS Architecture uses two terms to describe the systems that make up an architecture. They are:

- **Subsystems**, which represent the primary systems described by the architectures. For example the traffic/transportation management center (TMC) element mentioned above represents a regional ITS architecture example of the Traffic Management Subsystem

defined in the National ITS Architecture. The National ITS Architecture has 22 subsystems defined.

- **Terminators**, which represent systems that are on the boundary of the architecture. In general only interfaces to the terminators are described in the national architectures. An example of a terminator from the National ITS Architecture is the Weather Service. The National ITS Architecture has 76 terminators defined.

As a part of developing a regional ITS architecture, each element of the region is mapped to the subsystems and/or terminators that most closely define the functions of the element. This mapping allows the regional version to use the details associated with the subsystems and terminators in the National ITS Architecture. As an example, the element in the FDOT District 7 Regional ITS Architecture called *National Weather Service* is mapped to the National ITS Architecture terminator Weather Service.

The information exchanged between elements (in the FDOT District 7 Regional ITS Architecture) or between subsystems and terminators in the National ITS Architecture is described by **information flows** or **architecture flows.** There are hundreds of these flows defined in the National ITS Architecture; it is this information that is used to create the interface definitions in the FDOT District 7 Regional ITS Architecture. For example, in Figure 3 the top two boxes show an interface between two subsystems, with its information flows defining the exchange of information. A corresponding interface in the FDOT District 7 Regional ITS Architecture is shown in the bottom two boxes.

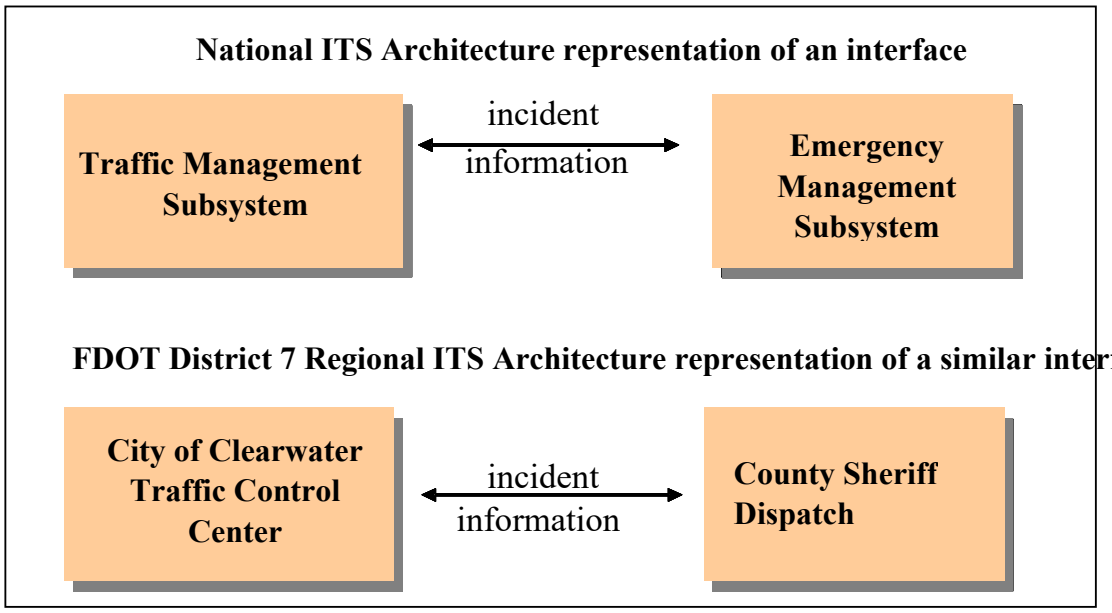
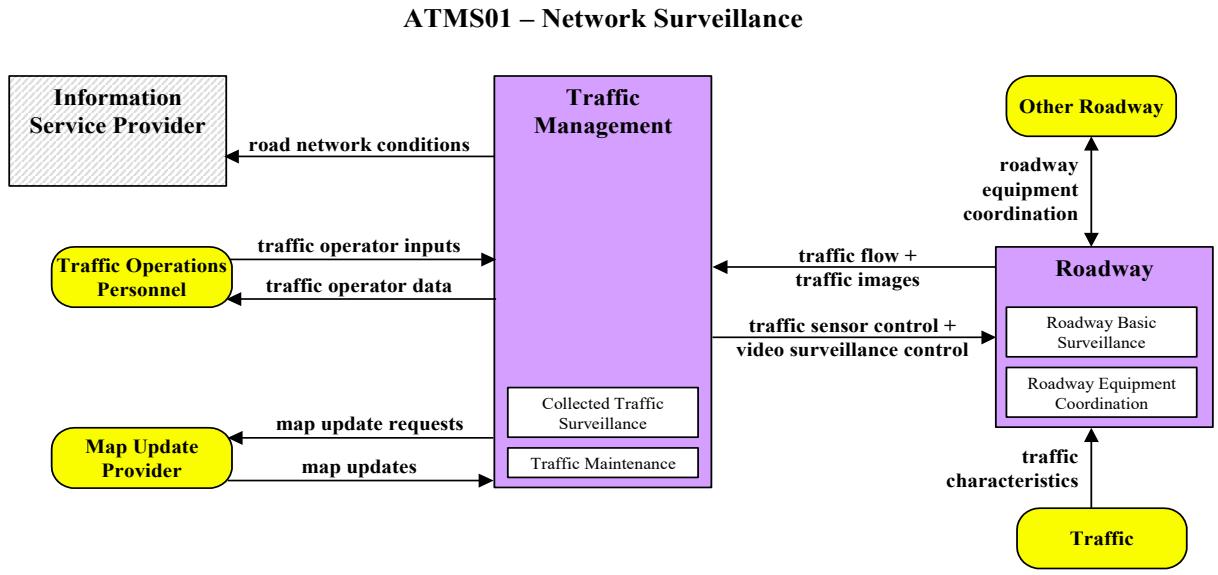


Figure 3. Information Flows

By mapping the FDOT District 7 Regional ITS Architecture elements (e.g. FDOT District 7 Tampa Bay SunGuide® Center) to National ITS Architecture subsystems (or terminators) (e.g. Traffic Management Subsystem), the interfaces defined in the National ITS Architecture can be used as the basis for defining the interfaces in the FDOT District 7 Regional ITS Architecture.

The next key concept used by the architectures is that of **service packages**. These represent slices of an architecture that provide a transportation service. In the National ITS Achitecture, these service packages are combinations of subsystems and information flows that are used to provide the service. An example of a National ITS Architecture service package is shown in Figure 4. This shows the subsystems and information flows (some of which go to terminators) that perform the collection and distribution of traffic flow and traffic images used to monitor a road network. In the update of the FDOT District 7 Regional ITS Architecture, a set of customized service packages were created that define the elements and interfaces used to provide the transportation services in the region.



- Traffic Management Center to Roadside Equipment and
- Traffic Management Center to Information Service Provider

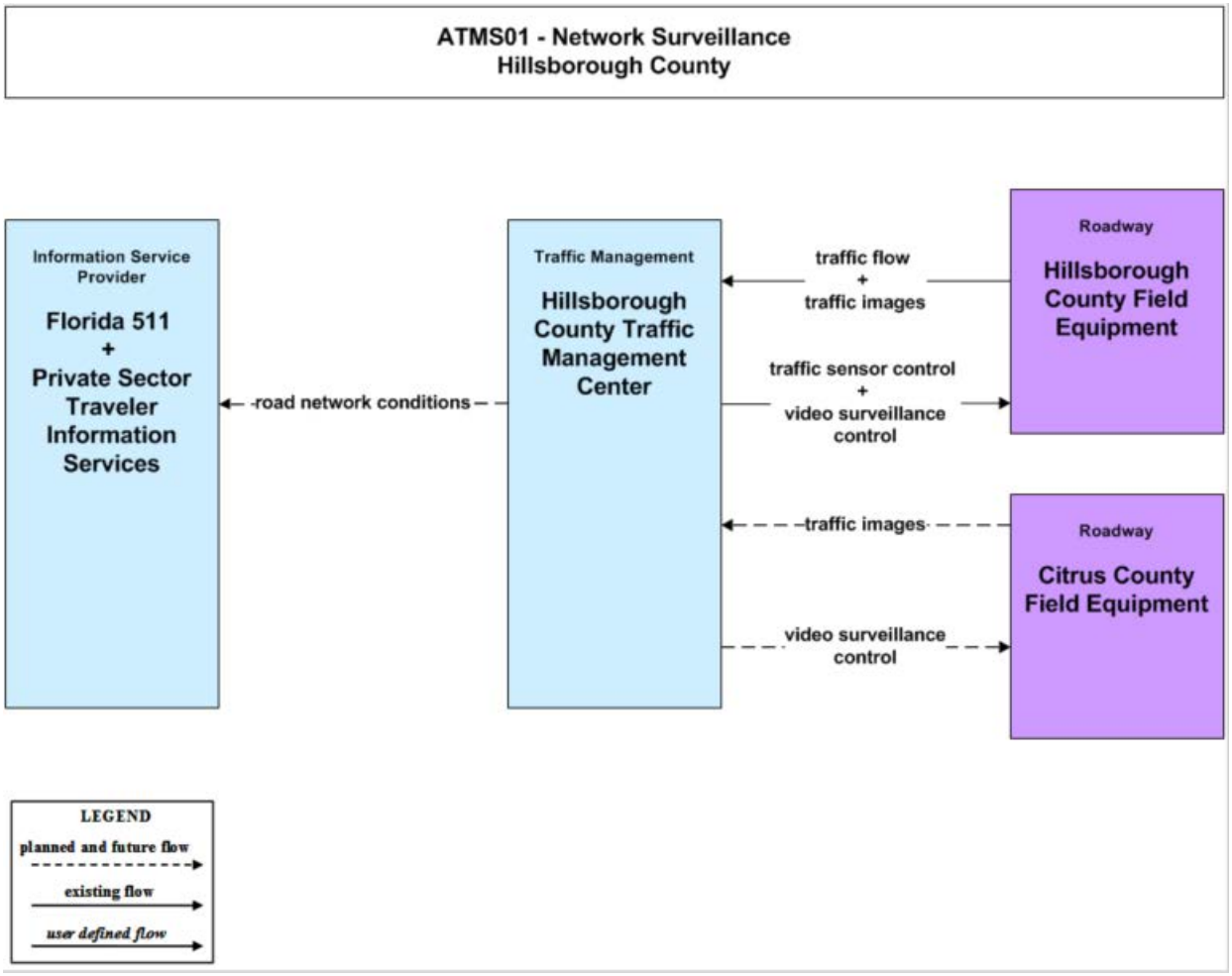


Figure 5. Example of FDOT District 7 Regional ITS Architecture Customized Service Package

Notice that the customized service package includes only some of the interfaces that were in the National ITS Architecture service package. It does not include interfaces to personnel or a map update provider element. Elements mapping to these are not included in the FDOT District 7 Regional ITS Architecture.

One final concept to mention relates to the functions performed by the elements in the architecture. The National ITS Architecture has the concept of an **equipment package,** which defines a piece of a subsystem (within the service package) that performs a specific function. For example, in Figure 4, *Collect Traffic Surveillance* (identified by the white box within the Traffic Management Subsystem) is a function (or equipment package) that is performed by the Traffic Management Subsystem when performing the Network Monitoring Transportation Service. In the FDOT District 7 Regional ITS Architecture functions have been identified for the key elements using a mapping of equipment packages to each element. For example, the Hillsborough County Traffic Management Center (shown in Figure 5) will implement the Collect

Traffic Surveillance equipment package (shown in Figure 4 as functionality in the Traffic Management Subsystem). Further information regarding how functions are defined for each element is found in Section 8 on Functional Requirements.

4 Identification of Stakeholders

Stakeholder coordination and involvement is one of the key aspects to the development of a regional ITS architecture. Because ITS often transcends traditional transportation infrastructure, it is important to consider a range of stakeholders beyond the traditional traffic, transit, and maintenance areas. In addition, it is important to consider stakeholders at a regional level, including those stakeholders in adjoining regions.

The FDOT District 7 Regional ITS Architecture includes a wide range of stakeholders. Many of these stakeholders were present at the stakeholder workshop described in Section 2. The following is a list of agencies/participants that were either present during the architecture development workshop and provided their input during this workshop, or were contacted specifically by ConSysTec Corporation for their input on the FDOT District 7 Regional ITS Architecture:

- City of Clearwater
- City of Plant City
- City of St. Petersburg
- FDOT Central Office
- FDOT District 7
- Florida's Turnpike Enterprise (FTE)
- Hillsborough Area Regional Transit Authority (HART)
- Hillsborough Metropolitan Planning Organization (MPO)
- Pinellas County
- Pinellas MPO
- Pinellas Suncoast Transit Authority (PSTA)
- The Tampa Bay Area Regional Transportation Authority (TBARTA)

The FDOT District 7 Regional ITS Architecture is defined by a set of elements (or systems), each of which is owned (or operated or maintained) by a stakeholder. The above listing includes all the agencies that attended stakeholder webinars or meetings. Essentially all of them own, operate, or maintain elements in the architecture. The full list of stakeholders can be found on the FDOT District 7 Regional ITS Architecture web page by selecting the "Stakeholders" pull down on the top menu bar.

The stakeholders on the web site represent a mix of specific agencies or organizations and generic names used to represent a variety of stakeholders. An example of a specific agency or organization from the architecture is City of Tampa Transportation and Stormwater Services, which represents departments responsible for traffic operations and maintenance throughout the

city. An example of a generic stakeholder name would be County Public Safety Agencies, which represents all of the public safety agencies (sheriff, fire, and EMS) at the county level.

4.1 Operational Concept

An operational concept documents each stakeholder's current and future roles and responsibilities in the operation of the regional ITS. The operational concept documents these roles and responsibilities across a range of transportation services. The services covered by the FDOT District 7 Regional ITS Architecture include:

- **Traffic Signal Control.** The development of traffic signal systems that react to changing traffic conditions and provide coordinated intersection timing over a corridor, an area, or multiple jurisdictions.
- **Highway Management.** The development of systems to monitor freeway traffic flow and roadway conditions, and provide strategies such as ramp metering or lane access control to improve the flow of traffic on the freeway. Includes systems to provide information to travelers on the roadway.
- **Incident Management.** The development of systems to provide rapid and effective response to incidents. Includes systems to detect and verify incidents, along with coordinated agency response to the incidents.
- **Transit Management.** The development of systems to more efficiently manage fleets of transit vehicles or transit rail. Includes systems to provide transit traveler information both pre-trip and during the trip as well as electronic fare payment systems used on transit vehicles.
- **Information Dissemination.** The development of systems to provide static and real-time transportation information to travelers.
- **Emergency Management.** The development of systems to provide emergency call taking, public safety dispatch, and emergency operations center operations.
- **Maintenance and Construction Management.** The development of systems to manage the maintenance of roadways in the region, including winter snow and ice clearance. Includes the managing of construction operations.
- **Archive Data Management.** The development of systems to collect transportation data for use in non-operational purposes (e.g. planning and research).

The roles and responsibilities of key stakeholders for the specified range of transportation services can be found on the web site under the Stakeholders tab by clicking the Operational Concept tab. This tab has an alphabetic list of stakeholders. Clicking on any stakeholder displays a complete list of the roles and responsibilities organized by the service areas listed above.

5 Systems Inventory

The FDOT District 7 Regional ITS Architecture inventory is a list of "elements" that represent all existing and planned ITS in the region as well as non-ITS that provide information to or get information from the ITS. These elements are owned, operated, or maintained by stakeholder agencies, companies, or groups. The focus of the inventory is on those systems that support, or may support, interfaces that cross stakeholder boundaries (e.g. public to private interfaces).

The vast majority of the inventory represents ITS within the region, but the inventory does contain some elements that represent systems in adjoining regions or those that are statewide in nature. An example of an element that is statewide in nature would be *Florida 511*, which represents the existing statewide traveler information system. An example of an element from an adjoining region is *FDOT SWIFT Center*, which is the main FDOT operations center in District 1 and has numerous connections with the FDOT District 7 Tampa Bay SunGuide Center.

Each element in the inventory is described by a name, the stakeholder, a description, general status (e.g. existing or planned), and the associated subsystems or terminators from the National ITS Architecture that the elements is mapped to for modeling purposes.

The web site lists the architecture elements in several different ways under the Inventory pull-down:

- Inventory- sorted alphabetically by element name
- Inventory by stakeholder- sorted alphabetically by stakeholder name, with each element assigned to that stakeholder listed alphabetically. See discussion below.
- Inventory by entity- this tab sorts first by types of entity (e.g. Traffic Management Subsystem), then alphabetically by element name. See discussion below.

5.1 Systems by Stakeholder.

The majority of elements in the inventory represent a specific existing or planned system. Examples of specific systems are the *FDOT District 7 Tampa Bay SunGuide Center* or the *Pinellas County Traffic Management Center*. Some of the elements represent sets of devices, rather than a single specific system or device. An example of this type of element is the element *FDOT District 7 Field Equipment*, which represents all of the ITS field devices that are, or will be, operated by FDOT District 7 in the region. The element describes the types of field device, not the specific number of each device.

A third type of element in the inventory is a "generic" element that represents all of the systems of a certain type in the region. An example of this type of element is *County Sheriff Dispatch*, which represents all the county sheriff's dispatch centers in the region. These generic elements have been created for two primary reasons. First, they represent elements with similar types of interfaces. So, from a standardization standpoint, describing how one of the major elements in

the region (e.g. the *FDOT District 7 Tampa Bay SunGuide Center*) interfaces with various county public safety dispatch functions would be the same. Second, describing many systems with a single element helps keep the architecture from growing too large.

5.2 Systems by Architecture Entity

Each element in the FDOT District 7 Regional ITS Architecture inventory is mapped to one or more entities from the National ITS Architecture. In version 7.0 of the National ITS Architecture (on which this architecture is based) there are 98 entities defined. These 22 subsystems and 76 terminators describe a wide array of systems that provide ITS services, or interface with systems that provide ITS services. The mapping of FDOT District 7 Regional ITS Architecture elements to National ITS Architecture entities has two primary benefits. First, it allows the full set of information flows contained in the National ITS Architecture to be used in the description of FDOT District 7 Regional ITS Architecture interfaces. Secondly, it allows the elements of the FDOT District 7 Regional ITS Architecture to be grouped by like entity.

A list of the elements in the FDOT District 7 Regional ITS Architecture sorted by entity can be found on the FDOT District 7 Regional ITS Architecture web page by selecting the “Inventory by Entity” button under the “Inventory” Tab on the top menu bar. This list on the web page allows the users of the architecture to immediately identify all the elements that have functions relating to transit management, or traffic management, or any other subsystem or terminator defined by the National ITS Architecture.

The FDOT District 7 Regional ITS Architecture inventory contains the following number of elements mapped to different types of entities:

- Archived Data Management: 8
- Emergency Management: 26 (including some transit elements that are mapped to emergency management because of the transit security service described in a later section)
- Information Service Providers: 15
- Maintenance and Construction Management: 12
- Traffic Management: 21
- Transit Management: 10

6 Services

The ITS in the region currently provide a wide array of transportation services and that list will grow as more systems are developed or upgraded. The current and planned services can be described by the set of service packages that are shown in Table 2. This set of services is a subset of the services contained in the National ITS Architecture, and represents all of the selected services (service packages) based on information gathered at stakeholder meetings, needs assessments, and review of planning documents. Each of the service packages is currently implemented, or planned for implementation by one or more stakeholders in the region. For those services where one or more stakeholders have already implemented it, the status is set to existing.

Table 2. Selected Regional Services (Service Packages)

Service Package	Service Package Name	Service Package Status
AD1	ITS Data Mart	Planned
AD2	ITS Data Warehouse	Planned
AD3	ITS Virtual Data Warehouse	Planned
APTS01	Transit Vehicle Tracking	Existing
APTS02	Transit Fixed-Route Operations	Existing
APTS03	Demand Response Transit Operations	Existing
APTS04	Transit Fare Collection Management	Planned
APTS05	Transit Security	Existing
APTS06	Transit Fleet Management	Planned
APTS07	Multi-modal Coordination	Existing
APTS08	Transit Traveler Information	Existing
APTS09	Transit Signal Priority	Existing
APTS10	Transit Passenger Counting	Existing
ATIS01	Broadcast Traveler Information	Existing
ATIS02	Interactive Traveler Information	Planned
ATIS08	Ride Sharing	Planned
ATMS01	Network Surveillance	Existing
ATMS02	Traffic Probe Surveillance	Planned
ATMS03	Traffic Signal Control	Existing
ATMD04	Traffic Metering	Planned
ATMS06	Traffic Information Dissemination	Existing
ATMS07	Regional Traffic Management	Existing

Service Package	Service Package Name	Service Package Status
ATMS08	Traffic Incident Management System	Existing
ATMS10	Electronic Toll Collection	Existing
ATMS13	Standard Railroad Grade Crossing	Existing
ATMS15	Railroad Operations Coordination	Planned
ATMS16	Parking Facility Management	Existing
ATMS17	Regional Parking Management	Planned
ATMS18	Reversible Lane Management	Planned
ATMS21	Roadway Closure Management	Planned
AVSS05	Intersection Safety Warning	Planned
AVSS12	Cooperative Vehicle Safety Systems	Planned
CVO06	Weigh-In-Motion	Planned
CVO10	HAZMAT Management	Planned
CVO11	Roadside HAZMAT Security Detection and Management	Planned
EM01	Emergency Call-Taking and Dispatch	Existing
EM02	Emergency Routing	Existing
EM04	Roadway Service Patrols	Planned
EM05	Transportation Infrastructure Protection	Planned
EM06	Wide Area Alert	Planned
EM07	Early Warning Systems	Planned
EM08	Disaster Response and Recovery	Planned
EM09	Evacuation and Reentry Management	Planned
EM10	Disaster Traveler Information	Planned
MC01	Maintenance and Construction Vehicle and Equipment Tracking	Planned
MC02	Maintenance and Construction Vehicle Maintenance	Planned
MC03	Road Weather Data Collection	Existing
MC04	Weather Information Processing and Distribution	Planned
MC07	Roadway Maintenance and Construction	Planned
MC08	Work Zone Management	Existing
MC09	Work Zone Safety Monitoring	Planned
MC10	Maintenance and Construction Activity Coordination	Existing
MC12	Infrastructure Monitoring	Existing

Incident Management, identified as ATMS08 in Table 5, is one of the key services planned throughout the region. Although it is technically called "Traffic Incident Management," and identified numerically in the National ITS Architecture as ATMS08, a broader view of this service includes several service packages, including:

- ATMS03 – Traffic Signal Control
- ATMS04 – Traffic Metering
- ATMS06 – Information Dissemination
- ATMS07 – Regional Traffic Control
- ATMS08 – Traffic Incident Management
- EM1 – Emergency Call-Taking and Dispatch
- EM2 – Emergency Routing

As indicated by Table 2, all of these services are identified as existing or planned for the FDOT District 7 Regional ITS Architecture.

7 Interfaces and Information Exchanges

The service packages identified in the National ITS Architecture (see Section 3) have been customized to reflect the unique systems and connections within the FDOT District 7 region, as well as connections just outside of the region (e.g. other counties). Each customized service package can be shown graphically, with the service package name, the entity from the National ITS Architecture and the specific FDOT District 7 architecture elements associated with the entity. In addition the service packages show the information flows that are exchanged (or will be exchanged) between elements.

Figure **6** is an example of an advanced traffic management system service package for Traffic Signal Control that has been customized for Hernando County. This service package shows the two subsystems, Traffic Management and Roadway, and the associated elements. Information flows (called "architecture flows" in the National ITS Architecture) between the subsystems indicate what information is being shared. The service packages that were customized for the FDOT District 7 Regional ITS Architecture can be found on the FDOT District 7 Regional ITS Architecture web page by selecting the "Services" button under the Services pull down on the top menu bar. Under the "Services" button, service packages are grouped by functional areas (e.g. Traffic Management, Maintenance and Construction, and Public Transportation). Each set of customized service packages (based on the functional area) can be viewed by clicking on the Service Package Diagram icon under each area heading. It is important to note that while the service package table on the web page shows all of the service packages from the National ITS Architecture, only those selected for the region are included in the diagrams. The selected service packages on the web page also are highlighted in the web page table with bold print and are indicated as existing or planned.

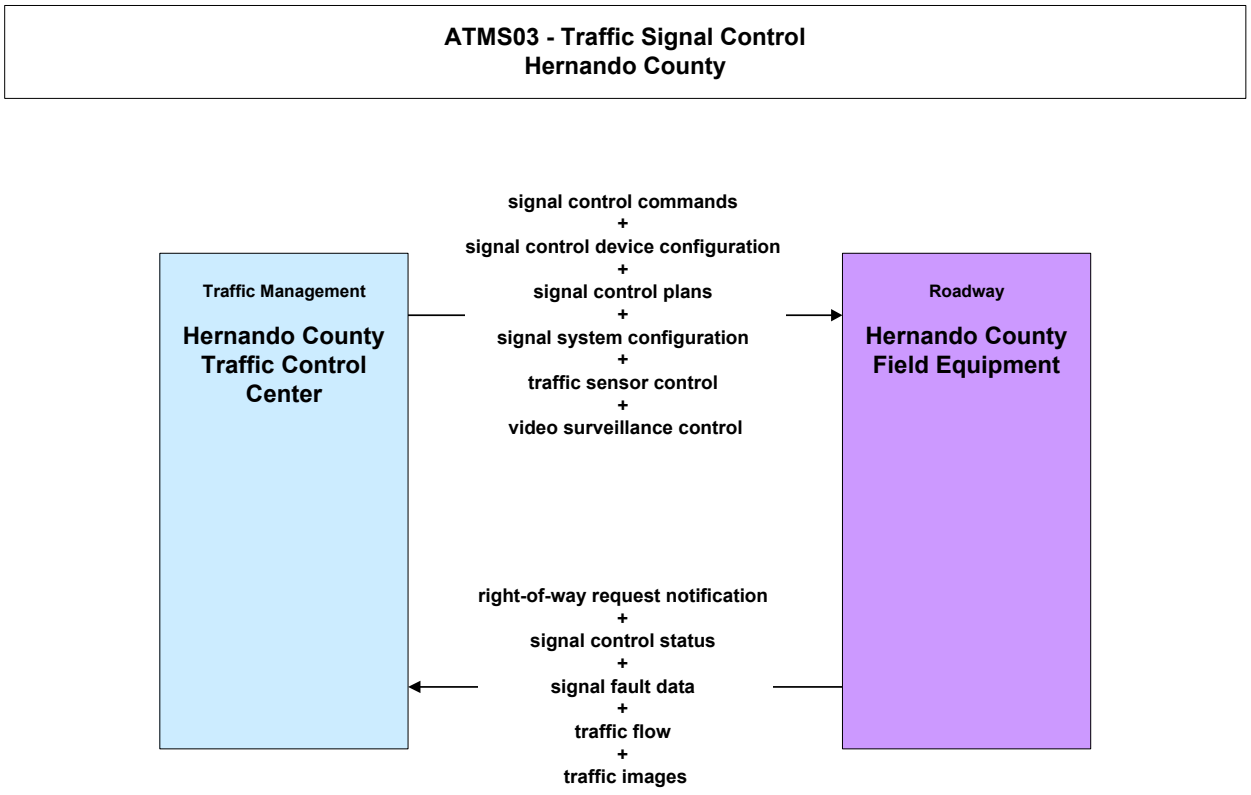


Figure 6. Example Customized Service Package

7.1 Regional Architecture Information Flows

While it is important to identify the various systems and stakeholders as part of the FDOT District 7 Regional ITS Architecture, a primary purpose of the architecture is to identify the *connectivity* between transportation systems in the region. The service packages from the National ITS Architecture represent services that can be deployed as an integrated capability, and the customized service package diagrams show the information flows between the subsystems and terminators (elements within the region) that are most important to the operation of the service packages. How these systems interface with each other is an integral part of the overall architecture.

There are 206 different elements identified as part of the FDOT District 7 Regional ITS Architecture. These elements include city, county and regional traffic operations centers, transit centers, transit vehicles, public safety dispatch centers, media outlets, and others—essentially all of the existing and planned physical components that contribute to the region's ITS. Interfaces have been defined for each element in the architecture. For example, the FDOT District 7 Tampa Bay SunGuide Center has existing or planned interfaces with 68 other elements in the region ranging from field equipment to transit centers. Some of the interfaces are far less complex. For example the FDLE Headquarters interfaces with only one other element in the architecture, the

FDOT District 7 Tampa Bay SunGuide Center. The FDOT District 7 Regional ITS Architecture defines a total of 743 interfaces from one element to another.

Elements and their interfaces are accessible via the FDOT District 7 Regional ITS Architecture web page by clicking on the "ITS Inventory" button under the Inventory pull-down. On this web page, elements are listed alphabetically in the column on the left, and the description of each element appears on the right. By clicking on (selecting) an element, the element detail page comes up where the user can view the element definition, the stakeholder, the current status of the element, and the other elements that the selected element interfaces with. Figure 7 is an example of a portion of the element detail page for the FDOT District 7 Maintenance Vehicles.



ELEMENT: FDOT DISTRICT 7 MAINTENANCE VEHICLES

Description:	Represents the ITS-devices (i.e., mobile data terminals) onboard the maintenance and construction vehicle owned and operated by FDOT District 7. This may include vehicles currently operated or owned by private contractors but used for FDOT projects.
Status:	Existing
Stakeholder:	FDOT District 7
Functional Areas: (Linked to Functional Requirements)	View All Functional Requirements MCV Roadway Maintenance and Construction MCV Vehicle Location Tracking MCV Vehicle Safety Monitoring MCV Vehicle System Monitoring and Diagnostics MCV Work Zone Support MCV Infrastructure Monitoring
Interfaces: (Flows) Context Diagram	FDOT District 7 Equipment Repair Facility FDOT District 7 Field Equipment FDOT District 7 Maintenance
Service Packages:	MC01 - Maintenance and Construction Vehicle and Equipment Tracking - FDOT District 7 MC02 - Maintenance and Construction Vehicle Maintenance - FDOT District 7 MC07 - Roadway Maintenance and Construction - FDOT District 7 MC08 - Work Zone Management - FDOT District 7 MC09 - Work Zone Safety Monitoring - FDOT District 7
Mapping:	Maintenance and Construction Vehicle

Figure 7. Example of Element Detail With Interfaces

Note that the FDOT District 7 Maintenance Vehicles interface with three other elements. By clicking on (selecting) an element that interfaces with the FDOT District 7 Maintenance Vehicles, more detailed information about the particular interface is pulled up (e.g. information flows). Information flows between elements define specific information that is exchanged by the elements. Each information flow has a direction, name, and definition. Most of the information

flows match architecture flows from the National ITS Architecture (the mapping of elements to National ITS Architecture entities allowed the developers to match the architecture flows to the appropriate interfaces). In some cases, new "user-defined" flows have been created for interfaces or connections that are not expressed in the National ITS Architecture (NOTE: User-defined flows have a "_ud" at the end of the flow name to indicate they are user-defined). These architecture flows define the interface requirements between the various elements in the region. The FDOT District 7 Regional ITS Architecture defines 3163 triplets (a source element, architecture flow and destination element) throughout the region.

An example of information flows between two elements is shown in Figure 8. In this interface, the information flows that go between the FDOT District 7 Work Zone Equipment and FDOT District 7 Operations Centers and Maintenance Yards are shown. Although both of these elements are existing, the information flows on this interface are shown as planned (indicated by the [P] after each flow in the table, or by a dotted line in the diagram). This signifies that these elements do not currently share data communications (since the information flows are all shown as planned).

Each of the individual element interfaces can be accessed on the FDOT District 7 Regional ITS Architecture web page by clicking on the "ITS Inventory" button and selecting the element whose interfaces they are reviewing in order to bring up the element detail page. Once on the element detail page, scrolling down to the "Interfaces" and clicking on (selecting) an interfacing element, pulls up more detailed information about the particular interface (e.g. architecture flows). Once you have selected the interfacing element, a screen should appear that is similar to the diagram shown in Figure 8 (which shows all of associated architecture flows). Selecting any of the information flows in the table will provide a description of the flow and any standards associated with that information flow.

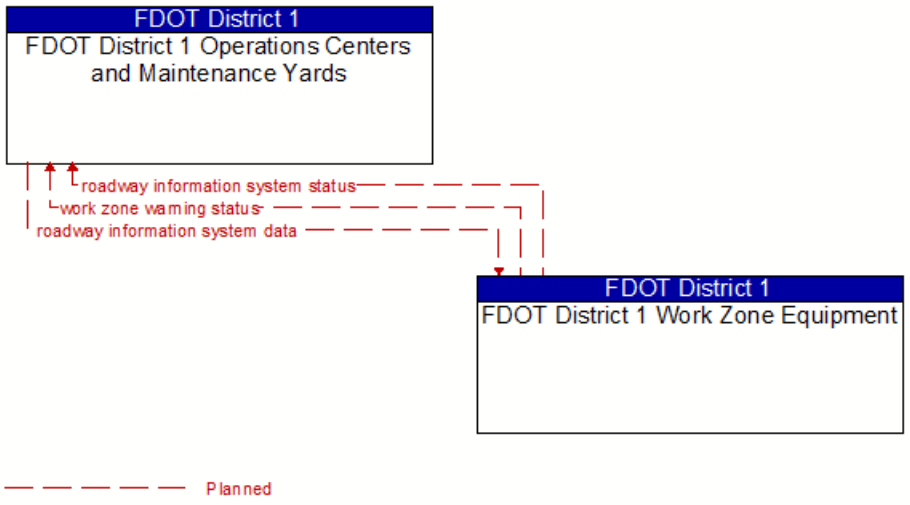


Figure 8. Example of Information Flows Between Elements

8 Functional Requirements

Functional requirements are a description of the functions or activities that are currently performed by the ITS elements or are planned to be performed in the future. For the FDOT District 7 Regional ITS Architecture, these functions have been developed by using the functional assignments underlying the National ITS Architecture.

In the National ITS Architecture, a service package is defined by subsystems, equipment packages, and architecture flows, which operate together to perform a particular transportation service. Equipment Packages represent pieces of a subsystem that perform a single function. (Further descriptions of these National ITS Architecture concepts are in Section 3.) Note: there are no equipment packages defined for the Terminators of the National ITS Architecture since they represent systems on the boundary of the architecture and, therefore, do not have functional descriptions within the architecture; hence any element mapped only to a National ITS Architecture terminator - e.g. National Weather Service - will not have functions assigned to it. To consider an example of this mapping beginning with service packages, the Surface Street Control (ATMS03) service package is composed of the three Traffic Management Subsystem equipment packages: Collect Traffic Surveillance, TMC Signal Control and Traffic Equipment Maintenance, and four Roadway Subsystem equipment packages: Field Management Stations Operations, Roadway Basic Surveillance, Roadway Signal Control, and Roadway Equipment Coordination. The definitions of these four equipment packages, copied from version 7 of the National ITS Architecture, are:

- Collect Traffic Surveillance – This equipment package remotely monitors and controls traffic sensors and surveillance (e.g., CCTV) equipment, and collects, processes and stores the collected traffic data. Current traffic information and other real-time transportation information is also collected from other centers. The collected information is provided to traffic operations personnel and made available to other centers.
- TMC Signal Control – This equipment package provides the capability for traffic managers to monitor and manage the traffic flow at signalized intersections. This capability includes analyzing and reducing the collected data from traffic surveillance equipment and developing and implementing control plans for signalized intersections. Control plans may be developed and implemented that coordinate signals at many intersections under the domain of a single traffic management subsystem and are responsive to traffic conditions and adapt to support incidents, preemption and priority requests, pedestrian crossing calls, etc.
- Traffic Equipment Maintenance – This equipment package monitors the operational status of field equipment and detects failures. It presents field equipment status to Traffic Operations Personnel and reports failures to the Maintenance and Construction Management Subsystem. The equipment package tracks the repair or replacement of the failed equipment. The entire range of ITS field equipment may be monitored by this

equipment package including sensors (traffic, infrastructure, environmental, security, speed, etc.) and devices (highway advisory radio, dynamic message signs, automated roadway treatment systems, barrier and safeguard systems, cameras, traffic signals and override equipment, ramp meters, beacons, security surveillance equipment, etc.).

- Field Management Stations Operations – This equipment package supports direct communications between field management stations and the local field equipment under their control.
- Roadway Basic Surveillance – This equipment package monitors traffic conditions using fixed equipment such as loop detectors and CCTV cameras.
- Roadway Equipment Coordination – This equipment package supports direct communications between field equipment. It includes field elements that control and send data to other field elements. This includes coordination between remote sensors and field devices (e.g., Dynamic Message Signs) and coordination between the field devices themselves (e.g., direct coordination between traffic controllers that are controlling adjacent intersections.).
- Roadway Signal Controls – This equipment package includes the field elements that monitor and control signalized intersections. It includes the traffic signal controllers, signal heads, detectors, and other ancillary equipment that supports traffic signal control. It also includes field masters, and equipment that supports communications with a central monitoring and/or control system, as applicable. The communications link supports upload and download of signal timings and other parameters and reporting of current intersection status. This equipment package represents the field equipment used in all levels of traffic signal control from basic actuated systems that operate on fixed timing plans through adaptive systems. It also supports all signalized intersection configurations, including those that accommodate pedestrians. Roadway Equipment Coordination – This equipment package supports direct communications between field equipment. It includes field elements that control and send data to other field elements. This includes coordination between remote sensors and field devices (e.g., Dynamic Message Signs) and coordination between the field devices themselves (e.g., direct coordination between traffic controllers that are controlling adjacent intersections.).

The approach used in the FDOT District 7 Regional ITS Architecture update was to begin with the mapping of equipment packages to elements as an initial definition of the functions being performed by each element. Then this mapping is tailored, or customized, in the Turbo Architecture tool to provide a more accurate picture of the functions performed by each element. The Turbo Architecture tool also contains a detailed mapping of functional requirements (written as “shall” statements) to each equipment package. This mapping to functional requirements has been customized for each element, selecting only those requirements that are appropriate given the definition and connectivity of the element. In some cases the functional requirement has been

customized to better reflect the functions of the element. This detailed mapping of functional requirements to elements is contained in the Turbo Architecture database.

The mapping of elements to the basic functions (equipment packages) is provided on the hyperlinked web site version of the architecture. The detail page for each element (which is accessed by clicking on the hyperlinked element name within the "ITS Inventory," "Inventory by Stakeholder," or "Inventory by Entity" tabs) has a list of the functional areas (i.e. equipment packages) assigned to the element. Sometimes the user may need to scroll down to see the equipment packages.

For example, the FDOT District 7 Field Equipment element has the following functional areas assigned to it:

- Roadway Basic Surveillance
- Roadway Environmental Monitoring
- Roadway Equipment Coordination
- Roadway Field Device Monitoring
- Roadway Infrastructure Monitoring
- Roadway Probe Data Communications
- Roadway Reversible Lanes
- Roadway Safety Warning System
- Roadway Traffic Information Dissemination
- Roadway Traffic Metering
- Roadway Work Zone Safety
- Roadway Work Zone Traffic Control

This represents a first level of detail that can be obtained in the hyperlinked web site in connection with functionality. The additional level of detail, or detailed functional requirements, can be accessed by clicking on the "View All Functional Requirements" link or any of the functional areas associated with the element under review. Using this example, viewing the FDOT District 7 Field Equipment element detail page, the user can see the functional areas listed above. If the user were to select one of the functional areas (all listed as hyperlinks), the functional area detail page would appear. This page lists the detailed functional requirements that have been customized for the FDOT District 7 Regional ITS Architecture as well as providing a full description of what this functional area contains and a listing of all elements that are associated with this functional area.

9 Standards

The following subsections provide a discussion of ITS standards potentially applicable in the region and how to identify the standards that might be applicable on a specific interface within the architecture.

9.1 Discussion of Key Standards for the Region

ITS standards establish a common way in which devices connect and communicate with one another. This allows transportation agencies to implement systems that cost-effectively exchange pertinent data and accommodate equipment replacement, system upgrades, and system expansion. Standards benefit the traveling public by providing products that will function consistently and reliably throughout the region. ITS standards contribute to a safer and more efficient transportation system, facilitate regional interoperability, and promote an innovative and competitive market for transportation products and services.

The use of ITS standards is very important to project development in the region. Table 3 identifies the ITS standards that are potentially applicable to the region. This table was created by using the standards information available in the Turbo Architecture database (which identifies standards applicable to each architecture flow) and taking the total set of standards that result from all of the selected flows. The table provides the status of the standards effort as of January 2012 (the most recent update of the information). The table lists the abbreviation of Standards Development Organization (SDO) in the first column, the name of the standard in the second column and the number of the standard in the third column. Regular updates of SDO activities will help ensure that the latest standards are utilized. The SDOs involved in the development of ITS standards that are listed in the table include:

- American Association of State Highway and Transportation Officials (AASHTO)
- American National Standards Institute (ANSI)
- American Public Transportation Association (APTA)
- American Society for Testing and Materials (ASTM)
- Institute of Electrical and Electronics Engineers (IEEE)
- Institute of Transportation Engineers (ITE)
- National Equipment Manufacturers Association (NEMA)
- Society of Automotive Engineers (SAE)

Table 3. Applicable ITS Standards

SDO	Standard Title	Document ID
AASHTO/ITE	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	ITE TMDD
AASHTO/ITE/NEMA	Data Element Definitions for Transportation Sensor Systems (TSS)	NTCIP 1209
AASHTO/ITE/NEMA	Field Management Stations (FMS) - Part 1: Object Definitions for Signal System Masters	NTCIP 1210
AASHTO/ITE/NEMA	Global Object Definitions	NTCIP 1201
AASHTO/ITE/NEMA	NTCIP Center-to-Center Standards Group	NTCIP C2C
AASHTO/ITE/NEMA	NTCIP Center-to-Field Standards Group	NTCIP C2F
AASHTO/ITE/NEMA	Object Definitions for Actuated Traffic Signal Controller (ASC) Units	NTCIP 1202
AASHTO/ITE/NEMA	Object Definitions for Closed Circuit Television (CCTV) Camera Control	NTCIP 1205
AASHTO/ITE/NEMA	Object Definitions for Closed Circuit Television (CCTV) Switching	NTCIP 1208
AASHTO/ITE/NEMA	Object Definitions for Conflict Monitor Units (CMU)	NTCIP 1214
AASHTO/ITE/NEMA	Object Definitions for Data Collection and Monitoring (DCM) Devices	NTCIP 1206
AASHTO/ITE/NEMA	Object Definitions for Dynamic Message Signs (DMS)	NTCIP 1203
AASHTO/ITE/NEMA	Object Definitions for Electrical and Lighting Management Systems (ELMS)	NTCIP 1213
AASHTO/ITE/NEMA	Object Definitions for Environmental Sensor Stations (ESS)	NTCIP 1204
AASHTO/ITE/NEMA	Object Definitions for Ramp Meter Control (RMC) Units	NTCIP 1207
AASHTO/ITE/NEMA	Object Definitions for Signal Control and Prioritization (SCP)	NTCIP 1211
APTA	Standard for Transit Communications Interface Profiles	APTA TCIP-S-001 3.0.4
ASTM	Dedicated Short Range Communication at 915 MHz Standards Group	DSRC 915MHz
ASTM	Standard Practice for Metadata to Support Archived Data Management Systems	ASTM E2468-05
ASTM	Standard Specifications for Archiving ITS-Generated Traffic Monitoring Data	ASTM E2665-08
ASTM/IEEE/SAE	Dedicated Short Range Communication at 5.9 GHz Standards Group	DSRC 5GHz
IEEE	Incident Management Standards Group	IEEE IM
IEEE	Standard for Message Sets for Vehicle/Roadside Communications	IEEE 1455-1999

SDO	Standard Title	Document ID
IEEE	Standard for the Interface Between the Rail Subsystem and the Highway Subsystem at a Highway Rail Intersection	IEEE 1570-2002
IEEE	Standard for Wireless Access in Vehicular Environments (WAVE) - Over- the-Air Data Exchange Protocol for Intelligent Transportation Systems (ITS)	IEEE P1609.11
SAE	Advanced Traveler Information Systems (ATIS) General Use Standards Group	ATIS General Use
SAE	Dedicated Short Range Communications (DSRC) Message Set Dictionary	SAE J2735
SAE	On-board Vehicle Mayday Standards Group	Mayday

NTCIP C2F: NTCIP Center-to-Field Standards Group

Table 3 specifies the NTCIP Center-to-Field (NTCIP C2F) Group of Standards, which addresses the communications protocols between a center and the ITS field devices it manages. The family includes the communications profiles that cover the interfaces between a TMC and DMSs, ramp meters, environmental sensors, or CCTVs under its control. These protocols are common across all Center-to-Field interfaces in the National ITS Architecture, and rather than repeat the entire list for each architecture flow, we have created this summary entry – the NTCIP C2F Group of communications standards.

The "vocabulary" (objects) is specific to the actual architecture flow in the National ITS Architecture and is, therefore, mapped to the corresponding Data Object standard. (In the example above, the "Object Definitions for Dynamic Message Signs" standard would be mapped to the specific control and data flows between the Traffic Management Subsystem and the Roadway DMS equipment.)

In order to satisfy a wide spectrum of system and regional communications requirements, Center-to-Field ITS deployments should each implement the combinations of the following NTCIP C2F communications protocols that best meet their needs.

This Group includes the following Standards Activities:

- NTCIP 1102: Base Standard: Octet Encoding Rules (OER)
- NTCIP 1103: Simple Transportation Management Protocol (STMP)
- NTCIP 2101: Point to Multi-Point Protocol Using RS-232 Subnetwork Profile
- NTCIP 2102: Subnet Profile for PMPP Over FSK modems
- NTCIP 2103: Subnet Profile for Point-to-Point Protocol using RS 232
- NTCIP 2104: Subnet Profile for Ethernet

- NTCIP 2201: Transportation Transport Profile
- NTCIP 2202: Internet (TCP/IP and UDP/IP) Transport Profile
- NTCIP 2301: Application Profile for Simple Transportation Management Framework (STMF)
- NTCIP 2302: Application Profile for Trivial File Transfer Protocol
- NTCIP 2303: Application Profile for File Transfer Protocol (FTP)

NTCIP C2C: NTCIP Center-to-Center Standards Group

Table 3 specifies the NTCIP Center-to-Center (NTCIP C2C) Group of Standards, which address the communications protocols between two centers (e.g. two TMCs exchanging information to facilitate regional coordination of traffic signals). Some of the communication protocols covered by this family are CORBA, DATEX-ASN and FTP. These protocols are common across all C2C interfaces in the National ITS Architecture, and rather than repeat the entire list for each architecture flow, we have created this summary entry – the NTCIP C2C Group of communications standards.

The standards that describe the "vocabulary" (data elements and messages) are mapped to specific architecture flows rather than the entire set of NTCIP C2C interfaces. In the regional traffic coordination example above, the "Traffic Management Data Dictionary" and the "Message Set for External TMC Communications" standards would be mapped to the specific flows between two Traffic Management Subsystems.

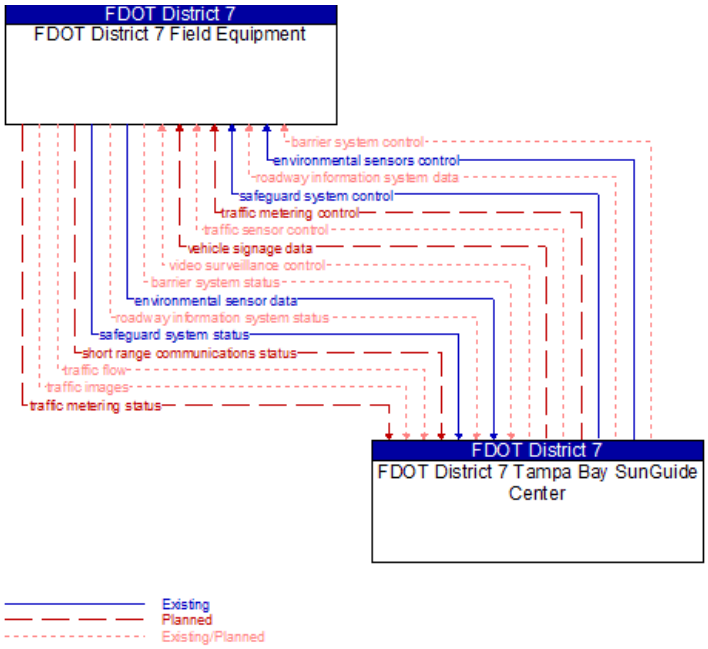
In order to satisfy a wide spectrum of system and regional communications requirements, C2C ITS deployments should each implement the combinations of the following NTCIP C2C communications protocols that best meet their needs.

This Group includes the following Standards Activities:

- NTCIP 1102: Base Standard: Octet Encoding Rules (OER)
- NTCIP 1104: Center-to-Center Naming Convention Specification
- NTCIP 2104: Subnet Profile for Ethernet
- NTCIP 2202: Internet (TCP/IP and UDP/IP) Transport Profile
- NTCIP 2303: Application Profile for File Transfer Protocol (FTP)
- NTCIP 2304: Application Profile for Data Exchange ASN.1 (DATEX)
- NTCIP 2306: Application Profiles for XML Message Encoding and Transport in ITS Center to Center Communications

9.2 Reference to the Detailed Standards Information on the Web Site

The previous section provides a general discussion of the standards environment in the region. However, the architecture does contain a far more detailed standards view, one that maps applicable standards to the individual information flows that go from one element to another. This detailed information is contained in the hyperlinked web site and can be accessed through the links to the architecture flows shown as part of each interface. Each element description page has a set of links that describe the information flowing to and from the element to other elements of the architecture. Selecting any of these interface links brings the user an interface page. For example, the interface between the *FDOT District 7 Tampa Bay Sunguide Center* and the *FDOT District 7 Field Equipment* is shown in Figure 9. There are many flows on this interface because FDOT District 7 has a wide array of ITS field equipment. Selecting one of the flows provides information regarding the flow and gives a list of ITS standards that are applicable to the flow. An example for the **roadway information system** data flow is shown in Figure 10.



(E) = Existing Flow
(P) = Planned/Future Flow
(E/P) = Existing and Planned Flow - Flow appears as Existing and Planned

Source	Architecture Flows	Destination
FDOT District 7 Field Equipment	short range communications status (P) safeguard system status (E) environmental sensor data (E) barrier system status (E/P) traffic metering status (P) roadway information system status (E/P) traffic images (E/P) traffic flow (E/P)	FDOT District 7 Tampa Bay SunGuide Center
FDOT District 7 Tampa Bay SunGuide Center	vehicle signage data (P) safeguard system control (E) environmental sensors control (E) barrier system control (E/P) traffic metering control (P) roadway information system data (E/P) video surveillance control (E/P) traffic sensor control (E/P)	FDOT District 7 Field Equipment

Figure 9. Example of Interface

FLOW: ROADWAY INFORMATION SYSTEM DATA

Description:			
Information used to initialize, configure, and control roadside systems that provide driver information (e.g., dynamic message signs, highway advisory radio, beacon systems). This flow can provide message content and delivery attributes, local message store maintenance requests, control mode commands, status queries, and all other commands and associated parameters that support remote management of these systems.			
Communications Standards:			
NTCIP C2F	AASHTO-17	File Transfer Protocol (FTP) Application Profile	NTCIP 2303
NTCIP C2F	AASHTO-18	Trivial File Transfer Protocol (TFTP) Application Profile	NTCIP 2302
NTCIP C2F	AASHTO-21	Octet Encoding Rules (OER) Base Protocol	NTCIP 1102
NTCIP C2F	AASHTO-28	Ethernet Subnetwork Profile	NTCIP 2104
NTCIP C2F	AASHTO-30	Point-to-Point Protocol Over RS-232 Subnetwork Profile	NTCIP 2103
NTCIP C2F	AASHTO-31	Transportation Transport Profile	NTCIP 2201
NTCIP C2F	AASHTO-38	Transportation Management Protocols (TMP)	NTCIP 1103
NTCIP C2F	AASHTO-47	Point to Multi-Point Protocol Using FSK Modem Subnetwork Profile	NTCIP 2102
NTCIP C2F	NEMA-TS3.p	Point to Multi-Point Protocol Using RS-232 Subnetwork Profile	NTCIP 2101
NTCIP C2F	S-85	Simple Transportation Management Framework (STMF) Application Profile	NTCIP 2301
NTCIP C2F	S-88	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
Message Standards:			
NEMA TS3.4	NEMA TS3.4	Global Object Definitions	NTCIP 1201
NEMA-TS3.6	NEMA-TS3.6	Object Definitions for Dynamic Message Signs (DMS)	NTCIP 1203
Data Standards:			
No Data Standards			

Figure 10. Example of Standards Mapping Page

10 Project Sequencing

The incorporation of the FDOT District 7 Regional ITS Architecture into the planning process will ultimately yield projects that are linked to the ITS architecture. Through the deployment of projects produced from the planning process, the services supported in the FDOT District 7 Regional ITS Architecture have been and will continue to be implemented and made a reality in the transportation system. Project implementation completes the evolution from: transportation plans to services, to functional descriptions in the regional ITS architecture, to project identification in the planning process and to project definition and deployment. The overarching goal of the FDOT District 7 Regional ITS Architecture update process is that this evolution takes place with the maximum amount of integration knowledge possible, so as to efficiently and economically implement the ITS required to serve the transportation community and users.

Many of the projects listed in the previous update of the FDOT District 7 Regional ITS Architecture were implemented in the time since that update. For this update to the architecture, a new set of projects were developed via interviews with key stakeholders, from inputs at the Stakeholder Workshop, and from subsequent comments received from stakeholders. This ITS architecture identifies which systems (operated by agencies in the District) should be interfaced to maximize integration opportunities throughout the region.

The general process followed for definition of the projects was to collect information from the stakeholders, create draft project listings, and then obtain comments from the stakeholders on the draft projects.

The following information was created for each project:

- **Project Name and Geographic Scope.** The name and geographic scope of the proposed ITS project.
- **Description.** The description of the project or services to be provided.
- **Lead Agency.** The primary agency or stakeholder responsible for the initiation, implementation, and maintenance of the ITS project and its components
- **Timeframe.** The estimated timeframe indicated for an ITS project to be deployed. Short-term projects will be implemented in 0-5 years; medium-term projects will be implemented in 5-10 years; and long-term projects will be implemented in over 10 years.
- **Project Inventory:** The elements indicated from the FDOT District 7 Regional ITS Architecture that are included in the project.

  Service packages. The proposed ITS project mapped to a transportation service (customized service package) identified in the FDOT District 7 Regional ITS Architecture, which reflects traceability from ITS project to the FDOT District 7 Regional ITS Architecture. It is important to note that if there are one or more customized

service packages listed in this column, then it is included as part of the regional ITS architecture.

The ITS projects are listed on the web site and can be found under the Stakeholder or Projects pull downs at the top of the page. The Projects pulldown contains two tabs: the first with the projects in alphabetic order and the second (Projects by Stakeholder) with the projects sorted by lead stakeholder. Note: the Projects by Stakeholder tab can also be found under the Stakeholder pull down.

11 Agreements

There are several types of arrangements associated with the interfaces included when deploying ITS projects within the region. The identification of institutional agreements required is crucial to the development of consensus architecture. This section documents the agreements associated with the FDOT District 7 Regional ITS Architecture.

11.1 Existing Agreements

The identification of institutional agreements, along with whether these agreements exist or need to be formulated, is a key output of this effort and should be updated periodically as part of the overall regional ITS architecture. During the original creation and previous updates of the District 7 ITS Architecture, stakeholders were asked at the stakeholder workshop to identify existing agreements in District 7. This list was updated at the stakeholder meeting for the development of the latest update of the FDOT District 7 Regional ITS Architecture. Table 4 outlines existing agreements between District 7 agencies.

Table 4. Existing District 7 Agreements

Name of Agreement	Description
FDOT District 7 and the City of Tampa Joint Program Agreement (JPA) for Video Monitoring	FDOT District 7 and Sarasota and the City of Tampa have a JPA for video monitoring
Veterans Expressway and Suncoast Parkway Memorandum of Understanding (MOU)	FDOT District 7 and the FTE have a MOU for operations on the Veterans Expressway and Suncoast Parkway.
FDOT District 7 and FHP RTMC MOU	FDOT District 7 and FHP have a MOU for the operation of the RTMC dispatch function.
FDOT District 7 and City of St. Petersburg I-275 MOU	FDOT District 7 and the City of St. Petersburg have a MOU for the operations of the I-275 DMS equipment.
FDOT District 7 Public Safety MOU	FDOT District 7 and various public safety agencies have a MOU for mutual aid to motorists.
FDOT District 7, HART and Hillsborough PWD Data Sharing MOU	FDOT District 7, HART, and the Hillsborough County Public Works Department have a MOU for ITS data sharing.
FDOT District 7 and City of Tampa Maintenance of Traffic	FDOT District 7 and the City of Tampa have an agreement that covers coordination during special events, such as football games. This agreement allows FDOT District 7 and the City of Tampa to modify traffic flow to meet the needs of an event. This agreements is known as the Maintenance of Traffic agreement.
FDOT CCTV MOU	FDOT has a standard, statewide agreement to share CCTV images with a variety of agencies and media outlets.

Name of Agreement	Description
FDOT District 7 Interlocal Agreement	The FDOT District 7 Interlocal Agreement allows local counties to take over control of city intersections under a funding umbrella provided by FDOT. This is funded through a 1-cent gas tax, which has matching USDOT funds. This allows counties to upgrade and add new ITS equipment using the gas tax and matching federal funds.
St. Petersburg and Kenneth City Maintenance Agreement	The City of St. Petersburg has a maintenance agreement with Kenneth City where the City of Tampa maintains Kenneth City traffic signals.
FDOT District 7 and Pasco County Maintenance Agreement	FDOT District 7 and Pasco County have an ITS equipment maintenance agreement
HART Bus Rapid Transit Agreement	HART has an agreement with both the City of St. Petersburg and Hillsborough County to operate bus rapid transit in the region. These agreements cover transit signal prioity on traffic signals as well.
HART TECO Streetcar Line Agreement	HART and the City of Tampa have a maintenance and operations agreement with the City of Tampa to run the TECO Streetcar Line.
FDOT District 7 and City of Tampa Maintenance Agreement	FDOT District 7 and the City of Tampa have a maintenance agreement for traffic signals
City of Tampa and Hillsborough County Maintenance Agreement	The City of Tampa and Hillsborugh County have a maintenance agreement that covers traffic signals and roadways.
City of Tampa and THEA Operations Agreement	The City of Tampa and THEA have an operations agreement in place
City of Tampa and Port of Tampa Maintenance Agreement	The City of Tampa and the Port of Tampa have a signal maintenance agreement in place
City of Tampa and Tampa Sports Authority Traffic Management Agreement	The City of Tampa and the Tampa Sports Authority have a traffic management agreement in place that covers football games.
City of Clearwater and Pinellas County Maintenance Agreement	The City of Clearwater and Pinellas County have a signal maintenance agreement in place
FDOT District 7 and City of Clearwater Maintenance Agreement	FDOT District 7 and the City of Clearwater have a signal maintenance agreement in place

11.2 Types of Agreements

There are several types of arrangements associated with the interfaces included when deploying ITS projects within the Tampa Bay region. Data exchanges between systems require agreements on the transmission protocol and data formats to ensure compatibility. Coordinating field device operations owned by different agencies requires defined procedures for submitting message requests and rules governing when such requests can be honored. Such coordination can be done with informal arrangements such as a MOU. Sharing control of field devices operated by different agencies, on the other hand, involves more liability issues, which requires more formal agreements. Coordinated incident response may also require formal agreements, and also requires group training of personnel from various agencies. While all interfaces involve

agreements for data compatibility, agreements for procedure and operation as well as training can also be critical elements to optimizing the benefits of the architecture.

Table 5 identifies types of potential agreements that could be used by agencies in the region. It is recognized, however, that a specific agreement mechanism used among stakeholders may be different between them (for example the nature and limitations associated with a MOU might vary between stakeholders). This should be taken into consideration when identifying and pursuing the proper agreement mechanism.

Table 5. Types of Institutional Agreements

Type of Agreement	Description
Handshake Agreement	Early agreement between one or more partners
	Not recommended for long-term operations.
Memorandum of Understanding	Initial agreement used to provide minimal detail and usually demonstrating a general consensus.
	Used to expand a more detailed agreement like an Interagency Agreement which may be broad in scope but contains all of the standard contract clauses required by a specific agency.
	May serve as a means to modify a much broader Master Funding Agreement, allowing the master agreement to cover various ITS projects throughout the region and the MOUs to specify the scope and differences between the projects.
Interagency Agreement	Between public agencies (e.g., transit authorities, cities, counties, etc.) for operations, services or funding
	Documents responsibility, functions and liability, at a minimum.
Intergovernmental Agreement	Between governmental agencies (e.g., Agreements between universities and state departments of transportation (DOT), MPOs and state DOT, etc.)
Operational Agreement	Between any agency involved in funding, operating, maintaining or using the right-of-way of another public or private agency.
	Identifies respective responsibilities for all activities associated with shared systems being operated and/or maintained.
Funding Agreement	Documents funding arrangements for ITS projects (and other projects)
	Includes, at a minimum, standard funding clauses, detailed scope, services to be performed, detailed project budgets, etc.
Master Agreements	Standard contract and/or legal verbiage for a specific agency and serving as a master agreement by which all business is done. These agreements can be found in the legal department of many public agencies.
	Allows states, cities, transit agencies, and other public agencies that do business with the same agencies over and over (e.g., cities and counties) to have one Master Agreement that uses smaller agreements (e.g., MOUs, Scope-of-Work and Budget Modifications, Funding Agreements, Project Agreements, etc.) to modify or expand the boundaries of the larger agreement to include more specific language.

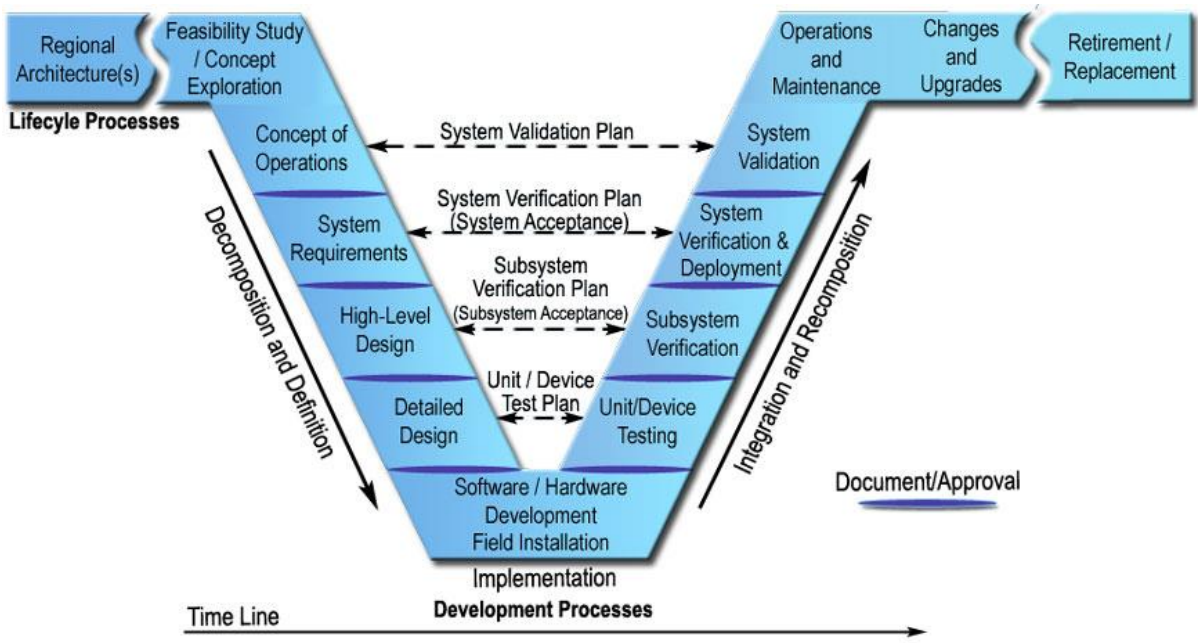
In addition to the agreements noted in Table 5, one element that must be considered is data ownership. The type of agreement used to address this issue may vary depending upon agencies involved.

12 Using the FDOT District 7 Regional ITS Architecture

The FDOT District 7 Regional ITS Architecture supports the deployment of ITS projects in the region. Using the architecture, each transportation project containing ITS can be viewed as an element of the overall transportation system, providing visibility into the relationship between individual transportation projects and ways to cost-effectively build an integrated transportation system over time. The following sections describe how to use the architecture for project deployment.

Projects that emerge from the planning process can benefit from the use of the FDOT District 7 Regional ITS Architecture in their definition and development. Systems engineering is a process for project development that considers the entire life-cycle of a project and emphasizes up-front planning and system definition. Systems engineering is a requirement for FHWA's Final Rule 23 CFR 940 as part of federal funding compliance.

Systems engineering is a multi-step and iterative process for developing an ITS project that supports standards use and implementation. The figure below shows the "Vee" diagram, which shows how each step of the process builds on the previous one. It stresses conceptual development and how the concept guides each of the key steps toward implementing and maintaining the system. This process typically applies to complex system design/integration/development efforts. The regional ITS architecture maps to the beginning of the systems engineering process shown in the "Vee" diagram.



The structure provides for a process that asks critical questions along the way to make sure that important steps or issues that could impact a project and the region are not overlooked. Systems engineering is an effective risk management tool that takes critical measures to identify project issues, benefits, risks, and impacts as well as going through a series of validation and approval points, which allows for less uncertainty about project objectives or expectations.

Rule 23 CFR 940 requires that aspects of this systems engineering process be used for ITS projects that are funded with federal funds. The ITS architecture is most effective in the early phases of systems engineering processes. The table below lists the requirements for a systems engineering analysis as stated in Rule 23 CFR 940, and lists the corresponding section of the FDOT District 7 Regional ITS Architecture where this information may be found.

Systems Engineering Analysis Requirement	Regional ITS Architecture
Identification of portions of the regional ITS architecture being implemented	Service Packages, ITS Elements, and Element Interfaces
Identification of participating agencies roles and responsibilities	Operational Concept
Requirements Definitions	Functional Requirements
Analysis of alternative system configurations and technology options to meet requirements	Not covered
Procurement options	Not covered
Identification of applicable ITS standards and testing procedures	The architecture includes identification of applicable ITS Standards
Procedures and resources necessary for operations and maintenance	Not covered

The next section will describe how to access the information about the project. How do stakeholders access project related information in the FDOT District 7 Regional ITS Architecture? That depends upon whether the project has already been included in the list of projects contained on the FDOT District 7 Regional ITS Architecture web site.

Identification of portions of the regional ITS architecture being implemented

1. **The project is in the list of projects on the web site.**

In this case, information relating the project to the architecture can be found directly on the hyperlinked web site. Stakeholders can find their projects in the regional ITS architecture through the Projects by Stakeholders Tab on the FDOT District 7 Regional ITS Architecture web page. This page may be found by navigating to the Stakeholders or the Project tab on the web site menu, then selecting the Project by Stakeholder page. The project details page provides the following information that identifies the portion of the FDOT District 7 Regional ITS Architecture addressed by the project:

- Lead Stakeholder
- Inventory
- Service Packages

Next, review the list of Inventory elements and edit as needed (adding or deleting entries as appropriate). Why might the list of Inventory elements not match the project? The lists contain the best understanding of the project at the time the architecture was updated, but the scope of the project may have changed once implementation began.

The Service Package header shows the customized service package diagrams mapped to the project. Select each and review for applicability. If the entire diagram is covered by the project, then copying the figure from the web site (it is in a .gif format) and pasting it into the Systems Engineering Analysis documentation will provide a detailed view of the mapping of the project to the architecture. If the project implements just a portion of the diagram(s) then mark them as needed to indicate what is covered. This can be done by importing the .gif file to an application like PowerPoint or Visio and performing edits in that tool. If the project as now defined is only partially covered by the architecture, then identify the changes needed to the architecture to fully cover the project (either by text or marked up customized market package diagrams) and indicate it in the submittal form (see Section 13).

2. **The project is not in the list of projects on the web site**

In this case the project is one that was not collected and described directly in the architecture. However the essential scope of the project may still be included in the architecture. In this case the simplest route is to consider what ITS Services the project will address. On the web site select Services (or Services by Stakeholder). Review the list of Services (Service Packages) and identify the ones most closely associated with the project. If you are not sure what a particular service package covers, select the Service Package Description Tab under Services, which has a description of each service package. Once you have identified the service package, review the customized diagrams under there for applicability. A selection of Inventory, Stakeholders (can be found on Stakeholder Tab, or under the Inventory Details pages on the web), and marked up customized market package diagrams represent a detailed mapping of project to architecture.

Identification of participating agencies roles and responsibilities

1. **The project is in the list of projects on the web site**

In this case a set of roles and responsibilities for the lead stakeholder are on the Project webpage. If these are relevant to the project they can be copied and used in documentation. If there are additional stakeholders involved beyond the lead stakeholder, or the roles and responsibilities don't fully address the project, then proceed as described below.

2. **The project is not in the list of projects on the web site**

The overall set of agency roles and responsibilities can be examined to identify relevant roles and responsibilities for the project. This overall set can be found in two places: Table 3 of this document and the Operational Concept tab under the Stakeholders pull down on the web site. In either place, find the appropriate stakeholder and general area of the project (e.g. Incident Management). Select the roles and responsibilities that most closely address the project and edit or expand as necessary.

Requirements Definitions

Finding applicable functional requirements breaks into two cases as described in the section below:

1. **The project is in this list of projects on the web site.**

In this case select the project details page (under Project or Project by Stakeholder Tab). This page contains a list of functional areas with relevant requirements from the Architecture associated with the project. Select the ones considered applicable for the project as now defined. Selecting one of the functional areas provides a complete list of all the functional requirements defined for that area. Some additional requirements from the complete list may be relevant as well. Alternatively, select each element that is part of the project (also on the project details page) and the functional areas/ functional requirements associated with that element are shown. Select those that are appropriate.

2. **The project is not in the list of projects on the web site**

In this case identify the key elements of the project and go to the Inventory ITS Element detail page on the web site. This page contains a list of functional areas applicable to the element based on all the services it supports in the FDOT District 7 Regional ITS Architecture. Select the functional area to see the complete set of functional requirements associated with that area and subset of these requirements applicable to the specific project.

Identification of applicable ITS standards and testing procedures

Once again this step breaks into two cases as described below.

1. **The project is in this list of projects on the web site**

In this case select the project details page (under Project or Project by Stakeholder Tab). This page contains a list of Standards from the FDOT District 7 Regional ITS Architecture associated with the project. Select the ones considered applicable for the project as now defined.

2. **The project is not in the list of projects on the web site**

In this case the applicable standards can be found by selecting the individual information flows that will be part of the project. If specific interfaces have been selected for the project, then go to the Element Details page for each project element, select the relevant interface, and select an

architecture flow, which will bring up a details page that includes the applicable standards for that particular architecture flow.

The architecture web site provides more details on how to find the information required for the systems engineering analysis. The details can be found by clicking on Resources from the web site menu, then clicking on Systems Engineering Analysis.

13 Maintaining the Architecture

The FDOT District 7 Regional ITS Architecture is not a static set of outputs. It must change as plans change, ITS projects are implemented, and the ITS needs and services evolve in the region. The update of the architecture will be performed per the FDOT procedure for Systems Engineering and ITS Architecture (750-040-003) located at http://www.dot.state.fl.us/proceduraldocuments/procedures.shtm. This procedure describes how updates to the Florida regional ITS architectures are performed.

Appendix A: Mapping to Rule 23 CFR 511

This section will discuss how the FDOT District 7 Regional ITS Architecture meets the requirements of Rule 23 CFR 511.

Background

Section 1201 of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA–LU) requires the Secretary of Transportation (Secretary) to establish a Real-Time System Management Information Program that provides, in all states, the capability to monitor, in real-time, the traffic and travel conditions of the major highways of the United States and to share these data with State and local governments and with the traveling public.[1]

As defined in Section 1201 and in Title 23 CFR 511, the RTSMIP should include the capability to monitor travel and traffic conditions and provide that information to travelers and other users of the information. As described in the rule, section 511.309, the RTSMIP Minimum requirements for traffic and travel conditions made available by real-time information programs include:

- Construction activities that impact travel conditions, particularly lane and roadway closures;
- Roadway or lane-blocking traffic incident information;
- Roadway weather observations; and
- Travel times or speeds for limited access roadways in metropolitan areas.[2]

In addition, the Rule includes the following requirement related to the regional ITS architecture:

511.311 d) ***Update of Regional ITS Architecture***. All States and regions that have created a Regional ITS Architecture in accordance with Section 940 in Title 23 CFR shall evaluate their Regional ITS Architectures to determine whether the Regional ITS Architectures explicitly address real-time highway and transit information needs and the methods needed to meet such needs. Traffic and travel conditions monitoring needs for all Interstate system highways shall be considered. If necessary, the Regional ITS Architectures shall be updated to address coverage, monitoring systems, data fusion and archiving, and accessibility to highway and transit information for other States and for value added information product providers. The Regional ITS Architecture shall feature the components and functionality of the real-time information program.[3]

[1] 23 CFR 511 Real-Time System Management Information Program, November 8, 2010

[2] Data Exchange Format Specification (DXFS), FHWA, August 2013

[3] 23 CFR 511 Real-Time System Management Information Program, November 8, 2010

The following section, taken from the DXFS, shows the mapping from the DXFS to the National ITS Architecture.

The Physical Architecture of the National ITS Architecture is defined by Entities, Interfaces, and Service Packages. The following section provides a mapping of the proposed system against these concepts of the National ITS Architecture (Version 7.0). This mapping, which is shown in Table 6, will be useful in placing the RTSMIP into the context of regional ITS architectures as shown in Figure 11.

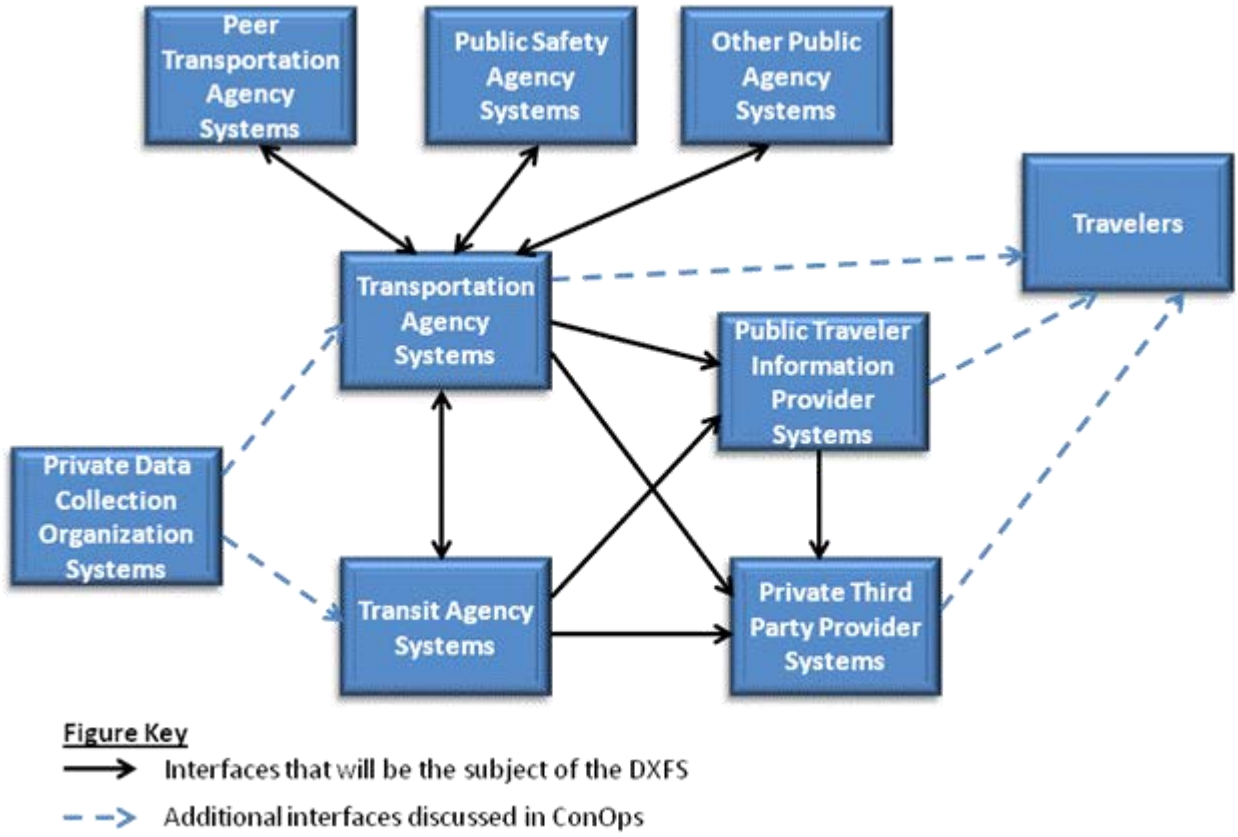


Figure 11. RTSMIP Context Diagram

Table 6. Mapping to National ITS Architecture Entities

RTSMIP Element	National ITS Architecture Entity
Transportation Agency Systems	Traffic Management Subsystem (TMS) Maintenance and Construction Management Subsystem (MCMS) Information Service Provider Subsystem (ISPS) Roadway Subsystem (RS)
Transit Agency Systems	Transit Management System (TMS)

RTSMIP Element	National ITS Architecture Entity
Peer Transportation Agency Systems	Other Traffic Management
Public Safety Agency Systems	Emergency Management Subsystem (EM)
Private Data Collection Organization Systems	Information Service Provider Subsystem (ISPS) Surface Transportation Weather Service Other Transit Management
Travelers	Personal Information Access Subsystem (PIAS) Vehicle Subsystem (VS)
Public Traveler Information Provider Systems	Information Service Provider Subsystem (ISPS)
Private Third Party Provider Systems	Information Service Provider Subsystem (ISPS)
Other Public Agency Systems	Weather Service Emergency Management Subsystem (EM)

Interfaces

The discussion of interfaces will use the context diagram of Figure 11 as the basis for the development of how the key RTSMIP interfaces would be mapped to the National ITS Architecture interfaces (defined as source entity, destination entity and architecture flow).

Private Data Collection Organization Systems to Transportation Agency Systems

This interface corresponds to two interfaces as shown in Table 7, mapping to the following architecture flows:

Table 7. Private Data Collection Organization to Transportation Agency

Source Entity	Destination Entity	Architecture Flow
ISPS	TMS	road network traffic probe data
Surface Transportation Weather Service	TMS	environmental conditions data
Surface Transportation Weather Service	TMS	transportation weather information

road network traffic probe data - Aggregated route usage, travel times, and other aggregated data collected from probe vehicles that can be used to estimate current traffic conditions.

environmental conditions data - Current road conditions (e.g., surface temperature, subsurface temperature, moisture, icing, treatment status) and surface weather conditions (e.g., air temperature, wind speed, precipitation, visibility) as measured and reported by fixed and/or mobile environmental sensors and aggregated by the data collector. Attributes relating to the data collection (and aggregation) are also included.

transportation weather information - Current and forecast road conditions and weather information (e.g., surface condition, flooding, wind advisories, visibility, etc.) associated with

the transportation network. This information is of a resolution, timeliness, and accuracy to be useful in transportation decision making.

Private Data Collection Organization Systems to Transit Agency Systems
This interface, which describes the provision of AVL data from a private data collection system to the transit agency, is not directly addressed in the National ITS Architecture, but its closest mapping is the Other Transit Management to TRMS interface with the following architecture flow:

transit service coordination - Schedule coordination information shared between local/regional transit organizations. (Note, while the definition of the architecture flow does not appear to cover AVL data, closer inspection of the underlying data flows of the Logical Architecture shows that information to be present on this architecture flow).

Transportation Agency Systems to Peer Transportation Agency Systems
This interface corresponds to two interfaces as shown in Table 8, mapping to the following architecture flows:

Table 8. Transportation Agency to Peer Transportation Agency

Source Entity	Destination Entity	Architecture Flow
TMS	Other Traffic Management	road network conditions
TMS	Other Traffic Management	incident information
Other Traffic Management	TMS	road network conditions
Other Traffic Management	TMS	incident information
MCMS	TMS	maint and constr work plans
MCMS	TMS	road weather information

road network conditions - Current and forecasted traffic information, road and weather conditions, and other road network status. Either raw data, processed data, or some combination of both may be provided by this architecture flow. Information on diversions and alternate routes, closures, and special traffic restrictions (lane/shoulder use, weight restrictions, width restrictions, HOV requirements) in effect is included along with a definition of the links, nodes, and routes that make up the road network.

incident information - Notification of existence of incident and expected severity, location, time and nature of incident. As additional information is gathered and the incident evolves, updated incident information is provided. Incidents include any event that impacts transportation system operation ranging from routine incidents (e.g., disabled vehicle at the side of the road) through large-scale natural or human-caused disasters that involve loss of life, injuries, extensive property damage, and multi-jurisdictional response. This also includes special events, closures, and other planned events that may impact the transportation system.

maint and constr work plans - Future construction and maintenance work schedules and activities including anticipated closures with anticipated impact to the roadway, alternate routes, anticipated delays, closure times, and durations.

road weather information - Road conditions and weather information that are made available by road maintenance operations to other transportation system operators.

Transportation Agency Systems to Public Safety Agency Systems
This interface corresponds to the TMS to EM interface and maps to the following architecture flow (which is bi directional):

incident information - Notification of existence of incident and expected severity, location, time and nature of incident. As additional information is gathered and the incident evolves, updated incident information is provided. Incidents include any event that impacts transportation system operation ranging from routine incidents (e.g., disabled vehicle at the side of the road) through large-scale natural or human-caused disasters that involve loss of life, injuries, extensive property damage, and multi-jurisdictional response. This also includes special events, closures, and other planned events that may impact the transportation system.

Transportation Agency Systems to Public Traveler information Provider Systems
This interface corresponds to two interfaces as shown in Table 9, mapping to the following architecture flows:

Table 9. Transportation Agency to Public Traveler Information Provider

Source Entity	Destination Entity	Architecture Flow
TMS	ISPS	road network conditions
TMS	ISPS	incident information
MCMS	ISPS	maint and constr work plans
MCMS	ISPS	road weather information

Transportation Agency Systems to Private Third Party Provider Systems
This interface corresponds to two interfaces from the National ITS Architecture as shown in Table 10, mapping to the following architecture flows:

Table 10. Transportation Agency to Private Third Party Provider

Source Entity	Destination Entity	Architecture Flow
TMS	ISPS	road network conditions
TMS	ISPS	incident information
MCMS	ISPS	maint and constr work plans
MCMS	ISPS	road weather information

Transportation Agency Systems to Transit Agency Systems
This interface corresponds to the TMS to TRMS interface and maps to the following architecture flow: **incident information**.

Transit Agency Systems to Public Traveler Information Provider Systems
This interface corresponds to the TRMS to ISP interface and maps to the following architecture flow: **transit schedule adherence information** - Dynamic transit schedule adherence and transit vehicle location information.

Transit Agency Systems to Private Third Party Provider Systems
This interface corresponds to the TRMS to ISP interface and maps to the following architecture flow: **transit schedule adherence information.**

Public Traveler Information Provider Systems to Private Third Party Provider Systems
This interface corresponds to the ISP to Other ISP interface and maps to the architecture flows shown in Table 11:

Table 11. Public Traveler information Provider to Private Third Party Provider

Source Entity	Destination Entity	Architecture Flow
ISPS	Other ISP	road network conditions
ISPS	Other ISP	incident information
ISPS	Other ISP	transit service information

transit service information- Transit service information including routes, schedules, and fare information as well as dynamic transit schedule adherence and transit vehicle location information.

Transportation Agency Systems to Travelers
This interface corresponds to the two interfaces shown in Table 12 and maps to the following architecture flows:

Table 12. Transportation Agency to Travelers

Source Entity	Destination Entity	Architecture Flow
ISPS	PIAS	broadcast traveler information
ISPS	PIAS	interactive traveler information
RS	VS	broadcast traveler information

broadcast traveler information - General traveler information that contains traffic and road conditions, link travel times, incidents, advisories, restrictions, transit service information, weather information, parking information, and other related traveler information.

interactive traveler information - Traveler information provided in response to a traveler request. The provided information includes traffic and road conditions, advisories, incidents, payment information, transit services, parking information, weather information, and other travel-related data updates and confirmations.

Public Traveler Information Provider Systems to Travelers
This interface corresponds to the ISP to PIAS interface and maps to the architecture flows shown in Table 13:

Table 13. Public Traveler Information Provider to Travelers

Source Entity	Destination Entity	Architecture Flow
ISPS	PIAS	broadcast traveler information
ISPS	PIAS	interactive traveler information

The interfaces from Private Third Party Provider Systems to Travelers is identical to the Public Traveler Information Provider Systems to Travelers (from a National ITS Architecture mapping standpoint).

Transportation Agency Systems to Other Public Agency Systems
The interface from Transportation Agency Systems to Other Public Agency Systems, shown in Table 14, is addressed by the TMS (and MCMS) to Weather Service and to EM interfaces (from a National ITS Architecture Standpoint).

Table 14. Transportation Agency to Other Public Agency

Source Entity	Destination Entity	Architecture Flow
Weather Service	TMS	road network conditions
TMS	EM	incident information
EM	TMS	incident information
MCMS	Weather Service	road weather information
MCMS	Weather Service	environmental conditions data

Other Public Agency to Transportation Agency Systems
The interface from Other Public Agency Systems to Transportation Agency Systems, shown in Table 15, is addressed by the Weather Service or EM to TMS or MCMS interfaces (from a National ITS Architecture Standpoint).

Table 15. Other Public Agency to Transportation Agency

Source Entity	Destination Entity	Architecture Flow
EM	TMS	incident information
Weather Service	TMS	qualified environmental conditions data

Weather Service	TMS	weather information

qualified environmental conditions data - Current road conditions (e.g., surface temperature, subsurface temperature, moisture, icing, treatment status) and surface weather conditions (e.g., air temperature, wind speed, precipitation, visibility) that has had quality checks performed on it and has been formatted and consolidated by the Clarus system. Attributes relating to the data collection (and aggregation) are also included.

weather information - Accumulated forecasted and current weather data (e.g., temperature, pressure, wind speed, wind direction, humidity, precipitation, visibility, light conditions, etc.).

How the Florida District 7 Regional ITS Architecture Addresses Rule 511 Requirements

This section describes how the FDOT District 7 Regional ITS Architecture addresses the requirements of Rule 23 CFR 511.311d- distribution of real-time highway and transit information, as well as providing traffic and travel conditions monitoring for the interstate system highways in the region. This will be done by showing how the Regional ITS Architecture includes the interfaces and architecture flows described in the DXFS (described above). The details of elements, interfaces, and architecture flows described below can be found on the architecture web site.

Table 16 shows some of the elements from the FDOT District 7 Regional ITS Architecture that map to elements in the DXFS. This mapping will be used as the basis for showing how the architecture includes many of the key interfaces from the DXFS.

Table 16: Mapping of FDOT District 7 Elements to RTSMIP Elements

RTSMIP Element	National ITS Architecture Entity	FDOT District 7 Regional ITS Architecture Elements
Transportation Agency Systems	Traffic Management Subsystem (TMS) Maintenance and Construction Management Subsystem (MCMS) Information Service Provider Subsystem (ISPS)	FDOT District 7 Tampa Bay SunGuide Center
Transit Agency Systems	Transit Management System (TMS)	Citrus County Transit Management Center HART Transit Operations PCPT Dispatch Center PSTA Transit Management Center

RTSMIP Element	National ITS Architecture Entity	FDOT District 7 Regional ITS Architecture Elements
Peer Transportation Agency Systems	Other Traffic Management	County TMCs (Hillsborough County Traffic Management Center, Pinellas County Traffic Management Center, Pasco County Traffic Operations Center), and City TMCs (City of Clearwater Traffic Control Center, City of St. Petersburg Traffic Control Center, City of Tampa TMC)
Public Safety Agency Systems	Emergency Management Subsystem (EM)	911 Emergency Call Centers County Fire/ EMS/ Sheriff Local Fire/EMS/ Police
Public Traveler Information Provider Systems	Information Service Provider Subsystem (ISPS)	Florida 511 (IVR and web site)
Other Public Agency Systems	Weather Service Emergency Management Subsystem (EM)	National Weather Service

While the FDOT District 7 Regional ITS Architecture does not contain all the interface types shown in the DXFS, it includes a significant number of these interfaces as described below. The following discussion will highlight the interface type listed above and provide the specific interfaces relating to it in the architecture.

The Transportation Agency Systems to Peer Transportation Agency Systems interface shown in Table 8 is addressed by the following elements that provide road network conditions and incident information to the FDOT District 7 Tampa Bay SunGuide Center and receive information from this element:

- Hillsborough County Traffic Management Center,
- Pinellas County Traffic Management Center,
- Pasco County Traffic Operations Center
- City of Clearwater Traffic Control Center,
- City of St. Petersburg Traffic Control Center, and
- City of Tampa TMC.

The Transportation Agency Systems to Public Safety Agency Systems interface discussed above is addressed by the following elements that in the future can provide incident information to FDOT District 7 Tampa Bay SunGuide Center and receive information from these elements:

- FHP Regional Dispatch,
- County Fire EMS/Rescue Dispatch,
- County Sheriff Dispatch,
- Local Fire/EMS Dispatch, and
- Local Police Dispatch.

The Transportation Agency Systems to Public Traveler Information Provider Systems interface shown in Table 9 is addressed by the following elements that receive road network conditions and incident information from the FDOT District 7 Tampa Bay SunGuide Center:

- Florida 511

The Transit Agency Systems to Public Traveler Information Provider Systems interface discussed above is addressed by the following elements that in the future can provide transit schedule adherence information to the Florida 511:

- Citrus County Transit Management Center,
- HART Transit Operations,
- PCPT Dispatch Center, and
- PSTA Transit Management Center.



Appendix J

FDOT GUIDANCE FOR ACES PLANNING



OFFICE OF POLICY PLANNING

GUIDANCE FOR ASSESSING PLANNING IMPACTS AND OPPORTUNITIES OF AUTOMATED, CONNECTED, ELECTRIC AND SHARED-USE VEHICLES

FDOT

SEPTEMBER 2018

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We also appreciate the information and insights provided to us by the Atlanta Regional Commission, Capitol Area Metropolitan Planning Organization, Mid-America Regional Council and Mid-Ohio Metropolitan Regional Planning Commission.

One result of this ongoing consultation and investigation is the development of the ACES Planning Process shown in Figure ES 1. MPOs that intend to update their LRTPs and incorporate ACES guidance may choose to follow this planning process, which provides a workflow for MPO use.

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EXECUTIVE SUMMARY

Florida metropolitan planning organizations (MPOs) are dealing with an unprecedented amount of potential change as they plan for their transportation needs between now and 2045. Within their next planning horizon, MPOs need to decide how best to address the increasing deployment of automated, connected, electric and shared-use vehicles (ACES) and complementary technologies.

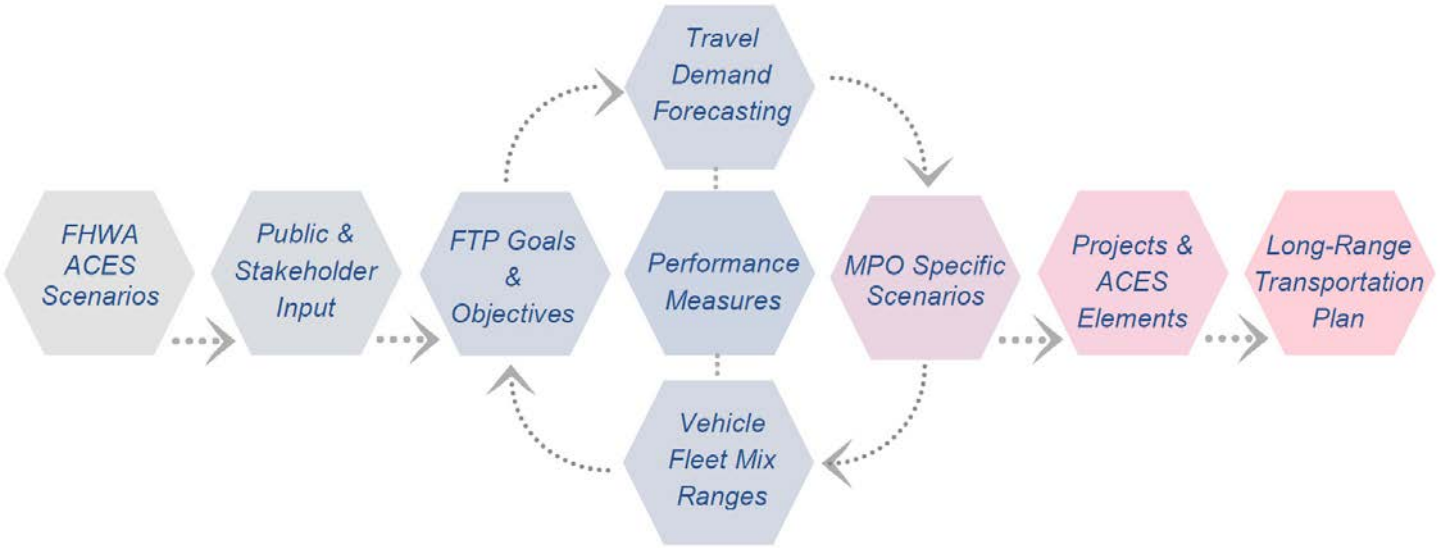
As with many technologies in their infancy, there is uncertainty about likely outcomes and how to plan for them. This guidance is intended to help each MPO consider how best to account for ACES within their individual planning process and long-range transportation plan. As such, the Florida Department of Transportation (FDOT) intends for it to be a catalyst that sparks consideration regarding how ACES uniquely will deploy and affect communities.

FDOT's overall approach to developing the guidance was to perform an extensive literature review, consider ACES-related practices of planning agencies around the country, electronically survey Florida MPOs followed by select individual interviews, develop an ACES-specific scenario planning approach and test ACES-related travel demand model concepts with two Florida MPO travel demand models. FDOT relied extensively on input from stakeholders and partners including the Florida Metropolitan Planning Organization Advisory Council (MPOAC) to help improve and refine contents of the guide.

> *"Transportation is in the midst of disruptive change from new technologies (automated and connected vehicles); new institutions (shared mobility firms); and changing attitudes (reduced car ownership). Across the nation, transportation planners are under pressure to develop performance-oriented policies, plans, and investment decisions that consider an increasingly complex transportation landscape. In the process, planners need to consider, but cannot yet reliably predict, the potential impact of disruptive and transformational … technologies on safety, vehicle ownership, road capacity, VMT (vehicle miles travelled), land-use, roadway design, future investment demands, and economic development, among others."*
>
> *Federal Highway Administration (FHWA)*
>
> *Source:*
> *FDOT OPP Planning Emphasis Areas 2018*

One result of this ongoing consultation and investigation is the development of the ACES Planning Process shown in Figure ES 1. MPOs that intend to update their LRTPs and incorporate ACES guidance may choose to follow this planning process, which provides a workflow for MPO use.

Figure ES 1: ACES Planning Process



Technology Adoption

ACES features have begun appearing in vehicles and are expected to increase significantly over the next few years. Initially, the introduction of ACES likely will be seen in the rapidly expanding number of electric and hybrid electric vehicles as well as those with driver-assist or basic connectivity functions. Later in the adoption curve, an increasing number of vehicles will operate autonomously in increasingly complex operating domains, under electric power and as parts of centrally managed fleets or under personal ownership.

A key planning implication revolves around the rate at which the vehicle fleet incorporates ACES technologies. There is considerable uncertainty surrounding the rate of deployment in the vehicle manufacturing industry. There's even more uncertainty around the actual usage rate, which is driven by a combination of consumer acceptance, the regulatory environment, business models and other factors.

In addition, adoption of different technologies and vehicle types can be expected to have different effects on planning issues, including:

- Automated Vehicles – When many vehicles can operate without a driver on board, potential increases in vehicle miles traveled (VMT) from empty vehicles, increased mobility for children, elderly or the disabled from lower costs, reduced parking demand and changes in urban form.
- Connected Vehicles – When most of the vehicle fleet can communicate with other vehicles and roadside devices, increases in road capacity, new safety features and improved congestion management could become more prevalent.
- Electric Vehicles – When a significant share of the vehicle fleet no longer pays motor fuel taxes, existing transportation funding sources may no longer be adequate, requiring MPOs to adjust their investment programs. On the other hand, widespread adoption of electric vehicles could result in substantially reduced air emissions. The magnitude of this effect depends on what energy sources are used to generate electricity and other factors.
- Shared-Use Vehicles – Ride sourcing, bike sharing and other shared mobility platforms are already creating new competition for limited curb space in urban areas, creating Complete Streets design challenges as well as opportunities for mobility hubs and new funding sources.

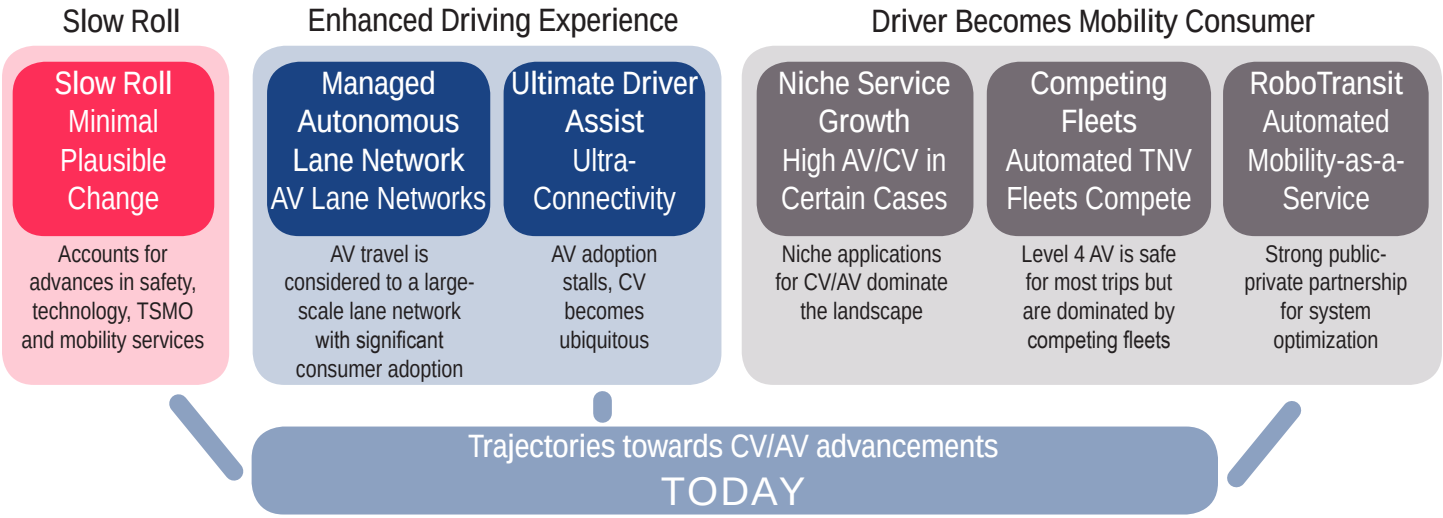
This guidance provides a range of potential fleet mix scenarios to help MPOs understand the likely contributions of different technologies and vehicle types on planning issues, including road design, VMT, parking, transit, urban form, transportation funding sources and safety (see Section 2). It's important to remember that technology is a tool for realizing community goals and not a solution itself.

This guidance also includes matrices that illustrate which vehicle types are associated with different impacts to help MPOs define the issues to consider in their planning processes based on the relative shares of different technologies and vehicle types in the future vehicle fleet (see Section 2.4).

Scenario Planning

Given the uncertainties around ACES deployment and impacts, scenario planning provides a framework for developing a shared vision for the future that tests various alternatives regarding state, community or regional needs. As illustrated in Figure ES 2, this guidance builds on six scenarios developed by FHWA that represent a range of potential outcomes related to technology capabilities, the regulatory framework, consumer preferences and economic impacts following the introduction of ACES technologies. The FHWA scenarios describe impacts that could be common to many metropolitan areas across the United States.[a] MPOs may use these scenarios, or some variation of the scenarios, as a starting point for constructing their own range of scenarios that apply the national trends to their own local economy, geography, demographics and transportation network. In the process of defining locally specific scenarios, each community can decide how to reflect the national trends in the context of its own values, planning goals and objectives.

Figure ES 2: FHWA 2035 CV/AV Scenarios



Source: FHWA, Scenario Planning for Connected and Automated Vehicles, DRAFT Scenario Descriptions, November 2017

This guidance describes potential ACES-supportive considerations or project elements that MPOs may consider as elements of their scenarios. Scenario development creates opportunities for an MPO to strengthen its own planning and organizational sustainability by:

- Engaging a wide variety of stakeholders;
- Illustrating trade-offs among different land use and transportation choices;
- Creating a broader understanding of issues and stakeholders to be incorporated into planning;
- Helping develop performance measures and evaluation processes that provide policy guidance for local decision makers; and
- Producing more efficient, effective decision-making that results in significant benefits and improvements.[b]

This in-depth consideration enables planners to identify robust strategies and policy options that hold up across the spectrum of possible future conditions. It also is helpful in developing stable long-term "political will" to make and sustain necessary decisions, such as changes in land use policies or transportation funding sources. Finally, it helps create a context helpful to MPOs that employ performance-based planning to evaluate the tradeoffs between transportation policies and investments in relation to land use and other agency controlled or influenced policies.

Transportation System Planning

To support definition of potential policy and scenario planning options, the existing transportation system planning process should be adapted to reflect ACES. The scenario planning process helps determine locally appropriate ranges of likely ACES impacts to employment, land use, facility design, capacity, auto ownership and consumer attitudes, among others. Two travel demand models were used to incorporate ACES scenarios and test impacts, including:

- The Gainesville Urban Area Transportation Study Model (GUATS), a traditional four-step travel demand model that includes a large university with a small urban area.
- The Central Florida Regional Planning Model (CFRPM), a large, multi-county regional four-step travel demand model.



Revenue Planning

Electric vehicles and the move away from the combustion engine promise significant changes to Florida infrastructure, transportation and related revenue systems. Even with growth trends in VMT carried forward, an increase in the average fuel economy of vehicles may have a staggering effect on revenue from fuel sales. Revenue declines likely will be compounded by greater electrification of the vehicle fleet and shared mobility services using electric vehicles producing a larger share of local and state VMT. Financial scenarios evaluating the impact on MPO fiscally constrained capital programs are likely to become a more important part of the planning process.

Education and Engagement

ACES-related impacts may significantly alter where people choose to live and bring changes to how they will travel and plan for land use. MPOs potentially can play a new or expanded role in communicating information about ACES and their impact on communities, policies and investments across a broad range of issues. Few organizations are as well positioned as MPOs to be the primary communicators about issues and opportunities stemming from ACES. These new demands on planning agencies, coupled with potential concerns about ACES impacts, will require added tools that empower the public to test planning assumptions and conclusions.

In this environment, MPOs may want to consider additional aspects during stakeholder engagement to better understand and evolve in reaction to new challenges to their planning processes and desired outcomes. This education and engagement will have the added benefit of building higher stakeholder tolerances for any extended period of unpredictable ACES evolution and impacts. Such uncertainty, driven by market- or technology-driven shifts in how, when and where ACES is deployed may trigger equally changing planning needs and decisions.

One way to mitigate against this uncertainty is to more extensively involve private-sector ACES stakeholders, including technology suppliers and emerging service providers, to:

- Identify location-specific ACES scenarios likely to occur;
- Resolve and integrate conflicting ACES priorities; and
- Explore public-private partnerships regarding emerging ACES opportunities.

Efforts like this may result in the creation of free-standing coalitions of stakeholders with similar interests. If proactively managed, such coalitions could become active, positive partners in helping MPOs appropriately prioritize their ACES efforts and invest their resources most effectively. Such coalitions, if supported through education and engagement, could help stimulate public- and private-sector policies and investments that support MPO policy changes and the performance measures they underpin.

MPOs likely will play a new or expanded role in communicating information about ACES and their impacts on communities, policies and investments across a broad range of issues. These new demands on planning agencies will require added tools that empower the public to test planning assumptions and conclusions. This guide provides “thought-starters” for MPOs in each of these areas as they consider where and how they can most appropriately invest their resources in shaping a region-specific vision of an ACES future.

Considerations

As MPOs wrestle with these challenges, a greater tolerance for ambiguity and uncertainty may be required as they explore, test, evaluate and accept or reject different policy approaches to ACES. To succeed in this kind of environment will require MPOs to create an agile policy-making framework that sets in place a continual “look ahead” assessment.

At the same time, MPOs should find some comfort in the expectation that the benefits of ACES align with traditional objectives of shared vehicle use, strong urban centers, efficient travel corridors and inclusive access. MPOs should pursue policies that are likely to yield benefits under a wide range of future ACES deployment scenarios.
ACES impacts can be focused on specific considerations in the areas of engagement, fiscally constrained financial planning, infrastructure programming, transportation planning and modeling, and policy.

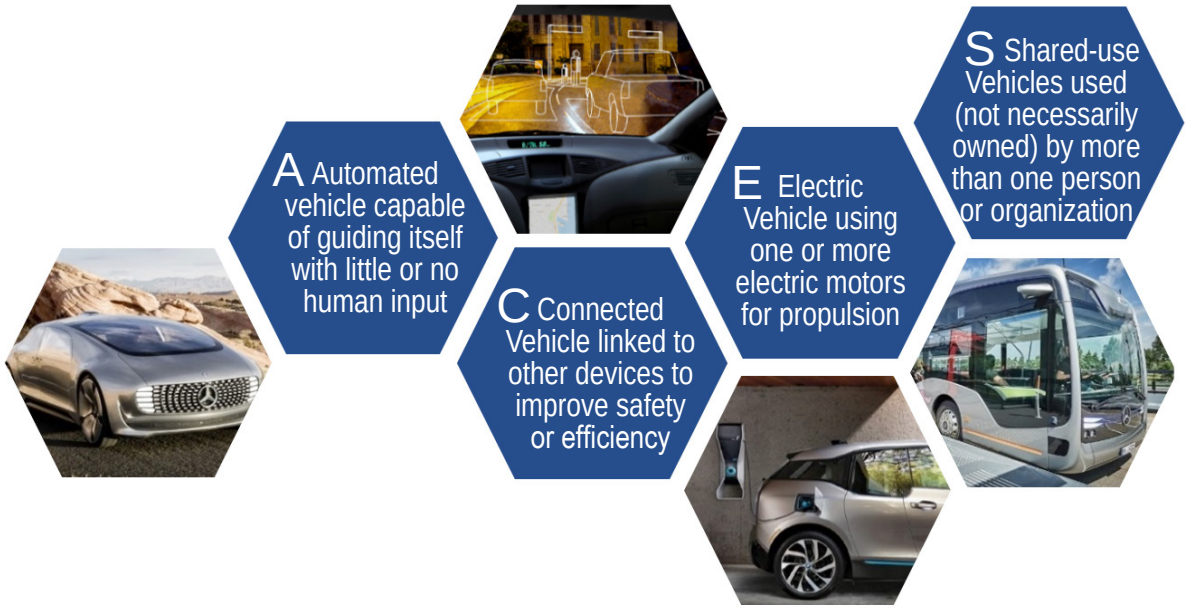
1. INTRODUCTION & PURPOSE



CHAPTER 1 AT A GLANCE

Chapter 1 provides an introduction to the ACES guidance and describes the process used to develop the guide.

Florida metropolitan planning organizations (MPOs) face an unprecedented amount of change as they plan for their transportation needs between now and 2045, the next planning horizon year for most Florida MPOs. MPOs need to decide how best to address opportunities presented to them by automated, connected, electric and shared-use vehicles (ACES). After all, ACES may improve personal productivity while traveling, increase road capacity and better utilize urban spaces. ACES may dramatically reduce negative outcomes associated with mobility systems on which our society currently relies by reducing injuries and fatalities due to human error while expanding mobility options for those who do not or cannot drive. At the same time, ACES may also introduce as-yet-unknown system costs, social inequities and new planning demands.



1.1 Legislative Reference

Florida statute requires MPOs to "assess capital investment and other measures necessary to … make the most efficient use of existing transportation facilities to relieve vehicular congestion, improve safety and maximize the mobility of people and goods. Such efforts must include, but are not limited to, consideration of infrastructure and technological improvements necessary to accommodate advances in vehicle technology, such as automated technology and other developments."[c]

At the same time, the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) encourage Florida and other MPOs to begin addressing infrastructure needed to support emerging technologies and the transition time for implementation in their next round of Long-Range Transportation Plans (LRTP) updates.[d] Although not required at this time, the federal guidance clearly supports efforts by states, among which Florida is a leader, to incorporate ACES in long-range planning activities. In 2016, the State of Florida passed a bill mandating the MPOs address AV technology in their LRTPs. However, no uniform policy or design guidance previously existed to help MPOs anticipate, plan for, finance, or implement programs necessary to facilitate this transition.[e]

1.2 Study Goals and Objectives

Local, regional and statewide impacts of ACES on the Florida transportation system are still not fully understood. Nonetheless, the window for making planning decisions related to impacts has already opened. FDOT created this guidance to provide a common understanding and approach for Florida's 27 MPOs as they anticipate and respond to potential effects of ACES and complementary technology trends.

As with many technologies in their infancy, there is a great deal of uncertainty about likely outcomes and how to plan for them; some of the dimensions of uncertainty include:

- Consumer Acceptance
- Deployment Timeframe
- Economy
- Environment
- Land Use
- Mode Choice
- Parking
- Safety
- Transportation Funding
- Vehicles Miles Traveled

This guide takes a risk-management approach to identifying and examining planning strategies and approaches with the goal of positive benefits under a broad range of potential ACES futures. In this manner, MPOs can advance "sure wins" while waiting for the future impacts and opportunities to become clearer. It also serves as a starting point for each MPO to consider how best to account for ACES within their individual planning process and long-range transportation plan.

Too often the deployment of ACES is discussed as if it will happen in one fell swoop. The reality is that the rate and nature of market penetration will vary – from technology to technology, vehicle type to vehicle type and from region to region – based on a wide variety of factors such as: cost, benefit, cultural and demographic acceptance, legal environment, infrastructure improvement requirements and many others.

Rather than offering a prescriptive document, FDOT seeks to provide a catalyst that helps each MPO consider how ACES will uniquely deploy and affect its specific area, and as a starting point for consideration in its planning processes and long-range transportation plan. MPOs remain the front line in deciding how best to incorporate these emerging technologies through the planning process.

However, as technology evolves over time and the implications for planning issues become clearer, this guidance is intended to be updated by FDOT, which considers this guidance to be a "living document" that will be revisited regularly as new technology and impacts emerge.

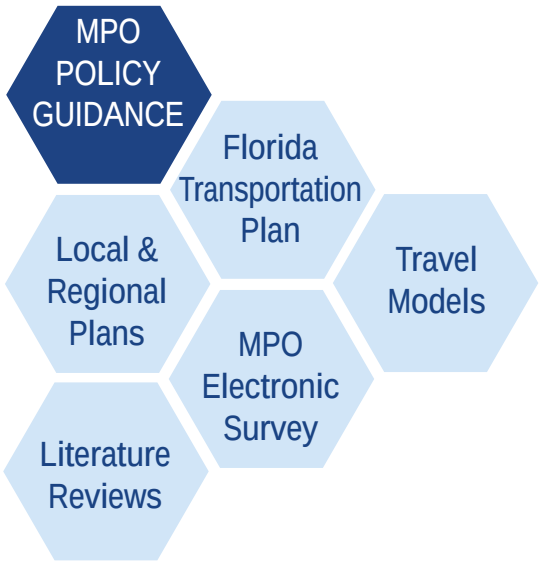
1.3 Methodology

The planning considerations presented in this document are drawn from a broad range of sources and influences. A review of many MPO practices nationally found few, if any, robustly reflecting the potential impacts of ACES on their TIPS or LRTPS at this time.

ACES have been more broadly addressed by scholars, academics and practitioners in the scholarly and popular press. As a result, an extensive literature review was conducted and the planning considerations presented in this document are drawn from that large and growing body of research that is relevant to planning for ACES. The bibliography at the end of this document provides links to many key resources.

These considerations were strengthened during development of this guidance by reaching out to Florida MPOs with an electronic survey and following up with select individual interviews to better understand their needs and testing travel demand model theories with selected MPO travel demand models.

Figure 1: Policy Guidance Resources



One result of this ongoing consultation and investigation is the development of the ACES Planning Process shown in Figure 2. MPOs that intend to update their LRTPs and incorporate ACES guidance may choose to follow this planning process, which provides a workflow for MPO use.

The process begins with FHWA scenarios, stakeholder input and FTP goals. Travel demand modeling, performance measures and vehicle fleet ranges become guidance inputs used to develop local MPO-specific scenarios to be considered.

Finally, local scenario planning will aid in the development of projects to be considered in existing and new long-range transportation plans. During this portion of the planning process, MPOs will begin to identify ACES-supportive elements that can be added to projects to prepare their local systems for successfully adapting to existing and emerging ACES technologies during the multi-year transition period ahead. An MPO, for example, may begin to increase its emphasis on its system state of good repair as an appropriate strategy to meet both short-term local transportation needs while also serving future navigational needs of an increasing number of ACES vehicles.

As illustrated in Figure 3, this guidance uses FHWA's six scenarios as an example of scenario building. FHWA's six scenarios are based on a future year of 2035. MPOs may use these scenarios as a starting point for constructing their own locally tailored scenarios.[f] The FHWA scenarios and the scenario planning process are described in more detail in Section 8.3.

Figure 2: ACES Planning Process

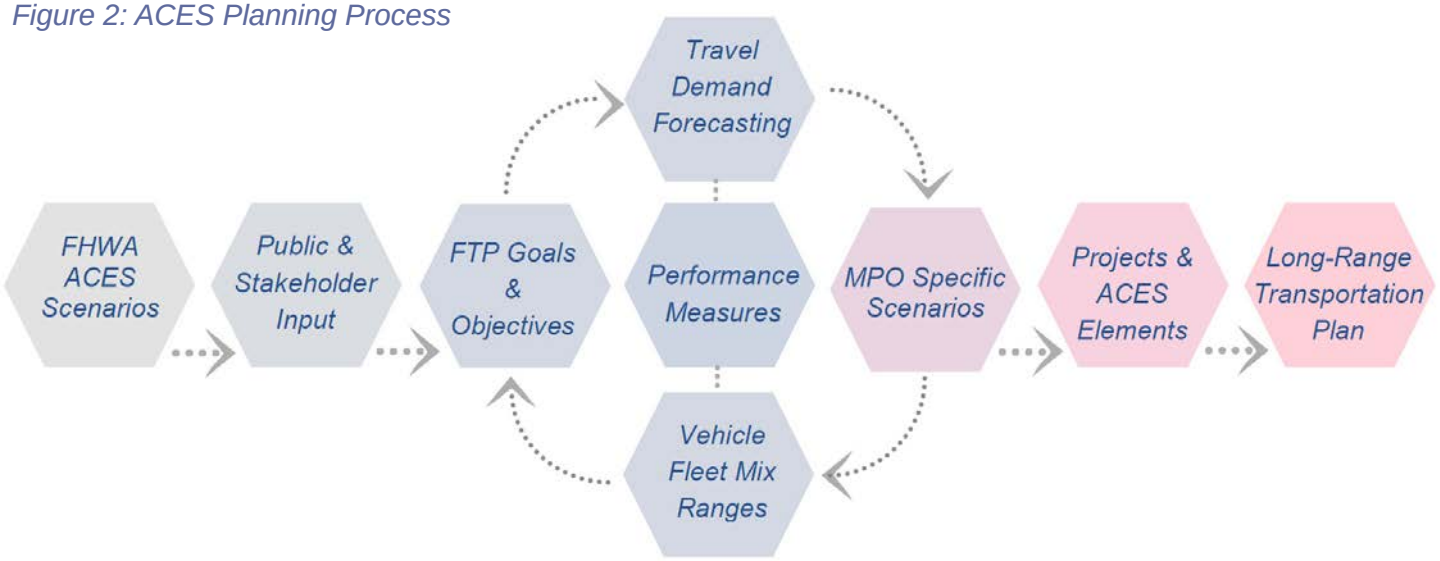
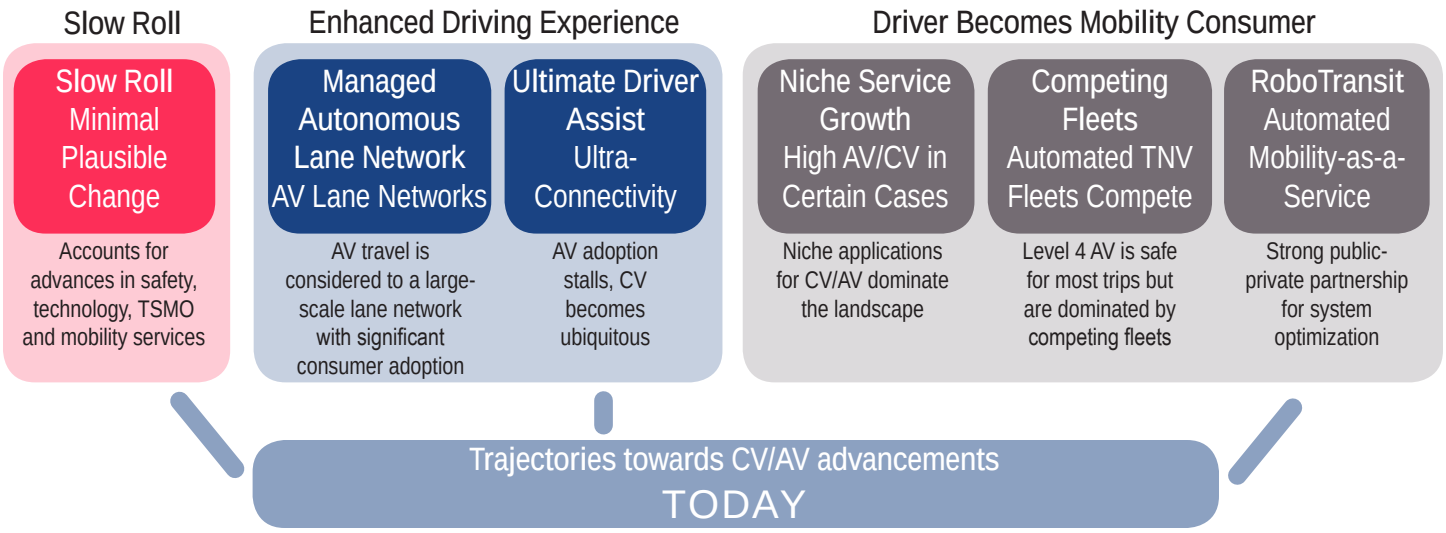


Figure 3: FHWA 2035 CV/AV Scenarios



2. AUTOMATED, CONNECTED, ELECTRIC AND SHARED-USE (ACES) TECHNOLOGY OVERVIEW



CHAPTER 2 AT A GLANCE

- Autonomous vehicles are likely to have profound impacts on society as a whole, not just on the transportation network.
- **The move to electric vehicles potentially will significantly impact motor** fuel tax revenues.
- Connected vehicles may profoundly change personal, freight and public transportation.

Vehicles and how we use them are changing as a result of four independent, but complementary, technologies being introduced on different timeframes and with expected different impacts on our cities and transportation planning regions.

This section provides an overview of each technology, current predictions on implementation timing from the literature review, regulatory frameworks that may affect their implementation or impacts and key implications for MPO Long-Range Transportation Plans.

It is important to note that planning implications will vary among communities based on each community's vision and goals. However, a universal planning implication each community will encounter, is how to adequately fund achieving its individual vision and supporting goals.

Because automation is expected to take the longest to reach its full potential, the ACES technologies are presented here in reverse order, with Shared-Use Vehicles first.

2.1 Shared-Use Vehicles

Vehicle sharing involves multiple passengers (or shippers moving goods in the case of freight sharing) choosing to travel together in a single vehicle. Many different options, including fixed-route transit, paratransit, intercity buses, taxis, carpooling and vanpooling, are commonly used in Florida.

Shared-use vehicles are growing in numbers as the rapid adoption of location-aware smartphones over the previous decade has led to new business models and technology platforms for brokering trips between available transportation assets and people wanting to travel or ship more conveniently. Some of the more common forms of shared-use vehicles include:

- **Ride sourcing** – Also known as ride-hailing and ride-splitting, this industry is dominated by transportation network companies (TNCs) Uber and Lyft, which are disrupting the traditional taxi industry. Combining real-time ride reservations via a smartphone application (app), surge pricing to entice drivers to make their vehicles available as demand fluctuates, seamless electronic payment and mutual rating of drivers and passengers, ride sourcing has achieved new levels of efficiency, customer convenience and entrepreneurial ease of entry in the for-hire car business. TNCs are adding shared-trip capabilities in many markets that allow multiple trips to be served by the same vehicle at once, increasing vehicle occupancy and reducing fares to levels that are often competitive with fixed route transit.

- **Ride sharing** – Traditional carpools and vanpools have been supplemented with technology-enabled real-time ridesharing allowing a passenger to find an empty seat in a vehicle with someone traveling in the same direction toward a destination, frequently in exchange for taking on a portion of the driver's cost.

- **Car sharing** – Traditional car rental services, typically priced by the day or week, have been supplemented with platforms that allow renting a car for short trips, often on an hourly basis, by matching users with cars parked around an urban area. Variations include round-trip (the car is returned to the same location it was picked up), point-to-point

(the drop-off location is different than the pick-up location) and peer-to-peer (individuals make their cars available to others via the platform when they are not in use). Car sharing in all its forms can reduce the need for car ownership and thus facilitate lifestyles with greater use of transit, biking, walking and other alternative modes.

- **Bike sharing** – Like point-to-point car sharing, bike sharing allows people to rent bikes for short trips around a community, frequently via a smartphone app that displays the location of nearby bicycles and facilitates payment. Public bike sharing systems have appeared in many communities in which publicly owned bikes are rented and returned at automated docking stations distributed around the service area. Dockless systems replace stations with location-tracking and unlocking devices on each bike.

- **Freight sharing** – Like ride-sharing, freight sharing involves companies sharing space on a vehicle and splitting "the fare" for their respective portions of the trip. Under the right circumstances, this distribution method can provide significant savings and reduce the overall carbon footprint of a manufacturer or distributor by reducing length of trips, empty backhauls or deadhead miles. This occurs by more directly moving goods from point to point whereas in traditional less-than-truckload (LTL) shipments, goods move through a spoke-and-hub network that may add distance and time.

Start-up companies continue to introduce variations on these shared-use vehicle platforms, including applications for small electric vehicles, specialty vehicles and urban delivery vehicles in a vigorous and still-evolving marketplace.[g]

2.1.1 Implementation Timeframe

Shared-use platforms are rapidly building out their networks and gaining market share in many communities. By late 2015, 15 percent of Americans had used a ride sourcing app.[h] By 2017, 30 percent had used an app to hail, rent or share a ride in some form.[i] The introduction of Mobility as a Service (MaaS) platforms, which integrate trip planning, payment, transit use and shared-use mobility services via a single convenient smartphone app are expected to boost market share for Shared-Use Vehicles in the 2020s and beyond, particularly as shared automated taxi services become available (see Section 2.4). As an example, Goldman Sachs forecasts that ride hailing will grow from two percent of mobility spending on ride-hailing today to 16 percent in 2030.[j]

2.1.2 Regulatory Framework

As TNCs have increased market share in the taxi industry over the last five years, states and cities have imposed increasing regulations on the industry. Florida enacted a statute in 2017 that established uniform statewide requirements for driver employment rights, insurance, driver background checks and other issues, while precluding local governments from levying taxes, requiring business licenses or placing other requirements on TNCs, TNC drivers or TNC vehicles.[k]

Across the United States, few jurisdictions have been successful in requiring TNCs to disclose information on passenger travel patterns. A notable exception is New York City, where the Taxi and Limousine Commission has been collecting and publishing TNC trip logs, including date, time and origin location of each trip, since 2015.[l]

A key objective of the National Association of City Transportation Officials (NACTO) and others in the planning community is to gain access to travel data from TNCs and other shared mobility platforms to support transportation planning analyses with richer and more accurate data than has traditionally been available through Census products and household travel surveys.[m]

2.1.3 Planning Implications

Higher vehicle occupancy is expected to continue to provide benefits in the form of reduced congestion, energy use, and emissions. A key role of MPOs in supporting the transition to an ACES future will include developing policies and prioritizing projects that encourage shared use of vehicles. This may include carpooling, ride sourcing, curb allocation, parking fees, and transit as appropriate in the community.

Shared-use vehicles are creating increased competition for curb space in urban areas. Ride sourcing platforms are a primary contributor to rising demand for pick-up and drop-off areas. Bike sharing stations, mobility hubs,

kiosks and other features of shared-use infrastructure add to the need to more effectively manage this limited resource.

Cities are beginning to turn to pricing of curb zones used by the taxi industry, TNCs and other transportation providers to both manage space and generate revenue.[n] While the role of planning and managing curb space generally falls to cities more than MPOs, new revenue from this resource may offset some or all the potential declines in other transportation funding sources.[o]

Likewise, MPOs may have a role in participating in or facilitating regional or subarea mobility studies that address the impacts of shared-use mobility curb space usage and pricing.

As of this writing, there are no true curb pricing programs fully implemented. However, two examples may serve to illustrate potential planning implications and approaches:

- To effectively manage and price curb space, communities must first inventory curb space and evaluate space allocation. Washington D.C. chose to focus on commercial loading zones. After digitally mapping all 600 commercial loading zones, DC implemented a cellphone payment system that charges commercial vehicles and collects usage data. The resulting database helped determine where additional zones were needed and how best to implement a demand-based pricing model that began in March 2015. By making available complementary driver information, this model has the potential to reduce the number of vehicles circling in search of space, therefore leading congestion relief, improved air quality and less noise pollution.[p]

- In San Francisco, for example, the city is partnering with Uber and Lyft on an experimental program to designate TNC pick-up and loading zones to mitigate their impacts on local congestion and accidents. Although TNCs account for only 20 percent of the city's traffic, they produce 65 percent of local traffic violations. In return for access to Uber and Lyft travel data the city desires for transportation planning purposes, San Francisco is specifying TNC curb space in selected areas. If the program proves successful, it is not difficult to imagine the city expanding its SFpark program of dynamic pricing of curbside parking to address TNCs impacts. Indeed, many believe that in 2014 the city effectively set the price of curbside parking at $1 per day as part of a deal with Google regarding private transit services.[q]

Additional discussion on land use planning implications can be found in Section 8.8 Land Use.

2.2 Electric Vehicles

Electrification of transportation vehicles is well underway. Advances with on-board energy storage, particularly lithium-ion batteries, over the previous decade have made electric drivetrains competitive with internal combustion engines in performance and range at increasingly affordable price points. Early movement in this transition was led by hybrid electric vehicles (HEVs) and plug-in hybrid electric vehicles (PHEVs). As technology has progressed, having a majority adoption of fully electric vehicles (EVs), dominated by battery electric vehicles (BEVs), now seems like less of a remote possibility. Based on the variety of vehicle types already using or soon to use batteries for energy storage (including passenger cars, large trucks, buses and streetcars), electrification appears to be scalable to a large share of the vehicle fleet.

EVs offer many advantages over combustion-engine vehicles, including reduced pollution, lower "well-to-wheel" carbon emissions, less maintenance and smoother travel. However, while there are clear benefits of EVs, the reuse and recycling of lithium-ion batteries used in the vehicles is a potential future industry challenge. Additionally, because the current electric power grid is incapable of accommodating a significant increase in EV charging, an important barrier to a full EV fleet is grid modernization. Concurrent with the transition in the transportation sector, the electric power sector may experience significant changes toward more resilient and efficient power generation and distribution. To meet potential demand for EVs, significant investment is necessary in infrastructure, data management and policy.

2.2.1 Implementation Timeframe

The Global EV Outlook 2017 published by the International Energy Agency (IEA) stated that the number of registered PHEVs and BEVs has grown 60

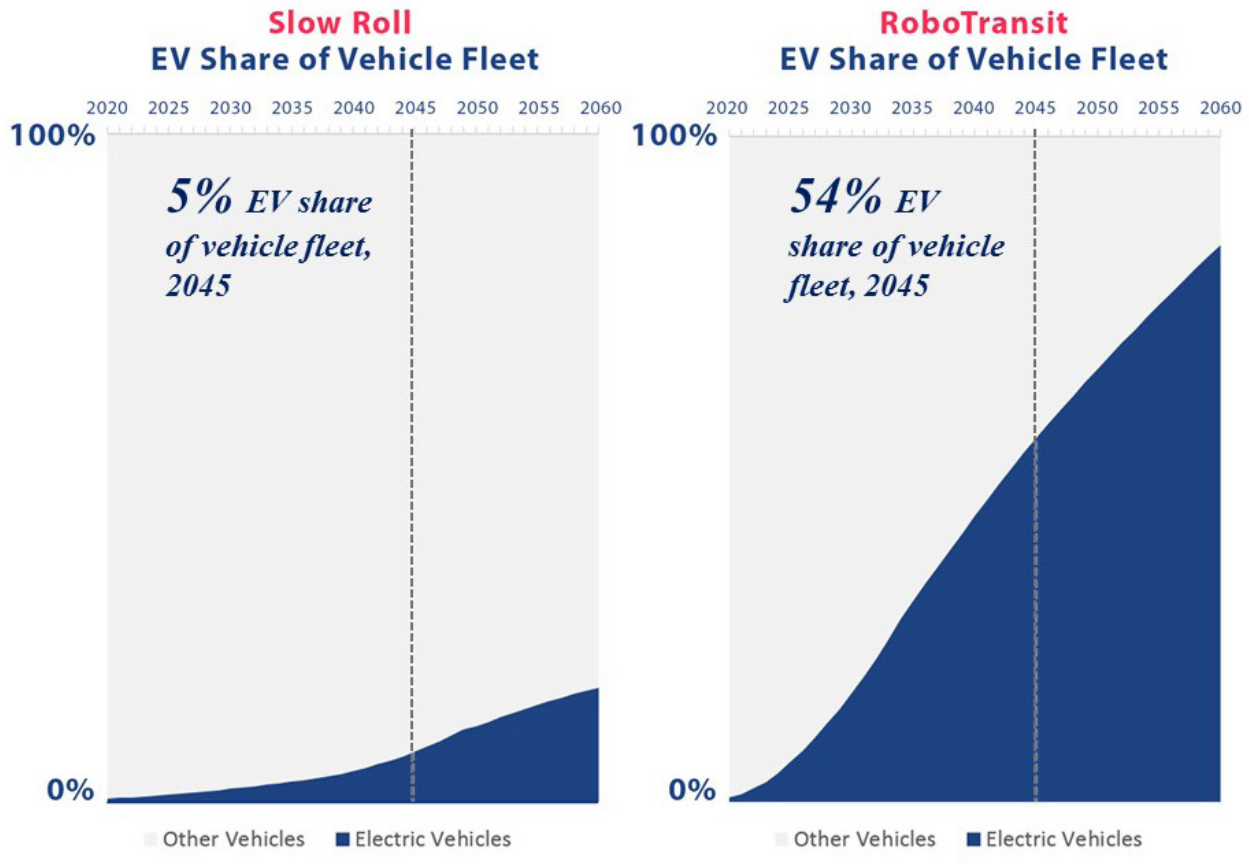
percent from the previous year.[r] While the total global and U.S. EV vehicle stock (number of EVs deployed on the road today) is small, EV sales and share of the vehicle fleet are expected to rise on an accelerating basis. Bloomberg predicts that EVs will become price competitive with internal combustion engine-powered vehicles without the need for subsidies by 2025, leading to EVs reaching seven percent of the global light vehicle fleet by 2030 and 33 percent by 2040.[s]

Figure 4 illustrates a range of potential electric vehicle adoption scenarios developed by the FHWA. The charts reflect the effect on the proportion of the overall fleet that operates electrically of lower and higher sales of EVs as a share of the total market for new vehicles. A key driver of the adoption timeframe is the turnover rate of existing vehicles in the fleet. With the average personal vehicle lasting nearly 20 years before it is replaced, even rapid changes in sales market share for a new technology have a gradual impact on the overall fleet composition.

By 2045 (the next expected LRTP planning horizon), the scenarios suggest that EVs could represent less than five percent to more than 50 percent of the fleet. Much of the difference depends on the degree to which shared automated mobility services (expected to use EVs in part for their automated "refueling" capability) replace personal vehicles. The Slow Roll assumes that "EVs gain market share only gradually, continuing at their current pace, comprising approximately 5 percent of new vehicle sales overall" [by 2035]. Conversely, the Robo Transit scenario assumes that "EV market share sharply increases [because all on-demand rides are electric]". A complete set of scenarios would also consider the appeal of personally owned automated vehicles, both electric and gas powered.

Another variable in the adoption rate is the degree to which jurisdictions encourage or mandate the shift away from internal combustion engines. These forecasts reflect an organic turnover of the vehicle fleet without abrupt shifts in public policy.

Figure 4: Electric Vehicle Adoption Scenarios



2.2.2 Regulatory Framework

States and municipalities are playing a significant role in the sale and ownership of electric vehicles. Due to concerns about carbon emissions and the viability of EVs as an alternative, several countries have announced plans to ban sales of combustion-engine vehicles by 2040 or earlier including India, France, Britain, and China. Other countries have EV sales targets in place, including Austria, Denmark, Ireland, Japan, the Netherlands, Portugal, Korea, and Spain.[t] The California Air Resources Board, already working with seven other states to deploy 3.3 million zero-emission vehicles (ZEVs) by 2025, is considering a similar sales ban.[u]

Many states and other jurisdictions have taken measures to incentivize ownership of partial or fully electric vehicles through one or more of the following mechanisms. To date, more than 40 percent of states, including Florida, have promoted EVs through incentives or waivers.

2.2.3 Planning Implications

Large-scale electrification would require an expansion of charging infrastructure, impacting power generation and distribution systems. While much of the implementation activity will be led by building owners, utilities and municipalities, MPOs may have a role in participating in or facilitating regional or subarea studies that address vehicle charging in the public right-of-way, renewable energy generation, supporting power systems and other features of the EV ecosystem.

Additionally, there are many uncertainties regarding the true environmental consequences of EVs when paired with automated vehicle deployment. Additionally, the implications on land use and public transit are unknown.

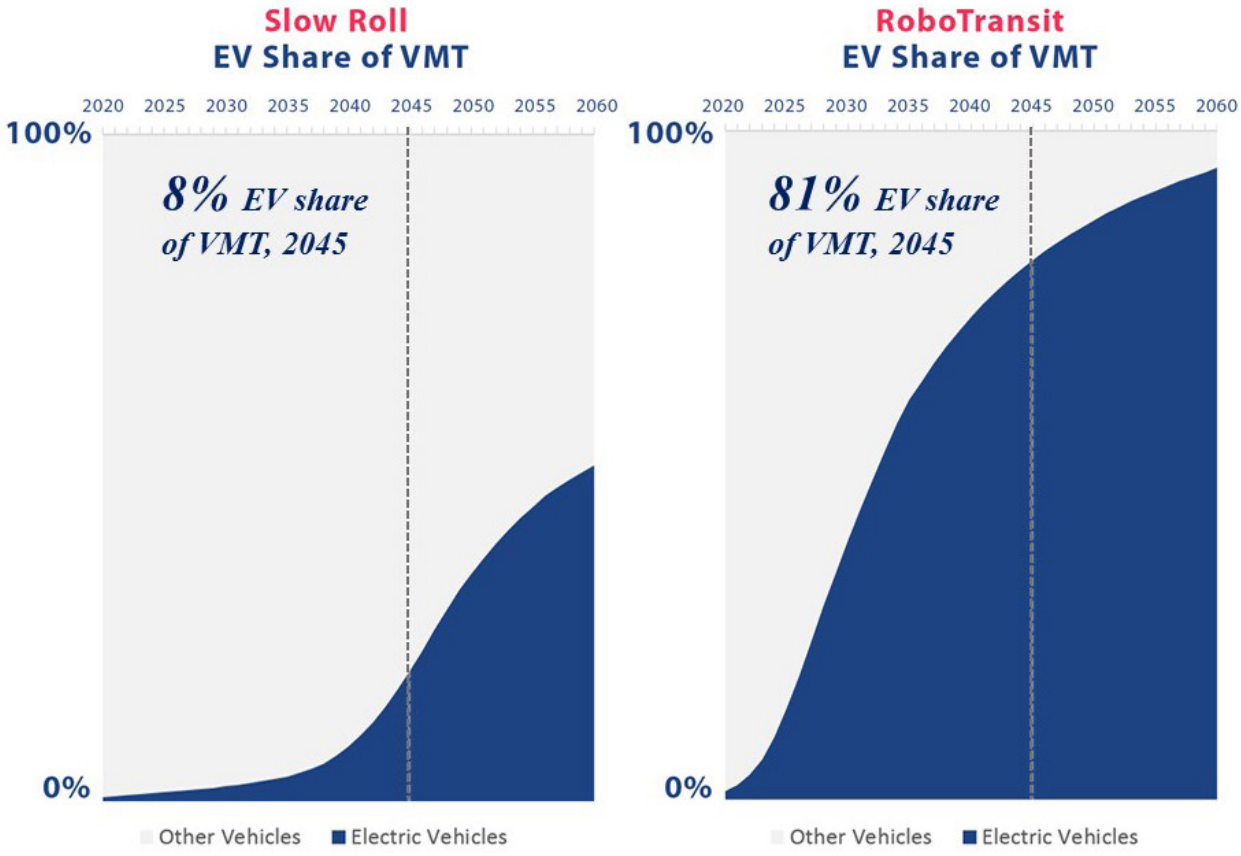
However, the move toward electrification would also significantly impact the motor fuel tax revenues that have traditionally been used to pay for transportation infrastructure. If fewer Florida drivers buy gas at the pump, revenue from the fuel tax will decline over time, affecting the ability to maintain transportation infrastructure and fund capital programs. The potential funding gap would be a primary hurdle for planners and administrators to overcome.

To offset a loss of fuel tax revenue, a growing number of states (including states that have incentivized EV purchase and ownership) are imposing EV-specific fees, typically in the form of higher annual registration fees. Other EV incentives that may also result in lost revenue include free charging, free parking, HOV lane access, vehicle inspection waivers, tax credits and vehicle rebates. Some states are considering more creative solutions, including mileage-based user fee programs, to address long-term revenue needs.

The Center for Urban Transportation Research (CUTR) completed a Transportation Revenue Study in 2012 and there is an existing effort to updated relevant section of the study to establish a baseline for analyzing AV and EV revenue impacts in the state.

Figure 5 represents the potential impact of electrification on the share of VMT made in EVs. More so than fleet mix, the shift of VMT from internal combustion to electric power is the main driver of potential impacts on motor fuel tax revenues. Because fleet vehicles, such as used by electric AV services, are expected to have higher utilization than personal vehicles, the FHWA scenarios suggest that EVs could represent less than 10 percent (“Slow Roll” scenario) to more than 80 percent (“Robo Transit” scenario) of VMT. Funding mechanisms to minimize the negative fiscal impact and expand the funding potential of ACES are further described in Section 6.0. More information on the vehicle fleet mix forecasting approach is provided in Appendix 2.

Figure 5: Electric Vehicle Share of Vehicle Miles Traveled Scenarios



2.3 Connected Vehicles

Connected vehicles (CVs) use over-the-air radio to communicate with each other, roadside devices and cloud-based internet platforms. Communications may occur via dedicated short-range communications (DSRC) reserved for transportation purposes, wireless broadband cellular data services, Wi-Fi and Bluetooth. A common feature of CVs is the broadcasting of a basic safety message that contains location, direction and speed information. The information in the basic safety message can be used by other connected vehicles and can be used to monitor the transportation network performance. The greatest concern for the development of CV is hacking by malicious entities, which poses an enormous threat to both the safety and security of future CVs. Secure communications technologies are critical to minimizing this potential problem. CV applications fall into the following major categories:

- **V2V – Vehicle to vehicle communications** enables equipped vehicles to alert drivers about an imminent forward collision or hard braking in the traffic stream ahead, assist drivers who are making unprotected left turns or passing maneuvers to proceed when it is safe or warn nearby drivers when one is changing lanes. V2V can also allow an adaptive cruise control system to harmonize speed with other nearby vehicles, which facilitates platooning on freeways as well as synchronized intersection approach and departure to reduce fuel consumption and emissions.

- **V2I – Vehicle to infrastructure communications** and the reverse (I2V) such as with traffic signals or other roadside devices, enables advanced signal timing or transit signal priority, in-vehicle warnings about road conditions in inclement weather, optimized intersection approach and departure coordinated with signal timing, real-time traffic data collection, work zone speed warnings and other applications.

- **V2X – Vehicle to everything communications** enable road users to connect with smart city infrastructure. For example, a connected vehicle equipped with V2X can pay tolls, pay for parking, or

help you remember where you parked. Or a visually impaired person can use a smartphone app to request a "walk" signal at a signalized intersection and provide audio cues to safely navigate the crosswalk.

It is expected that V2V communications will primarily rely on DSRC technology. Most experts believe that 5G technology will provide sufficient wireless broadband technology to make V2I applications work on a large scale. Implementing V2I applications using DSRC technology would require publicly funded deployment of DSRC roadside units. With the expected bandwidth of 5G technology, the required V2I communications can be accomplished using a wireless network that is serving multiple uses.

Vehicles that are increasingly connected have the potential to profoundly change personal, freight and public transportation. Potential benefits to society include reductions in crashes, traffic congestion (and therefore air pollution) and other negative driving-associated externalities. Depending on the levels of automation and connectivity, future CVs may encourage greater prevalence of distracted driving through an over-reliance of non-fully automated driving features.

The Center for Transportation Research at the University of Texas, Austin, published a research report that lists a range of CAV technologies that are either in use today or expected in the future, as shown in Table 1.[v] Its matrix, while defining CAV types differently than the SAE classifications more frequently seen, is helpful in exploring potential technology deployments, their timeframes and implications.

Table 1: Connected Vehicle Technologies

Technology	Automation Level	Maturity Timeframe	**Major Safety Benefit**	**Safety Benefit Significance**	Maturity	DOT Involvement
Forward collision warning	Level 0: No Automation	Short	Prevent rear-end collision	High	High	Infrastructure
Blind spot monitoring		Short	Reduce crash risk at merging and weaving areas	High	High	Policy
Lane departure warning		Short	Prevent lane departure crashes	High	Medium	Infrastructure
Traffic sign recognition		Short	Assist driving	Intermediate	Medium	Infrastructure
Left turn assist		Short	Prevent potential conflict	High	Medium	Policy
Pedestrian collision warning		Short	Prevent backing collision	High	Medium	Policy
Rear cross traffic alert		Short	Prevent pedestrian collision	High	Medium	Policy
Adaptive headlights		Short	Improve light condition and visibility of environment	Intermediate	Medium	Policy
Adaptive cruise control	Level 1: Funtion **Specific** Automation	Short	Prevent rear end collision	High	High	Policy
Cooperative adaptive cruise control		Short	Prevent rear end collision	High	High	Policy
Automatic emergency braking		Short	Prevent rear end collision	High	Medium	Policy
Lane keeping		Short	Prevent lane departure crashes	High	Medium	Infrastructure
Electronic stability control		Short	Prevent rollover	High	High	Policy
Parental control		Short	Prevent speeding	Intermediate	Medium	Policy
Traffic jam assist	Level 2: Combined Function Automation	Medium	Driving assist	Low	Medium	Policy
High speed automation		Medium	Driving assist	High	Medium	Policy
Automated assistance in roadwork and congestion		Medium	Driving assist	High	Medium	Policy
On highway platooning	Level 3: Semi-Automation	Medium	Driving assist, prevent rear-end crashes	Intermediate	Medium	Policy
Automated operation for military applications		Medium	Prevent human fatalities	Unknown	Low	Policy
Self-driving vehicle	Level 4: Full Automation	Medium	Replace human drivers	High	Low	Both
Emergency stopping assistant		Medium	Response when human drivers lose control	High	Low	Policy
Automated valet parking		Medium	Convenience feature	Low	Low	Both

Source: University of Texas, Austin. Implications of Connected and Automated Vehicles on the Safety and Operations of Roadway Networks: A Final Report, 2016

2.3.1 Implementation Timeframe

Today's vehicles and drivers in the vehicles are already connected. The USDOT has continued to move forward with its CV plans. In early 2014, the National Highway Traffic Safety Administration (NHTSA) indicated its intention to move forward with the regulatory process regarding CV technology, specifically V2V communications capability. NHTSA issued a Notice of Proposed Rulemaking in 2017 that would require all new light vehicles to send and receive basic safety messages by 2023.[w] However, it is unclear whether the current administration will implement the policies in the rulemaking. Based on the average useful life of vehicles, it would take more than 20 years before at least 90 percent of the fleet is equipped with V2V capabilities unless the mandate were extended to require retrofits of older vehicles. This forecast could be accelerated though based on market-driven interest as is being seen today.

While this proposed rulemaking signals a positive step toward CV technology beginning to be present on public roads, it does not include any requirements on specific safety or mobility applications that must be running on the equipment. Additionally, CV infrastructure falls outside the scope of the proposed rulemaking, meaning CVs will only be able to take advantage of V2I safety and mobility applications if a state or local government or transportation organization has made the commitment to invest and deploy roadside equipment and applications.

2.3.2 Regulatory Framework

The future of the NHTSA CV policy is uncertain. Without a mandate, it is unlikely that sufficient share of the fleet will be equipped with interoperable V2V capabilities to make many of the proposed safety features effective. With a mandate, the framework will be set by the federal government with MPOs addressing requirements assigned to them.

2.3.3 Planning Implications

Even without a mandate for manufacturers to build V2V capabilities into new vehicles, some CV applications will be possible using smartphones and vehicles increasingly connected to the cloud via existing 4G wireless broadband technology. At the same time, advanced traffic signal control systems are increasingly relying on cloud-sourced vehicle location data and roadside smartphone detection equipment to manage congestion. With public agency access, these systems could support long-range planning by generating new streams of data on travel patterns while providing inputs to DOTs or other agencies for improved real-time management of roadway operations.

However, the most significant impact of CV technology on MPO programs is likely to be the introduction of dedicated AV/CV-only lanes that allow coordinated speed control and greater capacity on limited access highways and arterials. MPOs may have a role in prioritizing roads for platooning lanes, evaluating HOV/HOT lane conversions to AV/CV-only lanes, identifying intersections or districts where traffic signal systems will apply V2I for "eco-driving" and designating networks of arterial lanes reserved for high-occupancy AV/CVs, such as buses and microtransit vans.

The Florida Connected Vehicle Initiative, a program of projects being run out of the FDOT Traffic Systems Management and Operations Office, provides early examples of the kinds of projects that MPOs may consider for their transportation programs. The connected vehicle initiative uses leading edge technologies to quickly identify roadway hazards and alert drivers. These technologies include:

- Emergency Vehicle Preemption
- Freight Signal Priority
- Global Positioning System Navigation
- On-Board Units
- Roadside Units
- Signal Phase and Timing (SPaT)
- Transit Signal Priority
- Vehicle Sensors
- Wireless Communications

The Florida Connected Vehicle Initiative is shown in Figure 6.

Figure 6: Florida Connected Vehicle Initiative

Projects / Initiatives

PLANNING

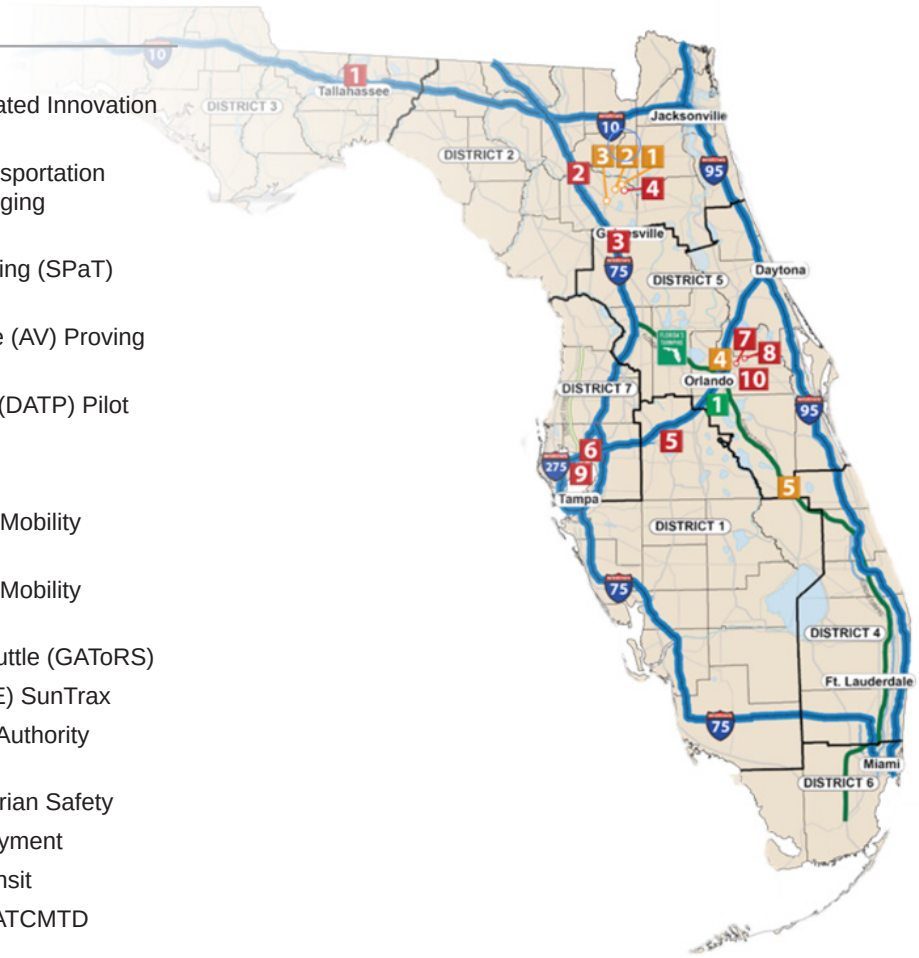
1. University of Florida (UF) Accelerated Innovation Deployment (AID) Demonstration
2. Implementing Solutions from Transportation Research and Evaluation of Emerging Technologies (I-STREET)
3. Gainesville Signal Phase and Timing (SPaT) Trapezium
4. Central Florida Automated Vehicle (AV) Proving Ground
5. Driver Assistive Truck Platooning (DATP) Pilot

DESIGN / IMPLEMENTATION

1. US 90 SPaT Tallahassee
2. I-75 Florida's Regional Advanced Mobility Elements (FRAME) Gainesville
3. I-75 Florida's Regional Advanced Mobility Elements (FRAME) Ocala
4. Gainesville Automated Transit Shuttle (GAToRS)
5. Florida's Turnpike Enterprise (FTE) SunTrax
6. Tampa Hillsborough Expressway Authority (THEA) Connected Vehicle Pilot
7. City of Orlando Greenway/Pedestrian Safety
8. SR 434 Connected Vehicle Deployment
9. Downtown Tampa Automated Transit
10. Orlando Smart Community 2017 ATCMTD

OPERATIONAL

1. Osceola County Connected Vehicle Signals



Source: FDOT[x]

2.4 Automated Vehicles

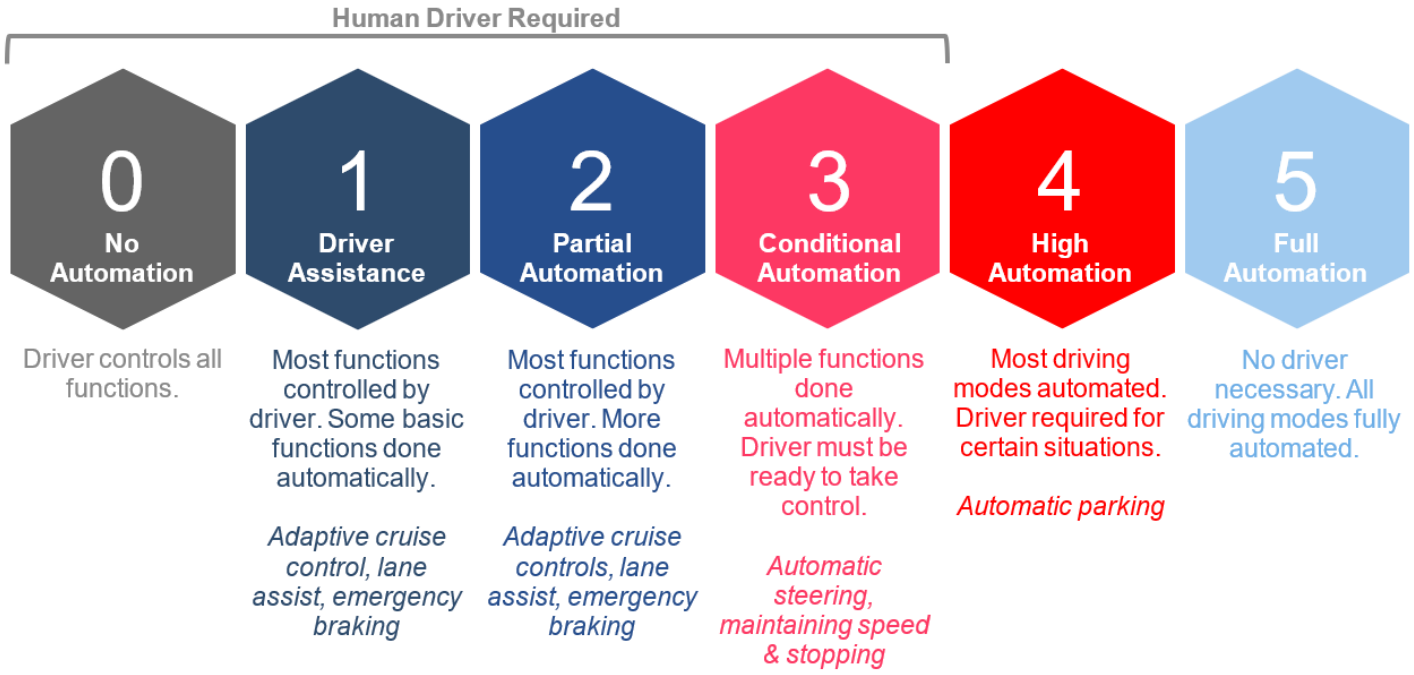
Of all the ACES technologies, automation is likely to have the most profound implications on our society, ranging from improved road safety to changes in the workforce. The Society of Automotive Engineers (SAE) framework for Levels of Automation is a helpful starting point for considering the planning implications of increasingly capable automated vehicles (see Figure 7). Complementary technologies of connected vehicle communications, electric propulsion and shared mobility platforms are expected to be introduced along with increasing levels of automation.

The share of vehicles with automated driving capabilities is expected to increase gradually from the small number of models available today that can operate with reduced human input in certain situations to a fleet that is largely automated and capable of operating in a wide variety of conditions.

How these capabilities grow over time will drive the use cases for which AVs are deployed and the resulting effects on our metropolitan regions. This guide breaks AVs into a range of nine different vehicle types, each with different potential rates of adoption, relevance in different operating contexts and impacts on metropolitan planning and infrastructure programs. Automated vehicle types include:

- *Level 2-3 Cars and Light Trucks* – Predominantly privately-owned vehicles with ADAS technology. Vehicles offer improved safety and potential for higher road capacity with V2V cooperative adaptive cruise control, but still require a human driver on board.

Figure 7: SAE Levels of Automation



Source: Society of Automotive Engineers

- *Level 2-3 Cars and Light Trucks* – Predominantly privately-owned vehicles with ADAS technology. Vehicles offer improved safety and potential for higher road capacity with V2V cooperative adaptive cruise control, but still require a human driver on board.

- *Level 2-3 Vans and Buses* – Mix of privately and publicly owned vehicles, including transit fleets. Vehicles offer improved safety with ADAS, but still require a human driver on board.

- *Level 2-3 Heavy Trucks* – Single unit and combination trucks with advanced driver assist technology. Vehicles offer improved safety and fuel savings from platooning, but because they still require a human driver on board, overall freight cost savings are limited.

- *Level 4-5 Cars and Light Trucks* – Predominantly personally owned vehicles that may operate without a human driver on board. New use cases could include ability to run errands while the owner is elsewhere, run home empty to transport other family members and earn money as a MaaS platform vehicle while not in use by the owner.

- *Level 4-5 Taxis* – Fleet owned automated vehicles used by Mobility as a Service (MaaS) platforms. Vehicles may take a variety of form factors from small single-occupant pods to large shared use vans that operate along a flexible route or fixed corridor.

- *Level 4-5 Low-Speed Shuttles* – Small automated shuttles used for campus, transit and first/last mile applications. Current vehicles are typically limited to less than 25 mph, particularly when operating in the presence of pedestrians. As technology advances, this category could merge with Level 4-5 Taxis and Level 4-5 Vans and Buses.

- *Level 4-5 Vans and Buses* – Larger or faster transit vehicles used for microtransit and trunk route applications, largely owned by public or private transit providers. Automation of transit vehicles could change the operating cost structure, potentially allowing for increased frequency in major urban corridors (see Section 7).

- *Level 4-5 Urban Delivery* – Fleet owned automated vehicles used for local freight delivery. Vehicles could take a variety of forms depending on the commodity shipped and the operating environment,

ranging from small robots on city sidewalks to large delivery vans with a human on board primarily for loading and unloading.

- *Level 4-5 Heavy Trucks –* Single unit and combination trucks with advanced technology capable of operating without a human driver on board. Highly automated vehicles that require a human for some tasks could extend the hours of service that currently restrict the range and productivity of truck drivers. Fully automated trucks operating in dedicated lanes on intercity highways could radically transform the cost structure of long-distance freight.

2.4.1 Implementation Timeframe

A key driver of planning implications is the rate at which automation will be adopted in the vehicle fleet. There is considerable uncertainty surrounding the rate of deployment and the rate of adoption, which is driven by a combination of consumer acceptance, the regulatory environment, business models and other outcomes. However, most estimates in the literature place widespread adoption of key features on some vehicle types by 2045, the planning horizon of MPO Long Range Transportation Plans.

Figure 3 illustrates a range of potential automated vehicle adoption scenarios developed by the FHWA (see Section 1.0). The charts reflect the effect on the proportion of the overall fleet that operates autonomously of lower and higher sales of each AV type as a share of the total market for new vehicles.

A key assumption in the vehicle fleet mix forecasts is that new personal vehicles continue to replace older vehicles as they wear out, typically after at least 20 years of service for passenger cars and light trucks. An abrupt transition caused by a policy change, such as a ban on human driving or, less drastically, zoning restrictions on downtown parking, could result in a more rapid adoption of ACES than is reflected in the charts. More information on the vehicle fleet mix forecasting approach is provided in Appendix 2.

By 2045, the FHWA scenarios suggest that Level 2 or higher AVs could represent less than 25% ("Slow Roll" Scenario) to nearly 35 percent of the fleet ("Robo Transit" scenario). Level 2-3 vehicles could range from a majority of the automated fleet (Slow Roll) to less than 40 percent of an automated fleet dominated by Level 4-5 taxis and delivery vehicles (RoboTransit). The Slow Roll scenario assumes that "Level 2 automated vehicles make up about 30-40 percent of the market [sales]" by 2035 while Level 3 vehicles remain rare. The RoboTransit scenario assumes that "Level 2 AVs make up 30-40 percent of the market overall market [sales]. Level 3 share is negligible. Level 4 AVs make up 30 percent of the overall market [sales]." by 2035.

Figure 9 illustrates the potential impact of automation on the share of VMT made in AVs. The shift of VMT is a key driver of the potential impacts of automation on overall road safety. The share of travel made in Level 4-5 shared taxis is a key driver of impacts on personal vehicle ownership, parking demand and urban form.

The scenarios suggest that travel in AVs could range from about 30 percent to more than 70 percent of total VMT by 2040. The share of total VMT in Level 2-3 AVs could range from about 10 percent in a fleet where half of travel is in Level 4-5 taxis and delivery vehicles to about 30 percent in a fleet where personal vehicles remain dominant and Level 4-5 vehicles are rare.

Figure 8: Illustrative Automation Adoption Timeframes by Vehicle Type

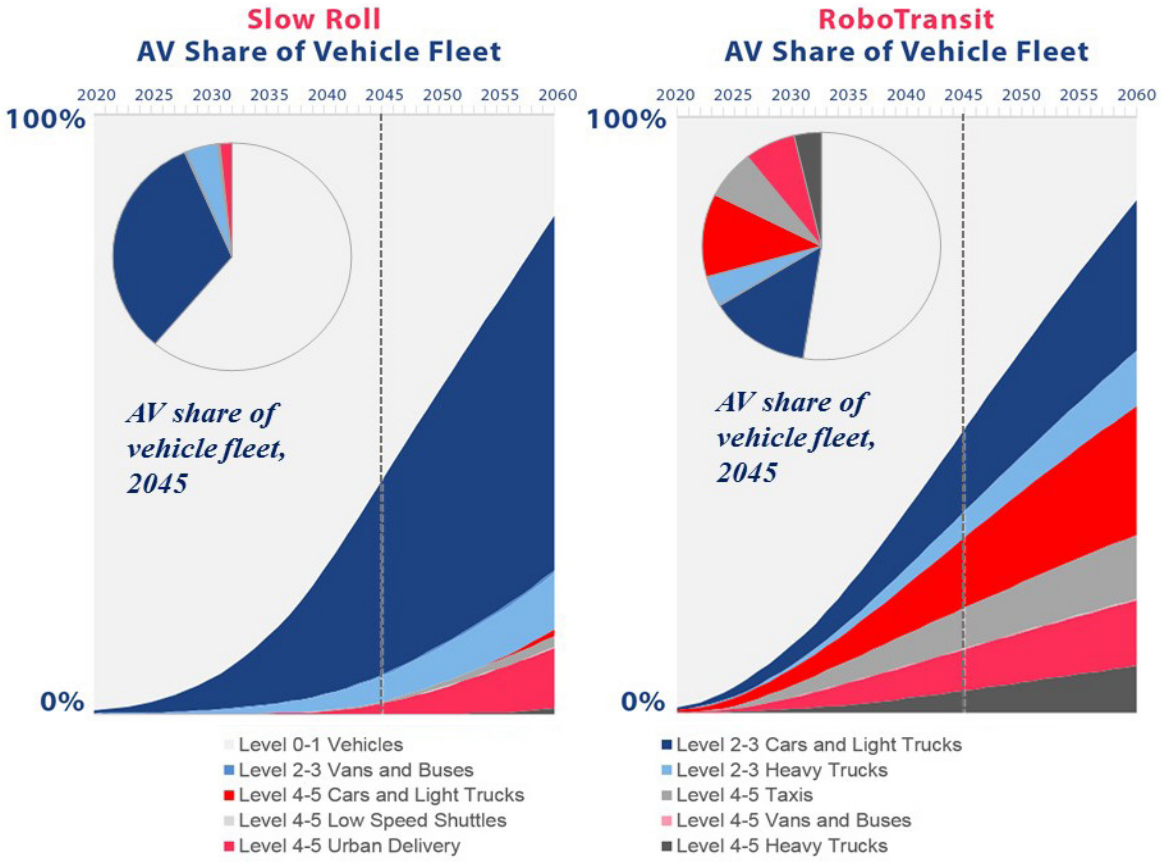
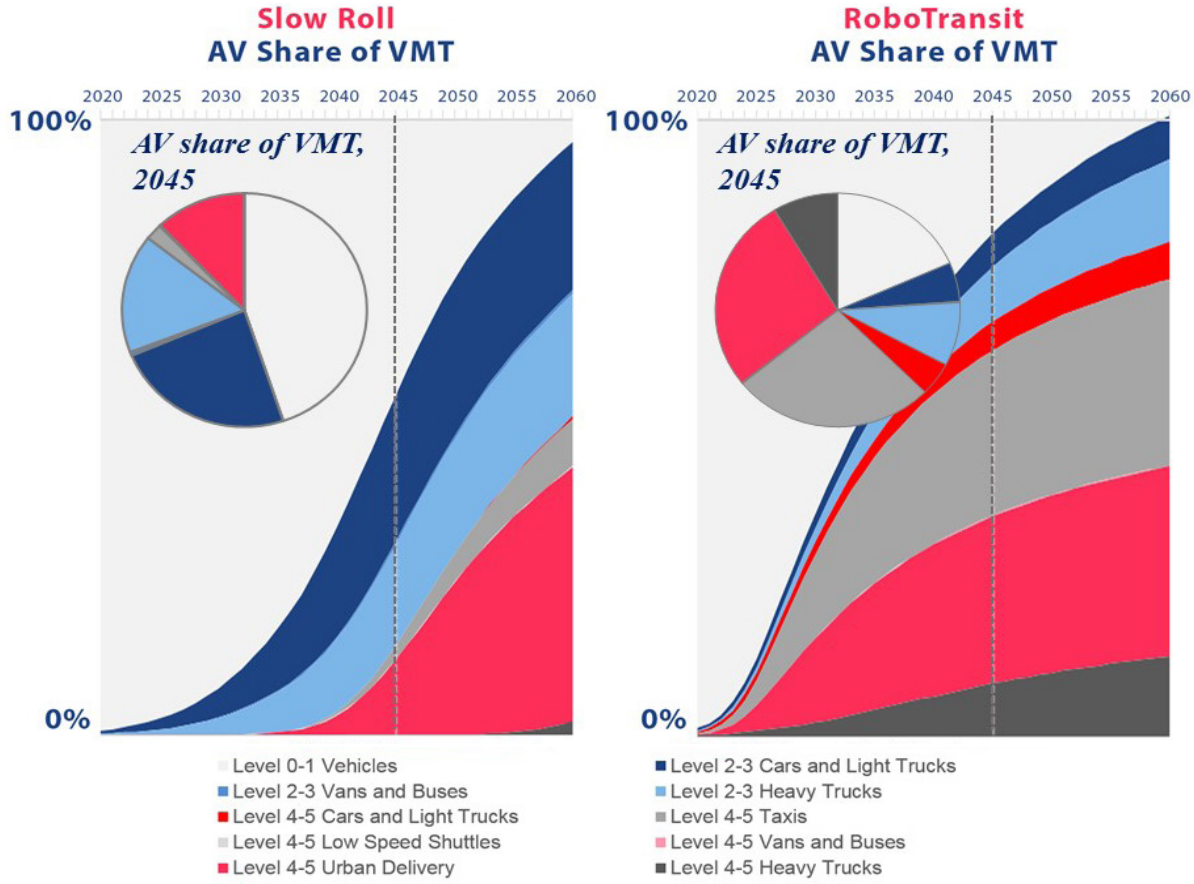


Figure 9: Illustrative Automation Share of Vehicle Miles Traveled Scenarios



The scenarios illustrate that even rapid changes in sales market share for a new technology have a gradual impact on the overall fleet composition. A more rapid transition could be possible if technology encourages car owners to sell their vehicles sooner or an abrupt shift in policy were to occur.

2.4.2 Regulatory Framework

The regulatory environment is an additional source of uncertainty in forecasting the rate of adoption. For example, some in the automotive industry have suggested that human driving may come to be seen as irresponsible compared to the safer operation of AVs, leading governments to eventually ban Level 0 and Level 1 vehicles.[z] If this were to occur in the MPO planning horizon, forecasts assuming that AVs represent a gradually rising share of new vehicle sales would prove to be pessimistic.

Regulation may also influence the degree to which AVs contribute to the travel data available for long-range planning and the revenues needed to maintain the transportation system. Centrally managed fleets of AVs provide an attractive opportunity to collect detailed origin-destination travel pattern data by time of day as well as a mechanism to collect fees. An early example of legislation in this area is an automated vehicle use tax in Tennessee based on the number of axles.

2.4.3 Planning Implications

Planning impacts may be comparatively minimal or non-existent from features that support Level 1 and Level 2 automated driving such as adaptive cruise control, lane keeping assist and automated emergency braking (already common on many new vehicles). The same may be true as automakers introduce more advanced Level 3 systems capable of steering, maintaining speed and stopping in certain situations, such as in freeway traffic, on more models every year. In these cases, a human driver is required to take over when the ADAS encounters a situation that it cannot safely manage.

A major shift in the implications of automated vehicles occurs when the human occupant is removed from the vehicle-driving process. When the vehicle can operate without anyone on board, many limitations of the current human-driven mobility system are removed, new business models are possible and potentially transformative and disruptive effects of technology emerge.

This guide recognizes the important distinction between the incremental effects on safety, mobility and convenience that we are experiencing with the Level 2-3 vehicles of today and the more profound effects that Level 4-5 vehicles may bring in the future.

Planning applications of AV technology to different vehicle types are likely to have different effects on road design, VMT, parking, urban form and other planning issues. The presumed ability of AV technology to help older individuals better age “in place” may have Complete Streets implications in terms of planning curbside loading zones, location of benches and other individual mobility comfort considerations. Of course, ultimately the effects that will be experienced will be distinguished by the degree of automation, the ownership of the vehicle, whether a vehicle can reposition itself without a driver on board and whether it is restricted for use by a single owner or available for shared use.

The matrices, in Appendix 3, illustrate which vehicle types are associated with different impacts to help MPOs define the issues to consider in their planning processes based on the relative shares of different technologies and vehicle types in the future vehicle fleet. For example, if a large share of fully automated taxis is expected in the planning horizon, MPOs should work with local agencies to place a greater emphasis on converting parking to other uses such as pick up/drop off zones and planning for major changes to transit systems. In contrast, if automation predominantly takes the form of partially automated personal vehicles, parking impacts may be limited to site design changes such as narrower parking spaces and more emphasis may be placed on developing dedicated lanes on freeways for platooning vehicles.

2.5 ACES Summary

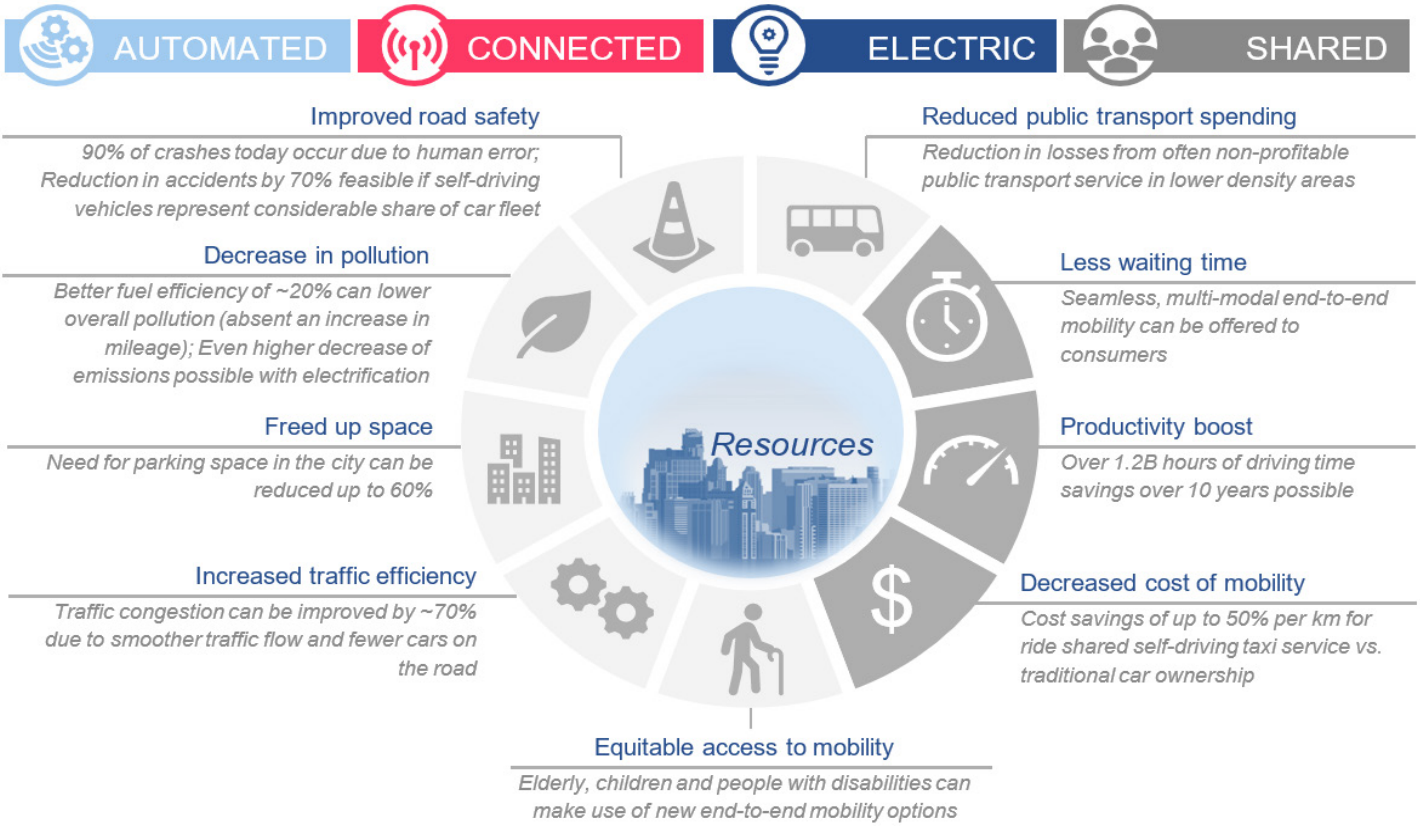
The ACES technology overview section was presented in reverse order by individual technology to represent the order of anticipated deployment and penetration. However, these technologies will work within one transportation system for each individual user. As a result, when planning for the future, ACES should be thought of together as a set of tools within a common transportation toolbox.

Figure 10, adapted from the Florida DOT Suntrax project, demonstrates how ACES can work together to address common transportation problems. The Suntrax graphic is an excellent example of the comprehensive benefits that are achieved when ACES all work together.

Another viewpoint of ACES potential benefits by common MPO planning factors is a table developed by the Strategies to Advance Automated and Connected Vehicles briefing document (NCHRP 845).[aa]

The briefing document outlines how ACES could lead to positive societal outcomes. The table summarizes the level of potential benefit for ACES by driving externality.

Figure 10: Florida DOT Suntrax ACES Benefits



Source: Adapted from FDOT Suntrax project

Table 2: Potential Benefits

Driving Externality	Connectivity (Full V2X)	Autonomy* (L4, L5)	Shared Autonomy (L4, L5) **	Electrification ***
Safety	●	●	●	○
Congestion	●	◐	◐	○
Emissions	◐	○	○	●
Land Use	○	◐	◐	○
Mobility	○	●	●	○

Weakest Benefits / No Impact
Some Expected Benefits
Strong Benefits
Uncertain Impact

*Autonomy is defined for this purpose as individually owned vehicle.
**Shared Autonomous Vehicles (SAV) are on-demand self-driving vehicles supporting shared rides as part of a privately or publicly managed fleet.
***While not a focus of this NCHRP research, the team provides assumptions of potential benefits of electrification based on known literature.

3. SAFETY IMPACTS



CHAPTER 3 AT A GLANCE

- Fatalities in Florida are on the rise.
- ACES may help reverse the fatalities trend.
- During transition, partial automation may increase risks associated with distracted driving.

In the U.S. more than 90 people die in car accidents daily. As a result, motor vehicle crashes are among the top ten causes of death among people under 54 years of age.

In Florida, there were 395,785 total crashes in 2016 with 2,935 being fatality crashes representing 3,176 Floridians lives lost.[bb] Floridians saw reductions in fatalities between 2009 and 2014; however, fatalities are currently on the rise again as VMT has continued to increase due to several factors including low gasoline prices. Researchers believe this is a direct result of distracted driving due to increasing smart phone usage among drivers of all ages.[cc]

Automated and connected vehicles use advanced safety technologies to reduce crashes due to driver distraction or other human errors. Some reports project that as many as 90 percent of crashes will be avoided with fully automated vehicles. Until then, many safety experts see partial autonomy as a stop gap against the spike in distracted driving deaths. Studies suggest that universal adoption of existing features like blind spot monitoring, lane departure warning and forward collision warning could eliminate hundreds of thousands of crashes a year, largely on highways. However, other research suggests that partial automated vehicles will make distracted driving worse by lulling drivers into complacency.

It should be noted that automated vehicles may have less impact on the overall safety because they represent only part of the predicted vehicle fleet, even by the year 2045, and cannot mitigate for human-controlled vehicles. As stated in Section 2.4, Automated Vehicles, FHWA has estimated the travel share of automated vehicles could range from about 30 percent to more than 70 percent of total VMT by 2035. If automated vehicles deliver promised improvements in road safety in urban areas as well as highways, they could be a boost to Vision Zero campaigns to eliminate traffic fatalities. But complete automation of urban traffic is likely many decades away.

Automated and connected vehicles may have a positive impact on bicycle and pedestrian safety as well. While automated and connected vehicles have the potential to improve the functioning of the transportation network, one other view is that these vehicles have the potential to make bike and pedestrian travel within urban settings far more complicated and less easily achieved, as pedestrians and bicyclists maneuver within a more dense and complicated roadway system.

Alternatively, because automated and connected vehicles may require less urban space than traditional vehicles (due to efficiency, accuracy, and parking implications) the technology offers some promise for the development of quality, attrative separated bike/pedestrian infrastructure.

Most safety benefits can be achieved with "Safe Cars" without full automation. Safe Cars use advanced driver assist systems to recognize and warn drivers about pedestrians and cyclists, increase awareness of threats that drivers may not be able to see before it is too late, and apply brakes to prevent a crash in an emergency. CV technology expands the range of situations that such systems can help to mitigate. (Adapted from Professor Alan Kornhauser, Princeton University)

Other safety benefits such as vehicle platooning are also on the planning horizon. With connected platoon driving, braking is automatic with virtually zero reaction time compared to human braking.

3.1 Crash Rates

A significant benefit likely to arise from automated and connected vehicles is the potential reduction of crashes. The Insurance Institute for Highway Safety (IIHS) conducted a study which found that basic forward-collision warning systems attribute to a seven percent reduction in crashes and automatic braking results in a reduction of 14 to 15 percent.[dd] Table 3 provides a summary of the IIHS estimated reduction of various in-vehicle technologies.

More advanced fully self-driving cars are still being tested, which employ smart technology and reduce the likelihood to be involved in a crash. When fully developed, McKinsey and Company notes that advanced driver assistance systems automated vehicles could reduce up to 90 percent of accidents.[ee]

Table 3: In-Vehicle Technologies and Benefits

Technology	Received Benefit
Forward collision warning	▼ 27% Front-to-rear crashes ▼ 20% Front-to-rear crashes with injuries ▼ 7% Claim rates for damage to other vehicles ▼ 14% Claim rates for injuries to people in other vehicles
Forward collision warning plus autobrake	▼ 50% Front-to-rear crashes ▼ 56% Front-to-rear crashes with injuries ▼ 13% Claim rates for damage to other vehicles ▼ 21% Claim rates for injuries to people in other vehicles
Lane departure warning	▼ 11% Single-vehicle, sideswipe and head-on crashes ▼ 21% Injury crashes of same types
Blind spot detection	▼ 14% Lane-change crashes ▼ 23% Lane-change crashes with injuries ▼ 9% Claim rates for damage to other vehicles ▼ 12% Claim rates for injuries to people in other vehicles
Rear automatic braking	▼ 62% Backing crashes ▼ 13% Claim rates for damage to the insured vehicle ▼ 26% Claim rates for damage to other vehicles
Rearview cameras	▼ 17% Backing crashes
Rear cross-traffic alert	▼ 22% Backing crashes

Source: IIHS

3.2 Crash Costs

The cost of motor-vehicle deaths, injuries and property damage in the US in 2016 was $432.5 billion crashes (a nine percent increase over the first six months of 2016 compared to 2015).[ff] In Florida, crash costs are significant to society.[gg] FDOT has calculated the cost of a crash as shown in Table 4.

Table 4: 2014 FDOT Crash Costs

Crash Severity	Comprehensibe Crash Data
Fatal (K)	$10,100,000
Severe Injury (A)	$818,636
Moderate Injury (B)	$163,254
Minor Injury (C)	$99,645
Property Damage Only (O)	$6,500

Source: FDOT Crash Analysis Reporting (G.A.R. System)

As the table shows, fatality crashes cost approximately 10 times all other crashes combined. In Florida, in 2013, crash deaths resulted in $3.02 billion in medical and work loss costs.[hh] If 90 percent of the human cause crashes can be eliminated because of automated and connected technologies, more than $2.7 billion societal costs are estimated to be eliminated annually (based on latest available data from 2013).

3.3 Infrastructure Resilience Considerations

Transportation infrastructure increasingly faces potentially significant vulnerabilities stemming from age, budget constraints, population growth, growing reliance on existing and emerging technologies and other factors that may hamper local, state or national networks' abilities to withstand natural and human-made disruptions.

In Florida, for example, state and local transportation networks have to be robust enough to survive and operate adequately before, during and after severe meteorological events such as tornadoes and hurricanes. They must be able to provide adequate levels of service to pre-position disaster relief supplies and personnel; provide for safe, time-sensitive evacuations; and, as technology plays an increasingly large role in transportation now and in an ACES future, include sufficient systemwide redundancy and flexibility to be able to continue functioning even during a such an event (including maintaining the ability of ACES technologies to maintain power, radio and Wi-Fi access, among others). The widespread use of Shared Use vehicles instead of personally owned vehicles may introduce a new planning challenge for events such as a hurricane evacuation. Having a finger on the pulse of the the proliferation of shared use vehicle supply may influence evacuation decision notification timeframes and event staging needs.

Based on local conditions and scenario planning, individual MPOs will need to consider short and long-range policies and projects that can help produce a resilient local transportation system that, as the U.S. DOT's Volpe Center described in "Beyond Bouncing Back: Critical Transportation Infrastructure Resilience"[ii]

> *"…has design-level robustness so that it can withstand severe blows; it is adaptable so that it can respond appropriately to threats and it can mitigate the consequences of threats through response and recovery operations."*

This may require Florida MPOs to plan significant redundancies into their local networks, partner with ACES manufacturers to develop event "insensitive" technologies or workarounds and work with local officials and stakeholders to build support for adequately programming transportation investments in system robustness, adaptability and harm mitigation.

4. TRAVEL DEMAND IMPACTS



CHAPTER 4 AT A GLANCE

- Terminal Times, Friction Factors, and Modifying the Trip Table are Three Areas for Modifying the Travel Demand Models to Account for ACES technologies.
- Different model complexities produce a wide variety of results within travel demand models using the six integration scenarios.
- ACES technologies can lead to increased VMT and VHT, but also result in higher network speeds.

The Gainesville Urbanized Area Transportation Model (GUATS) and Central Florida Regional Planning Model (CFRPM) four-step travel demand models were chosen for testing as they represent two different size MPO models and complexities as described below. The model years used for this analysis are 2040 as both models have 2040 data sets.

The GUATS model has a base year of 2010 and horizon year of 2040. The model covers the small urbanized area of Gainesville, Florida. The GUATS model area contains the University of Florida (UF) and Sante Fe College (SFC) as well as many medical facilities associated with the Shands UF teaching hospital. GUATS also includes local transit, bicycle and walking trips. This model was chosen for its smaller population as well as its mix of modes and colleges.

The CFRPM version 6.1 has a base year of 2010 and horizon year of 2045 with data sets for every five years from 2010 to 2045. The model covers several urban MPO areas including 11 counties. These include the nine counties of FDOT District 5 (Brevard, Flagler, Lake, Marion, Orange, Osceola, Seminole, Sumter, and Volusia) and all of Polk County and part of Indian River County. The CFRPM includes the tourist areas of Disney World, Universal Studios as well as a few smaller attractions. This model has several transit providers, special trip purposes, several toll facilities as well as complex trip distribution, mode choice and assignment models. This model was chosen for its complexity, size and mix of both travel modes and populations.

4.1 Travel Demand Modeling

The six FHWA Draft Scenarios shown in Figure 3: FHWA 2035 CV/AV Scenarios and explained in section 8.2.3 FHWA ACES Scenarios were tested in both the GUATS and CFRPM models. The modifications performed on both models by step in the model chain include changes to terminal times, friction factors, roadway capacities and trip tables. Table 5: ACES Potential Scenarios: Travel Demand Model Modifications describes the modifications. These are intended to help guide users on modifications and are not intended to be the only values or factors that can be modified to reflect ACES impacts.

Terminal times vary by area type and represent impedances at both ends of a trip, such as the amount of time required to walk to and from a transit mode, to park or access a parked car, or to pay parking cost. These durations are added to both the origin and the destination end of a trip. Terminal times are typically estimated as a function of population and employment density within a traffic zone or district. With an increase in automated vehicles, it is expected that terminal times will be reduced as the vehicle will pick up/drop off passengers as close to their origin/destination as possible and either leave for another fare or go park itself. Reductions to both the Central Business District (CBD) and CBD Fringe area types of 1 minute for the Slow Ride and Ultimate Traveler Assist scenarios and 2 minutes for all other scenarios were tested. It is anticipated that the initial highest penetration rates of automated vehicle usage will be in these areas since most CBDs have remote parking in either parking garages or surface lots and CBD Fringe areas also have some remote parking.

Friction Factors are parameters used in the gravity model portion of trip distribution to account for travel time separation between zones. They are impedance factors that enable the gravity model to distribute trips to the traffic analysis zones based on impedance between

the traffic analysis zones. Friction factors are used to replicate observed trip length frequency distributions. With the increase in use of automated vehicles, it is assumed that passengers on certain types of trips will accept longer trip lengths since they can be doing things other than driving. To simulate this, Home Based Work (HBW) trip purpose friction factors of the two models were modified. Two sets of friction factors were created, one with HBW increased by 2.5 percent and the other by 5 percent. These percentages were chosen based on a slight increase (2.5 percent) in use of longer distance automated vehicles and a larger increase (5 percent) of AV use influencing housing locations away from employment.

An increase, decrease, or shift in trips is also possible depending on the manner in which automated and connected vehicles are used in an area. The modification of model produced trip tables is a method for taking this into account. The model produces trips tables that include all trips forecasted in the model area. It is anticipated that there could be increases in trips due to the use of automated vehicles by people who currently can't drive such as those younger than legal driving age, the elderly or the disabled. This could also be seen as a shift from transit based trips to automobile based trips. Modifying the trip table by factoring or shifting trips is a way to accommodate these types of trips. It is also possible that certain areas like downtown business districts or multiuse areas that contain housing and employment could have special automated vehicle areas. These areas would also exhibit increased trips as the vehicles would not only be picking up and dropping off passengers, but also be repositioning for the next fare if they are for hire.

Another method employed to consider the effects of automated and connected vehicles in the model is the modification of roadway capacities. It is assumed that as more automated and connected vehicles are on the roadway network that there could be less congestion through density balancing or more roadway capacity. This takes two forms with automated vehicles; the more automated vehicles that are on the road will lead to smaller gaps or distances between vehicles, thus allowing more vehicles on the road. With connected vehicles, the more vehicles that have travel information on congestion will result in more vehicles rerouting or choosing another time to travel, thus lessening or balancing congestion. One of the ways to simulate this in travel demand models is to adjust the capacities of the roads in the model. Freeways or limited access facilities will likely see an increase in capacity before other facilities due to fewer conflict points. The models use lookup functions to create their roadway link capacities. Modifications to those tables were performed to take into account an increase in capacity and are explained in more detail in Chapter 5.

4.2 Summary of Results

In order to compare the results of each model run, Vehicle Miles of Travel (VMT), Vehicle Hours of Travel (VHT) and both Network Original Speed and Network Congested Speed were reported by scenario. Tables 6 and 7 show the results of the model runs for each scenario. As expected, there are increases in VMT with more automated and connected vehicles except for the Ultimate Traveler Assist scenario where VMT decreases due to more efficient travel routes being used as a result of better real-time information. There is also a decrease in overall travel speed in the Competing Fleets scenario due to fleet vehicles repositioning and waiting on fares. There are also some variances in results from each model. For example, the Robo Transit scenario shows a decrease in VHT in the GUATS model but a significant increase in VHT in the CFRPM. This is due to more transit usage in the CFRPM being shifted to the Robo Transit as well as more induced trips overall in the model due to more trips being taken by those who can't drive.

4.3 Other Travel Demand Modeling Considerations

Evaluation of socioeconomic data relating to age, income, disability and other factors can also be performed to see if there are specific zones whose characteristics would lead to increased automated vehicle usage at an accelerated rate compared to other areas in the regional model. Additional research on the effects of capacities on arterials with the integration of smart connected signals can also produce more refined capacity results. Finally, additional regional travel characteristics surveys should include questions relating propensity to use to autonomous vehicles and if their use would affect value of time so it can be represented in the Toll or Value of Time (VOT) input of the travel demand model.

Table 5: ACES Potential Scenarios: Travel Demand Model Modifications

	Model Step		
	Network	*Trip Distribution*	*Mode Choice*
Slow Roll *Minimum plausible change - Nothing beyond currently available technology and investments already in motion is adopted.* *(Baseline for comparison)*	No changes	Decrease of 1 minute in Terminal Times in Central Business District and Fringe Areas. Increase of 2.5% in impedance Friction Factors for HBW to obtain longer trip lengths.	Auto Trip Table Factored by 2.5% to take into account non driving trips that are now using AV. Shift of 5% of transit trips to AV.
Niche Service Growth *Innovation proliferates, but only in special purpose or "niche" AV zones, including retirement communities, campuses, transit corridors, urban cores, and ports.*	Increase in AV Zone roadway Capacities in Area Types 10-29 for Facility Types 10-19 of 33% and Area Types 10-39 for Facility Types 20-29 of 15%.	Decrease of 2 minutes in Terminal Times in Central Business District and Fringe Areas. Increase of 2.5% in impedance Friction Factors for HBW to obtain longer trip lengths.	Auto Trip Table Factored by 2.5% to take into account non driving trips that are now using AV and by 5% in AV Zones.
Ultimate Traveler Assist *CV technology progresses rapidly, but AV stagnates – 85% of vehicles have V2X capability by 2035 due to NHTSA mandate allowing DOTs to manage congestion aggressively.*	Increase in Freeway & Arterial Capacities due to more efficient trip planning. Increased capacities in Area Types 10-59 for Facility Types 10-19 of 75% and Area Types 10-59 for Facility Types 20-39 of 35%.	Decrease of 1 minute in Terminal Times in Central Business District and Fringe Areas.	Auto Trip Table Factored by 2.5% to take into account non driving trips that are now using AV.
Managed Automated Lane Network *Certain lanes become integrated with CV and AV – 50-60% of vehicles (75% of trucks) have automation capability for platooning in controlled settings.*	Special AV Lanes. Increase in Freeway & Arterial Capacities. Use of HOV lanes for AV only on Freeways in CFRPM (not in GUATS). Increased capacities in Area Types 10-59 for Facility Types 10-19 of 75% and Area Types 10-39 for Facility Types 20-39 of 35%.	Decrease of 2 minutes in Terminal Times in Central Business District and Fringe Areas.	Trip Table Factored by 2.5% to take into account non driving trips that are now using AV and by 5% to take into account increases on AV lanes.
Competing Fleets *Automated TNC-like services proliferate rapidly, but do not operate cooperatively. VMT doubles due to induced demand and empty vehicle repositioning.*	Increase in Freeway Capacity in Area Types 10-59 for Facility Types 10-19 of 50%.	Decrease of 2 minutes in Terminal Times in Central Business District and Fringe Areas. Increase of 2.5% in impedance Friction Factors for HBW to obtain longer trip lengths.	Trip Table Factored by 2.5% to take into account non driving trips that are now using AV and by 7.5% in to take into account the AV Fleets.
Robo Transit *On-demand shared services proliferate and integrate with other modes via cooperative data sharing, policies, and infrastructure.*	Increase in Freeway & Arterial Capacities due to more efficient trip planning. Increased capacities in Area Types 10-59 for Facility Types 10-19 of 75% and Area Types 10-59 for Facility Types 20-39 of 35%.	Decrease of 2 minutes in Terminal Times in Central Business District and Fringe Areas. Increase of 5% in impedance Friction Factors for HBW to obtain longer trip lengths.	Trip Table Factored by 2.5% to take into account non driving trips that are now using AV and by 12.5% to take into account Robo Transit.

Table 6: Scenario Results - GUATS Model

	Measure			
	VMT (Millions)	*VHT (Thousands)*	*Network Original Speed*	*Network Congested Speed*
Cost Feasible	11.72	373.39	29.65	26.60
Slow Roll	11.96	391.77	29.65	26.42
Percent Change (%)	*2.05*	*4.92*	-	*-0.68*
Niche Service Growth	11.92	381.82	29.65	26.66
Percent Change (%)	*1.71*	*2.26*	-	*0.23*
Ultimate Traveler Assist	11.64	340.59	29.65	27.76
Percent Change (%)	*-0.68*	*-8.78*	-	*4.36*
Managed Automated Lane Network	11.76	340.40	29.65	27.69
Percent Change (%)	*0.34*	*-8.84*	-	*4.10*
Competing Fleets	12.14	396.98	29.65	26.30
Percent Change (%)	*3.58*	*6.32*	-	*-1.13*
Robo Transit	12.19	360.62	29.65	27.44
Percent Change (%)	*4.01*	*-3.42*	-	*3.16*

Table 7: Scenario Results - CFRPM Model

	Measure			
	VMT (Millions)	*VHT (Thousands)*	*Network Original Speed*	*Network Congested Speed*
Cost Feasible	177.72	5,513.11	41.44	36.14
Slow Roll	188.62	6,465.28	41.44	35.45
Percent Change (%)	*6.12*	*17.27*	-	*-1.91*
Niche Service Growth	187.87	6,203.48	41.44	35.47
Percent Change (%)	*5.71*	*12.52*	-	*-1.85*
Ultimate Traveler Assist	189.07	5,707.27	41.44	37.58
Percent Change (%)	*6.39*	*3.52*	-	*3.98*
Managed Automated Lane Network	194.43	6,021.60	41.44	37.29
Percent Change (%)	*9.40*	*9.22*	-	*3.18*
Competing Fleets	198.01	7,100.14	41.44	35.20
Percent Change (%)	*11.42*	*28.79*	-	*-2.60*
Robo Transit	203.29	6,901.49	41.44	36.72
Percent Change (%)	*14.39*	*25.18*	-	*1.60*

5. ROADWAY SYSTEM IMPACTS



CHAPTER 5 AT A GLANCE

- ACES technologies can lead to increases in VMT over 30 percent.
- ACES technology can also lessen VHT nearly 10 percent.
- Arterial and Freeway network speeds can vary between 5-10 percent for arterials and 6-14 percent for freeways.

The impacts of ACES on the roadway system can be significant. This section looks at changes based on freeway and arterial lane capacities and the results of those changes measured by the changes in VMT, VHT and original and congested speeds on those facilities.

5.1 Freeway Lane Capacity

Freeway lane capacity is expected to increase faster and greater than other facilities due to the geometrics of freeway systems, their limited access, and the implications of changes in following distance based on connected and automated vehicles in the fleet. Mahmassani stated in 2016 it can be expected that there will be reductions from the standard 146 feet to 73 feet based on more connected and automated vehicles in the vehicle mix. As such, increases in capacity of 33 percent, 50 percent and 75 percent were applied. Since the adoption rates of automated and connected vehicles is something that individual areas will need to decide for themselves, 3 levels of increases based on slow (33 percent), moderate (50 percent) and fast (75 percent) adoption rates were analyzed. These capacities are shown in Table 5: ACES Potential Scenarios: Travel Demand Model Modifications.

5.2 Dedicated Freeway Lanes

The inclusion of dedicated freeway lanes in the models was accomplished by increasing capacity on the general freeway lanes as a proxy for the dedicated lanes. The results are shown in Tables 8 and 9.

5.3 Arterial Lane Capacity

Arterial lane capacity is expected to increase to a lesser degree than freeway facilities due to the increased number of conflict points and pedestrian crossings along a roadway segment. Variable increases in capacity of 15 percent, 35 percent and 50 percent as shown in Table 5: ACES Potential Scenarios: Travel Demand Model Modifications were applied. As with freeways, since the adoption rates of automated and connected vehicles is something that individual areas will need to decide for themselves, 3 levels of increases based on slow (15 percent), moderate (35 percent) and fast (50 percent) adoption rates were analyzed. These capacities were chosen as they lag behind the freeways with the exception of the Competing Fleets scenario which was tested at 50 percent, similar to freeways.

5.4 Dedicated Arterial Lanes

The inclusion of dedicated arterial lanes was accomplished by increasing the capacity of divided arterials in specific areas. The results are shown in Tables 10 and 11.

5.5 Summary of Results

Using the same statistics that were included in Chapter 4 (VMT, VHT, Network Original and Congested Speeds) for each scenario, the results of each scenario's model run were extracted for just Freeways and Divided Arterials and are shown in Tables 8 through 10.
As expected, there are increases in VMT with more automated and connected vehicles and more significant increases seen in the CFRPM model as a result of the larger model. An increase in overall travel speeds are observed in four scenarios with the Slow Roll and Niche Service Growth scenarios showing decreases which are most like due to lack of market share in the Slow Roll scenario and lack of coordination in the Niche Service Growth scenario. It is important to note that there are

some variances in results from each model. For example, several scenarios shows a decrease in Freeway VHT in the GUATS model but a significant increase in VHT in the CFRPM model. This is likely due to the lack of Freeway facilities in the GUATS model and a large number of freeway facilities in the CFRPM model.

For arterials, both models show a decrease in VHT and increases in speeds for the Ultimate Traveler Assist and Managed Automated Lane Network scenarios. The Robo Transit Scenario shows the largest increase in VMT and moderate increase in congested speeds.

MPOs should consider looking at ranges when taking into account automated, connected and shared vehicle usage. Although the six FHWA scenarios were tested with values that seemed reasonable based on available information and professional judgement, MPOs should consider their specific area demographics and economics when testing values.

Table 8: Freeway Lanes - GUATS Model

	Measure			
	VMT (Millions)	*VHT (Thousands)*	*Network Original Speed*	*Network Congested Speed*
Cost Feasible	2.590	0.434	68.52	60.84
Slow Roll	2.617	0.444	68.52	60.32
Percent Change (%)	*1.04*	*2.3*	-	*-0.85*
Niche Service Growth	2.597	0.436	68.52	60.7
Percent Change (%)	*0.27*	*0.46*	-	*-0.23*
Ultimate Traveler Assist	2.667	0.392	68.52	68.23
Percent Change (%)	*2.97*	*-9.68*	-	*12.15*
Managed Automated Lane Network	2.678	0.394	68.52	68.22
Percent Change (%)	*3.4*	*-9.22*	-	*12.13*
Competing Fleets	2.720	0.405	68.52	67.6
Percent Change (%)	*5.02*	*-6.68*	-	*11.11*
Robo Transit	2.712	0.400	68.52	68.19
Percent Change (%)	*4.71*	*-7.83*	-	*12.08*

Table 9: Freeway Lanes - CFRPM Model

	Measure			
	VMT (Millions)	*VHT (Thousands)*	*Network Original Speed*	*Network Congested Speed*
Cost Feasible	28.489	714.845	66.81	51.23
Slow Roll	30.100	783.478	66.81	48.78
Percent Change (%)	*5.65*	*9.6*	-	*-4.78*
Niche Service Growth	30.288	766.231	66.81	49.86
Percent Change (%)	*6.31*	*7.19*	-	*-2.67*
Ultimate Traveler Assist	38.228	729.226	66.81	58.55
Percent Change (%)	*34.19*	*2.01*	-	*14.29*
Managed Automated Lane Network	38.778	756.5	66.81	58.05
Percent Change (%)	*36.12*	*5.83*	-	*13.31*
Competing Fleets	37.671	811.433	66.81	54.63
Percent Change (%)	*32.23*	*13.51*	-	*6.64*
Robo Transit	39.554	792.584	66.81	57.34
Percent Change (%)	*38.84*	*10.87*	-	*11.93*

Table 10: Arterial Lanes - GUATS Model

	Measure			
	VMT (Millions)	*VHT (Thousands)*	*Network Original Speed*	*Network Congested Speed*
Cost Feasible	4.44	1.368	44.94	41.25
Slow Roll	4.57	1.5	44.94	40.75
Percent Change (%)	*2.93*	*9.65*	-	*-1.21*
Niche Service Growth	4.63	1.443	44.94	41.41
Percent Change (%)	*4.28*	*5.48*	-	*0.39*
Ultimate Traveler Assist	4.54	1.233	44.94	43.35
Percent Change (%)	*2.25*	*-9.87*	-	*5.09*
Managed Automated Lane Network	4.59	1.258	44.94	43.29
Percent Change (%)	*3.38*	*-8.04*	-	*4.95*
Competing Fleets	4.57	1.504	44.94	40.76
Percent Change (%)	*2.93*	*9.94*	-	*-1.19*
Robo Transit	4.83	1.357	44.94	42.95
Percent Change (%)	*8.78*	*-0.8*	-	*4.12*

Table 11: Arterial Lanes - CFRPM Model

	Measure			
	VMT (Millions)	*VHT (Thousands)*	*Network Original Speed*	*Network Congested Speed*
Cost Feasible	63.365	2,161.507	42.48	33.81
Slow Roll	66.949	2,320.139	42.48	33.36
Percent Change (%)	*5.66*	*7.34*	-	*-1.33*
Niche Service Growth	69.034	2,262.616	42.48	34.47
Percent Change (%)	*8.95*	*4.68*	-	*1.95*
Ultimate Traveler Assist	71.352	2,052.204	42.48	37.19
Percent Change (%)	*12.6*	*-5.06*	-	*10*
Managed Automated Lane Network	73.331	2,155.239	42.48	36.79
Percent Change (%)	*15.73*	*-0.29*	-	*8.81*
Competing Fleets	67.688	2,441.115	42.48	32.9
Percent Change (%)	*6.82*	*12.94*	-	*-2.69*
Robo Transit	76.63	2,352.04	42.48	36.72
Percent Change (%)	*20.93*	*8.81*	-	*8.61*

6. TRANSIT SYSTEM IMPACTS



CHAPTER 6 AT A GLANCE

- ACES has the potential to disrupt the transit industry by reducing demand for traditional services while simultaneously creating opportunities for more cost effective and customer friendly service.
- MPOs are in a unique position to help local transit agencies adapt by focusing on high quality services in major corridors and transforming into "mobility managers" that broker trips using multiple modes and providers across a metropolitan area.

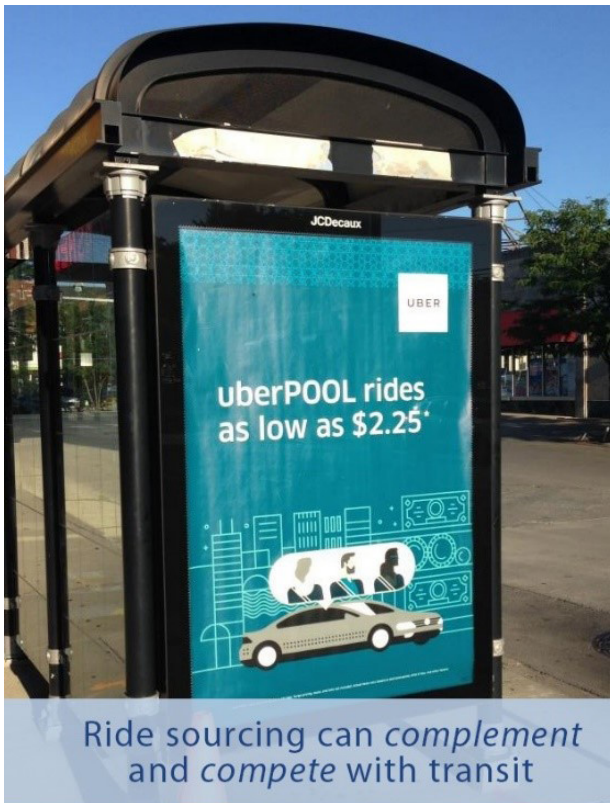
Between 2012 and 2016, ridership on fixed route bus services across the United States fell by more than seven percent.[jj] The American Public Transportation Association (APTA) attributes the decline to several factors, including erosion of time competitiveness, erosion of cost competitiveness and rising automobile ownership.[kk] Several factors may have led to the rising levels of automobile ownership including a strong economy allowing more people to afford personal automobiles, therefore transferring them off traditional fixed-route services.

All of these factors can be associated in part with the rise of shared use mobility services, particularly ride sourcing platforms such as Uber and Lyft. Apps have made it possible to avoid long wait times and circuitous bus routes, especially at off-peak times. As TNCs have introduced shared ride services, such as UberPool and Lyft Line, fares have approached those of urban bus services. TNCs are also aggregating pick-up and drop-off locations in major urban corridors to make shared ride services more time-competitive, increase vehicle utilization and reduce fare cost. At the same time, driving for a TNC has made it possible for some to own a car who previously relied on public transit to get around.

During the same period, ridership on fixed guideway transit services, including heavy rail, light rail and commuter rail, grew by about two percent. Some of this rise has been attributed to the complementary nature of line-haul trunk route services and flexible "first-mile / last-mile" services made more effective by shared use mobility services. This pattern also suggests that urban dwellers continue to value premium transit services that offer high quality passenger amenities, travel time reliability and ease of use.

Although some have speculated that shared mobility services using automated vehicles could make public transportation obsolete, many suggest that a more nuanced impact is likely.[ll mm nn oo] In this scenario, the transit industry reacts to disruption by focusing on high quality services in major corridors, using flexible services and partnerships when and where demand is more diffuse, transforming into "mobility managers" that broker trips using multiple modes and providers across a metropolitan area, applying advances in automation to make its own fixed route services more effective, and facilitating the development of seamless transportation networks that make it possible for many households to live without reliance on a personal automobile. This section explores each of these strategies in more detail, focusing on actions that MPOs can take as they conduct their community-specific planning processes.

Figure 11: uberPOOL Advertisement



6.1 Fixed Route Service Competitiveness

If shared automated vehicle mobility services are successful in reducing travel costs to less than the cost of bus fare while offering door-to-door convenience and short wait times, the ridership decline since the widespread introduction of TNCs in 2012-2015 could be just the beginning of a long period of adjustment for traditional bus services. As ridership falls, public support for continued or increasing subsidies could deteriorate.

Every fixed route transit system offers a combination of relatively higher productivity routes (typically measured by passenger boardings per vehicle revenue hour) in major corridors and lower productivity routes that provide "coverage" in other parts of the service area and at off-peak times. The trade-off between allocating resources between the highest productivity routes and providing a minimum level of service to taxpayers across the service area creates the principal tension in transit service planning. Each community determines for itself, frequently through a public planning process, how to reconcile these competing interests.

The introduction of shared mobility platforms, whether operated by a TNC, by a transit provider or through a partnership, creates an opportunity to achieve a more cost-effective balance between areas and times where ridership demand is concentrated and where it is dispersed. Many partnerships between transit agencies and TNCs have focused on certain markets in which fixed route transit is less effective:

- ***First and Last Mile –*** In less walkable areas, TNCs can provide short trips within designated areas. This can extend the reach of existing fixed route services, eliminate the need for certain fixed route shuttles, and expand transit coverage throughout an area. Driverless shuttles provide a new option for short-distance services in campuses and other areas where small low-speed vehicles can operate.

  Example: Altamonte Springs, Florida – The City partnered with Uber to subsidize rides beginning and ending in the city.[pp] The partnership was developed as a lower-cost alternative to a proposed demand-responsive flex-route bus service. By providing an alternative to park-and-ride for "first and last mile" connections, the program also aims to encourage ridership on SunRail, the commuter rail line to Orlando.

- ***Nights and Weekends –*** At off-peak times, TNCs can provide door-to-door trips that may or may not include segments on fixed route transit. This could improve customer convenience and reduce transit agency operating costs where demand is not sufficient to support 24/7 transit service. TNCs may also be used to provide ADA services at lower cost per trip, however ADA compliance and accessibility should be a priority for vehicles and pick-up locations.

  Example: Pinellas Suncoast Transit Authority (PSTA) – In Pinellas County, the transit agency partnered with Uber and United Taxi to offer free overnight (9 p.m. to 6 a.m.) rides to eligible low-income customers.[qq] The program is aimed at helping workers travel to and from service-sector jobs, many of which end or begin when transit does not operate. PSTA is serving as the central coordinator and dispatcher of these on-call services. As an alternative to requesting a ride through a smartphone app, which is often cited as a barrier to TNC services for individuals who do not have access to a smartphone, riders may call a transit dispatch telephone number.

- ***Underserved Areas –*** In partnership with a transit agency via an integrated trip planning platform, TNCs can provide service in the parts of a metropolitan area that remain beyond the reach of fixed route service.

- ***ADA Paratransit –*** TNCs may also be used to provide ADA services at lower cost per trip due to the use of non-dedicated drivers and vehicles which allows for greater productivity and cost effectiveness. However, ADA compliance and accessibility should be a priority for vehicles and pick-up locations.

  Example: Kansas City Area Transportation Authority (KCATA) – KCATA is the primary fixed-route transit provider in the Kansas City area and contracts an on-demand paratransit program with a local transportation service company. The on-demand program supplements the agency's ADA-compliant complementary paratransit and non-ADA services under their "RideKC Freedom" program. In addition to the same day reservations, the service is available 24 hours a day, seven days a week, within a designated area and agency is looking to expand the service area.[rr]

To support decision-makers as they consider how much fixed route transit service is appropriate in their community, MPOs or transit agencies can evaluate the relative competitiveness of existing transit services at a trip level of detail (e.g. the 7:30 a.m. southbound departure of Route X) under a range of transit and shared-use AV fare cost scenarios using available data on ridership, timetables, operating costs and fare revenues. Because of the broad range of stakeholders with interests in urban mobility, there are a range of valid viewpoints from which the question of relative performance could be assessed. Some of the perspectives may include:

Society
Would society be better off if the bus route were replaced by shared AVs?
(Transit user cost, emissions cost and crash cost vs. shared AV costs)

Agency
Could the resources spent on the bus route be better used elsewhere in the system?
(Route productivity in passengers per vehicle revenue hour vs. system average)

Taxpayer
Would it be cheaper to pay every bus rider's shared AV fare?
(Transit subsidy per passenger vs. SAV fare cost)

Customer
Would I be better off taking a shared AV for my trip than the bus?
(Transit value of travel time and out-of-pocket fare cost vs. SAV travel cost)

This analysis can identify corridors where fixed route transit services may provide durable value into an automated mobility future. After these corridors have been identified, a strategic planning process for transit can then identify how to focus capital investment and operating resources in these corridors, ensure the availability of affordable mobility services elsewhere (whether provided by an existing transit agency, a private provider or TNC platform, or some partnership), manage impacts of automation on organized labor, and secure the appropriate level of public funding required to sustain the transit agency.

FDOT collaborated with Florida State University on an Autonomous Vehicle Policy Guide for Public Transportation in Florida MPOs which provides additional policy recommendations and considerations related to automation and transit system impacts including land use, infrastructure, coordination, safety, funding, liability, licensing and registration, and ADA compliance.[ss]

6.2 Paratransit

By incorporating accessible vehicles in their fleet of available vehicles through partnerships with special service providers, TNCs can relieve transit agencies of some of the burden of providing paratransit services. In some cases, partnerships can enhance existing public dial-a-ride services with the convenience of real-time reservations.

Example:
Massachusetts Bay Transportation Authority On-Demand Paratransit Pilot Program – In Boston, the transit agency conducted a one-year pilot program that allowed paratransit customers to reserve rides on Uber and Lyft in real-time, avoiding the agency's 24-hour reservation requirement and its 30-minute pickup window requirement. Reservations are made by smartphone app or phone call. Customers pay the first $2 of each ride, with the next $13 paid by the MBTA. After $15, riders are responsible for further charges. [tt] The pilot was reportedly successful in reducing customer costs by 80 percent, reducing trip times by an average of 34 minutes and increasing trips by 28 percent while reducing agency costs by more than 6 percent.

MPOs can facilitate or support efforts by transit agencies to introduce new reservation and dispatching technology to improve customer service, reduce costs and address mobility needs in their communities.

6.3 Integrated Payment

The location-aware smartphone apps that have made ride sourcing possible also allow regional transportation agencies, such as MPOs or transit providers, to emerge as "mobility managers" matching travelers with available transportation assets across modes and operators. In a CV future, such services could be the key to optimally spreading traffic across the transportation network using itinerary routing and pricing incentives to reduce congestion and delay.

Transit agencies are increasingly developing interfaces between TNC reservation and payment systems and agency-managed stored value accounts, commuter benefits programs and trip planning apps. Various funding models include free fares, sponsored fares and integrated smartphone-based payment of transit and TNC fares from a single customer account. Key functions that public agencies can bring to private platforms include call centers to support phone-based reservations for those without smartphones and cash-based payment for those without bank accounts.

MPOs can facilitate or support efforts by transit agencies to introduce new trip planning, reservation and payment platforms across a wide range of regional transit, parking, toll, ride sourcing, bike sharing and other shared mobility providers.

6.4 Transit Priority Corridors

Focusing fixed-route bus resources in the highest ridership corridors allows transit agencies to increase service frequency, which can make a stronger case for transit priority features, such as dedicated bus lanes and transit signal priority. Concentrating boardings at major stops allows transit agencies to reduce travel times, improve travel time reliability and provide stations with enhanced passenger amenities and upgraded crosswalks. Modernizing fare payment, such as with off-board payment, proof of payment and payment by smartphone app, can further reduce travel time. With more pedestrians, the case may also be strengthened for Complete Streets treatments, transit supportive land use policies and potentially real estate value capture districts to fund the transit improvements.

Higher-performing transit in such corridors is a hedge against ACES scenarios that suggest higher VMT and congestion that could result from lower travel costs, empty automated vehicles repositioning between assignments, land use changes and other potential effects. If congestion were to increase, transit in dedicated lanes could become the fastest and most reliable way to get across town. Dedicated lanes may also provide the less complex operating environment needed for early stages of transit automation.

The hierarchy of places that transit priority corridors define may also help to guide the development of activity centers where automation may allow parking to be converted to other uses, increasing density and supporting transit ridership and value capture strategies.

Figure 12: Transit-Only Lanes



6.5 Intercity Rail and Bus

As Florida introduces improved intercity passenger transportation services, such as BrightLine, higher-speed rail service between Miami and Orlando, the scale of travel that can be accommodated by the shared mobility network increases. MPOs have always been in a unique position to coordinate regional planning efforts for local transit and shared mobility networks with the larger networks of intercity air, rail, highway and bus services. With ACES potentially increasing the number of travelers using shared-use mobility services for parts of their trips, this coordination role becomes even more important.

7. FUNDING IMPACTS



CHAPTER AT A GLANCE

- **Financial scenarios can help evaluate the impact on MPO fiscally** constrained capital programs.
- Transportation funding relies heavily upon the motor fuel tax; the future of which is uncertain.
- Coordination with federal and state agencies is crucial to develop new funding mechanisms that will be successful in the face of ACES.

The ACES transition may threaten existing funding sources as well as create opportunities for new, future transportation funding models. ACES technology may reduce revenues from traffic violations. EV technology may reduce revenue from motor fuel taxes. The shared-use economy may affect revenues from vehicle registration. However, smarter vehicles also allow for implementation of road usage fees and other funding sources that may be newly accessible via technology. This section outlines the high-level funding impact that ACES may have on traditional transportation funding sources including motor fuel tax, vehicle sales tax, vehicle registration fees, parking fees and traffic fines.

7.1 Motor Fuel Taxes

Currently, taxes and fees are imposed at local, state and national levels to fund Florida's transportation system. Two statewide fuel taxes contribute to the State Transportation Trust Fund: the state fuel sales tax and the State Comprehensive Enhanced Transportation System (SCETS) tax. State taxes distributed to FDOT are indexed annually in January to reflect inflation captured in the Consumer Price Index (CPI).

The assessment of historical trends in the state fuel tax is important as the fuel tax typically has been one of the largest contributing funding sources to the State Transportation Fund (greater than 30 percent).[uu] In 2016, the State of Florida received $1.9 billion from the fuel tax and $675 million from the SCETS tax.[vv]

FDOT, like other DOTs, will likely begin to feel the effects of EVs and other alternative fueled vehicles impact on revenue sooner rather than later as hybrid and fully electric vehicles become a larger portion of the Florida vehicle fleet and gasoline powered vehicle sales decline.

Additionally, the state receives federal assistance for transportation, funded largely by the federal fuel tax that will also be impacted. While the exact rate and timeframe is unknown, based on recent statewide VMT trends and an inventory of total gallons of motor fuel and diesel fuel sold, assumptions can be made to predict the effect that higher fuel efficiency will have on Florida DOT's revenue and therefore budget using the six FHWA scenarios and testing a variety of projections using assumptions of total gallons of fuel sold, anticipated average fuel economy and VMT projections.

CUTR is currently updating a Transportation Revenue Study conducted in 2012 to establish a baseline for analyzing AV and EV revenue impacts in the state. Financial scenarios evaluating the impact on MPO fiscally constrained capital programs of diminishing motor fuel tax revenues and potential replacements are likely to become a more important part of the planning process as ACES technology is adopted. MPOs should evaluate a range of financial implications through scenario planning.

7.2 Vehicle Registration Fees

While states have chosen to incentivize the ownership and use of electric vehicles, electric vehicles ultimately reduce revenues as they gain market share; automated and connected vehicles likely will add to this revenue decrease. To counter-balance this loss, some states impose vehicle registration fees on plug-in and fully electric vehicles. Statewide EV fees may be a separate annual fee or be an additional fee over normal

registration renewal fees. States such as Wyoming and Colorado include a $50 fee on EVs and plug-in hybrid electric vehicles (PHEVs) whereas states such as West Virginia charge up to $200 and Georgia charges $300 for commercial EVs.[ww]

7.3 Traffic Fines

Local municipalities rely upon revenues from traffic violations for local transportation funding. ACES will transform traffic safety and, along the way, potentially reduce or eliminate traditional traffic violations, the revenue they produce and the programs they support. If faced with a shrinking revenue source, municipalities will need to prioritize programs and projects or turn to alternative revenue sources to fund transportation needs. MPOs can help municipalities prioritize projects and identify new revenue sources to replace traditional funding streams.

7.4 Parking Revenues

The ACES transition will influence driver behavior and will affect many existing revenue streams for state and local entities. Parking revenues are no exception. Level 5 AVs can function without a human driver present and therefore can drop a passenger off at a destination without needing to park adjacently. This may mean the vehicle goes on to serve another trip (shared-use) or parks elsewhere in free or reduced-cost parking. This scenario may be at or beyond the 2045 planning horizon.

A 2016 survey of the 25 largest U.S. cities found that, collectively, they generated nearly $5 billion in parking related activities, traffic citations, gas taxes, towing and vehicle registration and licensing fees. Parking collection fees and fines accounted for more than half the total revenues cities reported.[xx] Additionally, if vehicles are shared by many different people throughout the day, parking need and demand will be dramatically reduced along with their municipal parking revenues, which often fund transportation infrastructure. Municipalities most affected will be those with existing high demand for parking, typically dense urban environments. Based on previous shared-use modeling, this change in parking behavior could result in a 50- to 90-percent reduction in urban space dedicated to parking.[yy] [zz] Therefore, while parking revenues may decline, less parking may be required which will reduce maintenance costs of parking facilities for municipalities.

7.5 State of Florida Incentives

ACES may reduce revenue from existing, traditional transportation revenue streams, but that has not stopped states from advancing the ACES transition through purchase and ownership incentives. The majority of current incentive programs focus on EVs. However, as the sharing economy continues to grow, states may also incentivize shared ownership or use of vehicles. As shown in Table 12, there are several incentive programs within the state of Florida incentivizing purchase and ownership of Hybrid Electric Vehicles (HEVs) and EVs.[aaa]

Table 12: Florida Hybrid and Electric Vehicle Incentives

Florida Hybrid and Electric Vehicle Incentives
All-Electric Vehicle Rebate
Duke Energy and Orlando Utilities Commission (OUC) customers and employees are eligible for a $10,000 rebate for the purchase of a new 2017 Nissan Leaf at participating dealerships. Rebates were available through June 30, 2017, or until funds are exhausted.
Authorization for Alternative Fuel Infrastructure Incentives
Local governments may use income from the infrastructure surtax to provide loans, grants, or rebates to residential or commercial property owners to install electric vehicle supply equipment (EVSE) as well as liquefied petroleum gas (propane), compressed natural gas and liquefied natural gas fueling infrastructure, if a local government ordinance authorizing this use is approved by referendum.
Electric Vehicle Supply Equipment Financing
Property owners may apply to their local government for funding to help finance EVSE installations on their property or enter into a financing agreement with the local government for the same purpose.
HOV Lane Exemption
Qualified alternative fuel vehicles (inherently low emission vehicle or HEV) may use designated HOV lanes regardless of the number of occupants in the vehicle. The vehicle must display a Florida Division of Motor Vehicles issued decal, which is renewed annually. Vehicles with decals may also use any HOV lane designated as a HOV toll lane without paying the toll. This exemption expires Sept. 30, 2019.
PEV Rebate
Jacksonville Electric Authority (JEA) offers rebates for PEVs with a battery less than 15 kilowatt-hours (kWh) in capacity to receive $500, and PEVs with larger battery capacity are eligible for $1,000. A copy of a valid Florida vehicle registration, proof of sale and a recent JEA Electric bill are required.

Source: National Conference of State Legislation

In addition to state incentives, the federal government also offers incentives for EVs. The federal Internal Revenue Service (IRS) tax credit is $2,500 - $7,500 per new EV purchased for use in the U.S., depending on the size of vehicle and the battery capacity. The credit will be available until 200,000 qualified vehicles have been sold in the U.S. by each manufacturer. As of this writing, credits are still available for all manufacturers.[bbb]

7.6 Alternative Funding

In response to consumers buying less gasoline due to electric, hybrid or more efficient combustion vehicles, some states are exploring other funding mechanisms for transportation programs and investment. New funding models range from data monetization, increased vehicle registration fees, curb pricing, carbon taxes, and user fees.

One type of user fee that is gaining interest in many communities is a VMT-based user fee as a supplement to or replacement for fuel taxes. Many argue that simply raising fuel taxes will not serve as an equitable funding solution because drivers unable to afford fuel efficient vehicles will fund an increasing percentage of the transportation system. To supplement or eventually replace fuel taxes, VMT-based user fees charge drivers for use of the transportation system rather than the purchase of fuel. Potential obstacles to a VMT-based system include concerns about privacy, safeguarding against fee evasion and how to meter VMT on older vehicles.

Consequently, several states are further investigating how a VMT revenue model might be implemented. Table 13 summarizes some of these model state programs.

Several states, including Florida, have considered the effects ACES, and specifically EVs, will have on transportation and state-wide funding through qualitative studies and reports. While there is a large revenue potential from deploying a mileage-based user fee, there would also be great cost involved in implementing a program.

Table 13: Alternative Road Usage Revenue Model Examples

OReGO	
	The first large road-usage charge program in the United States, OReGO began in July 2015 and continues to operate. Volunteers enroll on-line based on their preferred metering devices, account managers and value-added program offerings. Metering devices are sent to the volunteers to be self-installed to track mileage and fuel consumption. Drivers are charged 1.5 cents per mile and credited for the state fuel tax in one account for a net calculation. Volunteers are either billed for their calculated fee or sent a refund.
California Road Charge	
	The pilot program to explore road charging as a potential long-term replacement for the gas tax was initiated through the California State Transportation Agency (CalSTA), a component of the California Department of Transportation (Caltrans). The volunteer pilot included 5,000 Californians.
Nevada Field Test	
	The Nevada Department of Transportation has conducted mileage-based fee studies and conducted a small field test that included 40 participants in 2012. The field test implemented a pay-at-the-pump system and did not rely on the collection of location data.
Minnesota Road Fee Test	
	Minnesota Department of Transportation tested a road-usage revenue system that relied on smartphone GPS data for the collection and transmittal of mileage data. Participants were charged differently based on the geographic region the travel occurred within and whether the travel occurred during rush hour.

8. STRATEGIES FOR ADDRESSING ACES - TRANSPORTATION SYSTEM PLANNING PROCESS



CHAPTER 8 AT A GLANCE

- ACES will transform performance-based planning and, with it, the types of projects MPOs prioritize and plan.
- What do we do when every car produces 30 terabytes of data daily (equal to 13.2 billion single-spaced pages of text)?
- Finding locally meaningful data may require MPOs to conduct or participate in pilot ACES projects.

Florida MPOs are responsible for influential planning documents such as the Unified Planning Work Program, which lists the planning studies and tasks the MPO will perform to support the regions planning process for a one- or two-year timeframe; the Transportation Improvement Program which the regions detail transportation investments and strategies every four years; the Public Participation Plan, a periodic review of the regions public engagement strategies and goals; and the Long-Range Transportation Plan, which every five years looks out 20 years to identify the region's future goals, strategies and projects. LRTPs currently in preparation have a horizon year of 2045. Because of these responsibilities, and Florida Statute 339.175 (2016) Subsection (7) (c) which requires MPOS consider emerging technologies in Long Range Transportation Plans, this chapter identifies strategies for addressing ACES within this myriad of the region's transportation system planning process.

8.1 Performance Measures

8.1.1 Performance management in an age of ACES

The Federal Highway Administration defines Transportation Performance Management (TPM) as a strategic approach for gathering, analyzing and acting on data to make policy and investment decisions that create more efficient, effective transportation systems that support a community's vision and goals.[ccc]

It's an approach driven by a combination of factors in recent years. Legislatively, it's been mandated by two federal transportation reauthorization bills - 2012's Moving Ahead for Progress in the 21st Century (MAP-21) and 2015's Fixing America's Surface Transportation Act (FAST) – as well as National Performance Management Measures rule-making. [ddd] In 2014, the shift towards performance-based planning and programming was identified as one of three federal planning emphasis areas with related rule-making.[eee]

Performance-based planning accelerated movements by MPOs seeking to balance growing and changing transportation needs and technology in the face of changing and increasingly uncertain funding sources. As demonstrated by the Metropolitan Washington Council of Governments, there was a recognition that performance-based planning provides MPOs with an opportunity for advancing community goals, increasing accountability and transparency and better communicating the value and impact of transportation planning, policies and investments with elected officials and their constituents, local stakeholder groups and the public.[fff]

8.1.2 Opportunities and Challenges of ACES-Related Performance Measures

"How are we going to get there?" is a key question in performance-based planning as described by the U.S. DOT in A Guide to Transportation Planning.[ggg] Answering that question involves identifying "trends and targets to help planners compare alternative strategies based on data and information from similar past projects."

But that's exactly the challenge for MPOs establishing ACES-related performance measures. There is limited real-world empirical data concerning ACES impact on transportation system performance; few vehicles operate "in mixed use traffic" and, when they do, they usually are monitored and accompanied by personnel familiar

with the technology being used, potentially skewing initial findings. Additionally, each planning organization is looking at a different mix of projected deployment rates and set of automated technologies, ranging from relatively simple driver assistance systems to fully self-driving vehicles.

As a result, the planning environment presents more uncertainty than is typically the case as planning agencies address the coming proliferation of connected and automated vehicle technologies. Agencies are looking for ways to ensure accuracy and confidence in the performance measures they develop in relation to all aspects of their transportation networks, such as roadway, transit and parking capacity; system maintenance; data collection, security, privacy and analytics; and the viability of existing intelligent transportation system investments.

Perhaps that's why FDOT's 2016 Surveying Florida MPO Readiness to Incorporate Innovative Technologies into Long Range Transportation Plans found that only about one third of state MPOs include AV-related language in their current long-range plans, with much variability in what is discussed.[hhh] And while in 2016, the State of Florida passed a bill mandating the MPO's address AV technology in their LRTPs, no uniform policy or design guidance previously existed to help MPOs anticipate, plan for, finance, or implement programs necessary to facilitate this transit.

However, such uncertainty does not preclude transportation agencies from considering strategic planning and performance-setting activities undertaken at a high level. As outlined in Strategies to Advance Automated and Connected Vehicles, these might involve:

- Identifying transportation and societal goals and objectives that may be achieved through AV and CV technologies;
- Setting the general parameters under which CV and AV deployment can be facilitated to achieve agency and societal goals;
- Developing performance measures that support specific safety, congestion, mobility and environmental goals that may be supported by AV and CV systems and can be used to track the results of testing and investment in these systems over time; and
- Outlining potential communication toward building the business case for investing in ACES, generating support for adoption of safety and mobility applications, and promoting incentives for producers to improve applications and technology.[iii]

Additionally, nothing prevents an MPO from partnering in pilot projects to begin addressing the uncertainties ACES presents in order to understand the benefits to regional performance measures. As the U.S. Government Accounting Office noted in its "Automated Vehicles: Comprehensive Plan Could Help DOT Address Challenges," pilot programs like the Uber test conducted by the City of Pittsburgh are providing important information for a "better understanding emerging automated vehicle technologies, how the city should adapt its role in response, and when actions are needed to advance public-interest goals, such as equity and accessibility.[jjj] Strategies such as this provide decision-makers with a basis for decisions today about infrastructure needs decades in the future, but represent something of a departure from more traditional infrastructure planning approaches, according to some state, regional and local officials[.]"

Official results of the Pittsburgh Uber pilot project are not available yet.[kkk] But based on media coverage of the Pittsburgh test, transportation planners may need to factor into their planning automated vehicle attributes that include, for example, slower overall operation (AVs spend more time at stop signs than human drivers do). But the vehicles also may become transportation network "probes," providing important real-time data about potholes, obstructions, congestion points and traffic patterns.[lll]

How and when ACES evolve may present benefits for MPOs from a planning perspective. The ebb and flow of ACES policies and technologies over the next decades may align with good planning practices described by the Strategies authors: "Ultimately, public policy making for AVs and CVs will be informed through a cycle of learning and leveraging the activities of early adopter agencies that support testing, evaluation, research and continuous knowledge creation and that tie back to the MPOs performance measures. Agencies can create a nimble policy-making framework that espouses these principles and sets in place a continual 'look ahead' assessment."

The key, as noted in Advancement of Performance-Based Scenario Planning for Regional Planning and Decision-Making, is to make sure that performance measures are selected "that can be tracked across scenarios to compare the tradeoffs of each scenario and measure performance over time." [mmm]

8.1.2 Best Practices for Performance Measure Development

In a 2015 white paper, former FDOT Secretary and current president of the Florida Transportation Builders Association Ananth Prasad outlined the results of a national survey of MPO best practices for performance measurement development (How to initiate MAP-21 performance-based planning: Lessons learned and best practices; Think Infrastructure Solutions white paper; HNTB Corp.; March 2015). Among the best practices the white paper identified were:

1. Derive performance measures from the link between the MPO vision and goals and how ACES may affect achieving them. Refine the measures based on input from MPO stakeholders and from an assessment of how easily and frequently the required data can be accessed, analyzed and acted upon.
2. Collaborate to maximize the alignment, where appropriate, between MPO vision and goals with those of the state DOT. This created opportunities to synergistically leverage the impact of data collection and analysis and resulting policy and investment development.
3. Correlate measurements to transportation investments. Be able to show how appropriate investments in infrastructure produces positive results or why, in times of constrained resources, one investment clearly is preferable to another. Programming decisions should reference scenario analysis used in order to correlate to performance measure inputs.
4. Use performance measures as future action triggers. For example, having set desired and acceptable travel time measures, a corridor beginning to intermittently fail this standard would trigger planning activities for future corridor improvements.
5. Update and communicate performance measurements regularly. Performance measures that can be publicly reported and understood can educate stakeholders on how local planning works, the value of it in their lives and whether individual metrics remain pertinent in terms of progress towards MPO vision and goals. It is a powerful tool for communicating how efficiently and effectively resources are being used. The good will this can produce becomes as asset that an MPO can manage and invest in maintaining its ability to tackle tough planning issues.

8.1.3 Other Considerations

Implicit in the discussion of setting and monitoring performance measures are several other considerations, including:

- Data collection and analysis – Does an organization have the resources, training and easy access to the data required for the performance measures it has established? Data is expensive and time-consuming to acquire and maintain and must be constantly updated and improved. Poor quality data can make performance measures difficult to track and report, and it may lead to a loss of confidence in the necessity or effectiveness of system performance investments if it proves inaccurate. If not already in place, an MPO may want to explore establishing and maintaining shared datasets reflecting common standards regarding data collection, hygiene and maintenance.
- Staff capacity – ACES for the foreseeable future could require MPOs to maintain or access robust pertinent scenario-planning models requiring significant staff expertise and technical capacity to determine likely ACES-related outcomes. This also may be true in terms of monitoring actual system performance in terms of ACES impacts. This may be an area for further exploration in terms of collaboration with other MPOs or agencies.
- Technological support – Dashboards, visualizations and other technological systems and platforms can improve the ease of gathering analyzing and reporting system performance, particularly in ways that build stakeholder education and engagement. However, these tools come at a cost that will need to be identified and accounted for by MPOs, and they may grow in magnitude depending upon the degree to which an MPO wants to customize performance measurement and reporting.
- Collaboration and consensus – Differences may exist among MPOs and their clients and stakeholders regarding the need or wisdom of identifying and reporting on system performance issues or specific

policy/investment needs for addressing problems. This may diminish commitment to the need for – or value of - accurate and regularly updated performance measures and results. Reaching consensus about what will be measured and reported and to what end may demand considerable time in some jurisdictions and should be factored into the performance measure planning process. That being said, it is an important step that will enable MPOs to create and test new or refined performance measures that better reflect federal and state regulatory requirements while better meeting community needs, preferences and expectations.

8.1.4 Potential ACES-Related Performance Measures

As Florida MPOs noted in Surveying Florida MPO Readiness to Incorporate Innovative Technologies into Long Range Transportation Plans, the challenge is in "dealing with the large amount of uncertainty associated with the AV technology, plausible set of AV/CV scenarios to plan for, insights into timelines for availability and adoption of these technologies and information on the potential impacts of these technologies." [nnn]

Performance measures for many aspects of ACES can be derived from normal MPO practice and data sources – if it can be determined when and to what degree particular technology elements are part of the regional vehicle fleet.

After all, there are certain givens in the LRTP process that can help MPOs begin developing ACES-specific performance measures. MAP-21/FAST Act provisions require MPOs to develop their LRTPs through a performance-driven, outcome-based approach to planning that addresses the following factors:

1. Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity and efficiency;
2. Increase the safety of the transportation system for motorized and non-motorized users;
3. Increase the security of the transportation system for motorized and non-motorized users;
4. Increase accessibility and mobility of people and freight;
5. Protect and enhance the environment, promote energy conservation, improve the quality of life and promote consistency between transportation improvements and State and local planned growth and economic development patterns;
6. Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight;
7. Promote efficient system management and operation;
8. Emphasize the preservation of the existing transportation system;
9. Improve the resiliency and reliability of the transportation system and reduce or mitigate storm water impacts of surface transportation; and
10. Enhance travel and tourism.[ooo]

It still may not yet be possible to determine the impact of ACES in terms of setting and measuring specific performance measures with any degree of certainty for the foreseeable future. But all that means, as FHWA noted in Planning for Connected and Automated Vehicles, is that performance-based planning in an age of ACES requires implementing projects based on estimated outcomes coupled with repetitively and regularly evaluating results as new data and data sources come on line that are pertinent to ACES performance measures.

This implies a de-emphasis of precise predictions and suggests that ACES metrics might be best thought of, at least initially, as "action brackets." That is, planners set a range of desired outcomes then, as data comes in showing positive or negative trends that depart significantly from the estimated outcomes, revisit goals and associated performance measures to determine if either needs revision, refinement or more concrete policy or programmatic support. Such action brackets also would become an early warning system about opportunities that can be capitalized on or issues that can be resolved if action is taken early.

This uncertainty may make it more important for MPOs to align their planning with the Florida Transportation Plan, which envisions a state/local partnership in reaching common goals and objectives. Such an alignment may create opportunities for leveraging the positive impact of state plans and investments while generating a framework of performance measures and indicators that are consistent locally and regionally.

8.2 Scenario Planning

8.2.1 Overview

The only thing certain about the future is uncertainty. Nevertheless, transportation planners engage the community in planning processes that describe and project future conditions to define long-range visions and outcomes, prioritize investments and craft performance measures to guide the way from here to there for their community.

Scenario planning provides a framework for developing a shared vision for the future that tests various future alternatives that meet state, community and/or regional needs. Scenario development transforms the planning process from strategic hindsight into strategic foresight. And at the same time, it creates opportunities for an MPO to strengthen its own organizational sustainability by:

- Engaging a wide variety of stakeholders;
- Illustrating trade-offs among different land use and transportation choices;
- Creating a broader understanding of issues and stakeholders to be incorporated into planning;
- Helping develop performance measures and evaluation processes that provide policy guidance for local decision makers; and
- Producing more efficient, effective decision-making that results in significant benefits and improvements.

The Federal Highway Administration considers scenario planning to be a critically important analytical tool that can help transportation professionals prepare for what lies ahead. It provides a context and framework for developing a shared vision of the future and analyzing how various forces (e.g., health, transportation, economic, environmental, land use) will shape, accelerate or derail that future.

ACES technologies have the potential to change transportation on a global scale. These technologies could improve safety, significantly alter transportation costs and change traffic patterns and congestion. However, the future is very uncertain by even the most advanced professionals. Scenario planning is the best available tool to plan for this uncertain future. In 2008, the American Association of State Highway and Transportation Officials (AASHTO) established the forward-looking NCHRP Report 750 Strategic Issues Facing Transportation.[ppp] As the Foresight series explains, transportation's future will be determined by the interplay of impossible-to-predict changes in technology, the environment, global and local politics, the economy and society. Several of the Foresight reports used scenario planning as a tool for managing uncertainty. Scenario planning helps DOTs and MPOs consider the future, anticipate events and trends, understand risk and gather ideas for proactive organizational response.

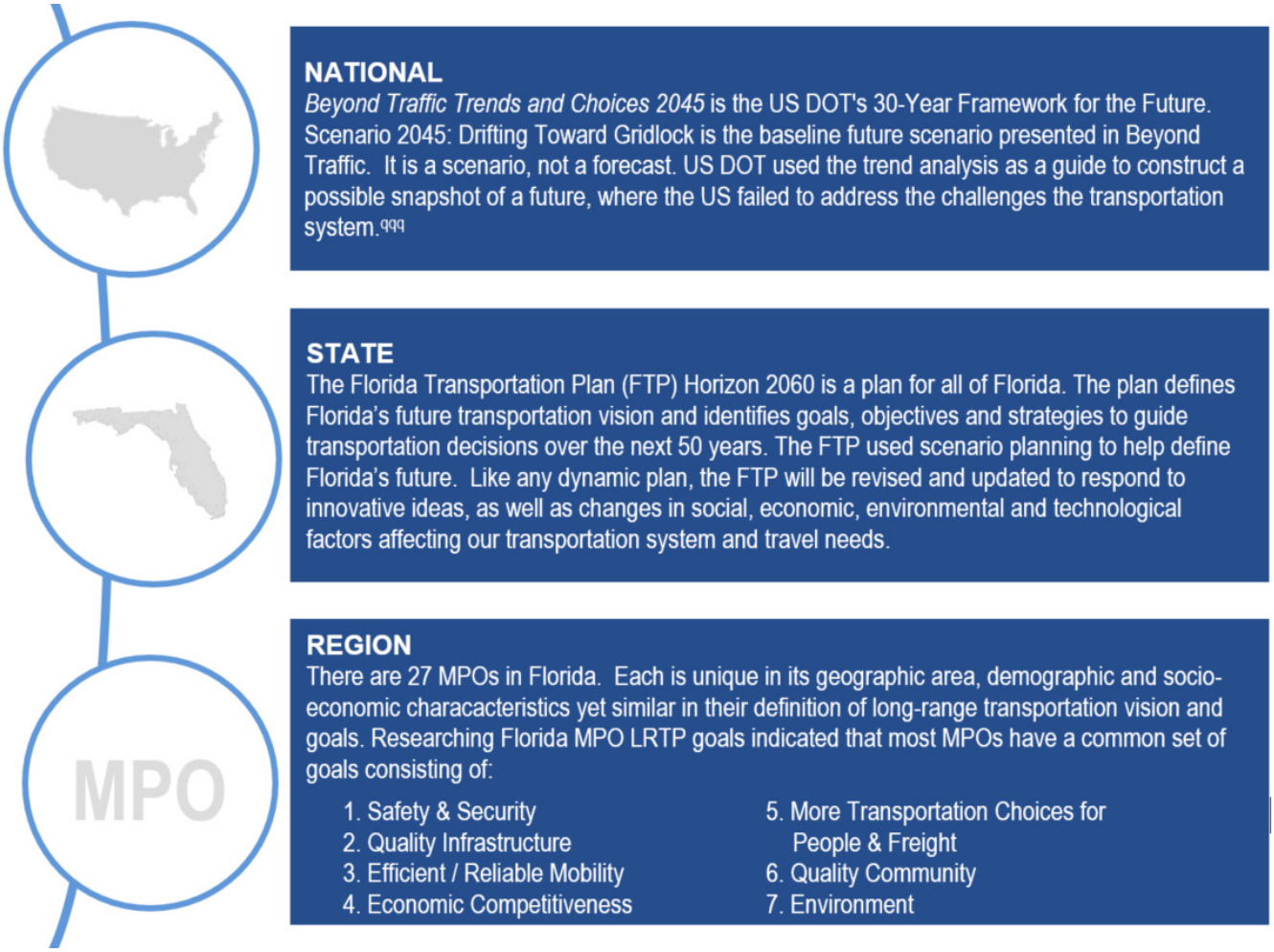
Figure 13 provides one example framework for scenario planning that MPOs can use to plan the future impacts of ACES on your community. As each MPO works through their own individual scenario planning framework, Appendix 4 provides scenario planning thought starters related to the impact of ACES on common LRTP goals.

Figure 13: Scenario Planning Framework Example



8.2.2 A Common Transportation Vision

While the country is diverse, there is a common transportation vision amongst us. That vision takes on different facets at different levels of government and geography but essentially the transportation vision is shared. This vision should be considered as each MPO develops their own ACES scenarios.



8.2.3 FHWA ACES Scenarios

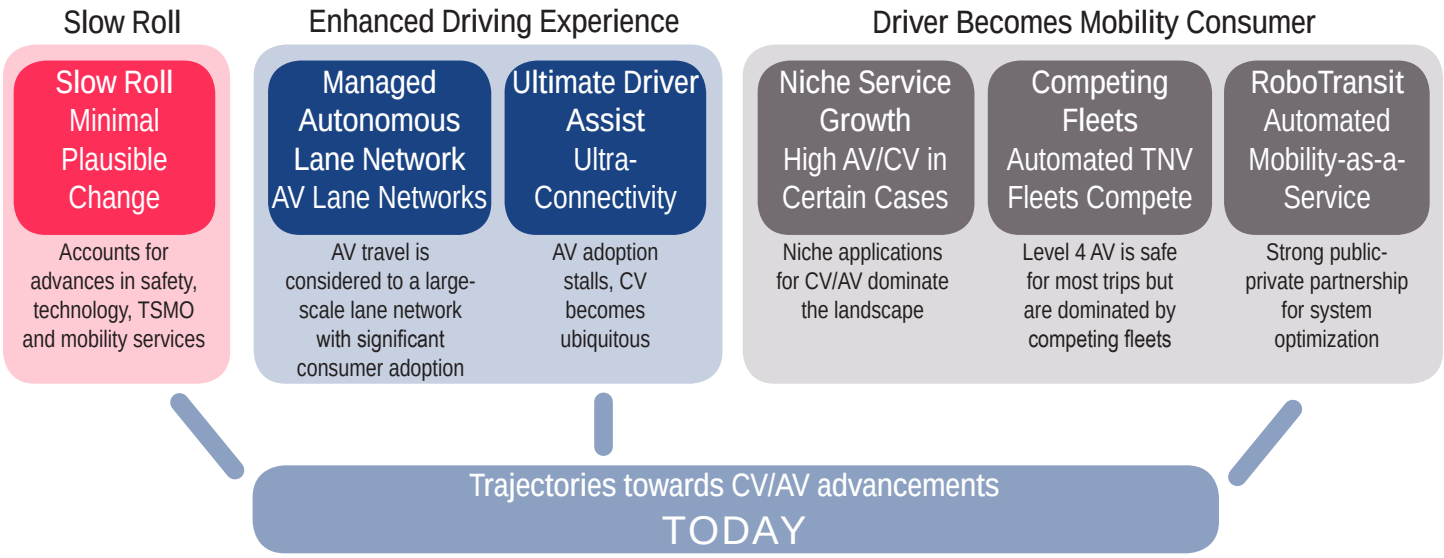
In November 2017, FHWA convened stakeholders and subject matter experts during a workshop to define potential future scenarios for connected and automated vehicles. The workshop participants understood that planners need to consider, but cannot yet accurately predict, the potential impact of disruptive and transformational connected vehicle and automated vehicle technologies on safety, vehicle ownership, road capacity, VMT, land-use, roadway design, future investment demands and economic development, among others. While some forms of CV and AV are already being deployed across the United States, significant unknowns exist regarding the rate of technology adoption, which types of technologies will prevail in the marketplace, the interaction between CV/AV vehicles and various forms of shared mobility services and the impacts of interim and widespread levels of CV/ AV usage.

The workshop's goal was to generate and pilot-test six scenarios of potential futures related to CV/AV deployment, adoption, use and likely impacts. Insights generated by the process will be compiled into a resource guide for transportation practitioners on the use of scenario planning to support informed decision-making in light of the changing realm of transportation technologies and business models.[rrr]

These scenarios are not predictions of the future. Rather, they are plausible futures designed to illustrate the causes and impacts of possible combinations of forces. One goal in creating these scenarios was to capture, as best as possible, the range of plausible futures regarding CV and AV technology, so that planners could be better prepared to discern the implications of events as they unfold.

The scenarios were developed to highlight uncertainties, with a focus on maintaining plausibility while also illustrating various cases within the spectrum of these scenarios. Figure 14 illustrates the scenarios in terms of their relation to one another, grouping those in which primary effects are in improved driving experience, versus those which result in shifting mobility models.

Figure 14: FHWA 2035 CV/AV Scenarios



Source: FHWA, Scenario Planning for Connected and Automated Vehicles, DRAFT Scenario Descriptions, November 2017

These six FHWA CV/AV Scenarios will have an impact on Florida MPO long-range transportation planning. Planners should consider aligning National, State and Regional transportation goals with the six FHWA scenarios when performing their own scenario analysis. One approach would be to pick two FHWA scenarios that may represent the range of possible scenarios. The FHWA scenarios that represent the full range include the Slow Roll – minimal plausible change to Robo Transit, Automated Mobility-as-Service – maximum plausible change.

It's important to note that Florida's 27 MPOs have individual transportation goals for their regions. However, for analytical purposes, it is possible to synthesize these into a broad, common set of goals as shown in Section 8.2.2. These have many similarities with the 2060 FTP goals and is why FTP goals were used in Table 14 and elsewhere to explore the linkages, impacts and opportunities that the six FHWA scenarios may uncover.

Table 14: ACES Potential Scenarios: Impacts on Progress toward Planning Goals

	LRTP Goal	Slow Roll	Niche Service Growth	Ultimate Traveler Assist	Managed Automated Lane Network	Competing Fleets	Robo Transit
		Minimum plausible change - Nothing beyond currently available technology and investments already in motion is adopted. (Baseline for comparison)	*Innovation proliferates, but only in special purpose or "niche" AV zones, including retirement communities, campuses, transit corridors, urban cores, and ports.*	*CV technology progresses rapidly, but AV stagnates – 85% of vehicles have V2X capability by 2035 due to NHTSA mandate allowing DOTs to manage congestion aggressively.*	*Certain lanes become integrated with CV and AV – 50-60% of vehicles (75% of trucks) have automation capability for platooning in controlled settings.*	*Automated TNC-like services proliferate rapidly, but do not operate cooperatively. VMT doubles due to induced demand and empty vehicle repositioning.*	*On-demand shared services proliferate and integrate with other modes via cooperative data sharing, policies, and infrastructure.*
ACES Shares - 2035	*AVs – L2*	50 – 60%	50 – 60%	50 – 60%	30 – 40%	30 – 40%	30 – 40%
	AVs – L3	0%	0%	0%	20%	1%	0%
	AVs – L4	0% / 0%	1 – 5% / 1 – 5%	0%	1%	30%	30%
	CVs in Fleet	40%	40%	85%	75%	75%	75%
	EV Sales (urban/all)	15% / 5 – 10%	15% / 5 – 10%	15% / 5 – 10%	15% / 5 – 10%	85% / 85%	85% / 85%
	Shared Trips (urban/all)	20% / 5 – 10%	20% / 5 – 10%	20% / 5 – 10%	20% / 5 – 10%	85% / 85%	85% / 85%
1.	*Safety & Security*	Level 2 driver assist features (e.g. lane tracking, automatic braking) reduce fatalities and serious injuries.	Prevalence of AVs allows "Vision Zero" goals to be realized in AV zones. Level 2 features improve safety elsewhere.	V2V communications enable 80% reduction in crashes systemwide.	V2V communications enable significant (but less than 80%) reduction in crashes systemwide.	Automated fleets and V2V communications enable 80% reduction in crashes systemwide, including realization of "Vision Zero" in urban areas.	Automated fleets and V2V communications enable 80% reduction in crashes systemwide, including realization of "Vision Zero" in urban areas.
2.	*Maintenance and Operations*	Truck platooning is common on rural interstate highways.	Improvements to lane markings, pavement maintenance and new V2X infrastructure are concentrated in AV zones.	CV roadside units proliferate to cover all roads with V2I infrastructure.	AV-only lanes on rural interstates and urban expressways and separate freight corridors allow for safe, efficient and automated travel. Eco-signal corridors reduce congestion and emissions in urban cores. Cooperative use of CV data allows DOTs to improve network operations systemwide.	Suburban freight centers are interface between automated long-haul trucking and local delivery. Evenly distributed EV charging network serves fleets. Maintenance of lane markings and pavement improves for AVs. Restricted data sharing prevents optimization of road capacity, increasing congestion.	Suburban freight centers are interface between automated long-haul trucking and local delivery. Evenly distributed EV charging network serves fleets. Maintenance of lane markings and pavement improves for AVs. Cooperative use of CV data allows DOTs to improve network operations systemwide, nearly eliminating congestion.
3.	*Mobility and Connectivity*	Mobility services reduce car ownership near urban cores, while increasing travel by elderly and disabled populations everywhere.	Car ownership falls dramatically in AV zones as residents shift to local mobility services.	Public transit improves efficiency, competitiveness and customer service due to real-time pricing, universal trip planning and multimodal integration.	Mobility services reduce car ownership near urban cores, while increasing travel by elderly and disabled populations everywhere. Transit becomes less competitive with managed lanes.	Vigorous competition between mobility service providers drives many toward car-free lifestyles. Door-to-door, transportation as low as $0.20/mile is available in most contexts, outcompeting traditional transit.	Personal mobility becomes a commodity, integrating door-to-door and fixed guideway transit in urban corridors. Automated long-haul and local freight makes immediate consumption universal. Regions offer universal shared mobility services as low as $0.20/mile.
4.	*Economic Competitiveness*	Widespread use of real-time travel info reduces costs of congestion.	AV zones gain significant advantages from efficient transportation, leading to increased desirability and rising real estate values.	Near elimination of congestion through cooperative dynamic routing and pricing incentives improves economic productivity.	Reduced congestion and automated trucking improve economic productivity.	Costs of local travel and long-haul trucking plummet due to automation, increasing economic productivity. Induced demand offsets savings with congestion costs.	Near elimination of congestion through cooperative dynamic routing and pricing incentives, combined with driverless travel, dramatically improves economic productivity.
5.	*Community Livability*		Quality of life improves in AV zones, leading to concerns about equitable access to technology benefits outside niche areas.		Businesses locate outside of the urban core and people to move to the suburbs and exurbs near managed lanes.	Parking is converted to other uses in urban and suburban areas.	Parking is converted to other uses in urban and suburban areas. Walkable mixed-use development dominates in transit corridors.
6.	*Environmental Stewardship*	Electrification trend continues, decarbonizing the transportation sector and reducing emissions.			Automation of long-haul trucking reduces rail mode share and convenience of driving reduces transit mode share, increasing VMT and emissions.	Fleets use EVs exclusively, making 85% of urban VMT (plus 50% suburban and 5% rural) electric, greatly reducing emissions. Gains are offset by VMT increases.	Fleets use EVs exclusively, making 85% of urban VMT (plus 50% suburban and 5% rural) electric, greatly reducing emissions. Shared use reduces offsetting VMT gains.

Source: Adapted from FHWA, Scenario Planning for Connected and Automated Vehicles, November 6, 2017.

8.3 Project Prioritization

ACES may change the types of existing projects that MPOs include in LRTPs and TIPs. In some cases, there will be new projects, such as platooning lanes on freeways, or elements of traditional projects that support ACES, such as EV charging in park-and-ride facilities. In other cases, priorities may change, such as greater emphasis on maintenance of pavement and lane markings to support ADAS.

Some of these projects may benefit from the wider latitude under the 2015 FAST Act to fund ITS projects with federal, state and or local funds. MPOs may be well served by brainstorming with state and local transportation agencies regarding how best to access those funds. Such outreach could also be used by MPOs as the first step in developing and implementing a region-specific process for winning consensus regarding how ACES should impact project development and prioritization.

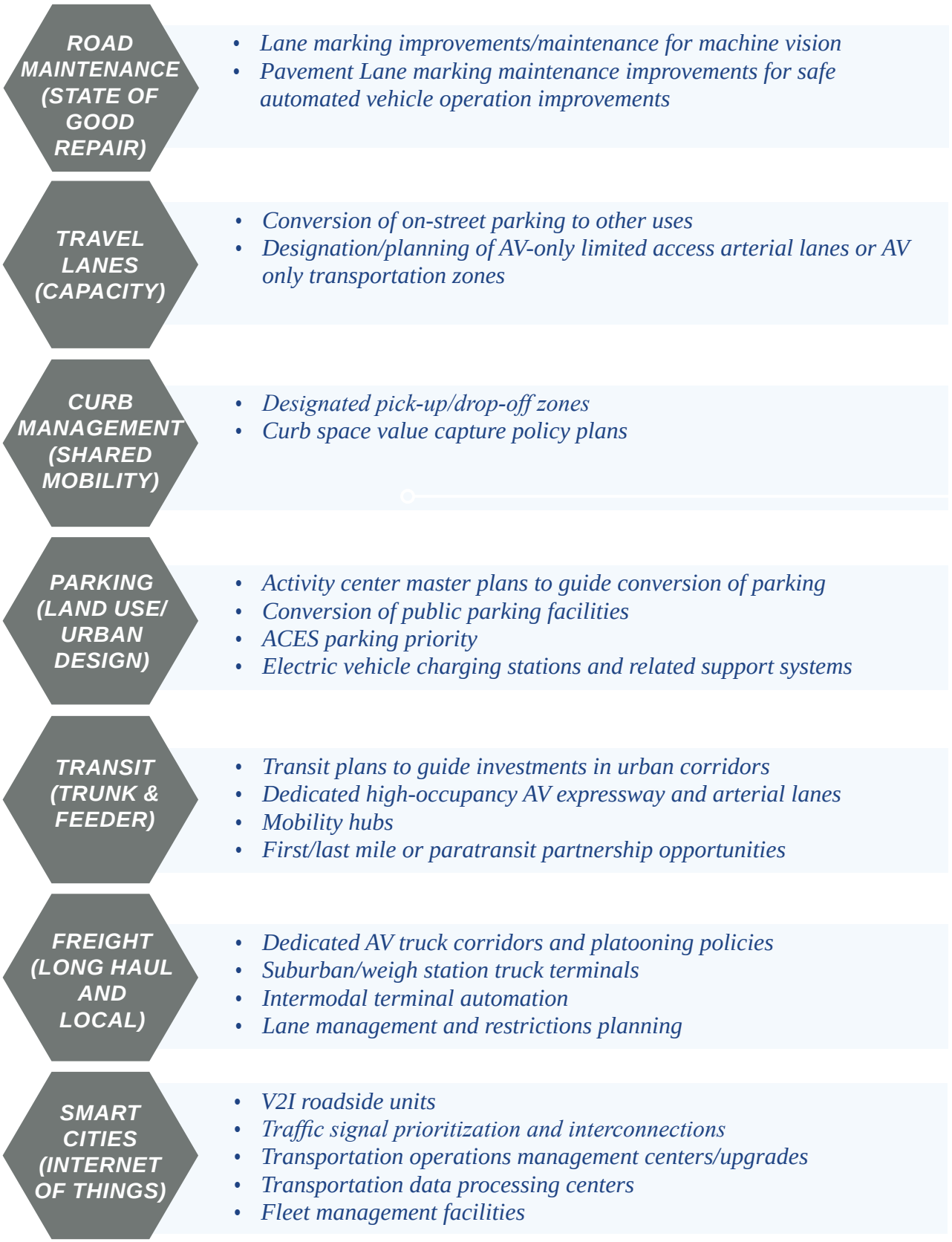
One way to do this would be to create a dialog with stakeholders regarding the kind of ACES-supportive projects summarized in Figure 15 that ACES may engender, along with the kinds of projects that MPOs may consider in their community to support ACES across a range of potential scenarios.

The projects shown are examples, and actual projects and project components will be based on community and regional goals. Additionally, many of the projects chosen will require integration into communities' comprehensive plans and likely require additional analysis before moving forward.

PROJECT PRIORITIZATION TOOLS

- Update project prioritization process
- Employ scenario planning
- Tap into ACES steering committee insights
- Receive feedback from the public
- Integrate ACES compatible elements into programmed projects
- Incorporate required FAST Act performance measures
- Develop new ACES-focused performance measures

Figure 15: Potential Example ACES-Supportive Projects



Conversations on potential projects like these and others would help MPOs refine their project prioritization or selection criteria to rank specific investments or strategies that best advance their short-term Transportation Improvement Program and long-term Long-Range Transportation Plan.

They also would help refine the way projects included in the TIP/STIP are selected based on performance and show a clear link to meeting identified goals and performance objectives using a process unique to each MPO. Each MPO's LRTP identifies a number of policy goals and objectives for regional transportation investments. Within the eligible uses of these funds, priority is given to projects that advance the region's vision and transportation system policy goals and objectives.

As each MPO considers how ACES projects fit into its long-range transportation plans, it also is determining the importance of technology in solving their region's transportation needs. MPOs can use scenario planning as a tool not only to shape a vision and policy direction (through identification of goals, objectives and performance measures), but also to analyze the impacts of unpredictable forces on future conditions, to support long-range project prioritization and programming and to improve its performance-based framework for ongoing evaluation, reporting and system monitoring. The programming process typically identifies project prioritization and selection criteria, then evaluates proposed projects against the criteria to establish a priority list of projects for funding in the TIP/STIP.

Prioritization is something that should be discussed early by the MPO as ACES technologies are already present. Many MPOs around the country are incorporating ACES-related investments into their TIP/STIP and long-range plans.

8.4 Policies

Policies should help guide ACES technology towards safe, efficient and sustainable deployment. Based on the results of the scenario-planning exercise, MPO planners will want to develop policies that will positively impact people to achieve the region's desired long-range goals.

In response to increasing demands for federal guidance, National Highway Traffic Safety Administration (NHTSA) released its Federal Automated Vehicles Policy Statement (FAVP) in September 2016.[sss] The document provides national policy guidance for highly automated vehicles into the following four areas: Vehicle Performance Guidance for Automated Vehicles, Model State Policy, NHTSA's Current Regulatory Tools and New Tools and Authorities.

Local policy direction should consider relevant national and state policies. First start with local existing policies and consider how they may need to change to continue to achieve the desired goals. Next consider new policies. NCHRP 845, Advancing Automated and Connected Vehicles: Policy and Planning Strategies for State and Local Transportation Agencies is a new resource that can be used to identify potential policies around automated and connected vehicles. The report identifies assessments of 18 policy and planning strategies that states or localities can directly or indirectly impact as appropriate when they explore how to help influence private-sector ACES decisions in ways that maximize their benefits to communities. MPOs may want to consider which of the strategies make the most sense for them and for their communities as they examine potential future impacts. The 18 strategies are:

1. Enact legislation to legalize AV testing
2. Enact legislation to stimulate CV or AV testing
3. Modify driver training standards and curricula
4. Increase public awareness of benefits and risks
5. Subsidize SAV use
6. Implement transit benefits for SAVs
7. Implement a parking cash-out strategy
8. Implement location-efficient mortgages
9. Implement land use policies and parking requirements
10. Apply road use pricing
11. Implement a no-fault insurance approach
12. Require motorists to carry more insurance
13. Subsidize CVs
14. Invest in CV Infrastructure
15. Grant AVs and CVs priority access to dedicated lanes
16. Grant signal priority to CVs
17. Grant parking access to AVs and CVs
18. Implement new contractual mechanisms with private-sector providers

Source: NCHRP 845, Advancing Automated and Connected Vehicles: Policy and Planning Strategies for State and Local Transportation Agencies

8.5 Smart Cities

There is a lot of buzz around cities becoming "smart". Smart cities tap into the power of the so-called "Internet of Things" to make sure that all aspects of services and infrastructure communicate and generate data that can be used to improve safety, economic vitality and quality of life. Investment in smart cities will continue to be significant over time, in fact Accenture predicts smart city infrastructure investments could bring as many as 90,000 jobs and $14 billion in economic growth to the City of Chicago.

One of the key activities that really sets a smart city apart is the strategic use of technology to improve the transportation system, particularly for populations that need transportation most.[ttt] As transportation technology continues to evolve, several benefits are expected to be seen, including vehicle-to-infrastructure communications for smoother traffic flow on city streets for commuters using rapid-transit buses or other connected vehicles. Additionally, applications may find parking spaces for drivers, and automated vehicles may eliminate the first-mile/last-mile problem for public transit riders. Transportation technology also is expected to provide significant safety benefits, such as pedestrian-detection and applications that provide alerts before potential collisions between vehicles or with transit systems, such as streetcars. Cities that implement these technologies may even see up to an 80 percent reduction in vehicle collisions, excluding those involving impaired drivers.[uuu]

However, cities should not implement this technology for its own sake – it must be implemented strategically to solve real issues. As cities become smarter and transportation technology more prevalent, cities and regions must first look to those populations with the greatest transportation needs, then bring together the resources of the public and private sectors to find the best solutions. When a city or region can find a way to use modern transportation infrastructure to connect jobs, schools, healthcare and other amenities, social equity is improved and quality of life bolstered.

Two examples from the USDOT Smart City grant winner Columbus, Ohio illustrate how this can work to benefit a community.[vvv]

- *Provide better access to transit, jobs and amenities*
  In one Columbus neighborhood, many businesses and retail centers were more than a mile walking distance from current bus routes and stops, a greater walking distance than is typically acceptable. Columbus will deploy automated multi-passenger electric vehicles to provide an accessible and easily expandable first mile/last mile transportation solution. The deployment will also reduce congestion by encouraging drivers to "park once" and more efficiently use transit resources by delaying or eliminating the need to add bus routes.

- *Improve local freight efficiency*
  America's 10th most active logistics hub consists of the Rickenbacker International Airport, Rickenbacker Intermodal Terminal and Rickenbacker Logistics Park. But freight-induced congestion and queuing are significant challenges in and around the facilities. Columbus will deploy two-vehicle connected truck platoons and signal prioritization for logistics-related vehicles using intelligent transportation systems to reduce congestion and queuing.

As municipalities explore expanding these kinds of smart city elements and others, the role of MPOs likely will be one of technical advisor or service provider. It's also likely that they will see growth in their role as a catalyst for helping local jurisdictions and their constituents better understand potential ACES impacts and opportunities along with current or future infrastructure-related needs and supplementary funding sources. This is often provided as municipalities consider public-private partnerships (P3) with entities bringing new funding and approaches to solving local infrastructure challenges. However, as these P3s grow in size or complexity, or new technologies come on line, new roles for MPOs may emerge.

8.6 Data

"Big Data" represents the idea that we are becoming a connected society through the Internet and that will produce a tremendous amount of data. The white paper, The Connected Vehicle: Big Data, Big Opportunities, illustrates this by stating that IHS Automotive forecasts that there will be 152 million actively connected cars on global roads by 2020.[www] The combination of new car features and aftermarket devices could mean nearly 2 billion connected cars on the world's roadways by 2025. Conservative estimates from IHS Automotive state the average car will produce up to 30 terabytes of data each day.

Hidden in the data are valuable clues regarding the performance and health of the local transportation network (e.g., how, when and where vehicles are driven and how those patterns are changing over time). Analyzing the data can reveal meaningful connections, trends and patterns that help provide better planning outcomes and improve decision-making reliability, potentially resulting in a more reliable, resilient transportation network.

As ACES deployment grows, AV and CV systems will require physical infrastructure assets, data management and ITS services – all of which may impact MPOs significantly based on how they assess their roles in collecting, analyzing and acting on ACES data related to technology, safety, workforce, operating policies, laws and regulations, economic vitality and quality of life.

Two important considerations particularly were identified in the Eno Center for Transportation report, Adopting and Adapting States and Automated Vehicle Policy, 2017:

- *Data sharing* - Creating initial guidelines for data sharing can set the stage for future data sharing agreements that can bring benefits to both public sector agencies and private companies.
- *Cybersecurity* - States should work with partners to proactively define AV developers' limited liability for crashes that result from a security breach and ensure that all AV developers are taking cybersecurity seriously.[xxx]

At the local level, this translates into MPOs playing key roles in facilitating discussions among local governments

Figure 16: Analytics Opportunities in CVs



regarding how data, ACES-related and otherwise, will be collected, structured and transmitted so that there is efficient, effective sharing of data that informs transportation policies and investments. This role may extend to helping public entities entering into ACES-related P3 arrangements make sure that they have access to the invaluable, near-real-time data about their traffic systems, data generated by the vehicles themselves that will essentially act as traffic system probes. Helping a region come to agreement on common access and sharing requirements will position a region to leverage such data into improved state and local maintenance scheduling, current operations management and future infrastructure investment planning, maximizing the public interest.[yyy]

This also translates into MPOs considering local aspects of cybersecurity. Although many cybersecurity aspects likely will be addressed by federal regulation, product liability and OEM design, there will still need to be local discussions regarding the new partnerships, capacities and strategies that the public sector will need to securely manage and share AV/CV-related big data. Consider signal prioritization, for example. Localities may need to look at "hardening" traffic signal controllers beyond OEM standards to reduce the risk of hacking that may cause accidents and increase liability while still also maintain the data sharing capacity that maintains signal timing along corridors.

Potential cybersecurity issues and their local prioritization will depend upon several MPO

considerations, among them the likelihood of occurrence, local concerns and preferences, budget and staff technical knowledge and resources. As part of its ongoing planning processes, an MPO may want to consider consulting with FDOT, local municipalities, Smart City grant recipients, industry experts, data aggregators, MaaS providers and others over time to help develop a locally appropriate cybersecurity workplan.

8.7 Freight

Automated and connected vehicle technologies are rapidly entering the freight environment and are expected to profoundly change all aspects of freight mobility. Because labor, crashes and fuel are the largest cost components of freight mobility, emerging technologies can have a profound impact on the freight industry. Starting with safety, collision mitigation systems are always-on radar sensors to detect stopped or slowed vehicles far down the road to alert the driver and apply brakes when needed.

From a fuel savings perspective, platooning trucks are connected using direct Vehicle to Vehicle (V2V) communications. This allows the rear truck to react immediately to the actions of the front truck. By electronically coupling the trucks in this way, they accelerate and brake together and can safely operate at closer distances to form a platoon.

One manufacturer, The Peloton System, has proven savings of more than 7 percent when platooning using industry standard tests: 4.5 percent for the lead truck and 10 percent for the following truck.[zzz] Platooning only occurs when it's safe, where it's safe and how it's safe. A cloud-based network operations center approves each platoon, and adjusts platooning parameters to be safe for conditions. Each driver is empowered with over-the-horizon alerts at all times.

For freight applications, Michigan companies can capitalize on AV/CV capabilities by operating platoons on streets or highways for entities, provided that they submit plans for general platoon operations with the state police department and state transportation department. If neither department rejects those plans within 30 days, the entity can initiate platooning tests and demonstrations.

FHWA is currently performing a freight pilot program in Wyoming. The pilot program focuses on applying



CV technology along freight-intensive corridors that experience significant weather-related incidents and delays.

Florida has its own truck platoon pilot project along Florida's Turnpike. Based on the results of this pilot project, other state corridors would likely be candidate truck platooning corridors. Also, Florida ports may be ideal locations for automated and connected technology to move freight. MPOs should work with large freight operators and the military bases within their region to identify potential freight platooning routes and potentially partner with freight signal priority technology vendors for maximum efficiencies.

8.8 Land Use

Automobile use has influenced the form and extent of U.S. land development, influencing the density and land-use patterns of local communities. Additionally, the land and resources used for vehicle-supportive infrastructure has been considerable and represents one-time and ongoing local, state and federal investment decisions having impacts to the economy, environment, quality of life and other facets of how people live, work and play.

How these influences will change in the future due to ACES remains unclear. There are both potential benefits and costs of widespread deployment of ACES for cities and metropolitan regions. Automated and connected vehicles could increase safety and convenience of vehicle travel, lowering transportation costs and thus increasing people's willingness to live and travel farther. While there is some concern that ACES may encourage sprawl, if enhanced technology is incorporated into transit vehicles and shared vehicles, this shift could decrease

vehicle ownership and use in favor of transit and shared mobility that may favor shorter trips and more compact development. The American Planning Association (APA) continually adds resources related to AV and CV planning and the interaction between land use and community implications to their on-line site.[aaaa]

Sensors will allow AVs to travel closer together, likely reducing the necessary pavement width and freeing up ROW for other uses. Local zoning codes may need to address requirements for passenger loading and unloading, and parking needs will potentially change drastically with increased shared use. Most existing ordinances require large amounts of land to be dedicated to parking and circulation, however, this may be unnecessary in the future and jurisdictions must determine how best to make use of newly available land through new approaches in land use and zoning.[bbbb]

The ACES transition is expected to change the physical layout of urban and suburban areas. Coupled with greater demand for e-commerce, retail space will shrink while there will be a higher demand for warehousing and e-commerce logistical square footage. There is even the potential for mobile workspace pods and tiny homes that may replace traditional office space, hotel uses, and traditional housing.[cccc]

The uncertainty of ACES' impacts on land use underscores the importance of MPOs and their local planning partners clearly defining the vision of their communities that they seek to realize – along with specific, actionable and measurable supportive goals and objectives. Regularly measuring progress toward the vision will enable an MPO to better assess the real-time impacts of ACES and what response, if any, is required to keep progressing towards the community vision.

9. EDUCATION AND ENGAGEMENT



CHAPTER 9 AT A GLANCE

- ACES introduce equity and other issues that may affect how MPOs **define their community visions, goals and performance measures.**
- MPOs will face new and perhaps unprecedented demands on engagement staff, resources and technical knowledge to address new needs and new stakeholders.
- ACES opens up new and more complex communication needs and opportunities across seven broad topic areas.

MPOs are uniquely qualified to be the lead in educating the public on ACES. MAP-21 legislation and previous legislation require metropolitan planning organizations to provide a broad range of stakeholders with a reasonable opportunity to learn about and comment on their transportation plans.[dddd] This put in place the basic framework for understanding who affected stakeholders are and how to engage with them; indeed, many planning agencies have expanded this ethos to include many of their other activities.

Given the potential impacts of ACES, new strategies are needed to increase education and engagement in ways that help the public and specific stakeholders fully understand related needs and acceptable solutions. This is a critical step in developing and communicating a feasible, supportable vision of the community and the quality of life, economic vitality, and environmental quality it offers – based on stakeholders input about an ACES future. This may impose new costs, staff size, and skill requirements in areas other than transportation planning – communications most notably, but also data mining and data visualization.[eeee]

MPOs also are likely to play a new or expanded role in creating dialog about ACES and their impacts on communities, policies, and investments across a broad range of issues and concerns. Few organizations are as well positioned as MPOs to be informed, neutral communicators about issues and opportunities stemming from ACES. These new demands on MPOs, coupled with continually growing citizen engagement about public policy generally and concerns about ACES impacts specifically, will require added investments and tools that empower the public to test planning assumptions and conclusions.

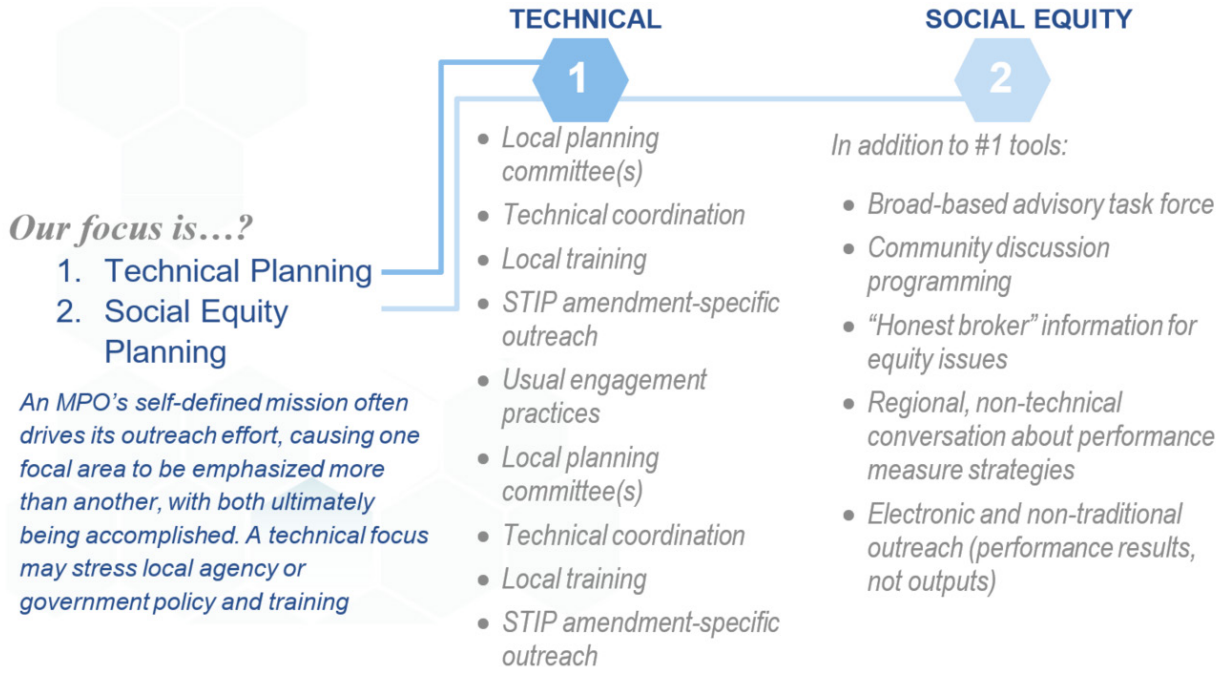
9.1 ACES - Impetus to Change?

The potential impacts of ACES are beginning to move metropolitan and regional planning agencies beyond the traditional approach of seeing stakeholder involvement as providing opportunities for input into the existing transportation planning process, along with the sharing policy, funding and technical services and expertise with local agencies and governments.

Many still feel, as one MPO leader put it, that "… transportation is all about getting from point A to point B, and that won't change; technology will just change attributes of that travel." This perspective, along with uncertainties surrounding ACES deployment, have caused many planning agencies nationally to delay addressing ACES in depth until their next LRTP updates. The hope is that they then can better assess how, when and to what impact ACES technology will deploy in their regions. This approach may be supplemented, as it is with the Mid-Ohio Regional Planning Commission, with the recognition that amendments to State Transportation Improvement Plans (STIP) can provide interim opportunities for adding ACES-related projects and strategies. Under this model, the LRTP planning process often remains the main entry point for engaging and educating stakeholders, using traditional outreach tools such as the MPO website, social media and newsletter/ other publication, display advertisements, internal advisory groups and others.

On the other hand, an increasing number of planning agencies have embraced a more expansive engagement approach in recent years, reaching out to a much broader range of stakeholders directly affected by the infrastructure decisions in terms of access to jobs, amenities, quality of life and social equity. This

Figure 17: ACES Engagement Alternatives



movement began with the goal of doing a better job of involving low income and minority populations in voicing their ideas, values and opinions regarding transportation. It has been expanded by the realization of the potential sweeping impacts of ACES deployments, which for many organizations have been seen as adding educational opportunities regarding those impacts.

MPOs keyed into a social equity approach may use the same public involvement tools as those employed under a more traditional model. However, the need to reach new affected stakeholders in innovative ways, forums and manners, especially to address ACES-related issues - can create new demands on public involvement staff and resources in terms of time, resources, technology and approaches.

For example, the Mid-America Regional Council (MARC) – the MPO for Greater Kansas City - established an AV planning framework[ffff] for developing regional goals and strategies for successfully deploying new transportation technologies. Its 12-month process will inform development of regional transportation plans, provide ACES policy resources for local governments and identify potential AV deployment strategies for cooperation among public and private sectors.

The MARC Regional Automated Vehicle Planning process is intended to provide ACES considerations for the region's metropolitan transportation plan, best practices for future infrastructure improvements and guidance for data management strategies and other policy and legislative priorities. In the context of its community vision, MARC identified seven broad and locally important topic areas in which a dialog needs to be held with stakeholders. They are:

1. Travel Demand Management and System Performance guidance focused on anticipating changes in travel demand and travel behavior that may result from widespread ACES adoption;
2. Infrastructure, Planning and Investment considerations regarding new infrastructure systems, standards, funding sources and planning tools and processes needed to prepare for successful regional integration of automated and connected vehicles;
3. Data Management and Cybersecurity partnerships, capacities and strategies that enable the public and private sectors to securely manage and share automated and connected vehicle-related data;
4. Environment and Land Use changes in travel behavior and measures for shaping or mitigating their impact on compact, efficient development

and environmental sustainability;
5. Equitable Access and Mobility Services deployment that equitably serves the needs of people and communities with transportation disadvantages;
6. Economic and Workforce Opportunity creation for regional industry clusters, workforce and related economic competitiveness; and
7. Certification, Liability and Insurance considerations and how they affect area local governments.

This work builds on MARC's recent scenario planning efforts and features a robust stakeholder engagement effort; key elements include:

1. Advisory Task Force - guides the process and provides feedback on outcomes and deliverables during the 12-month planning timeline. Proposed representation on this task force includes planning partners, industry experts and academic researchers in fields related to policy focus areas;
2. MARC Committee – provides ACES-related technical and planning capacity to a range of standing committees such as the Total Transportation Policy Committee, Sustainable Places Policy Committee, Highway Committee, Aviation Committee and others; and
3. Regional and National Experts – offer input and guidance acquired through staff-generated literature reviews, surveys and interviews with subject-matter experts.

9.2 New Directions

As the MARC example illustrates, ACES-induced engagement changes are potentially so great that new strategies will be needed to:

1. Re-examine and expand stakeholder groups to be involved by MPOs in discussions surrounding ACES and the opportunities they present;
2. Increase stakeholder engagement and public outreach to help these groups fully understand new and emerging ACES-driven needs and determine appropriate responses; and
3. Position stakeholders to flexibly adapt and prosper as ACES follows a typical technology adoption arc from "gold rush" to stable competitive and regulatory environment.

Such ACES-related impacts introduce a broad range of transportation planning challenges, most notably related to timing. The greatest impact may not come from the final shape of a definitive ACES future, but rather from the transitional planning and development period when related transportation needs, solutions and funding requirements and sources are in comparatively rapid flux – and are in competition with fully ACES-compliant projects that may cost less, be funded differently and pose new or alternative impacts.

Although challenging, long-term significant ACES deployment presents an opportunity to re-envision more equitable communities through policies and planning that reduce transportation costs, increase greenspace and build denser land uses. As Aurash Khawarzad with the Center for Social Inclusion noted At ConnectATL, the first automated vehicle summit convened by the Atlanta Regional Commission, the automated and connected future must include the entire community, with equity being addressed at the front end of the planning process for smart mobility projects.[gggg]

MPOs may want to consider whether more robust stakeholder engagement will help partners and stakeholders better understand and respond to ACES within planning processes. Such engagement also may build higher stakeholder tolerances for an extended period of shifting planning decisions made in response to - or in anticipation of – changing ACES impacts and needs. This would require involving private-sector stakeholders, including technology suppliers and emerging service providers, to:

- Identify location-specific ACES scenarios likely to occur;
- Resolve and integrate conflicting ACES priorities; and
- Explore ongoing relationships and initiatives required between the public and private sectors to mitigate potential harms and fully leverage emerging ACES opportunities.

One result of this kind of effort may be the creation of free-standing coalitions of stakeholders with similar

interests. Such coalitions can become active, positive partners in helping MPOs prioritize their ACES efforts and invest their resources where they count most. If supported through education and engagement, these coalitions can help stimulate public- and private-sector policies and investments that support MPO policy changes and the performance measures they underpin. This creates collaborative opportunities for MPOs and these coalitions to report on ACES impacts on other community assets and goals, using communication channels MPO partners control.

The use of coalitions and other public advisory groups also can be particularly helpful in overcoming participatory barriers by populations who by income, training, mobility and other factors may have limited success in participating in traditional outreach activities like evening public meetings.

As MPOs consider the pace and attributes of ACES penetration of their regions for outreach and planning purposes, they will naturally engage with the multiplicity of policy makers, industries, and groups that have a stake in shaping local, state and national ACES futures, futures being the operative word as virtually every local community will see ACES play out differently from even nearby communities. The wide-ranging audiences interested in learning about automated vehicles and what is being done to promote the efficient and equitable incorporation of emerging and innovative transportation and technology into plans and projects includes, but is not limited to planners and engineers in the public and private sectors; freight operators; transit operators; automobile manufacturers; original equipment manufacturer (OEM) suppliers; aftermarket equipment manufacturers; academic professionals and students; elected officials and their constituents, as well as users of the transportation system.

With different agendas and needs, the sheer number of stakeholders – along with public need for greater understanding of the different technological paths forward – mean that MPOs are one of the few public institutions with the planning skills and credibility to identify and build support for various policy needs and initiatives that can help communities successfully adopt – and adapt to – ACES.[hhhh]

POTENTIAL ENGAGEMENT TOPICS

- What is our community's vision for its future? How does that change, if at all, by location or demographics?
- What are the mobility priorities for achieving that vision? How do we resolve conflicting priorities?
- What will it cost to achieve our community vision? How will we pay that cost? At what price point do we revisit/ revise our vision and priorities? How do we decide that?
- What are the likely impacts of working toward our vision? How do we decide which are acceptable and at what level? What are our strategies for mitigating or eliminating unacceptable impacts?
- Whose support or acquiescence do we need to create and achieve our community vision? What information and involvement do they need to give us that support? How will we provide it? How will we measure our progress in providing it in ways that measurably advance our vision?

9.3 Leading New Community Conversations

MPOs have a clear opportunity to lead in developing comprehensive communication programs that build recognition of and support for the role that emerging and innovative transportation and technology plays in the efficient movement of people and goods.

Given the potentially great – and as-yet unknowable – impacts of ACES, it may not be too early to begin a strategic and comprehensive education and outreach effort. Much information needs to be conveyed, public attitudes about ACES features understood and specific concerns addressed. As the May 2017 Pew Research survey on the rise of automation reported, the American "public generally expresses more worry than enthusiasm about emerging automation technologies" with 56 percent saying they would not want to ride in a driverless vehicle (and 87 percent favoring requirements that all driverless vehicles have a human in the driver's seat able to take control in an emergency).[iiii]

If an MPO sees a need to fully understand and respond to such concerns to ensure it captures the locally

appropriate potential of ACES in community planning, beginning to do so now or soon may be beneficial organizationally. Promoting regional dialogs about ACES through MPO planning processes, community forums and topical briefings for area policy makers, for example, will spread the resource impact over a longer period. Interaction with a broader range of stakeholder groups will bring new information and perspectives into the planning process at regular intervals and may mean smaller, easier course corrections in planning over time.

An early start will help MPOs better coordinate ACES messaging between front-running agencies and other entities, thus minimizing potential stakeholder confusion or concern that may negatively affect public policy development. This also may help move stakeholder behaviors in desirable directions while infrastructure investment strategies are being developed, as noted in Advancing Automated and Connected Vehicles: Policy and Planning Strategies for State and Local Transportation Agencies.[jjjj]

> *"Public involvement and education are used to inform the planning process. This step is also a planning activity that can have a direct influence on the behavior of consumers and producers in the market. Transportation agencies may, through any number of mediums and strategies, provide information to consumers as a means of encouraging desired behavior. For example, to encourage consumers to purchase CVs with safety, mobility, or environmental applications, transportation agencies can report and communicate the various benefits that have been identified through analysis and evaluation. Agencies may also coordinate with departments of transportation, metropolitan planning organizations, other rural and regional planning organizations, transit agencies and other stakeholders. For example, agencies can report information about AV/CV system performance and the effectiveness of plans and programs. They can also coordinate and form partnerships with the private sector to speed commercialization of CV technologies. In general, as AV and CV technology is developed and deployed, new information should be relayed to the public to expand its understanding of the technologies."*

Such MPO/private-sector partnerships can help the introduction of new ACES-related technology go more smoothly and predictably from a planning perspective by providing advance notice of new developments and potential impacts requiring mitigation. Such engagement frameworks provide continuity of focus over time while also offering flexibility to incorporate new insights and perspectives to meet changing needs using such strategies and tools as:

- Using scenario planning to identify groups to be included in advisory committees and other initiatives based on the probability and magnitude of likely outcomes;
- Tailoring advisory committees using specific geographic and demographic criteria that, together, reflect the weighted make-up of the community;
- Conducting regular polling (phone, in-person and online) to identify issues; develop a baseline of public attitudes to ACES and advocates to be included in planning and engagement activities;
- Participating in free-standing coalitions of stakeholder groups organized around pertinent focal areas - such as privacy, cybersecurity, safety, system performance, infrastructure, environment, land use, equitable access to mobility services and economic and workforce opportunity creation;
- Hosting workshops and community forums to educate the public and specific groups about a comprehensive array of ACES-related topics meaningful to particular audiences; and
- Measuring and publicly reporting on short- and long-term progress towards the community vision and supporting performance measures in ways, such as online dashboards, that help all stakeholders gain better understanding of how ACES affect their lives and their communities.

Approaches like these help create an environment in which MPOs can share insights, best practices and collaborative policy initiatives and advocacy across a broader range of public- and private-sector decision makers and influencers. These techniques can make the planning process more understandable and transparent for a wider spectrum of stakeholders. And perhaps more importantly, these strategies for seeking out and incorporating a broader range of perspectives increases the chances of real-time feedback and dialogue between planning agencies and stakeholders, thus decreasing the likelihood of a patchwork of contradictory strategies,

policies and investments that could hinder ACES-related planning progress, potentially harming their communities.

9.4 Going Forward

MPOs fill a crucial role as essential ACES education and engagement leaders for policy committees, elected officials and their constituents, specific stakeholder groups and the public. They provide a balanced, informed framework for making important interim and long-term ACES-related decisions that will affect deployment rates, magnitude and timing of positive and negative impacts and the type, scope and effectiveness of community planning.

As MPOs consider how best to accomplish this, initial steps towards ACES engagement often can be incorporated in various existing aspects of an agency's planning process - Vision, LRTP, TIP – or into other planning documents and initiatives related to other MPO services that may be affected by ACES such as 9-1-1, senior services, air quality and other regional services.

Longer term, moving towards a more robust planning agency-led education and engagement model will require identifying and balancing the potentially competing resource demands of adequate engagement staffing, expertise and technology; data collection, analysis and reporting; political sensitivities and will; and speed of marketplace advances versus policy development. Implicit in this is the need for MPOs to assess how best to educate staff on advances in ACES on an ongoing basis so that they can help inform the public, local decision makers and other participants in the planning process, thus improving outcomes and helping regional actors make more sustainable planning decisions and investments.

Agencies and practitioners also cite an interest in having more readily available tools and guidance for addressing these and other challenges beyond transportation and land use-related topics. Examples of such tools include: incorporating emerging issues such as climate change adaptation, improving public health outcomes and social equity. Indeed, the National Association of Regional Councils in 2016 reiterated many of these same findings with a call to action for a broader consortium of public and private entities to organize, invest and share resources to provide technical assistance and more interoperability between appropriate tools and datasets.

While a perfect set of predictive tools may not yet exist, fortunately for MPOs they don't have to be final at this point. "Envisioning Florida's Future: Transportation and Land Use in an Automated Vehicle Automated Vehicle World," issued by FDOT in collaboration with the Florida State University Department of Urban & Regional Planning stated:

> *Automated vehicles will be the catalyst for the next great transformation in our transportation systems and the built environment. By providing public and private stakeholders with a starting point for envisioning the impact of AVs on the built environment, MPOs can offer guidance for public and private stakeholders to prepare for these impacts and ensure that this remarkable opportunity is grasped.*

Such engagement increases the likelihood of a planning agency identifying and implementing actionable, quantifiable strategies that can be monitored and measured against vision-based goals for the community – and helping deliver the policy, institutional and investment changes required to achieve the vision. Additional opportunities for gaining insight on new tools, trends, and techniques for incorporating ACES technologies into transportation plans can also be garnered from conferences such as the annual Florida Automated Vehicle Summit, where many of these planning issues are discussed. Finally, as recommended in the FHWA guidance Federal Strategies for Implementing Requirements for LRTP Updates for the Florida MPOs, a key part of this also involves making sure that MPOs systematically test and validate their outreach strategies to ensure that stakeholders are effectively engaged in ways that ensure full, open participation as outlined in the Code of Federal Regulations.[kkkk]

10. CONSIDERATIONS



CHAPTER 10 AT A GLANCE

- Florida requires state MPOs to address emerging technologies in long-range plans.
- **39 considerations focused on engagement, fiscal planning, modeling,** planning policy and projects can be a starting point to for LRTP updates.
- ACES should support existing state and local goals already established.

Increasingly automated, connected, electric and shared-use vehicles will profoundly change the personal, public and freight transportation needs and expectations. The multi-faceted challenge MPOs face going forward involves identifying and assessing policy processes and tools that can help them align ACES technologies and public policy outcomes in ways that meet those needs while ensuring safe and efficient mobility that promotes equity and minimizes negative impacts.

ACES are the foundation of mobility in a Smart City or region. Many MPOs are in the middle of Smart City initiatives. It is important for MPOs to think about ACES in the context of other areas of infrastructure (power, water, etc.), data and regional partnerships. In each area, MPOs can help to frame discussions of technology as a tool to realize community goals, not a solution in itself.

Creating a smart city – let alone a "smart state" – will require decision-makers and planners to find ever-more efficient and effective ways to define community goals. They should prompt and measure progress towards those goals while anticipating and helping overcome public and private sector barriers to ACES implementation and the mitigation of any impacts that implementation triggers.

The collection and analysis of the massive amounts of data that will become available in an ACES future data will be challenging. FDOT has already begun to collect some of the data and is formulating strategies and methods to manage this data and analyze it in a secure environment, an extension of previous and ongoing initiatives such as its Reliable, Organized and Accurate Data Sharing Project. ROADS is an example of the focus FDOT puts on improving data reliability and simplifying data sharing.

In addition to collaborating with FDOT in such initiatives, these efforts may also provide models from which MPOs can look to for lessons learned and best practices regarding how to deal with large influxes of data. Additionally, working groups and industry panels are good ways to stay informed and identify new strategies for partnering on data collection, analysis and security and should be considered by MPOs during their long-range planning.

10.1 Evaluation

The considerations presented here should be considered "thought-starters" for MPOs as they consider where and how they can most appropriately invest their resources in shaping a region-specific vision of an ACES future. It is not an all-inclusive list.

Local conditions may lead to the creation of new or modified considerations. New research and technology will present new considerations as well. Considerations will not be universally applicable to every MPO. Rather their utility will depend on local conditions, preferences and trends.

When reviewing these considerations, an MPO should determine first whether it has effective formal and informal processes and assessment tools in place to evaluate each consideration in terms of locally defined standards.

10.2 Challenges

The Florida Legislature has required the state's MPOs to address emerging technologies in their long-range plans,

including assessing the capital investment and other measures necessary to:

> *"…make the most efficient use of existing transportation facilities to relieve vehicular congestion, improve safety, and maximize the mobility of people and goods. Such efforts must include, but are not limited to, consideration of infrastructure and technological improvements necessary to accommodate advances in vehicle technology, such as autonomous technology and other developments."*

Assessing those technologies, however, present multiple levels level of uncertainty for local planning organizations. America is still sorting out which public- and private-sector entities will lead and enforce the development and implementation of policies affecting ACES institutional, informational, technological, operational, political and other impacts. Some combination of these known and unknown future responsibilities may be sought out by MPOs - or imposed upon them by commission or omission – with potentially disruptive institutional impacts affecting organizational focus, priorities and organizational structure, staffing and operations.

The speed of first-mover technology companies may outrun slower-paced efforts to create a positive, impact-neutral policy framework – or create situations in which pressure is brought to bear to shape policies that favor one approach over another. The proliferation of automated models could cause start-and-stop investments in new policies and technologies; make existing intelligent transportation system investments less effective; and negatively affect transportation funding sources and/or their impact on improving transportation infrastructure and related services.

As MPOs wrestle with these challenges, a greater tolerance for ambiguity and uncertainty may be required as they explore, test, evaluate and accept or reject different policy approaches to the opportunities and challenges of ACES. However, tolerance for ambiguity should not be confused with failing to address the issue. To succeed in this kind of environment will require MPOs to create what NCHRP Research Report 845: Advancing Automated and Connected Vehicles: Policy and Planning Strategies for State and Local Transportation Agencies described as "an agile policy-making framework that espouses these principles and sets in place a continual "look ahead" assessment." [lllll]

One way to do this would be for MPOs to consider consulting regularly with industry experts to better understand the future and how it might impact localities and regions. Doing this informally or through an "industry council" may help an MPO develop a roadmap of appropriate interactions with industry, legislatures, federal government and others to facilitate ACES deployment and accelerate accompanying societal benefits they have identified.

At the same time, MPOs should find some comfort in the expectation that the benefits of ACES increase with traditional objectives of shared vehicle use, strong urban centers, efficient travel corridors and inclusive access. MPOs should pursue policies like those reflected in the following considerations, in Table 9, that are likely to yield benefits under a wide range of future ACES deployment scenarios. Finally, the following considerations should support MPO and FDOT goals related to transportation mobility and safety. ACES will help with both goals.

Table 15: Considerations

	Considerations	Implementation Time Frame	Report Location
A	**ENGAGEMENT**		
1	Coordinate with other organizations regarding ACES communication roles and responsibilities.	Short-term	Chapter 9
2	Report ACES impact on transportation system performance and other community vision, goals, objectives and assets.	Short-term	Chapter 9
3	Collaborate with the private sector to deploy ACES technologies in more uniform, predictable ways.	Short-term	Chapter 9
4	Identify and develop staff skills and knowledge on advances in ACES to help them better inform and serve the public, local decision-makers and other participants in the planning process.	Short-term	Chapter 9
5	Help the public understand ACES technology so that community decisions about related investments and impacts are made in a timely, factual and sustainable fashion.	SShort-term	Chapter 9
6	Develop a roadmap of appropriate interactions between MPOs and industry, legislatures, federal government and others to facilitate ACES deployment and accelerate the accompanying societal benefits.	Short-term	Chapter 9
7	Consider developing an ACES committee to inform other policy committees on the trade-offs of ACES.	Short-term	Chapter 9
8	Develop an industry council to identify opportunities for private-sector ACES interactions and collaboration.	Short-term	Chapter 10
B	**FISCAL PLANNING**		
1	Determine potential effects of ACES on infrastructure funding, revenue sources and stakeholder support.	Medium-term	Chapter 7
2	Explore funding scenarios to evaluate effects of revenue shortfalls and alternative revenue sources on capital programs.	Medium-term	Chapter 7
3	Investigate road pricing and other non-traditional funding sources that better support desired community outcomes.	Medium-term	Chapter 7
4	Coordinate with ACES committee and the public to weigh the benefits and drawbacks of non-traditional funding sources to determine whether there is the political will to adopt and sustain those sources in support of a community vision.	Medium-term	Chapter 7
5	Coordinate with federal and state agencies to ensure that new funding mechanisms create opportunities to replace local revenue sources disrupted by ACES.	Medium-term	Chapter 7
6	Capitalize on the funding opportunities at federal, state and/or local funds.	Short-term	Chapter 7
C	**MODELING**		
1	Terminal Times, Friction Factors, and modifying the Trip Table are three areas to account for ACES technologies in travel demand models	Short-term	Chapter 4
2	Socioeconomic data may be a factor in market penetration rates of ACES technologies in certain zones	Short-term	Chapter 4
3	Travel Characteristic surveys may also be used to refine inputs within the Value of Time parameter for additional demand model refinements	Short-term	Chapter 4
4	ACES impacts on the relationships between VHT, VMT and network speeds within the model vary between FHWA scenarios and may influence goals and objectives	Short-term	Chapter 4
5	Freeway lanes may realize higher capacity improvements due to fewer friction factors and the lack of pedestrian crossings	Medium-term	Chapter 5
6	The complexity of models impact the results of capacity, speeds, and VMT depending on scenario used. Therefore, no two model results may be alike.	Long-term	Chapter 5

Table 15: Considerations Continued

	Considerations	Implementation Time Frame	Report Location
D	**PLANNING**		
1	Refine or revise MPO goals in light of ACES opportunities, impacts and uncertainties.	Medium-term	Chapter 8
2	Link local ACES-related long-term goals with state and federal goals to take advantage of benefits and future opportunities.	Medium-term	Chapter 8
3	Use regular planning processes such as development of unified work program and scenario planning to capture new data and trends that can be used to achieve regional vision and goals.	Short-term	Chapter 9
4	Transit Planning		
	A. Reconsider current transit development plan in light of ACES-related opportunities and threats.	Short-term	Chapter 6
	B. Identify and prioritize major corridors where fixed route transit can be most effective in an ACES future and plan for supporting transit features and land use.	Medium-term	Chapter 6
	C. Support integration of transportation payment and trip planning systems across public and private mobility service providers	Short-term	Chapter 6
	D. Identify locations for mobility hubs where flexible taxi services can interface with fixed route transit.	Short-term	Chapter 6
5	Performance Measures		
	A. Develop and continually refine a flexible approach to determining ACES-driven system performance needs and measures.	Short-term	Chapter 9
	B. Create and test new or refined performance measures that better reflect federal and state regulatory requirements while better meeting community needs, preferences and expectations.	Short-term	Chapter 8
6	Smart Cities		
	A. Work with municipalities and the private sector to define, collect and share “smart cities” data relevant to long-range planning	Short-term	Chapter 8
	B. Facilitate regional or subarea studies and pilot projects that address vehicle charging in the public right-of-way, renewable energy generation, supporting power systems and other features of the EV ecosystem.	Short-term	Chapter 2
	C. Partner in pilot ACES projects to begin addressing the uncertainties ACES presents.	Short-term	Chapter 8
E	**POLICY DEVELOPMENT**		
1	Identify ACES solutions to mitigate potentially increased VMT and vehicle emissions.	Medium-term	Chapter 2
2	Coordinate with local governments on land-use and parking policies to achieve local and regional goals.	Short-term	Chapter 8
3	Work with the local transit agency to develop policies that integrate ride hailing and TNCs with traditional transit, including integrated payment.	Short-term	Chapter 6
4	Develop a comprehensive freight strategy that addresses private sector and military freight needs and trends.	Short-term	Chapter 8

Table 15: Considerations Continued

	Considerations	Implementation Time Frame	Report Location
D	**PLANNING**		
1	Build consensus with MPO members regarding how to account for ACES in project development and prioritization.	Long-term	Chapter 8
2	Explore how best to implement new ACES-related infrastructure needs and standards into project planning, including such considerations as the need for:	Long-term	Chapter 8
	A. Increased road marking implementation and maintenance for machine vision (e.g. electronic lane markings that allow use of V2I to provide more accurate lane markings and to provide changing road lanes for work zones.)	Long-term	Chapter 8
	B. Increased pavement maintenance for safe automated vehicle operation.	Long-term	Chapter 8
	C. Electric vehicle charging and related power generation and distribution systems.	Long-term	Chapter 8
	D. Supplementary or supportive ITS investments.	Long-term	Chapter 8
	E. Dedicated or priority lanes for exclusive use by ACES vehicles (intermittently or uniformly).	Long-term	Chapter 8
	F. Signal priority for ACES vehicles.	Long-term	Chapter 8
	G. Parking access and priority for ACES vehicles.	Long-term	Chapter 8
	H. Evaluation of future operations related to lane management and restrictions (truck platoons operating in the left lanes rather than the right lanes, for example), pick up zones for transportation network companies, etc.	Long-term	Chapter 8
	I. Other ACES-related needs as identified.	Long-term	Chapter 8
	J. ACES-related impacts on non-transportation related programs (911, Meals on Wheels, Air Quality, etc.).	Long-term	Chapter 8
	K. Incorporate into existing or planned Complete Streets projects.	Long-term	Chapter 8
3	Incorporate ACES-related investments into already programed TIP/STIP and fiscally constrained LRTP infrastructure plans and individual projects.	Long-term	Chapter 8

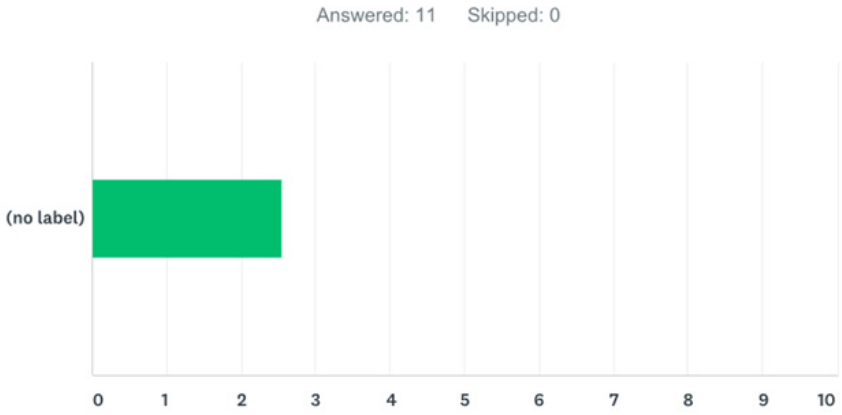
APPENDIX 1: SURVEY ON THE POTENTIAL IMPACTS OF AN ACES FUTURE ON LRTP GOALS

An electronic survey was developed and emailed to all 27 Florida MPOs and TPOs as a means identifying their understanding questions and concerns related to addressing ACES – Automated, Connected, Electric and Shared vehicles - in their long-rang planning. The questions were designed to better understand how planning organizations were currently thinking about ACES in terms of locally relevant priorities, impacts and organizational challenges and opportunities.

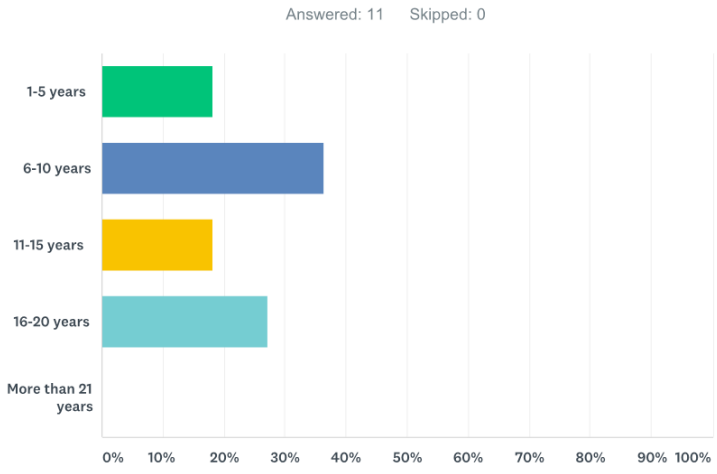
The survey was distributed in early October 2017, to the executive directors of all Florida MPOs, who also were told about the survey and given an opportunity to ask questions about it and its uses at the October MPOAC meeting. Initially, eleven MPOs responded to the electronic survey. A follow up survey was directly sent to MPO planners and three additional MPOs responded for a total of 14 MPO responses (52 percent response rate). Responses to the survey were used to help develop and refine ACES guidance.

Survey A: FDOT MPO ACES Guidebook Survey (E-mail Survey)

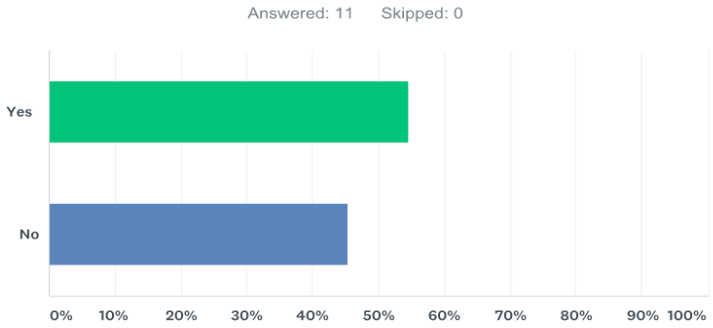
Q1 How informed do you feel on the subject of ACES – Automated, Connected, Electric and Shared vehicles? (1 = very well informed; 5 = not very informed at all)



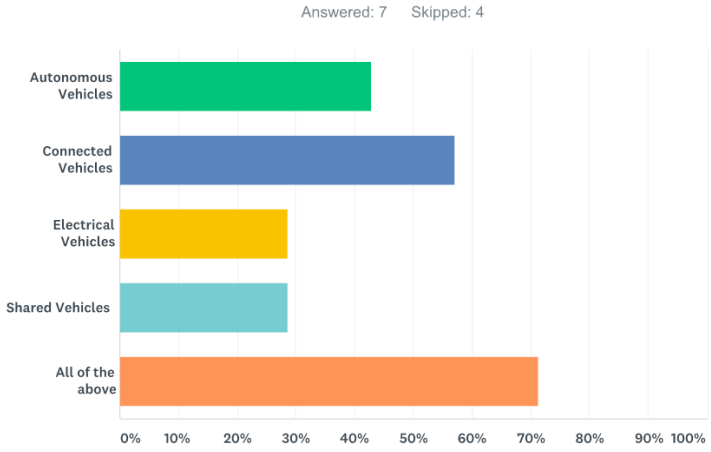
Q2 Based on your knowledge of ACES, when do you think they will have a significant impact on your region? (select the answer that best applies)



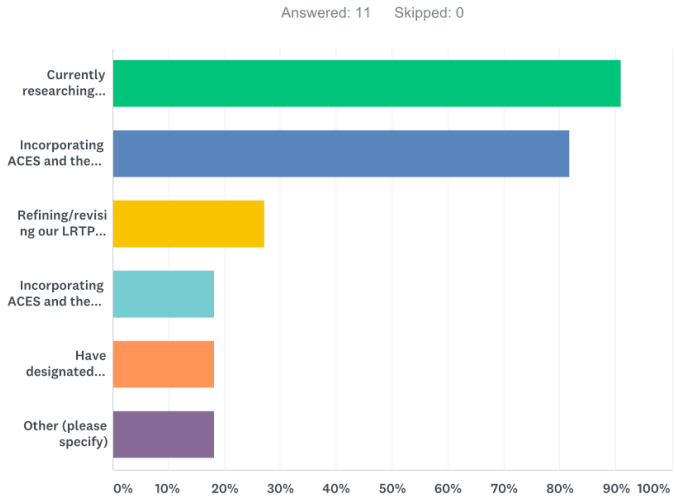
Q4 If it is, which elements of ACES are being actively addressed? (select all that apply)



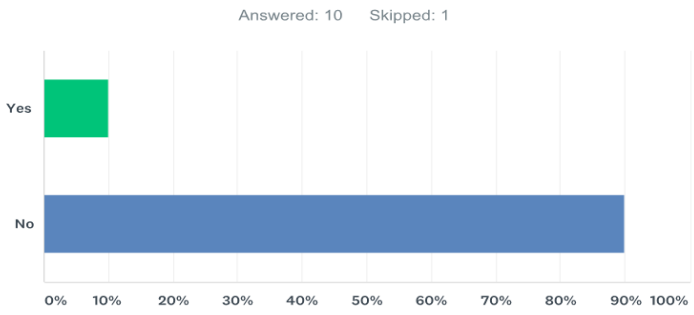
Q4 If it is, which elements of ACES are being actively addressed? (select all that apply)



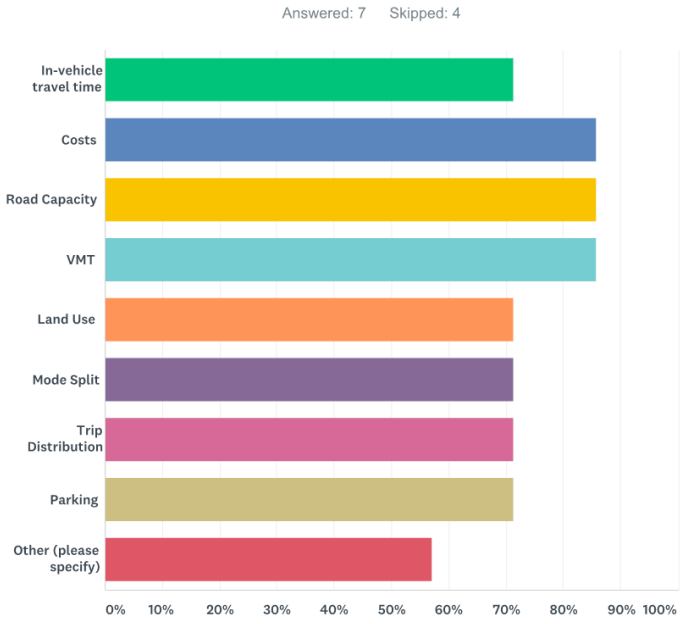
Q5 How are you addressing ACES at your agency? (select all that apply, even if only to some elements of ACES)



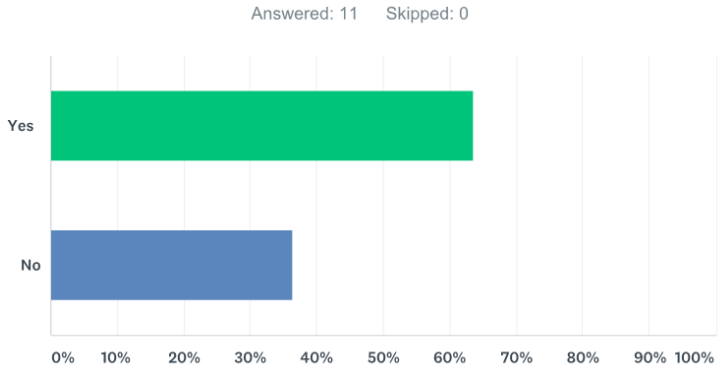
Q6 Are you reflecting ACES in your travel demand modeling? (select the answer that best applies)



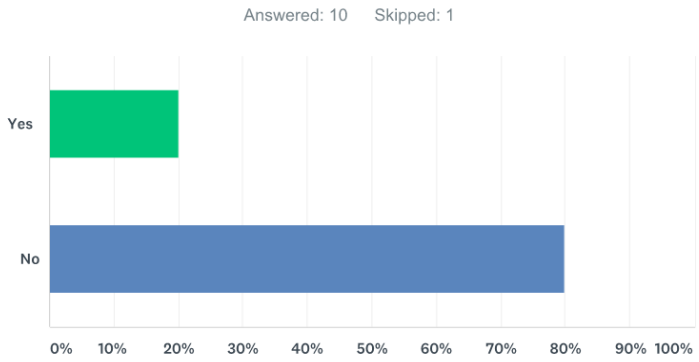
Q7 What kinds of changes are you exploring? (select al that apply)



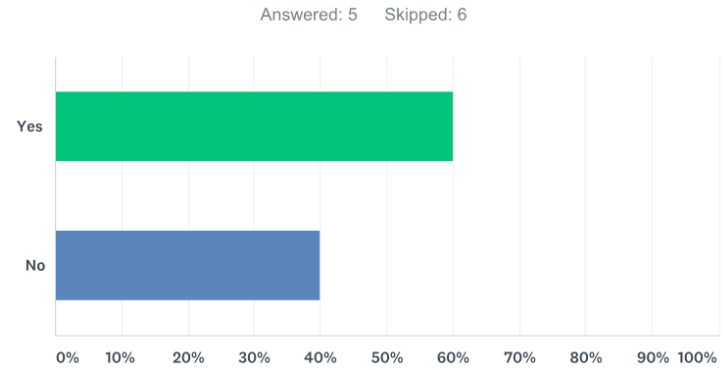
Q8 Have you engaged your existing policy and advisory groups to think about future ACES implementation? (select the answer that best applies)



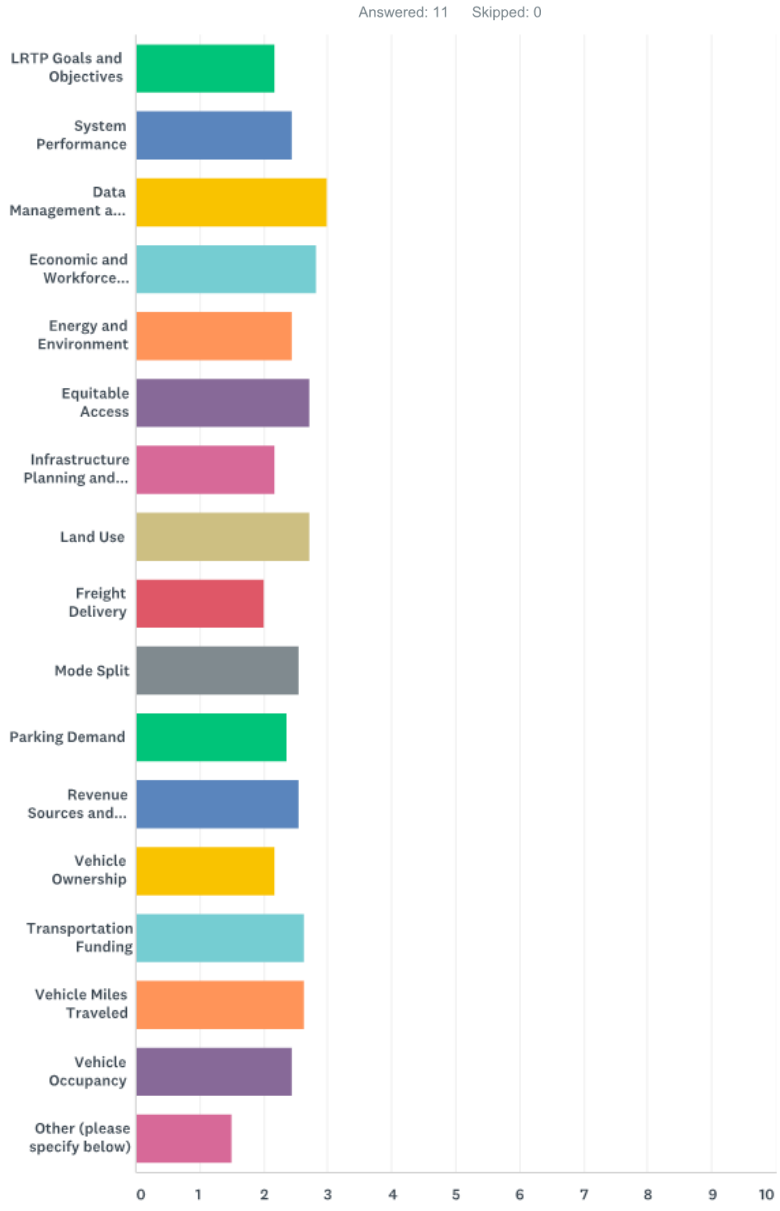
Q9 Has your agency been involved in Smart City Challenge activities? (select the answer that best applies)



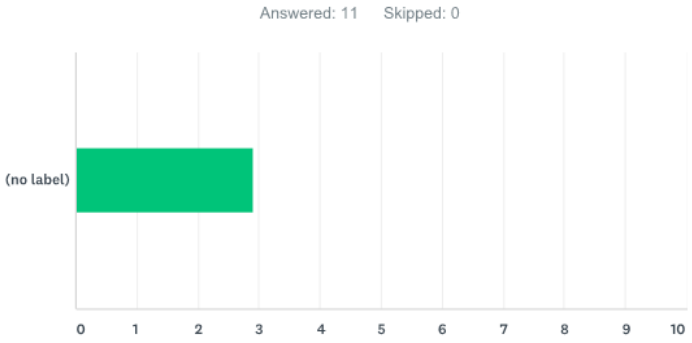
Q10 If yes, have you continued to engage in Smart City Challenge activities since Columbus, Ohio was awarded the grant? (select the answer that best applies)



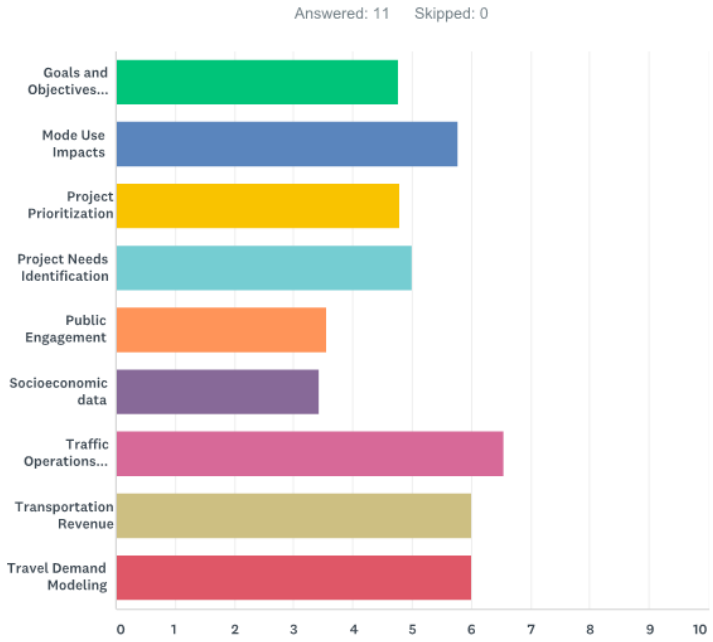
Q11 From your agency's perspective and within your LRTP horizon year, how much impact will ACES have in the following areas: (1 = high impact; 5 = low impact)



Q15 Thinking about ACES and potential impacts on how your agency functions, how big a priority does it represent to your organization? (1 = high priority; 5 = low priority)



Q16 Please rank the following in terms of information or guidance you may need to better assess future transportation technology impacts? (1 = most important 9 least important)



Q17 What tools, information or resources do you need as you look into a future with more ACES?

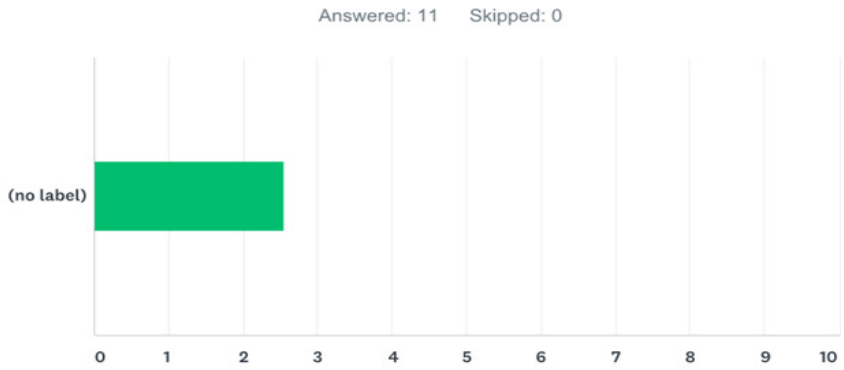
RESPONSES
Funding for more involvement, staff and stakeholder education, demand modeling, conference attendance, and public outreach activities
Case Studies, Research, Pavement Condition, Statistics on Safety and Reliability, Vehicle Cost, Refueling Station Locations and Costs.
Projected vehicle deployment dates/numbers, auto industry infrastructure needs, new funding sources, guidance on public data (SPaT) for private for profit use, general planning guidance
Federal and state legislation on performance and operation of CAVs, and timeline on market impacts.
coordination with neighboring MPOs.
FDOT guidance on scenario planning, TDM implications, leading to needs analysis, revenue projections.

Q18 Describe your MPO region. (geography, demographics, economic outlook, etc.)

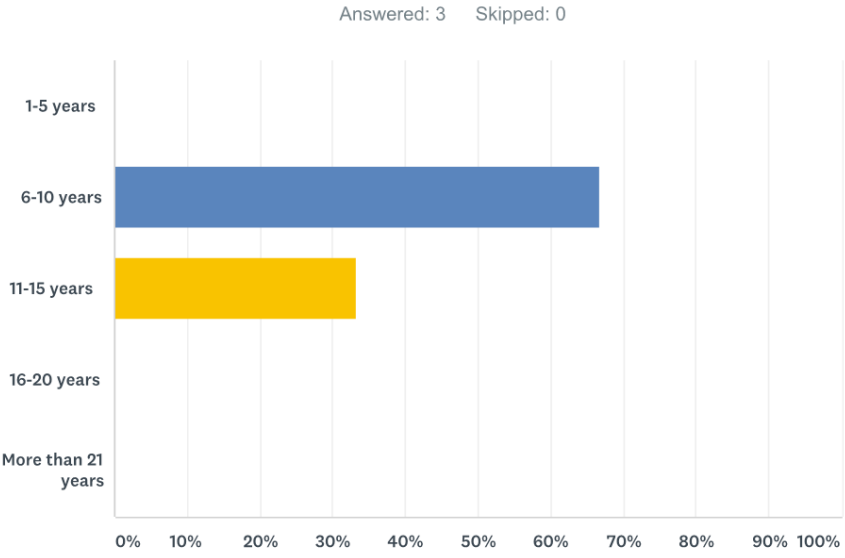
RESPONSES
MPO covers Palm Beach County, with approximately 2,300 square miles with 1.4 million people; relatively fast growing area
Coastal, fast-growing, continued growth projected, tied to Tampa Bay and Orlando regional economies.
The three TPOs in our region are located in the extreme northwest Florida or the Panhandle. The population of the metropolitan planning areas for the three TPOs based on the 2010 Census are 434,896 (Florida-Alabama), 214,967 (Okaloosa-Walton), and 168,852 (Bay). Most of the population is between the ages of 18-44. The male and female population is almost identical and is predominately white followed by African-American, multiracial, and Hispanic or Latino. The majority of the population speaks English The Economic Outlook for the region is good. Airbus locating to Mobile in 2015, the expansion of the Navy Federal Credit Union, Military presence, tourism, proximity to the Gulf of Mexico and Interstate 10, a 4-year University and three state colleges, and agricultural presence in the northern parts of the region are reasons for the good economic outlook.
http://www.planhillsborough.org/2040-lrtp/
Population of 561,714 in 2015, 72 miles long, constrained by water on east and west, lots of urban sprawl, Auto oriented, for more see our State of the System Report http://spacecoasttpo.com/wp-content/uploads/2016/12/2015-SOS-Final-Report-2016_11_16.pdf
www.metroplanorlando.com for Annual Report or Tracking the Trends.
Polk County - Lakeland/Winter Haven MSA Prominent logistics and freight distribution hub
flat. old. growing.
Collier MPO. End of the line from transportation perspective. High/low income and retirees/families split west/east axis; economic outlook - high growth residential and service industries

Survey B: FDOT MPO ACES Guidebook Survey (Phone Survey)

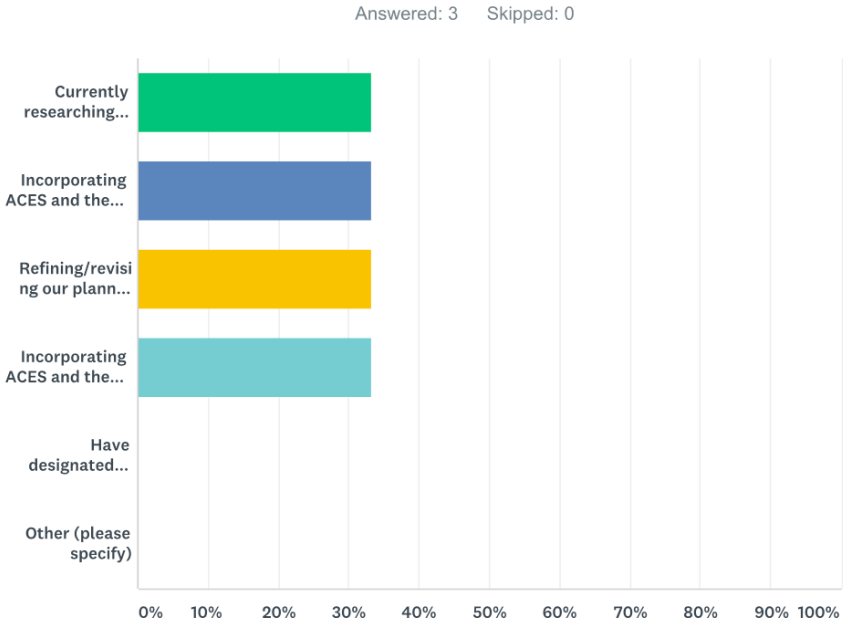
Q1 How informed do you feel on the subject of ACES – Automated, Connected, Electric and Shared vehicles? (1 = very well informed; 5 = not very informed at all)



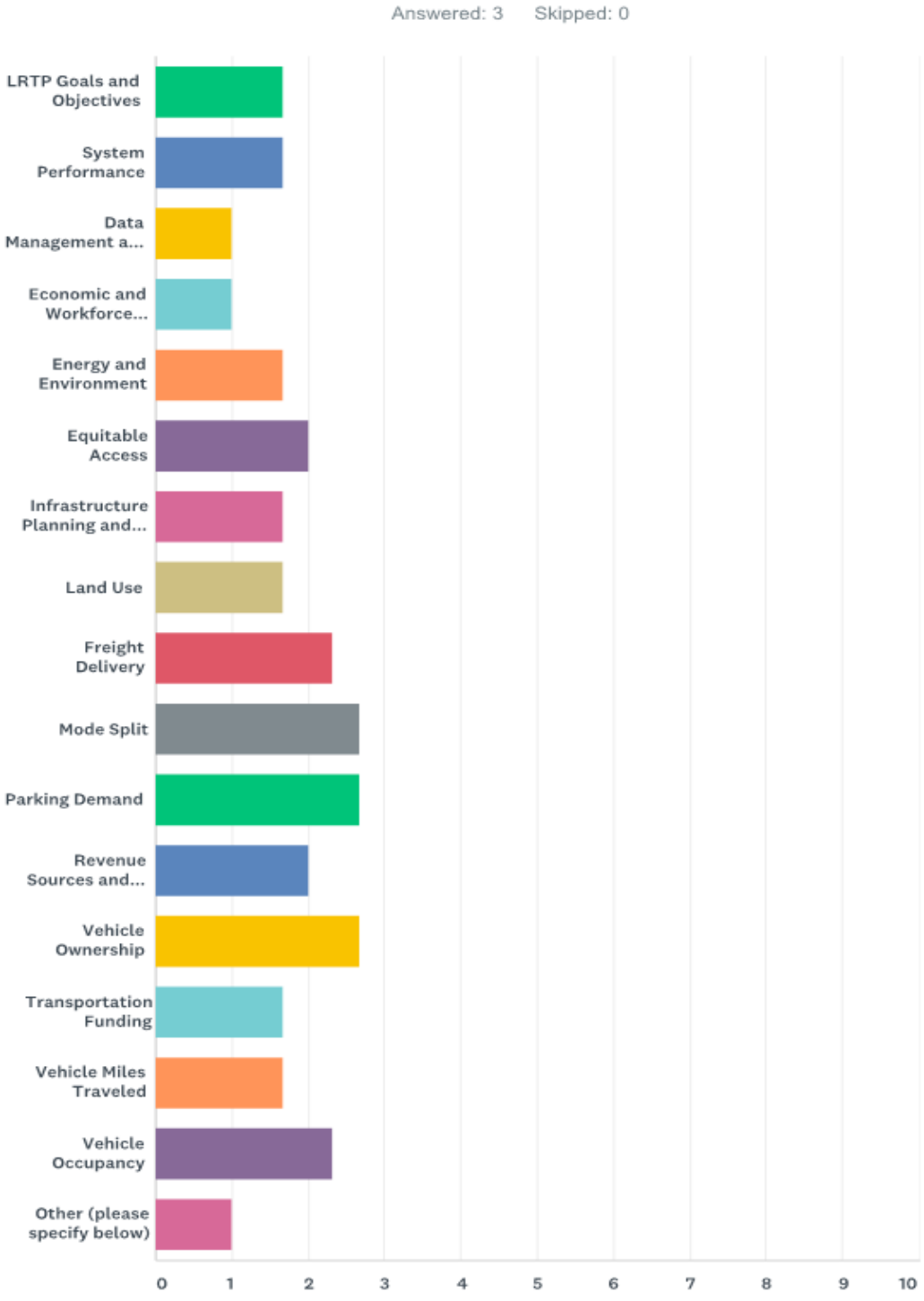
Q2 Based on your knowledge of ACES, when do you think they will have a significant impact? (select the answer that best applies)



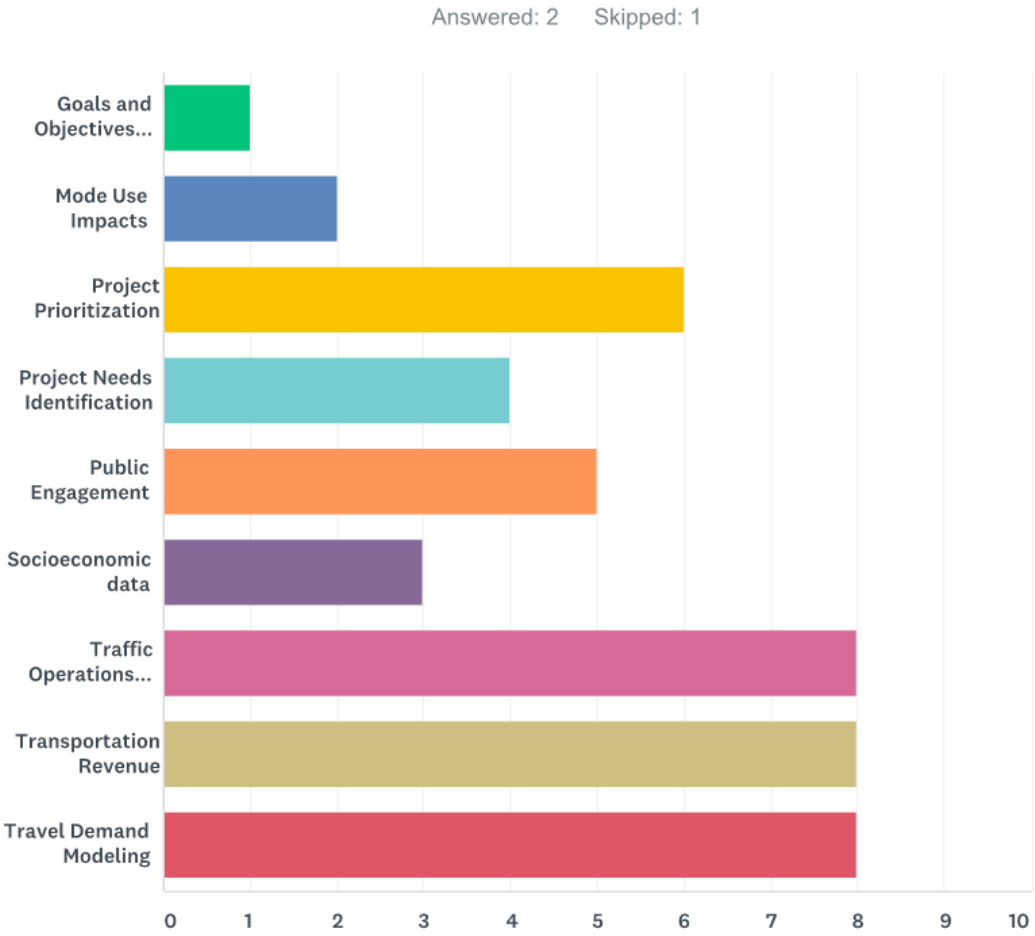
Q3 How are you addressing ACES at your agency/business? (select all that apply, even if only to some elements of ACES)



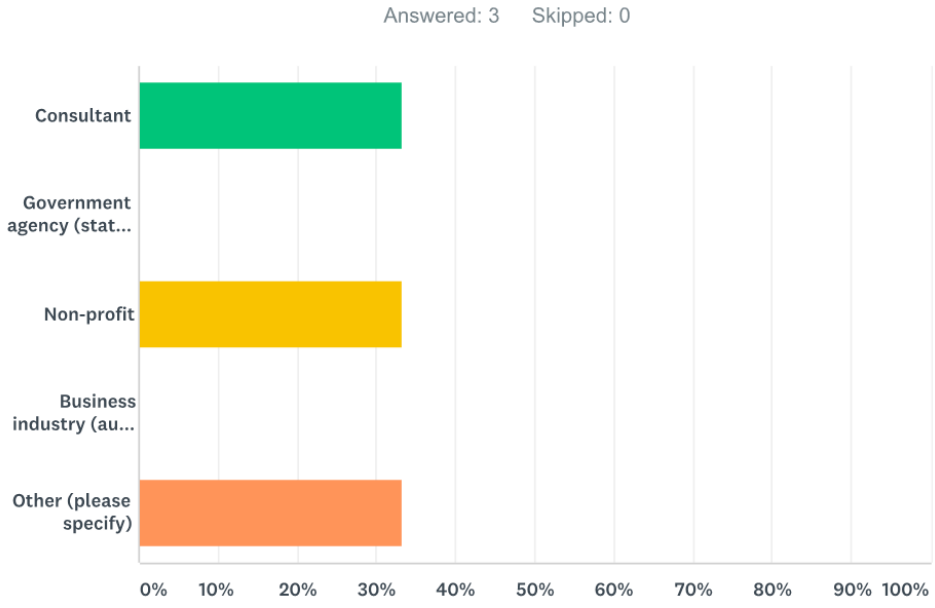
Q4 From your agency's/businesses perspective, how much impact will ACES have on the following transportation planning or network attributes: (1 = high impact; 5 = low impact)



Q5 Please rank the following in terms of information or guidance you may need to better assess future transportation technology impacts? (1 = most important 9 least important)



Q6 What industry do you represent?



APPENDIX 2: ACES ADOPTION METHODOLOGY

As organizations grapple with the potential opportunities and implications of ACES, they quickly encounter a broad and rapidly changing range of estimates and projections regarding the speed and depth of impacts to be experienced by local, state and national transportation networks.

For example, consider just three estimates from credible, mainstream sources:

- *IHS Automotive* – "Autonomous vehicle sales to surpass 33 million annually in 2040, enabling new autonomous mobility in more than 26 percent of new car sales."

- *RethinkX* – "By 2030, within 10 years of regulatory approval of autonomous vehicles (AVs), 95 percent of U.S. passenger miles traveled will be served by on-demand autonomous electric vehicles owned by fleets, not individuals, in a new business model we call "transportation-as-a-service".

- *Victoria Transportation Policy Institute* – "In the 2040s, autonomous vehicles will represent approximately 50 percent of vehicle sales, 30 percent of vehicles and 40 percent of all vehicle travel. Only in the 2050s would most vehicles be capable of automated driving."

Such a variety of estimates arise from a number of factors that, depending upon even small fluctuations between projected and actual experience may produce dramatically different outcomes:

- Because new vehicles sold today remain in service for at least 20 years on average, the fleet is expected to contain a significant share of traditional Level 0-1 vehicles for several decades. Whether that fleet turnover rate remains the same or is accelerated by broad public acceptance of automation benefits is unknown. However, it illustrates one example of the considerable uncertainty surrounding the rate of adoption, prompted in part by the wide range of factors that could affect acceptance and dispersal of automation technology.

- There is widespread interest among investors, ride-sourcing companies (e.g. Uber and Lyft), trucking companies and vehicle manufacturers in introducing Level 4-5 vehicles, with testing occurring around the world. Transit agencies are also implementing low-speed automated shuttles in urban centers, campus environments and as a first-mile/last mile connection near rail stations in many cities. Both trends could influence overall market demand by accelerating consumer familiarity and comfort with automated vehicles that translates into faster rates of private ownership.

Because the rate of adoption of AV technology is so uncertain and has important effects on planning implications, it was necessary to develop a fleet transition model to evaluate the relationships between sales forecasts, vehicle types as a share of the total fleet and VMT share. As represented in the S-curves and use cases illustrated elsewhere in this guidance, the informal modeling was designed to simulate the organic growth and replacement of the vehicle fleet as new technologies are introduced. It covers not just various types of automated vehicles, but simulates connected and electric vehicle adoption as well.

Key steps in the simulation included estimating or computing the:

1. Growth of existing fleet of cars, light trucks, motorcycles, buses and heavy trucks based on USDOT vehicle inventory data, Census population forecasts and Congressional Budget Office economic projections. This estimate reflects what demand for vehicles of each type would be without the introduction of ACES technologies.

2. Reductions in demand for human-driven vehicles caused by the introduction of Automated fleet services for personal mobility and local freight delivery. This is modeled using an S-curve approach in which a midpoint year and a duration for moving from 1 percent to 99 percent of the ultimate impact is derived from the FHWA scenarios (see Section 9.3).

3. Resulting "adjusted" vehicle demand after the effects of fleet platforms are considered. This becomes the base fleet forecast that is then allocated among vehicle types with various ACES characteristics. The forecast is broken out by annual sales of vehicle replacements (estimated using the average age at which vehicles are replaced) and additional vehicles needed to accommodate growth.

4. Annual sales of each of 10 types of AVs, including shares of each that are CVs and EVs based on a similar S-curve approach. Fleet AV sales are reduced to reflect the higher levels of utilization expected from automation.

5. Resulting fleet size of each of the vehicle types, including the shares of each that are CVs and EVs.

6. VMT contributed by each vehicle type based on current USDOT average annual mileage traveled data and estimates of vehicle utilization for AVs from the literature.

7. Impacts in terms of AV, CV and EV share of fleet from 2020 to 2060; AV, CV and EV share of VMT; and same for a snapshot in 2040.

A more detailed look at the assumptions used in producing S-curves related to the six FHWA scenarios can be seen as part of the S-curves projection workbook that follows. The workbook provides a look at the sources and assumptions used to produce the S-curves. It also enables users to adjust assumptions and variables to more closely mirror known or projected conditions in a region in order to estimate what an ACES future might local like in a specific jurisdiction.

APPENDIX 3: ACES USE CASES

A major shift in the implications of automated vehicles occurs when the human occupant is removed from the vehicle driving process. When the vehicle can operate without anyone on board, many limitations of the current human-driven mobility system are removed, new business models are possible and potentially transformative and disruptive effects of technology emerge.

This planning guide recognizes the important distinction between the incremental effects on safety, convenience and mobility that we are experiencing with the Level 2-3 vehicles of today and the more profound effects that Level 4-5 vehicles may bring.

A "use case" is made up of a set of possible sequences of interactions between systems and users in a particular environment and related to a particular goal. Use cases that are likely to have different effects on road design, Vehicle Miles Traveled (VMT), parking, urban form and other planning issues are distinguished by the degree of automation, the ownership of the vehicle. Whether a vehicle can reposition itself without a human on board and whether it is restricted for use by a single owner or available for shared use results in different effects. Likely use cases to consider in the planning process are described in the following tables. Each icon illustrates a potential impact and is associated with a descriptive note.

Use Case	Shared Use	Road Design Impacts	VMT Impacts	Parking Impacts	Urban Form Impacts	Other Impacts
Level 2-3 Cars and Light Trucks	Largely household ownership; shared use limited to rental fleets, ride sourcing and car sharing	1, 2	3, 4	5, 6	7	8

1 Driving systems increase need for lane marking maintenance.
2 Connected vehicle lanes on highways facilitate platooning, increasing capacity.
3 Easier driving on freeways and in traffic increases tolerance for longer commutes.
4 Electrification reduces cost of vehicle operation, promoting more and/or longer trips.
5 Level 4-5 remote parking capability expected to allow for smaller parking spaces.
6 Electrification likely to increase need for chargers at homes and destinations.
7 Level 4-5 remote parking expected to reduce need for physical proximity of parking and uses. Reduced emphasis on parking availability near main entrance contributes to more walkable site design.
8 Broad adoption may reduce crash rates.

Use Case	Shared Use	Road Design Impacts	VMT Impacts	Parking Impacts	Urban Form Impacts	Other Impacts
Level 2-3 Vans and Buses	Mix of privately and publicly owned vehicles, including transit fleets	1, 2	3, 4	5, 6		7

1 Driving systems increase need for lane marking maintenance.
2 Connected vehicle lanes on highways facilitate platooning, increasing capacity.
3 Improved working conditions could enable longer hours of service, potentially reducing operating costs.
4 Electrification reduces cost of vehicle operation, potentially increasing mode share.
5 Level 4-5 remote parking capability expected to allow for smaller fleet storage facilities.
6 Electrification likely to increase need for chargers at bus route terminals or en-route stations.
7 Broad adoption may reduce crash rates.

Use Case	Shared Use	Road Design Impacts	VMT Impacts	Parking Impacts	Urban Form Impacts	Other Impacts
Level 2-3 Heavy Trucks	Largely fleet ownership	1, 2	3, 4			5

1 Driving systems increase need for lane marking maintenance.
2 Connected vehicle lanes on highways facilitate platooning, increasing capacity.
3 Improved working conditions may reduce truck driver shortage, leading to diversion of some shipments from rail to truck.
4 Platooning and electrification expected to reduce fuel consumption, reducing costs and potentially leading to diversion of some traffic from rail to truck.
5 Broad adoption may reduce crash rates.

Use Case	Shared Use	Road Design Impacts	VMT Impacts	Parking Impacts	Urban Form Impacts	Other Impacts
Level 4-5 Cars and Light Trucks	Largely household ownership; shared use limited to rental fleets and car sharing	1, 2, 3, 4	5, 6, 7, 8	9, 10	11, 12	13

1 Driving systems increase need for lane marking maintenance.
2 Connected vehicle lanes on highways facilitate platooning, increasing capacity.
3 Connected vehicle lanes at arterial intersections may increase capacity.
4 Road construction, emergencies and other temporary conditions require fleet operators or subscription services to divert vehicles to other routes.
5 Electrification reduces cost of vehicle operation, promoting more and/or longer trips.
6 Fully automated driving may reduce disutility of travel, promoting more and longer trips.
7 Greater mobility for non-driving populations increases demand for travel.
8 Reduced parking cost in remote lots may divert trips in dense urban centers from transit to auto.
9 Remote parking capability expected to allow for smaller parking spaces.
10 Electrification likely to increase need for chargers at homes and destinations.
11 Remote parking expected to reduce need for physical proximity of parking and uses, potentially contributing to more walkable site design.
12 Remote parking allows for conversion of parking lots and structures in urban centers, as well as some residential garages, to other uses.
13 Broad adoption may reduce crash rates.

Use Case	Shared Use	Road Design Impacts	VMT Impacts	Parking Impacts	Urban Form Impacts	Other Impacts
Level 4-5 Taxis	Almost exclusively public or private ride sourcing fleets	1, 2, 3, 4, 5	6, 7, 8, 9	10	11, 12, 13, 14	15, 16, 17

1 Driving systems increase need for lane marking maintenance.
2 Connected vehicle lanes on highways facilitate platooning, increasing capacity.
3 Connected vehicle lanes at arterial intersections may increase capacity.
4 Road construction, emergencies and other temporary conditions require fleet operators or subscription services to divert vehicles
5 to other routes.
6 Increased need for curbside drop-off areas.
7 Greater mobility for non-driving populations increases demand for travel.
8 Automation likely to reduce cost of taxi services, shifting demand from buses to smaller vehicles.
9 Reduced cost of mobility expected to increase number of trips.
10 More efficient smartphone-based dispatching likely to offset some VMT growth with less deadhead compared to human-driven taxis.
11 On-demand mobility services likely to reduce car ownership and demand for both residential and destination parking.
12 Reduced parking demand expected to lead to conversion of parking lots and structures in urban centers, as well as some residential garages, to other uses.
13 Parking areas near main entrances likely to transition to pick-up/drop-off areas.
First-mile/last-mile services support consolidation of transit stops into high-amenity stations in major urban corridors.
14 Fleet service centers likely to emerge on fringes of urban centers.
15 Broad adoption may reduce crash rates.
16 Reduced car ownership likely to have transformative impacts on automobile-dependent industries, including manufacturing, repair, driving and insurance.
17 New jobs created in mobility service control centers, vehicle fleet maintenance facilities and support services

Use Case	Shared Use	Road Design Impacts	VMT Impacts	Parking Impacts	Urban Form Impacts	Other Impacts
Level 4-5 Low Speed Shuttles	Almost exclusively transit fleets	1, 2	FM/LM 3	4, 5	6	

1 Additional signals or other traffic control may be needed where low-speed shuttle routes cross mixed traffic streets.
2 Mixed use trails that accommodate low-speed shuttles may be wider than pedestrian/bike only trails.
3 Improved options for first-mile/last-mile may increase transit mode share.
4 Increased transit mode share may reduce parking demand in campuses and urban centers.
5 Remote parking shuttles may reduce parking demand near destinations.
6 Level 4-5 remote parking expected to reduce need for physical proximity of parking and uses. Reduced emphasis on parking availability near main entrance contributes to more walkable site design.

Use Case	Shared Use	Road Design Impacts	VMT Impacts	Parking Impacts	Urban Form Impacts	Other Impacts
Level 4-5 Vans and Buses	Almost exclusively public or private transit fleets	1, 2	3, 4	5	6	7, 8

1 Driving systems increase need for lane marking maintenance.
2 Dedicated road space in major urban corridors provides priority to high occupancy vehicles and may facilitate high degree of automation sooner.
3 Reduced transit operating costs allow more frequent service in major urban corridors.
4 Reduced transit operating costs may support fixed route services in lower density settings, such as connections between suburban campuses and transit corridors.
5 On-demand mobility services likely to reduce car ownership and demand for both residential and destination parking.
6 Dedicated transit priority corridors encourage transit-supportive development patterns around stations.
7 Mix of public and private transit operators likely as taxi companies aggregate trips into larger vehicles in major urban corridors.
8 Transit automation may reduce demand for bus drivers, potentially offset by increased service frequency in major corridors and new control center jobs.

Use Case	Shared Use	Road Design Impacts	VMT Impacts	Parking Impacts	Urban Form Impacts	Other Impacts
Level 4-5 Urban Delivery	Almost exclusively fleet ownership	1, 2, 3, 4, 5	6, 7		8, 9	10, 11, 12

1 Driving systems increase need for lane marking maintenance.
2 Connected vehicle lanes on highways facilitate platooning, increasing capacity.
3 Connected vehicle lanes at arterial intersections may increase capacity.
4 Increased need for curbside and off-street loading zones.
5 Low-speed delivery vehicles share space with pedestrians, requiring new intersection control systems in urban centers and potentially wider sidewalks.
6 Electrification reduces cost of vehicle operation, promoting more and/or longer trips.
7 New business models built on low-cost driverless delivery likely to generate demand for more trips.
8 Fleet service centers likely to emerge on fringes of urban centers.
9 Transition to on-demand delivery likely to further reduce demand for traditional brick-and-mortar retail uses, especially outside urban centers.
10 Broad adoption may reduce crash rates.
11 Retail industry continues transition from selling physical goods to providing individualized services and experiences in urban shopping centers.
12 Food service industry may transition to more delivery-based business models.

Use Case	Shared Use	Road Design Impacts	VMT Impacts	Parking Impacts	Urban Form Impacts	Other Impacts
Level 4-5 Heavy Trucks	Almost exclusively fleet ownership	1, 2, 3	4, 5	6	7	8, 9

1 Driving systems increase need for lane marking maintenance.
2 Connected vehicle lanes on highways facilitate platooning, increasing capacity.
3 Connected vehicle lanes at arterial intersections may increase capacity.
4 Electrification reduces cost of vehicle operation, promoting more and/or longer trips.
5 Automation reduces operating costs, leading to diversion of some traffic from rail to truck.
6 Less use of human drivers for long-haul trucking reduces demand for truck plazas near highway interchanges.
7 Truck terminals needed near highway interchanges to transfer loads between large trucks and urban delivery vehicles.
8 Trucking industry jobs may shift from driving to fleet control centers, vehicle maintenance and logistics hubs.

APPENDIX 4: POTENTIAL IMPACTS OF AN ACES FUTURE ON LRTP GOALS

The impact of ACES on LRTP Goals is unknown. This table provides some thought starters for your scenario planning exercise.

		Possible LRTP Goals						
		Safety & Security	**Quality Infrastructure**	**Efficient & Reliable Mobility**	**Transportation Choice**	**Economic**	**Quality Community**	**Environment**
Potential Impacts	**Safety**	Increase in ACES increases safety for all modes Technology security is a concern	Safety can be incorporated into the rebuilding of infrastructure to meet ACES needs	ACES are expected to increase the efficiency of the transportation system and improve mobility for everyone	ACES will provide people with greater choices in transportation	ACES will provide more choice to the marketplace lowering transportation costs Anticipated "winners" and "losers" in the transportation industry	ACES will improve the safety of the most vulnerable road users (pedestrians & cyclists)	Crash reduction will have a positive impact on the environment
	Infrastructure	ACES provide opportunity to improve the safety of outdated infrastructure	May need high quality dedicated infrastructure only accessible with ACES technology	Investments in infrastructure to meet ACES needs provides the opportunity to improve efficiency and reliability	Infrastructure investment allows investment in a range of transportation infrastructure providing more choice	Reduction in congestion and improved travel time reliability Infrastructure will support the economic growth potential of an area by allowing efficient and reliable mobility	Reductions in infrastructure creates opportunity to enhance quality of life	Reduced infrastructure needs would reduce the physical impact on the environment
	Land Use	Changes in land use patterns will require safety and security to be rethought	Decreased parking requirements will make land available for high-density residential or mixed-use development	Land use changes effect on travel efficiency and reliability is unknow Travel models aim to project the potential range of impacts	More transportation choices offered that could impact land use	May increase commuter willingness to travel longer distances Households and businesses may situate farther away from urban cores in search for affordability May incentive sprawl, low-density urban development and increase in travel	Reduction in parking requirements May allow for road diets Increase in available land for redevelopment Opportunity to invest in walkable communities and encourage compact urban growth patterns	Land use changes could provide either a positive or negative impact on the environment
	Capacity	Enables safe travel at higher speeds with fewer accidents Less congestion and bottlenecks	Expected higher capacity and ability to serve more people and goods	A higher capacity transportation system will be more efficient and reliable	Reduced need to invest in increased capacity will allow investment in increased modes	ACES technology will vastly increase highway capacity increasing economic growth and opportunity	Increased capacity may allow communities to focus transportation dollars on more Complete Street concepts	By reducing traffic congestion and the need for fossil fuels, environmental factors will improve
	Mode Choice	Increased mode choices with safety features	Light EVs and shared use vehicles would have less impact on infrastructure	AVs are expected to increase headways and provide more efficient and reliable trips	Increased car-sharing and driverless taxis with potentially reduced individual vehicle ownership	Influence the relative competitiveness of other modes of transportation maximizing economic competitiveness	Enable new opportunity for those who cannot currently drive (elderly, disabled, children)	Technology will reduce carbon emissions
	Freight	Improved technology with freight movement will provide safety and security to goods movement	Electric freight vehicles will have less wear and tear on infrastructure	Advanced freight technology will have a role to play in optimizing and streamlining logistic movements	Technology will provide alternative freight mobility choices to consumers	Increased fuel economy through vehicle weight reductions will also reduce battery and storage tank requirements (and costs) alternative-fuel vehicles	Technology improvements to freight will provide opportunities for quality community infrastructure	Technology improvements to freight will reduce environmental impacts
	Revenue	EVs will reduce existing revenue sources impacting safety and security goals	EVs will reduce existing revenue sources impacting ability to maintain infrastructure	EVs will reduce existing revenue sources impacting efficient and reliable mobility	EVs will reduce existing revenue sources impacting transportation choice	Reduced driver costs (gas, ownership, property damage/insurance) Impact on revenue	Potential for niche occupations to become obsolete (bus drivers, taxi drivers, chauffeurs, etc.)	Reduced transportation revenue due to EVs may reduce environmental mitigation opportunities
	Parking	Shared vehicles will reduce parking needs AVs will eliminate human error and reduce parking lot collisions	Reduction in parking demand will reduce public and private costs	Point to point travel efficiency and reliability is improved without the need to park	In cities where parking is expensive/limited, ACES vehicles act as a viable option for mobility	ACES vehicles will reduce parking requirements Increase in available land for development	Reduced parking allows for more walkable spaces, trees and less heat absorbent asphalt	Reduction in parking lots and negative externalities including toxic runoff

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ENDNOTES

[a] *Scenario Planning for Connected and Automated Vehicles, Draft Scenario Descriptions.* U.S. Federal Highway Administration, December 2017. Accessed at https://www.pcb.its.dot.gov/universityworkshops/Nov2017/Day1_Azizi.pdf

[b] *Supporting Performance-Based Planning and Programming through Scenario Planning.* U.S. Department of Transportation, June 2016. Accessed at https://www.fhwa.dot.gov/planning/scenario_and_visualization/scenario_planning/scenario_planning_guidebook/fhwahep16068.pdf.

[c] 339.175 Fla. Stat. (2016) Subsection (7) (c) 2.

[d] *Federal Strategies for Implementing Requirements for LRTP Updates for the Florida MPOs* (draft). U.S. Federal Highway Administration, October 2017. Accessed at http://www.fdot.gov/planning/revenueforecast.com

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Appendix K

2045 LRTP TRANSIT EVALUATION

Hernando-Citrus 2045 LRTP: Transit Evaluation

Introduction

Mobility offers community members with access to education, jobs, healthcare, and cultural/environmental resources, and more. Public transportation plays an important role in this relationship, offering the means for people to connect to places. Beyond benefitting those who may choose to ride transit every day, public transportation can increase the quality of life for those who cannot freely travel by other means and gives people access to resources that fulfill basic needs (e.g., jobs, education, grocery stores, healthcare, etc.). Even beyond mobility, public transportation can offer economic benefits—such as ensuring that local and regional businesses have dependable access to the workforce that they require to be successful.

This document serves as an update of the Long-Range Transit Element (LRTE) of the Hernando-Citrus 2045 Long-Range Transportation Plan (LRTP) and addresses the transit service needs to 2045 in Hernando and Citrus Counties.

Existing System

Hernando County and Citrus County currently operate separate transit agencies within each county boundary. The following describes the existing system in each county.

Hernando County

Hernando County Transit, branded as TheBus, operates fixed route, demand response, and paratransit services. TheBus operates four fixed route services Monday through Friday on 60-minute headways. Americans with Disabilities Act (ADA)-compliant paratransit service is provided to eligible riders with origins and/or destinations within ¾-mile of a fixed route, with the ADA service transferring the rider to/from the fixed route service. Demand response service is provided throughout Hernando County areas that are more than ¾-miles from fixed route bus. TheBus currently connects south to Pasco County Public Transportation (PCPT) and does not connect with Citrus County.

The Purple and Green routes have the highest ridership (50,280 and 34,894 rides per year, respectively). The Purple Route serves as a connection from the City of Brooksville into Pasco County. The Green Route connects Pasco-Hernando State College (PHSC) to the City of Brooksville. **Error! Reference source not found.** illustrates the routes and transfer points, and Table 1 summarizes service characteristics.

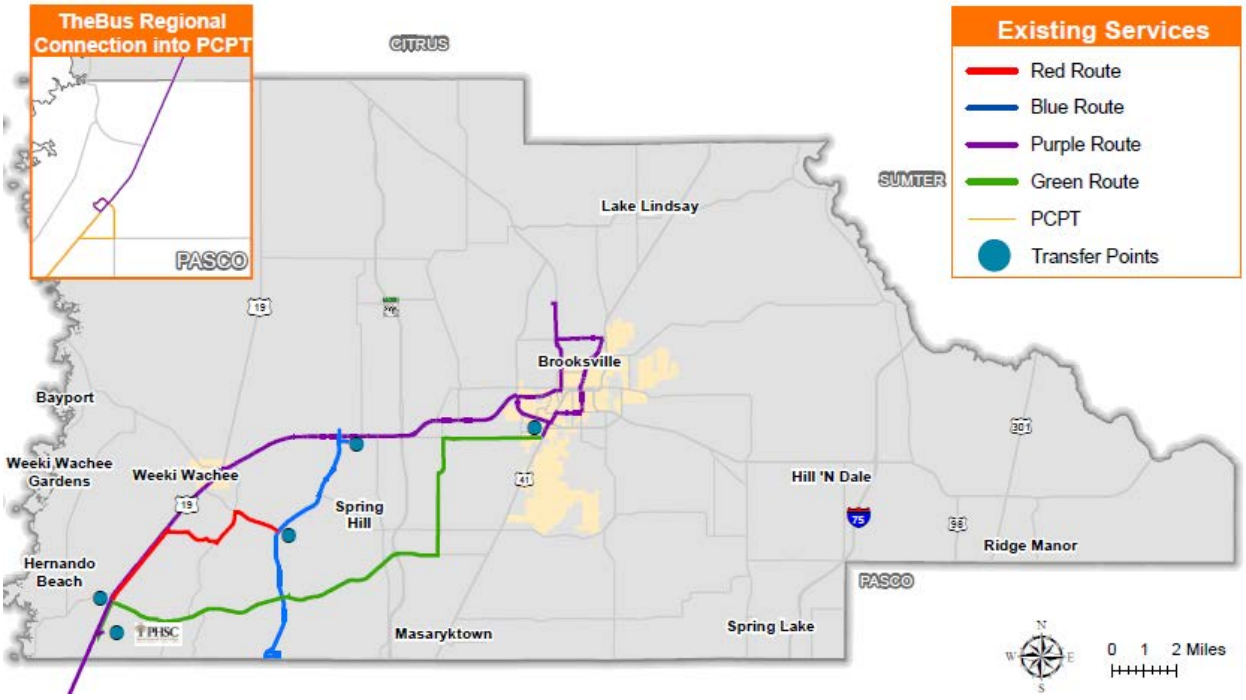


Figure 1: Existing TheBus routes in Hernando County

Table 1: TheBus system service details

Route Color/Name	Key Locations/Corridors Served	Weekday Service Frequency	Days of Service	Weekday Span	FY 2018 Ridership
Purple	Pasco County via US-19 through Brooksville city loop	60 min	Monday–Friday	5:30 AM–7:20 PM	50,280
Green	Spring Hill Dr from PHSC Spring Hill to transfer station in Brooksville on SR-50	60 min	Monday–Friday	6:00 AM–7:00 PM	34,894
Blue	Mariner Blvd from Pasco County line to Coastal Way Plaza	60 min	Monday–Friday	6:00 AM–7:00 PM	25,268
Red	Spring Hill Dr Transfer Center via US-19 to Mariner Commons Transfer Center	60 min	Monday–Friday	5:45 AM–5:40 PM	16,630

Source: TheBus

Citrus County

Citrus County Transit operates deviated fixed route and paratransit services in Citrus County. The Citrus County Orange Line Bus includes four routes: Beverly Hills Route, Crystal River Route, Homosassa Route, and Inverness Route. **Error! Reference source not found.** summarizes service characteristics about the routes and Figure 2 illustrates the routes.

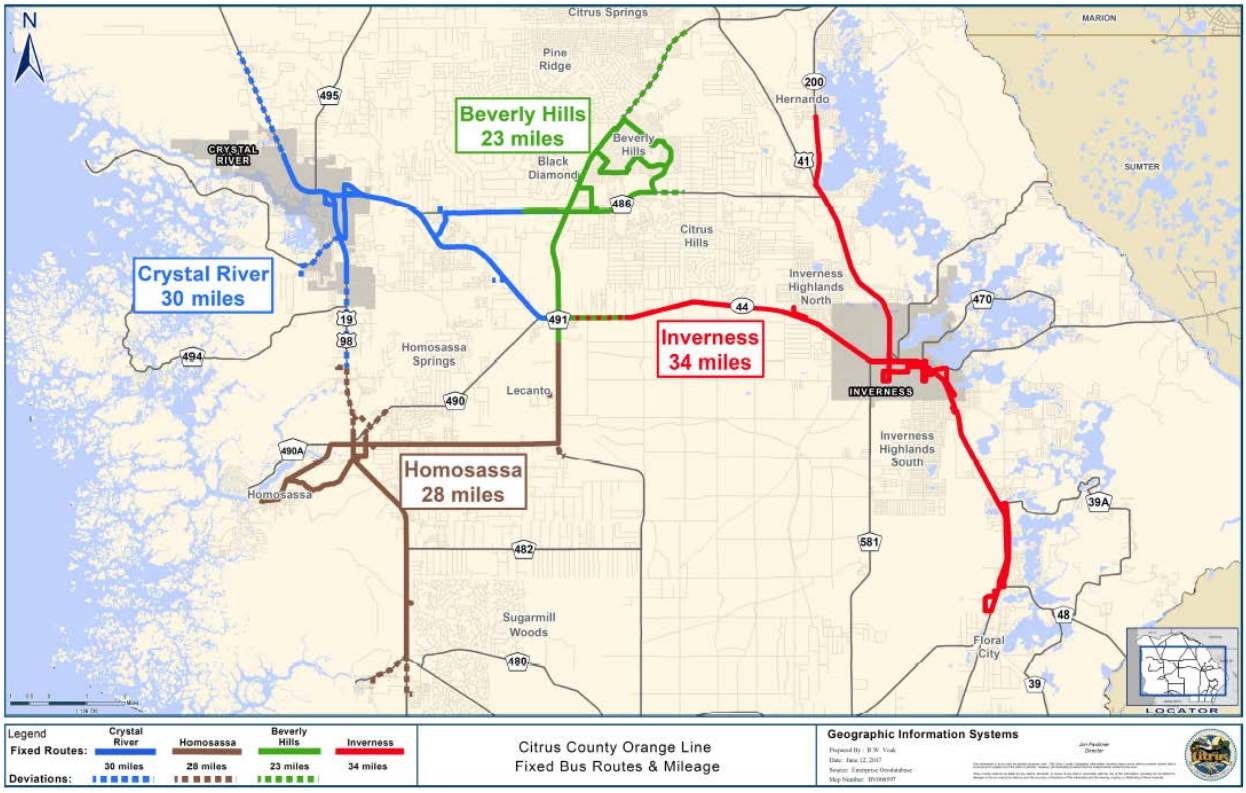


Figure 2: Orange Line Bus Routes Map (Source: Citrus County 2019 TDP Update)

Table 2: Citrus County Orange Line Bus Routes

Route Name	Key Locations/Corridors Served	Weekday Service Frequency	Days of Service	Weekday Span	FY 2017 Ridership
Beverly Hills Route	Serves Beverly Hills neighborhoods along CR 491 from County Transit office to SR 44 and Citrus Center	135 min	Mon – Fri	6:00 AM – 6:27 PM	11,715
Crystal River Route	Serves major activity centers of West Citrus Gov't Center, Coastal Region Library, County Health department, County Mall, and Community Outreach Center by making a loop along CR 491, CR 486, SR 44, and US 98. Connects to other buses at the County Transit office and with the Homosassa Route at the Community Outreach Center.	135 min	Mon – Fri	6:00 AM – 6:41 PM	14,511
Homosassa Route	Out and back route along CR 491 between the County Transit office and Homosassa Spring area and Walden Woods via US 98. Connects to Crystal River Route and the County Outreach Center and other buses at the County Transit Office.	135 min	Mon – Fri	6:00 AM – 6:45 PM	10,034
Inverness Route	Serves Inverness area activity centers along US 41 corridor from Inverness Blvd on the south to Lantana Way on the north. Connects to other routes at the County Transit Office.	135 min	Mon – Fri	6:00 AM – 7:20 PM	22,000

Transit Needs Assessment

The list of potential transit projects for the 2045 Cost Feasible Transit Plan was generated by reviewing the findings and recommendations from current and previous plans, including the Transportation Improvement Program (TIP), Hernando-Citrus 2040 LRTP, Hernando County 2020-2029 Transit Development Plan (TDP), and the Citrus County TDP 2019 annual report. A review of transit markets was also completed to confirm or refine the list of potential transit projects in the two-county area.

Previous Plan Review

Hernando-Citrus MPO TIP

The Hernando-Citrus MPO adopted the most recent TIP representing the next five years (2019/2020 to 2023/2024). The TIP presents the MPO's five-year financially feasible program of transportation projects as adopted by state, regional, and local transportation authorities. The TIP includes all transit projects and anticipated revenues for both counties. The following is the transit-specific list of projects in the 2019/2020-2023/2024 TIP.

Project ID	Project Type	Description
402628 1	CITRUS CAPITAL FOR FIXED ROUTE	FTA SECTION 5311 OPERATING *NON-SIS*
402628 2	CITRUS OPERATING/ADMIN. ASSISTANCE	FTA SECTION 5311 *NON-SIS*
402628 4	CITRUS OPERATING/ADMIN. ASSISTANCE	CITRUS COUNTY BOCC - FTA SECTION 5307 *NON-SIS*
438845	CITRUS OPERATING/ADMIN. ASSISTANCE	CITRUS COUNTY BOCC - STATE TRANSIT BLOCK GRANT *NON-SIS*
401982 1	HERNANDO OPERATING/ADMIN. ASSISTANCE	HERNANDO COUNTY SECTION 5311 *NON-SIS*
401982 2	HERNANDO CAPITAL FOR FIXED ROUTE	HERNANDO COUNTY BOCC - FTA SECTION 5311 *NON-SIS*
401983	HERNANDO PTO STUDIES	HERNANDO COUNTY MPO TRANSIT PLANNING FUNDS SECTION 5303 *NON-SIS*
408104	HERNANDO OPERATING FOR FIXED ROUTE	HERNANDO COUNTY BLOCK GRANT *NON-SIS*
408715	HERNANDO TRANSIT IMPROVEMENT	HERNANDO COUNTY BOCC - FTA SECTION 5307 *NON-SIS*

Hernando-Citrus 2040 Long Range Transportation Plan

The Hernando/Citrus MPO identified a need for significant transit-related improvements in the 2040 LRTP (2015) and these were considered in the list of potential transit projects for the 2045 Cost Feasible Plan. Potential transit projects from the 2040 LRTP (2015) included improvements to existing transit service; new local, express, and rail service (rail service was identified in Hernando County only); and infrastructure and access improvements. These potential projects are discussed in Appendix A.

Hernando County 2020-2029 TDP

Hernando County adopted its updated Transit Development Plan (TDP) in August 2019. The TDP identifies the County's transit priorities for ten years (2020 – 2029) and these were considered in the list of potential transit projects for the 2045 Cost Feasible Plan. Potential transit projects from the Hernando County 2020-2029 TDP included service improvements, and capital and infrastructure improvements. These potential projects are discussed in Appendix B.

Citrus County TDP – 2019 Annual Report

Citrus County updated its TDP in 2015 and produced a progress report in 2019 that identifies the County's updated transit priorities for the next ten years (2019 – 2028). These projects were considered in the list of potential transit projects for the 2045 Cost Feasible Plan. Potential transit projects from the Citrus County TDP – 2019 Annual Report included existing service improvements, new service, capital and infrastructure improvements. and capital and infrastructure improvements. These potential projects are discussed in Appendix C.

Transit Demand Assessment

In addition to reviewing previous plans, the Transit Needs Assessment includes reviewing existing and anticipated future transit demand. The text that follows highlights key, transit-related demographic and employment information from the U.S. Census and the Hernando-Citrus Travel Demand Model (TDM).

Population

Presently, the areas with highest population densities in Hernando County are in the City of Brooksville and the larger Spring Hill area, between SR 589 and Commercial Way (US 19). Citrus County notes higher densities in West Gulf to Lake Highway (SR 44) north of Lecanto into the Beverly Hills and Inverness areas. Notable population densities also exist in Citrus County along Suncoast Boulevard (US 98) from Crystal River south to Homossassa Springs. These population patterns are anticipated to continue into 2045, with Hernando County gaining population density in the southwest part of the county. Figure 3 shows the existing population density based off of 2015 data. Figure 4 shows the 2045 forecasted population density.

Figure 3: 2015 Population Density

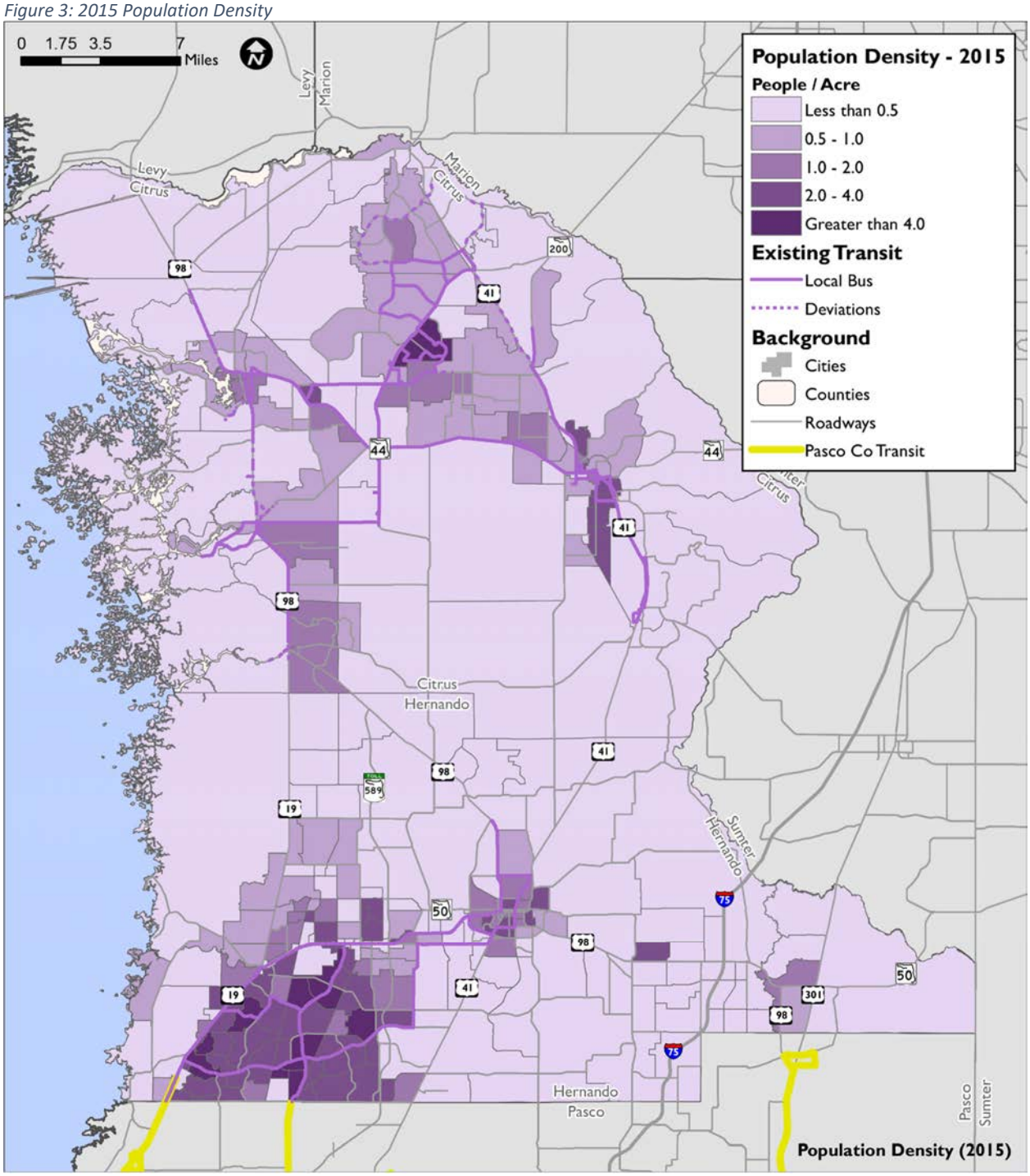
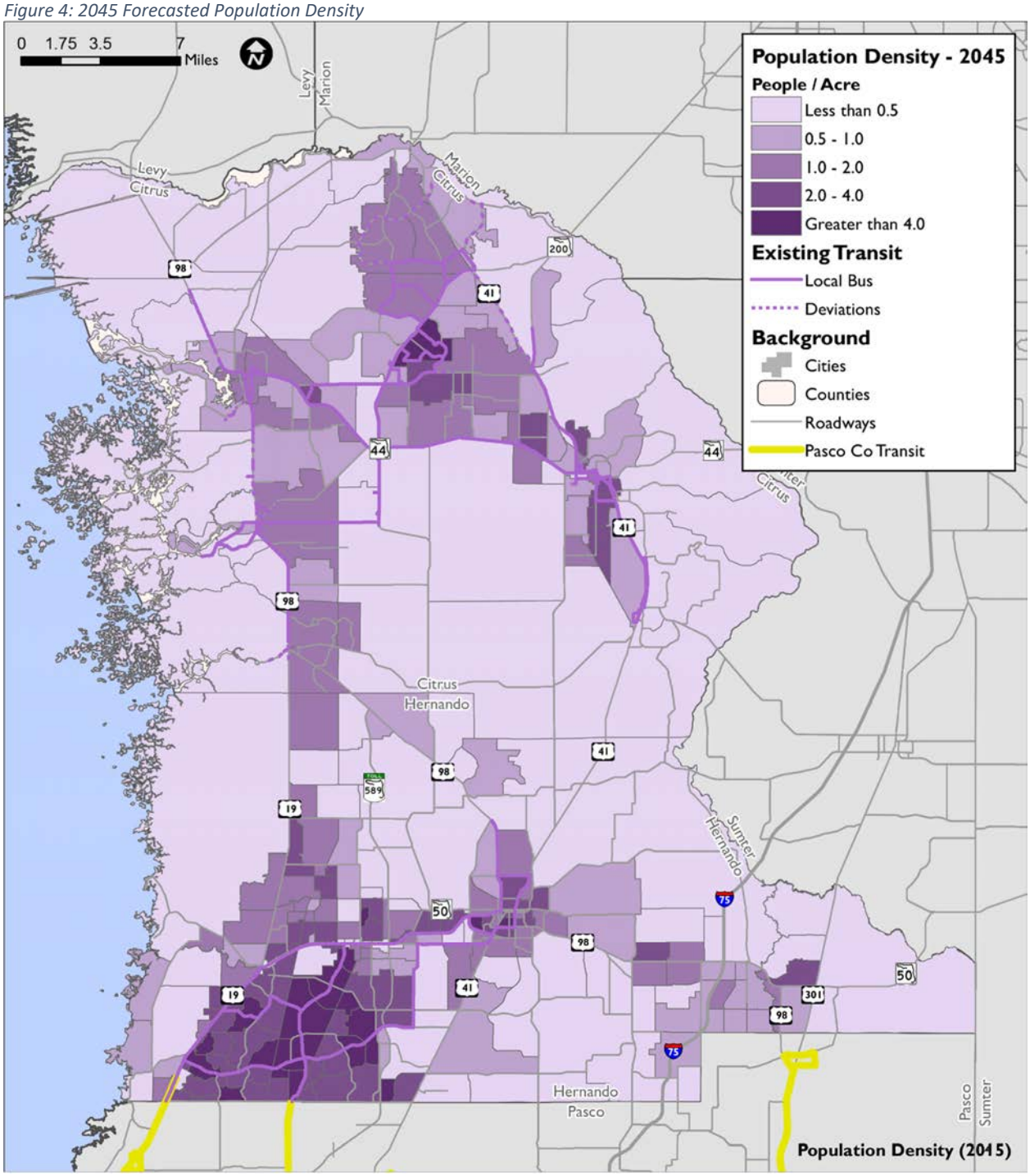


Figure 4: 2045 Forecasted Population Density



Employment

The areas with highest employment densities generally follow the same patterns as existing population densities. Employment densities, however, are more focused in specific areas. For example, in the Spring Hill area, employment is concentrated along Commercial Way (US 19) and Mariner Boulevard. Brooksville also maintains a higher-than-average employment density. In Citrus County, employment is concentrated in three areas: Inverness along US 41 (West Main Street); Crystal River (near the intersection of SR 44 and US 98); and lesser densities in the Beverly Hills area. This employment pattern is anticipated to continue into 2045, with employment densities following the same geographic patterns as population density.

Figure 5 shows the 2015 employment density; Figure 6 shows the 2045 forecasted employment density.

Figure 5: 2015 Employment Density

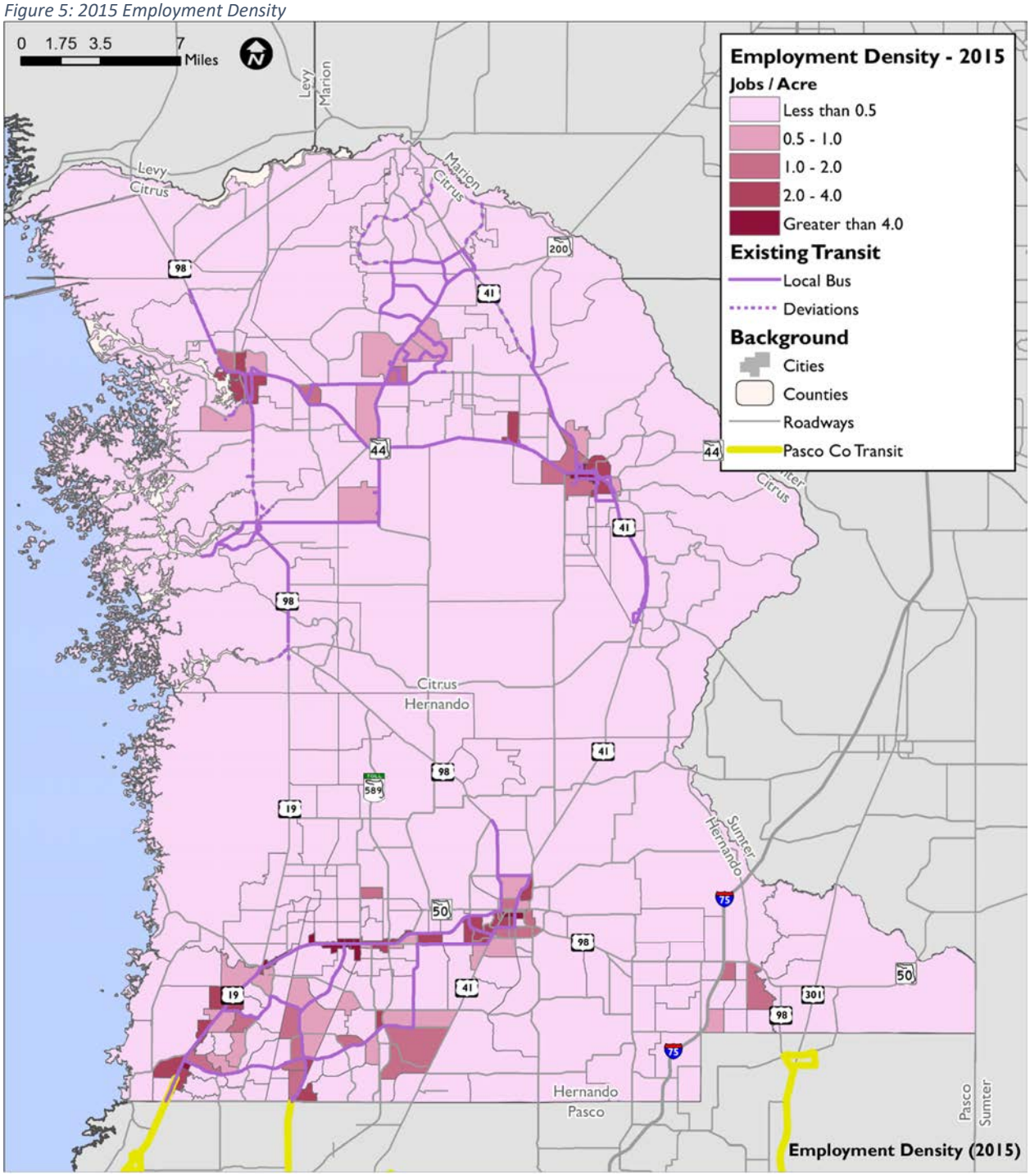
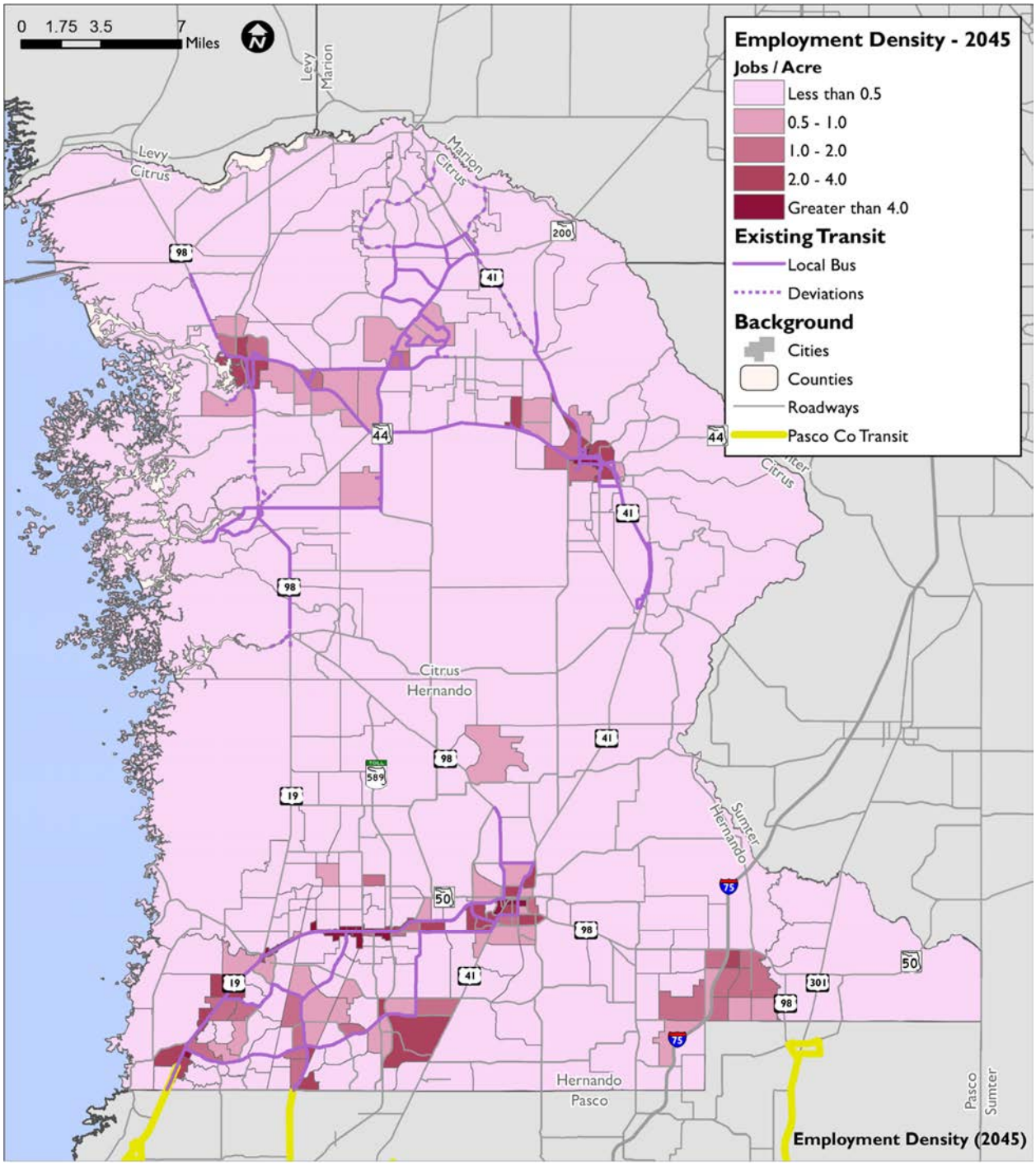


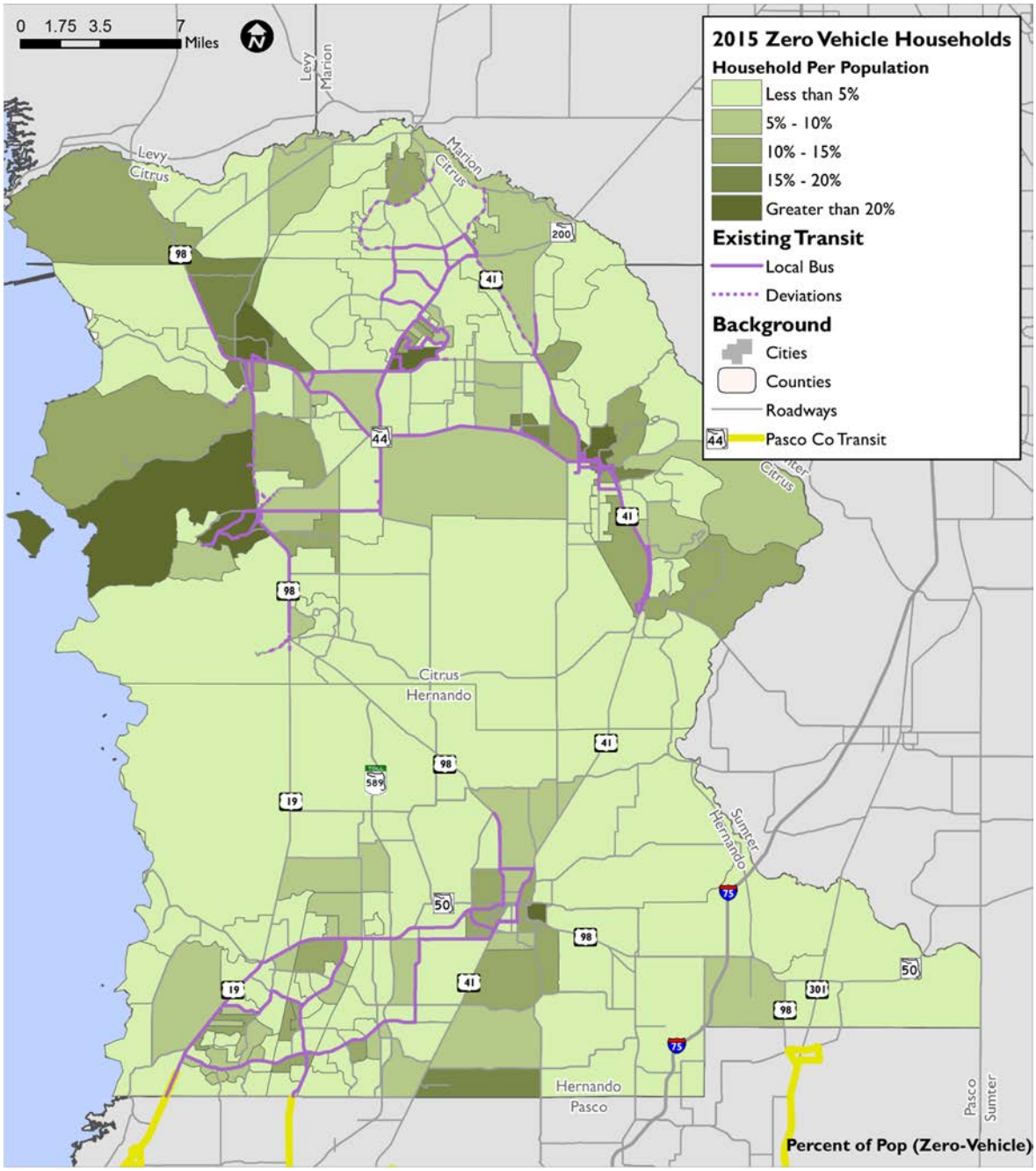
Figure 6: 2045 Forecasted Employment Density


0 1.75 3.5 7
Miles
Employment Density - 2045
Jobs / Acre
Less than 0.5
0.5 - 1.0
1.0 - 2.0
2.0 - 4.0
Greater than 4.0
Existing Transit
Local Bus
Deviations
Background
Cities
Counties
Roadways
Pasco Co Transit
Levy
Marion
Citrus
Hernando
Sumter
Pasco
Employment Density (2045)

Zero-Vehicle Households

Concentrations of zero-vehicle households are spread out in both Citrus and Hernando Counties. Zero-vehicle households in these counties are located largely within municipalities, with densities within the Crystal River, Inverness, and Beverly Hills city limits, as well as Brooksville heading south on US 41. Planners do not attempt to forecast future locations of zero-vehicle households.

Figure 7: Density of Households Without Vehicles

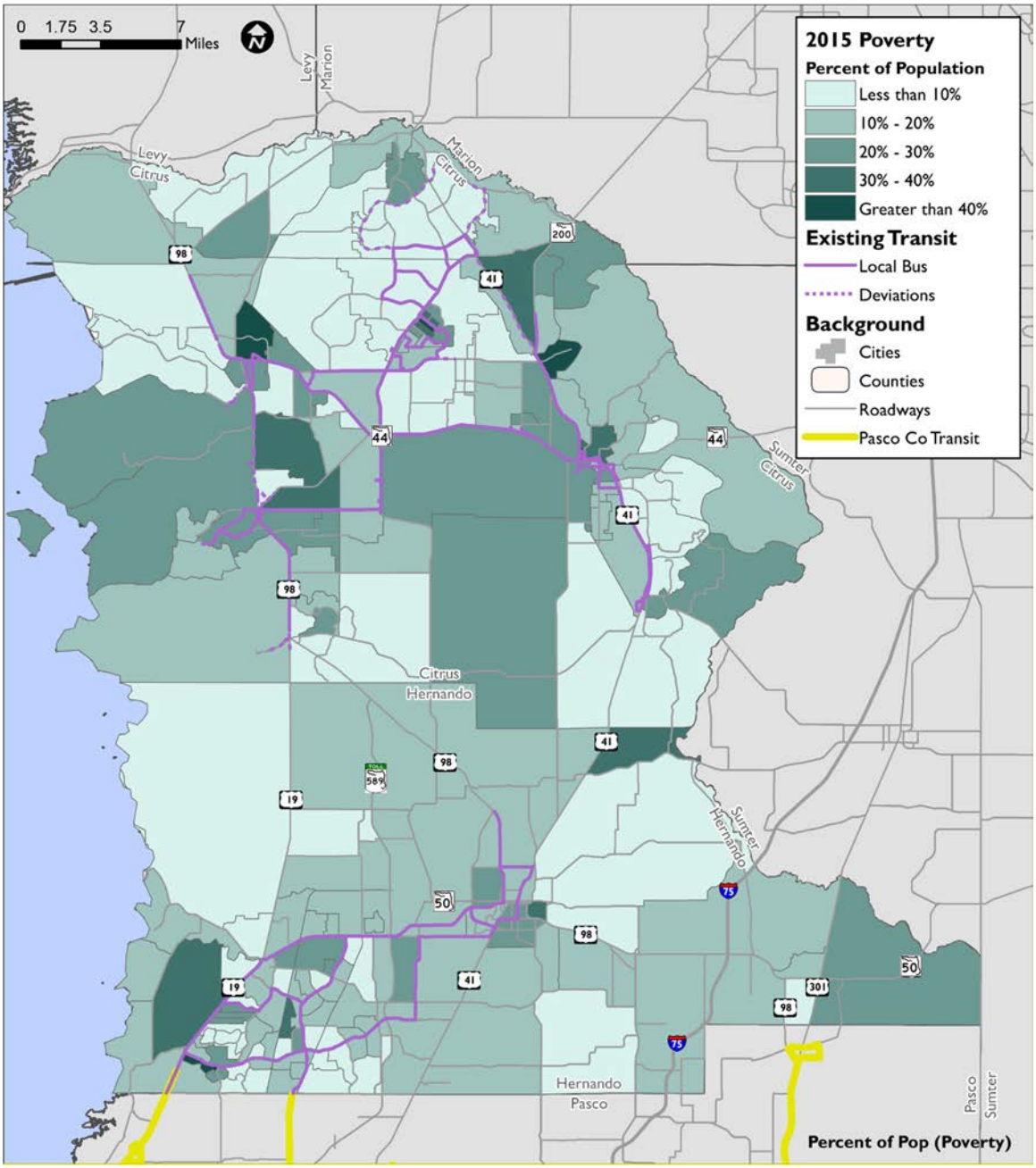


Low-Income/Poverty Threshold

Populations in Citrus and Hernando counties that are identified as low-income and living under the federally-established poverty are more dispersed throughout the counties as compared to zero-vehicle households. In Hernando County, most census block groups have at least 10% of the population living at or below the poverty threshold. Figure 8 illustrates the percent population living below poverty level by census block group.

There are concentrations along the US 19 corridor that follows east connecting through Brooksville and US 98 towards Sumter County. The pattern of low-income households in Citrus County is similar to Hernando County with concentrations of people living under the federal poverty threshold located along the US 98 corridor (starting north at Crystal River and following south to the Hernando County border), along the US 41 corridor (Citrus Springs south to Inverness), and along the SR 44 corridor connecting Inverness to Crystal River. Planners do not attempt to forecast future locations of low-income households.

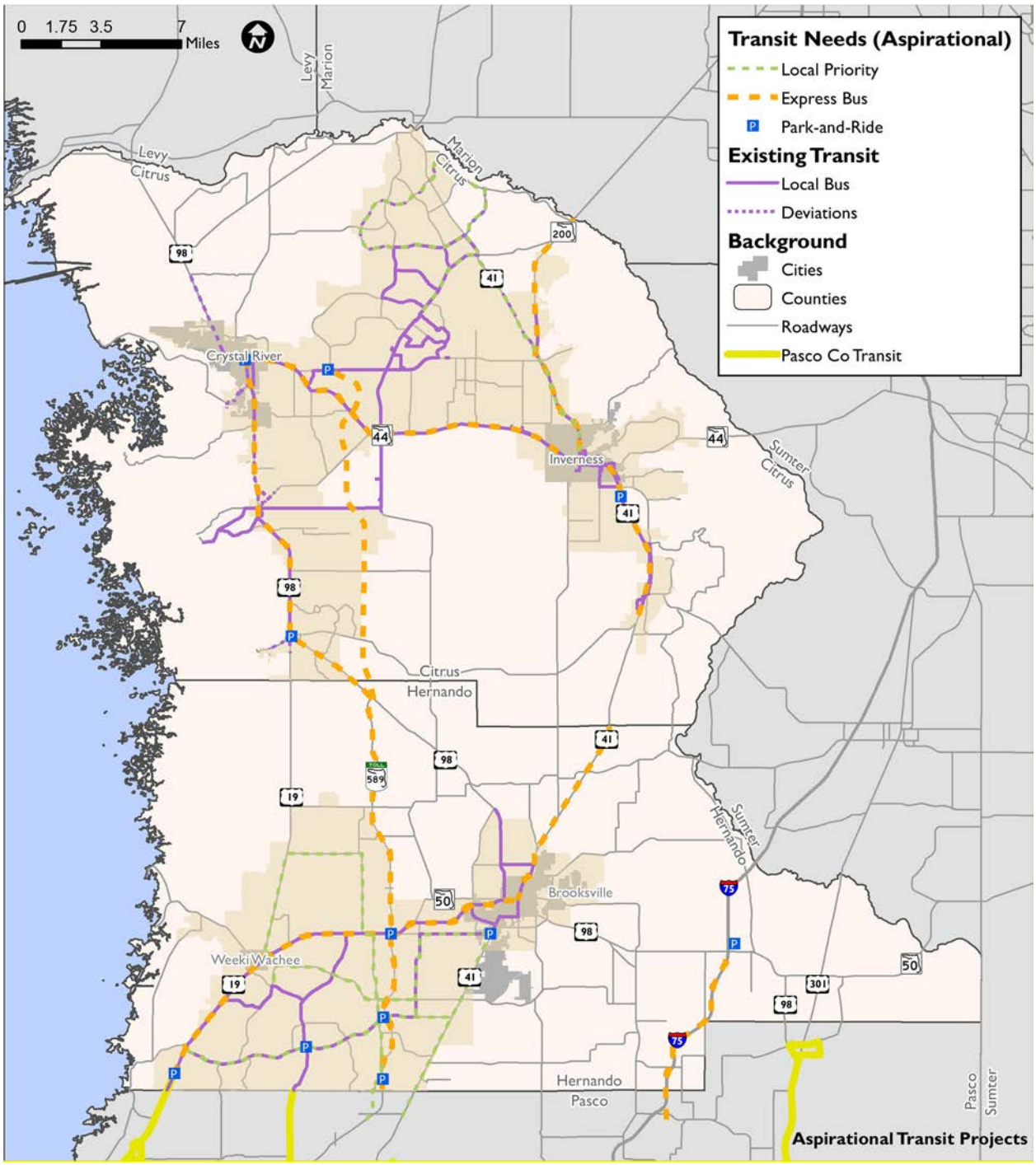
Figure 8: Percent Population Below Poverty Level by US Census Block Group



Transit Needs Evaluation and Prioritization

Figure 9 illustrates the transit needs identified based on previous studies and the transit demand assessment conducted as a part of this LRTP update. Identified needs exceed anticipated revenues through 2045. The 2045 LRTP-identified transit needs were evaluated and prioritized based on ability to operate and maintain existing transit service, and projects identified and prioritized in previous planning efforts, especially those reiterated through the 2045 LRTP public involvement process.

Figure 9: All Transit Needs



2045 Transit Revenue Forecast

The reasonably anticipated revenues for the 2045 LRTP total approximately $95.1 million for Hernando County and $129.0 million for Citrus County.

Hernando County Transit Revenues

Revenues	5-Year Period (Fiscal Years)				Total
	2020-2025	2026-30	2031-35	2036-45	2019-2040
Federal Operating	$5,201,000	$5,630,000	$6,034,000	$13,282,000	$26,023,000
FDOT State Block Grant	$4,335,000	$5,274,000	$6,261,000	$15,484,000	$27,955,000
Local Funds	$2,704,000	$3,505,000	$4,316,000	$11,063,000	$19,488,000
Farebox Revenues	$891,000	$1,062,000	$1,233,000	$2,977,000	$5,464,000
Other					
Total Operating Funds	$13,131,000	$15,471,000	$17,844,000	$42,806,000	$78,930,000
Total Federal for Capital	$2,696,000	$3,865,000	$3,865,000	$7,730,000	$16,233,000
Total Revenues	$15,827,000	$19,336,000	$21,709,000	$50,536,000	$95,163,000

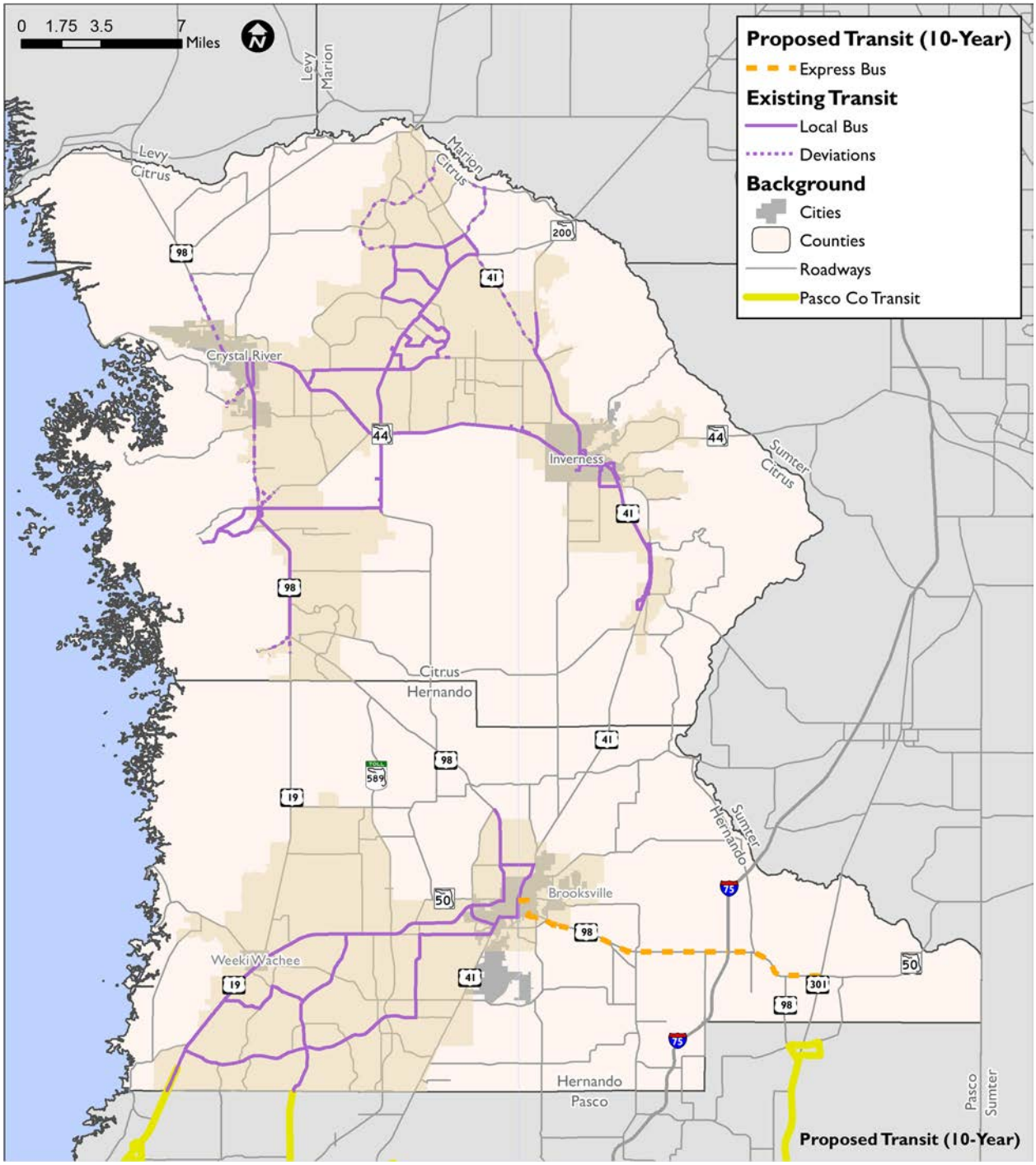
Citrus County Transit Revenues

Revenues	5-Year Period (Fiscal Years)				Total
	2020-2025	2026-30	2031-35	2036-45	2019-2040
Federal Operating	$4,899,000	$6,727,000	$8,461,000	$22,189,000	$38,513,000
FDOT State Block Grant	$1,364,000	$1,860,000	$2,323,000	$6,061,000	$10,560,000
Local Funds	$5,155,000	$7,030,000	$8,777,000	$22,901,000	$39,903,000
Commission for TD Operation	$3,052,000	$4,162,000	$5,197,000	$13,560,000	$23,627,000
Farebox Revenues	$369,000	$502,000	$629,000	$1,639,000	$2,856,000
Other					
Total Operating Funds	$14,839,000	$20,281,000	$25,387,000	$66,350,000	$115,459,000
Total Federal for Capital	$3,501,000	$3,412,000	$3,175,000	$6,350,000	$13,583,000
Total Revenues	$18,340,000	$23,693,000	$28,562,000	$72,700,000	$129,042,000

2045 Cost Feasible Transit Plan

The 2045 Cost Feasible Transit Plan maintains existing service and fleets for both counties. The plan was developed using the transit needs assessment, year-of-expenditure transit project costs and revenues, and input from the public, MPO Committees, and MPO board.

Figure 10: 2045 Transit Cost Feasible Plan



Timeframe 1 (TIP, 2019/2020-2024/2025)

Hernando County

In the existing Transportation Improvement Program (TIP), Hernando County will add Saturday service, expand service hours to 9pm on weekdays, and start the East Hernando Connector Express Service. The TIP also includes a vehicle replacement and acquisition program to support existing and expanded service.

Citrus County

Citrus County maintains its existing transit service and fleets in the TIP.

Timeframe 2 (2026-2030)

Hernando County

Hernando County includes investment in three shared park-and-ride facilities, a major transfer facility, as well as a vehicle replacement and acquisition program to support existing service in Timeframe 1. The park-and-ride facilities and transfer facilities are not shown in the map.

Citrus County

Citrus County maintains existing transit service and fleets in this timeframe.

Timeframe 3 (2031-2035)

Hernando County

Hernando County maintains services, fleets, and facilities established or maintained in Timeframe 1.

Citrus County

Citrus County maintains its existing transit service and fleets in this timeframe.

Timeframe 4 (2036-2045)

Hernando County

Hernando County maintains services, fleets, and facilities established or maintained in Timeframe 1.

Citrus County

Citrus County maintains its existing transit service and fleets in this timeframe.

Aspirational

Where transit needs could not be met due to financial constraints, the projects were included in the Aspirational transit project list for Hernando and Citrus Counties. Previously pictured Figure 9 illustrates the Aspirational transit projects in addition to those considered Cost Feasible.

Appendix A.

Hernando-Citrus 2040 Long Range Transportation Plan Review Findings

The Hernando/Citrus MPO identified a need for significant transit-related improvements in the 2040 LRTP (2015), consisting of both existing service enhancements and additional capital projects. Note that the 2040 LRTP included projects for the Hernando/Citrus Region, and improvements were categorized by specific county. The overall goals, applicable to both counties, as defined in the 2040 LRTP are:

1. Support the development of the county's economy and manage growth through the development of financially-feasible multimodal facilities and services and affordable growth strategies. (Economic Development, Growth Management)

2. Increase the safety and security of the county's transportation system. (Safety and Security)

3. Provide for the mobility needs of the county's population and economy by providing safe, secure, effective, and efficient movement of people and goods. (Highway Capacity and Mobility)

4. Support the efficient, safe, and secure integration of port, airport, and rail modes of transportation and associated intermodal facilities into one cohesive intermodal system. (Goods Movement)

5. Preserve, where possible, and enhance community social and environmental values. (Social and Environmental Value)

The LRTP project recommendations were developed through a robust public engagement process of open houses, surveys, and workshops, before submitting to a cost feasibility and policy impacts evaluation to determine cost-constrained project recommendations.

Hernando County

The 2040 LRTP project improvements for Hernando County consist of improvements to existing service, expansion of local, express, and rail service, and infrastructure/access improvements.

Improvements to Existing Service

- Increase service frequency on existing routes from 75-minute to 30-minute headways (service was improved to 60-minute headways in 2016)
- Add Saturday service on existing routes
- Expand the operational hours of all routes by three hours (aim for ~16-hour service span)

New Service

New Local Service

- **Green Route** - Establish the Green route as a local bus connection between Hernando Airport and Spring Hill and Brooksville

- **East Hernando Connector** - Establish East Hernando connector local bus service during peak hours with the option to expand in the future. The service will provide an east-west connection between Brooksville and I-75 and connecting to Pasco County in the south.
- **Spring Hill-Airport Circulator** - Establish a Spring Hill-Airport circulator local bus service
- **North-South Connector** - Establish a north-south connector bus service
- **US 41 Service** - Establish local bus service along US 41 to connect Brooksville with the Brooksville-Tampa Bay Regional Airport and connect to regional local service

New Express Service

- **I-75 Regional Express** - Establish I-75 Regional Express service to provide an inter-county connection between Hernando and Pasco Counties
- **Citrus Connector Express** - Establish a Citrus Connector Express service to provide an inter-county connection between Hernando County and Citrus County
- **US 19/SR 50 Express** - Provide an express service route along US 19 and SR 50 that connects to Pasco Hernando State College (PHSC) near county border
- **Suncoast Parkway Express** – Establish express service along Suncoast Parkway connecting Citrus and Pasco County

New Rail Service

- **Commuter Rail** - Coordinate with TBARTA to establish commuter rail to operate on the existing CSX railway and connect Pasco County with Brooksville

Infrastructure and Access Improvements

- Establish three (3) shared use park-and-ride lots
- Implement bus stop amenity improvements
- Establish a transit transfer center on SR 50
- Improve transit accessibility with regards to safety and ADA compliance on sidewalks, crosswalks, ramps, etc.)

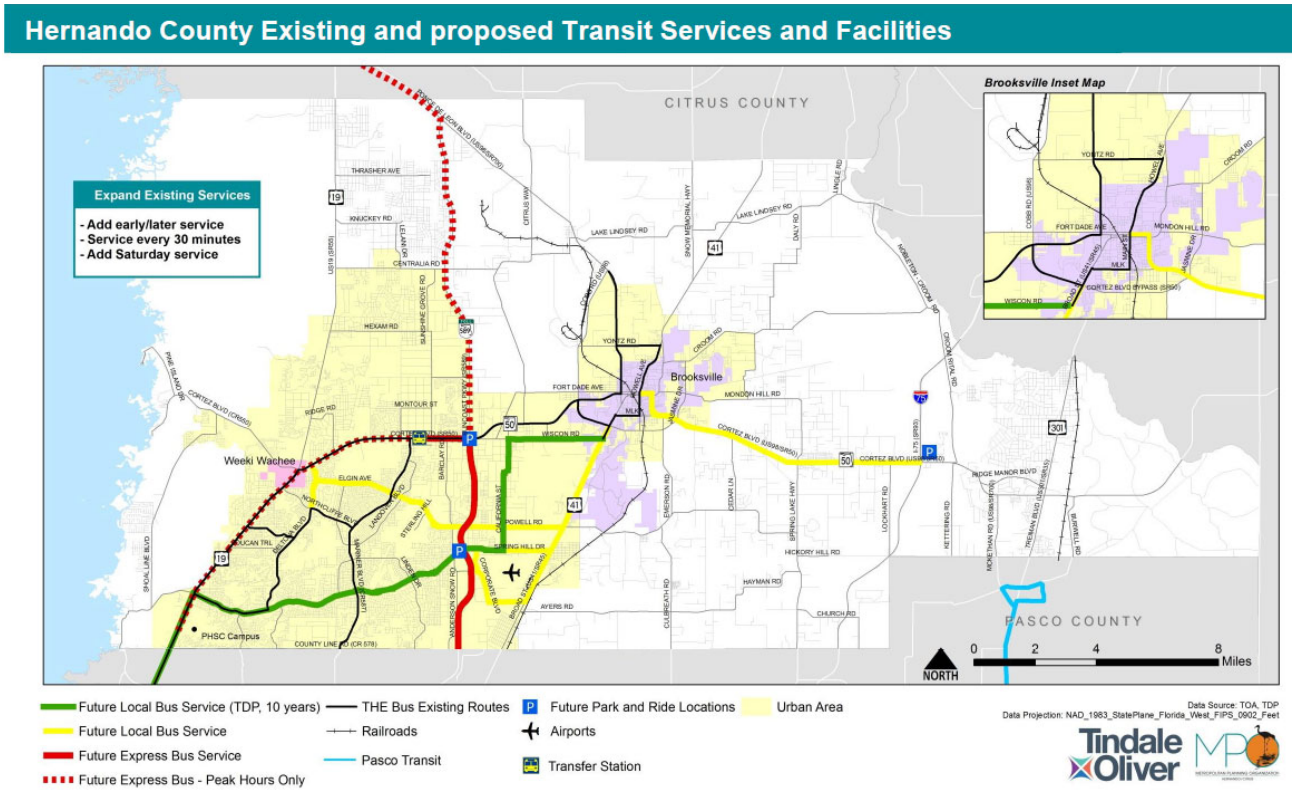


Figure 11: Map of Hernando County Existing and Proposed Transit Services (Source: 2040 LRTP)

Citrus County

The 2040 LRTP transit project improvements for Citrus County consist of improvements to existing service, expansion of local and express service, and infrastructure/access improvements. Many recommendations are applicable to both Hernando and Citrus Counties and thus are repeated below.

Improvements to Existing Service

- Increase service frequency on existing routes to 60-minute headways (currently 135 minutes; objective to improve to 30 minutes by 2040)
- Expand the operational hours of all routes by three hours (aim for ~16-hour service span)

New Service

New Local Service

- **Citrus Springs Connector** - Establish local bus service from Downtown Inverness to Citrus Springs with a transfer opportunity with the existing Beverly Hills route

Express Service

- **Citrus-Inverness Limited Express** - Establish an intra-county express service along SR 44 that connects Inverness and Crystal River. The project would also connect to the proposed Citrus Connector Express service recommended for Hernando County
- **US 19 Express** - Provide an express connection between Spring River in Citrus County and Hernando County along US 19 and US 98

- **Ocala Express** - Establish the Ocala Express route that provides connections to Ocala in Marion County and runs along US 41

Infrastructure and Access Improvements

- Establish three (3) shared use park-and-ride lots
- Implement bus stop amenity improvements

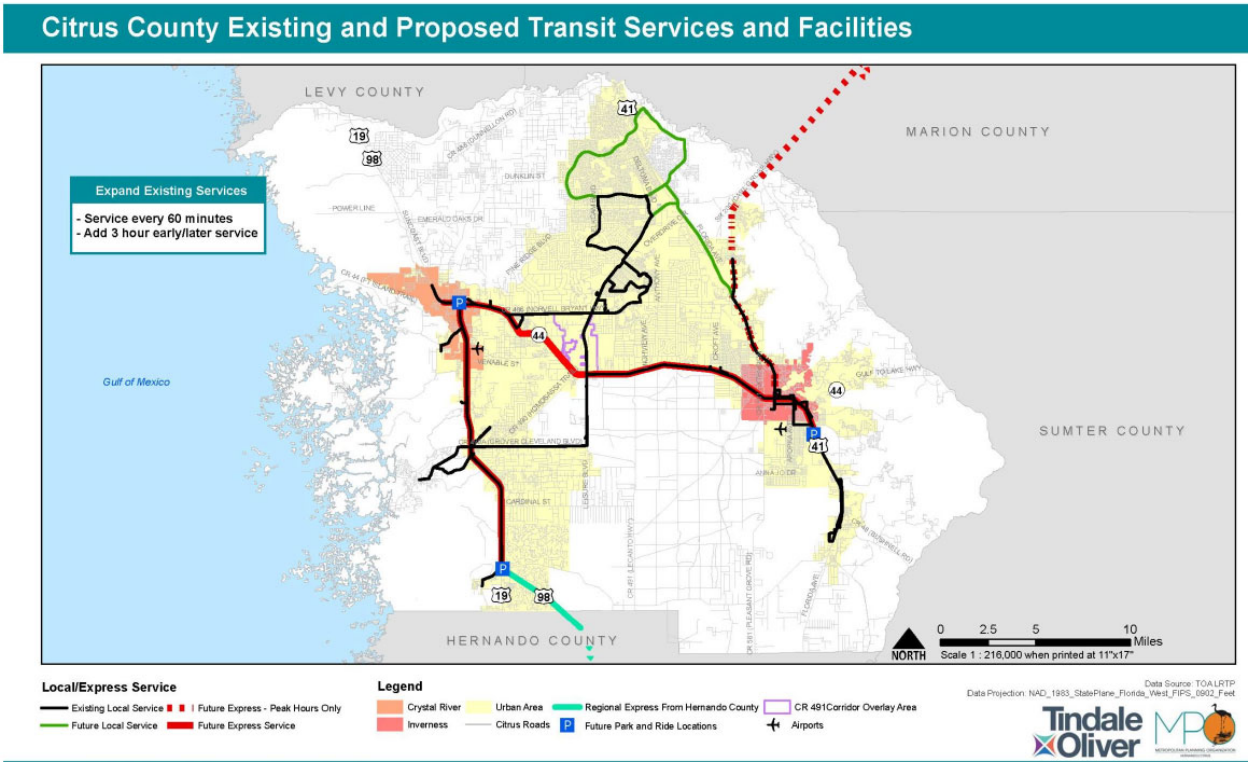


Figure 12: Map of Citrus County Existing and Proposed Transit Services (Source: 2040 LRTP)

TBARTA Master Plan

The Tampa Bay Area Regional Transit Authority (TBARTA) updated its Regional Transportation Master Plan in 2015, refining its strategic vision for transit in the region. The plan incorporated the MPOs' six adopted cost-feasible plans from the LRTPs. As part of the plan, TBARTA stated it will work to identify and select priority transit projects annually based on project readiness, funding, modal connections, and other opportunities. In Hernando and Citrus Counties, the TBARTA Regional Transportation Master Plan identified one priority project, the Suncoast Parkway 2 (SR 589) project, which builds a toll highway through Citrus County. This express bus route was identified as a need in the 2040 LRTP.

Appendix B.

Hernando County 2020-2029 Transit Development Plan (TDP) Review Findings

Hernando County adopted its updated Transit Development Plan (TDP) in August 2019. The TDP identifies the County's transit priorities for ten years (2020 – 2029). The information that follows is from the 2020-2029 TDP. The County defined its transit goals for the relevant period, focusing on increasing ridership, improving service levels and visibility of the system, improving cost efficiency of operations, enhancing social and environmental considerations, integrating with supportive land-use efforts, and pursuing inter-jurisdictional coordination. The needs identified for the 2020 – 2029 were categorized into service improvements and capital/infrastructure improvements.

Service Improvements

- Add Saturday service to all routes (8:00 AM – 5:00 PM)
- Extend service hours until 9:00 PM on existing routes
- Establish East Hernando Connector bus service (along SR-50 from Brooksville to I-75)
- Implement Commuter Express Service on Suncoast Parkway (coordination with TBARTA; currently unfunded and identified as long-term project)

The projects were evaluated and prioritized by weighing four groups of project benefits: community support (40%), ridership potential (20%), regional connectivity (15%), and funding potential (25%). A prioritization of service-related alternatives is presented in Table 3.

Table 3: Hernando County TDP Recommended Projects (Source: 2019 TDP Major Update)

TDP 10-Year Needs	Criteria				Weighted Score	Priority Rank
	Community Support	Ridership Potential	Regional Connectivity	Funding Potential		
Extend service hours until 9:00 PM on existing routes	VERY HIGH	MEDIUM	HIGH	HIGH	4.3	1
Saturday service to all existing routes	VERY HIGH	MEDIUM	HIGH	MEDIUM	4.0	2
Commuter Express service on SR-50/Suncoast Parkway	MEDIUM	LOW	HIGH	HIGH	2.3	3
East Hernando Connector	MEDIUM	LOW	LOW	LOW	1.4	4

Improvement alternatives are scored using ranking of "Very High," "High," "Medium," or "Low" based on qualitative/quantitative evaluation process in this report. Scores for each rankings as follows: Very High = 7, High = 5, Medium = 3, and Low =1.

Capital and Infrastructure Improvements

- Establish a major transit facility to accommodate transfers and expanded service
- Roll-out the flamingo Fares program, a mobile fare payment app
- Continue vehicle fleet replacement and acquisition
- Improve bus stop and ADA-compliance at transit facilities
- Establish shared park-and-ride facilities to support proposed express service
- Expand transit marketing program, including using social media platforms
- Work with the business community to develop employee bus pass programs
- Coordinate with TBARTA to promote transportation demand management (TDM) strategies
- Roll-out real-time bus location app and signs

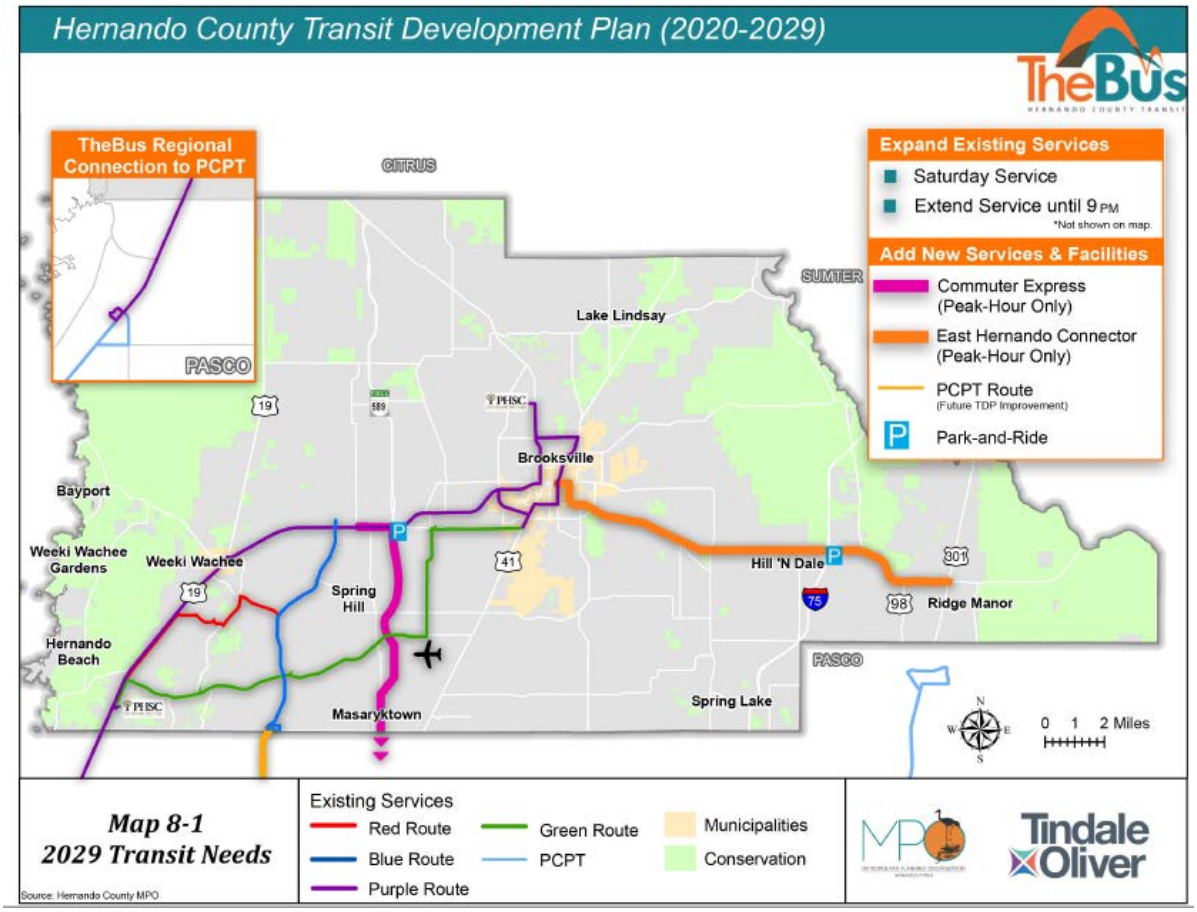
After considering costs and anticipated revenues, the TDP recommends the implementation plan summarized in Table 4. Note that as circumstances change, the implementation plan will be refined.

Table 4: Implementation Timeline for Hernando County TDP Projects

TDP Improvement	Implementation Year
Fixed-Route Bus Service	
Add Saturday service to existing routes (8:00 AM to 5:00 PM)	2020
Extend service hours to 9:00 PM on existing routes	2020
Add East Hernando Connector (AM and PM bus service to Ridge Manor)	2024
Add commuter express service on Suncoast Parkway	Unfunded
Capital/Infrastructure/Technology	
Bus stop infrastructure/ADA accessibility improvements	2020–2029
Shared park-and-ride facilities	2020–2030
Major transfer facility (secure a location and development)	2025–2029
Real-time bus location app/displays	Unfunded
Policy/Other Improvements	
Implement regional mobile payment app	2020
Engage businesses to develop employee bus pass/subsidy programs	2020–2029
Coordinate with TBARTA to promote TDM strategies	2020–2029
Expand transit marketing program	2020–2029

Figure 13 displays a map of the Hernando County 2020-2029 TDP improvement recommendations.

Figure 13: Hernando County 2019 TDP Transit Needs



Appendix C

Citrus County TDP 2019 Annual Report Review Findings

Citrus County updated its Transit Development Plan (TDP) in 2015 and produced a progress report in 2019 that identifies the County's updated transit priorities for the next ten years (2019 – 2028). The progress report summarizes successes from and refinements to the 2016-2025 TDP based on findings from the 2040 LRTP update process and input from County and MPO staff. Some of the projects identified in the 2015 TDP are active or funded, but most of the 2015 TDP project recommendations for Citrus County remain unfunded in the progress report. Unfunded projects, summarized below, are grouped as service improvements, capital/infrastructure improvements, and policy improvements.

Service Improvements

Existing Service Improvements

- **Increase existing route frequency to 60 minutes** – Unfunded in TDP progress report; projected implementation changed to 2030 for consistency with the 2040 LRTP
- **Expand early/late service on all routes by 3 hours on weekdays** – Unfunded in TDP progress report; projected implementation changed to 2030 for consistency with the 2040 LRTP alignment
- **Add back Saturday service for the Orange Line** – Unfunded in TDP progress report; unknown implementation timeframe

New Service Improvements

- **Ocala Express** - Establish the Ocala Express route that provides connections to Ocala in Marion County and runs along US 41. Unfunded; projected implementation in 2036
- **Citrus-Hernando Express** – Establish commuter express service along SR44 and on the proposed Suncoast Parkway from Citrus County Transit's office in Lecanto to the Mariner Square transfer center in Hernando County. Unfunded; implementation timing depends on completion of the Suncoast Parkway extension (Hernando County inter-county express along US 98 – 2038 implementation)

Capital and Infrastructure Improvements

- **Purchase transit software and radio system** – funded; implementation through 2026
- **Establish shared-use park-and-ride lots** – coordinated with Citrus-Hernando Express service; unfunded
- **Continue vehicle replacement and acquisition** – ongoing and assuming a five-year useable life for buses; funded through 2026
- **Add additional transit infrastructure** – funded for 2022-2026

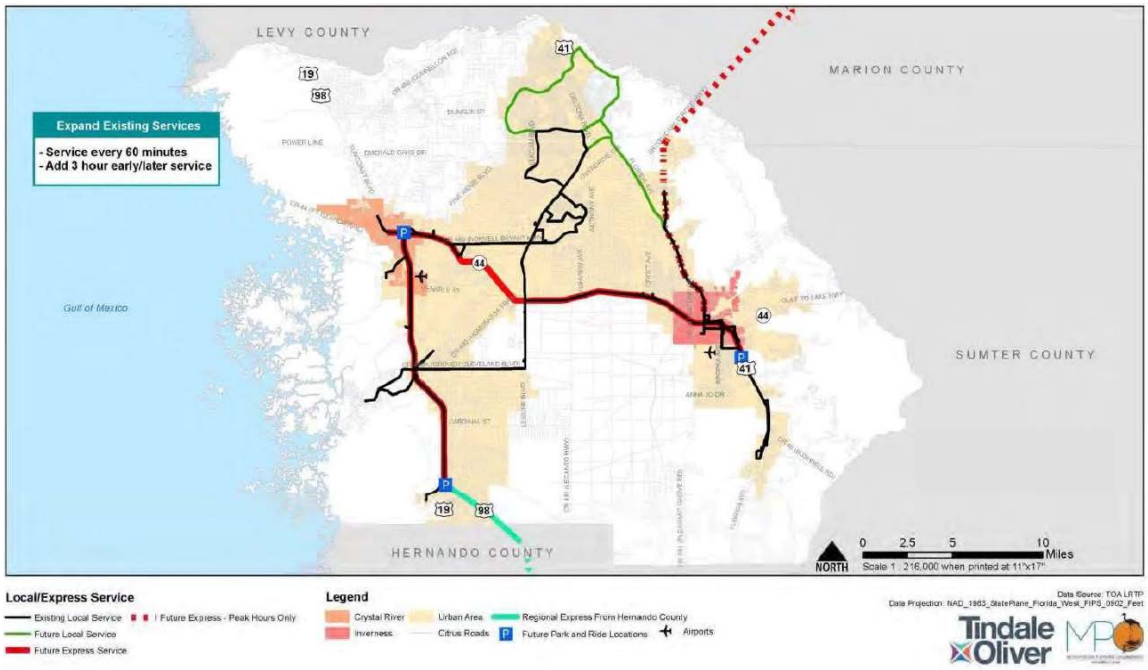
Policy Improvements

- **Reduce the number of route deviations** – reduce one-way trip deviations to two so that Citrus County Transit can provide ADA-compliant ¾-mile deviations; no service changes currently planned

- **Explore transforming the current system to a traditional fixed-route service** – no service changes planned currently
- **Continue transit marketing program** – no financial impacts identified for duration of the plan
- **Promote TDM strategies** – no financial impacts identified for duration of the plan

Figure 14 illustrates the existing and future transit system as outlined in the 2019 Citrus County TDP Progress Report.

Figure 14: Map of 2019 Citrus County TDP Progress Report Existing and Future Transit Projects





Appendix L

TRANSIT DEVELOPMENT PLANS

Citrus County
Transit Development Plan (TDP)

Citrus County Transit Services
1300 South Lecanto Highway
Lecanto, Florida 34461

Annual TDP Update 2019

Prepared by
Hernando/Citrus Metropolitan Planning Organization
1661 Blaise Dr.
Brooksville, FL 34601
(352) 754-4082

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Section 1.: Introduction

TDP Annual Progress Report Requirements

The State of Florida Public Transit Block Grant Program was enacted by the Florida Legislature to provide a stable source of funding for public transit. The Block Grant Program requires public transit service providers to develop, adopt, and annually update a 10-Year Transit Development Plan (TDP). Under legislation that became effective February 20, 2007, the TDP must undergo a Major Update every five years. In the interim years, an update is to be submitted in the form of a progress report on the 10-year implementation program of the TDP.

Each update must be submitted annually to the appropriate Florida Department of Transportation (FDOT) District Office by September 1st. The most recent major update of the Citrus County TDP covering fiscal years (FYs) 2016-2025 was adopted by the Citrus County Board of County Commissioners (BOCC) in August 2015. This document serves as Citrus County's annual progress report FY 2018/19 and meets the requirement for a TDP annual progress report in accordance with Rule Chapter 14-73, Florida Administrative Code (FAC). A major update to the TDP is due by September 1, 2020 and has been initiated.

Organization of Report

In addition to this Introduction, this annual progress report includes the following sections:

- **Section Two**, which provides an overview of the activities and accomplishments completed in FY 2018/19 following completion of the 2016-2025 TDP Major Update which was adopted prior to September 1, 2015.
- **Section Three**, which updates and assesses the goals and objectives from the 2016-2025 TDP Major Update based on the undertakings in FY 2018/19
- **Section Four**, which provides an updated implementation and financial plan and extends the TDP implementation plan to include a new tenth year, covering FYs 2020-2029.

Table 1-1 lists the TDP requirements from Rule 14-73.001, FAC for annual TDP progress reports and indicates where in this document discussion of each can be found.

Table 1-1: TDP Annual Progress Report Checklist

Annual Progress Report Checklist Item	Report Section
Past year's accomplishments compared to the original implementation program.	Section 2—Overview and Accomplishments for FY2018/19
Analysis of any discrepancies between the plan and its implementation for the past year and steps that will be taken to attain original goals and objectives.	Section 3—Goals and Objectives Assessment
Any revisions to the implementation program for the coming year.	Section 4—Updated Implementation and Financial Plan
Revised implementation program for the tenth year.	Section 4—Updated Implementation and Financial Plan
Added recommendations for the new tenth year of the updated plan.	Section 4—Updated Implementation and Financial Plan
A revised financial plan.	Section 4—Updated Implementation and Financial Plan
A revised list of projects or services needed to meet the goals and objectives, including projects for which funding may not have been identified.	Section 4—Updated Implementation and Financial Plan

Source: Rule 14-73.001(4), FAC.

Section 2.: Overview and Accomplishments for FY 2018/19

Citrus County Transit System Overview

The Citrus County BOCC, the transit grant recipient in Citrus County, is technically viewed as the operator of transit services in Citrus County. The transit system, called Citrus County Transit, has been in operation since 1978 under the County's Department of Community Services. Citrus County Transit provides two types of services: a deviated fixed-route bus service (Orange Line Bus) and a demand response paratransit service (Transit Bus). Today, Citrus County Transit operates 26 vehicles with an average of 6,697 trips per month—4,422 Orange Line trips and 2,275 Transit Bus trips.

Orange Line Bus

The Orange Line Bus service is a deviated fixed-route bus service that allows a bus to pick up a passenger at a bus stop within ¼-mile from the regular route alignment. The passenger must call at least one hour before the time he/she would like to be picked up. The service currently has four routes that form a radial network with all routes originating from Citrus County Transit's office. Routes operate Monday–Friday with service starting at 6:00 AM and ending approximately 6:30 to 7:20 PM with 135-minute headways. A description of each route is presented below.

- The **Beverly Hills Route** operates along CR 491 from the south end at Citrus County Transit's office to the north end of intersection of CR 491 and N Deltona Blvd. The route provides access to several neighborhoods in Beverly Hills and deviates east along SR 44 to the Citrus Center.
- The **Crystal River Route** starts at Citrus County Transit's office and makes a loop back along CR 491, CR 486, SR 44, and US 98. Major activity centers covered by this route include West Citrus Government Center, Coastal Region Library, Crystal River Health Department, Crystal River Mall, and Citrus Community Outreach Center. The route makes connections to the Homosassa Route at the Citrus Community Outreach Center and other Orange Line Bus routes at Citrus County Transit's office.
- The **Homosassa Route** runs south along CR 491 from Citrus County Transit's office and extends to Homosassa Spring area via W Grover Cleveland Blvd and to the Waldon Woods Entrance via US 98. The route then returns to Citrus County Transit's office along the same roadways it traverses for its outbound trip. The route connects to the Crystal River Route at the Citrus Community Outreach Center and other Orange Line Bus routes at Citrus County Transit's office.
- The **Inverness Route** provides service along the US 41 corridor, from the south end at Inverness Blvd and Southerly Ave to the north end at Lantana Way and CR 490. The route also connects several major activity centers in Inverness. Riders on other routes can make a transfer to the Inverness Route at Citrus County Transit's office.

Table 2-1 presents a summary of existing fixed-route service operating characteristics. The current deviated fixed-route system and urban boundaries are depicted in Map 2-1.

Table 2-1: Orange Line Bus Operating Characteristics

Category	Beverly Hills Route	Crystal River Route	Homosassa Route	Inverness Route
Vehicles in service	1	1	1	2
Headways (min)	135	135	135	135
Days of service	Mon–Fri	Mon–Fri	Mon–Fri	Mon–Fri
Hours of service	6:00 AM–6:27 PM	6:00 AM–6:41 PM	6:00 AM–6:45 PM	6:00 AM–7:20 PM
2018 Annual Ridership	10,597	11,420	8,725	22,236
Annual revenue miles*	48,053	48,053	48,053	96,105

Source: Citrus County Transit

**Total annual revenue miles for the Orange Line Bus system is 240,263*

Aside from schedule adjustments, there have been no notable changes to the Orange Line Bus deviated fixed-route service since adoption of the 2016-2025 TDP Major Update.

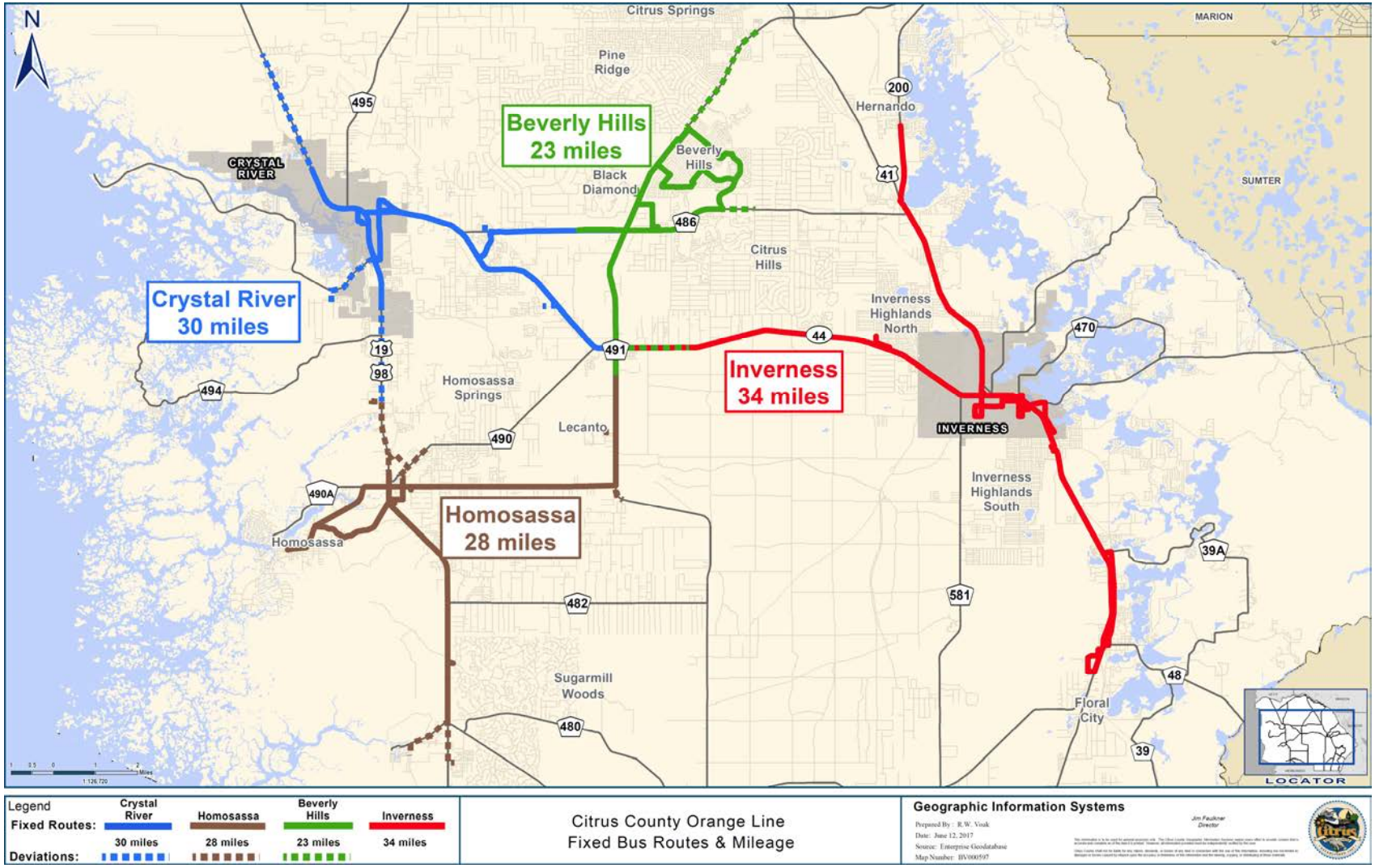
The four-route Orange Line Bus system began service on December 1, 2013. Prior to then, only a one route system was in place serving Inverness. Annual ridership for the Orange Line Bus has been consistently increasing, as shown in Table 2-2. FY 2015 is the only year to-date where all four routes were operational for the entire fiscal year. The four routes were operational part of FY 2014 and only the Inverness Route was operational prior to December 1, 2013.

Table 2-2: Orange Line Bus Ridership Trends

Fiscal Year	Service Description	Deviated Fixed-Route Ridership	Percent Growth
2014	Inverness route only	21,060	161%
2015	Inverness route only	29,516	40%
2016	Inverness route only July 1-Nov 31, 2013; All four routes operational Dec 1, 2013-June 30, 2014	51,419	74%
2017	All four routes operational	58,260	13%
2018	All four routes operational	53,068	-9%

Source: Citrus County Transit

Map 2-1 Orange Line Bus System



Transit Bus

In addition to deviated fixed-route bus service, Citrus County Transit Bus provides door-to-door transit service throughout the county as a demand-response paratransit bus system. Transit Bus service operates on preset schedules and reservations.

The system picks up riders anywhere within the county's 773 square-mile area and transports them to their planned destinations, which, in some cases, are destinations outside of the county. The service transports riders as far south as Tampa and as far north as Gainesville. Reservations are required and are accepted up to seven calendar days in advance. The service operates from Monday to Friday between 7:00 AM and 5:00 PM. As previously mentioned, the Transit Bus averages 2,275 trips per month.

There have been no significant changes to the Transit Bus service since adoption of the 2016-2025 TDP Major Update.

Transit Capital and Infrastructure

Vehicle Maintenance

Citrus County Transit maintains a preventative maintenance program to maximize the operating life of all vehicles while ensuring the safety of all passengers. All Citrus County Transit vehicles received scheduled maintenance during the past year.

Replacement Vehicles

Citrus County Transit continues to maintain an effective replacement program for its buses. Last year Citrus County Transit acquired five (5) new vehicles for replacement, three (3) paratransit and two (2) deviated fixed-route buses. The new vehicles further contribute to the attractiveness of the service, ensure service reliability, and support efforts to reduce maintenance costs. Citrus County Transit's vehicle fleet now consists of 25 vehicles with an average fleet age of 4 years.

Update of Internal Procedures, Manuals, and Reports

Citrus County Transit has also the following internal documents, including:

- System Safety Plan, updated May 2019
- Title VI Plan, updated on February 12, 2019
- By-Laws and Grievances, updated March 2019

Following adoption of the TDP Major Update, these internal documents were also updated:

- Transportation Disadvantaged Service Plan, updated on May 23, 2019
- Standard Operating Procedures, updated March 2019

Threat and Vulnerability Assessment

To ensure the resiliency of bus services in the event of a major security event, Citrus County Transit recently completed a Threat and Vulnerability Assessment of its bus operations consistent with the Federal Transit Administration's (FTA) eight-step process. The assessment includes an agency plan that deals with security events from routine to severe. Security events could include criminal activity such as hostage situations, cyber-attacks, or even terrorist attacks. The assessment identifies specific threats, organizational and personnel roles and responsibilities, and countermeasure and strategy activities.

Driver and Staff Training

Over the past year, Citrus County Transit has conducted refresher training for its staff and operators in several areas, including distracted driving, security awareness, blood borne pathogens, emergency preparedness, alcohol facts, and operator fatigue training. New operator training for individuals also occurred as necessary.

Public Involvement Activities

The Following Public Involvement Activities were conducted in FY 2018/19:

April 11, 2018: A Resource Expo was held at the Citrus County Courthouse for Citrus County's Advocacy Center, Jessi's Place where a Citrus County Transit representative provided information to citizens on transportation services provided throughout Citrus County.

April 19, 2018: A Resource Expo was held at the Central Florida College in Lecanto where a Citrus County Transit representative provided information to citizens on transportation services provided throughout Citrus County.

July 28, 2018: Key Training Telethon- Several Citrus County Transit representatives manned phone lines during the telethon.

October 24, 2018: Resource Expo was held at the Withlacoochee Technical College in Inverness where a Citrus County Transit representative provided information to citizens on transportation services provided throughout Citrus County.

Regional Transit Plans

2040 Hernando/Citrus Long Range Transportation Plan

The Hernando/Citrus Metropolitan Planning Organization (MPO) is responsible for updating the Long Range Transportation Plan (LRTP) for the Hernando/Citrus metropolitan planning area every five years. The LRTP serves as the strategic guide for the future transportation system in both Hernando and Citrus Counties. Although the Comprehensive Plan provides a vision of where the community wants to go, the LRTP provides the year-by-year strategies to reach those transportation-related goals. Although these goals are determined at the local level, they must be consistent with federal and state requirements to maintain funding. The Hernando/Citrus MPO Board approved the amended 2040 Long Range Transportation Plan Document on August 1, 2015 (with the final report dated March 2015).

Now that the 2040 LRTP has been adopted, transit improvements included in this 25-year plan can be implemented over time. The improvements originally included in the adopted TDP and subsequently adopted 2040 LRTP Cost Affordable Plan are funded in the longer term are summarized below. The year of implementation in the 2040 Cost Affordable Plan is noted in parentheses and any change from the original implementation date in the 2016-2025 TDP is also noted below. The transit improvements for Citrus County included in the adopted 2040 Cost Affordable Plan are provided in Appendix A.

Service Improvements:

- Increase service frequency to 60 minutes on existing routes (2028). This improvement was originally identified for implementation in 2024 in the TDP 10-Year Implementation Plan.
- Expand early/late service on all routes by 3 hours on weekdays (2030). This improvement was originally identified for implementation in 2025 in the TDP 10-Year Implementation Plan.
- Increase service frequency to weekly for our existing Veteran's Hospital route (2020). Expand the current service to also include The Villages and Tampa VA Hospitals (2020). This improvement was not included in the 2016-2025 TDP 10-Year Implementation Plan.

New Service Expansions:

- Ocala Express – This express service would run north from Inverness along US 41 and SR 200 and connects to Ocala in Marion County (2036). This improvement was unfunded in the in the 2016-2025 TDP 10-Year Implementation Plan.
- Crystal River-Inverness Limited Express-Express service providing intra-county connection between Inverness and Crystal River along SR 44, connecting to the proposed Citrus Connector Express in Hernando County at south end (2039). This improvement was not included in the 2016-2025 TDP 10-Year Implementation Plan.

It should be noted that the Citrus-Hernando express bus service as an alternative route via the Suncoast Parkway extension into Citrus County is identified in the 2040 LRTP Needs Plan. This improvement was identified as the Citrus-Hernando Express for implementation in 2025 in the TDP 10-Year Implementation Plan.

Infrastructure Improvements

- Additional bus stop infrastructure (2020-2040). Additional bus stop infrastructure improvements were also identified for implementation in the last five years of the TDP 10-Year Implementation Plan (2021-2025).

Section 3.: Goals and Objectives Assessment for FY 2018/19

As part of the 2016-2025 TDP Major Update process, a vision and mission for public transit services in Citrus County to guide the next 10 years was developed. The vision and mission are supported by a series of overarching goals, underneath which objectives and policies were developed to provide the policy direction to achieve the community's vision.

An assessment of Citrus County's objectives and policies that support the vision, mission, and goals pertaining to public transportation, as outlined in the FY 2016-2025 TDP, was conducted as part of this progress report. The results of this assessment are summarized on the following pages in this section.

Vision Statement: "To be a viable transportation choice for the public in Citrus County."

Mission Statement: "Provide an efficient, affordable, safe public transit service that is accessible to all, while improving the quality of life by building a sense of community through connecting neighborhoods."

Goal	Objective / Policy	Implementation Assessment
Goal 1 Maintain, improve, and enhance an efficient and safe public transit system that maximizes community benefits through increased mobility opportunities.	**Objective** 1.1 Expand the frequency of the service to no more than one hour on all existing routes by 2025 and future routes by 2030.	**Assessment** 1.1 No action this period - Identified for implementation in 2024 in the 2016-2025 TDP 10-Year Implementation Plan. Now proposed for implementation starting in 2028 as documented in Section 4.
	1.2 Explore implementation / expansion of a fixed route public transit system within areas of higher density residential and employment and mixed-use developments	1.2 No action this period - The Citrus Hernando Express was identified for implementation in 2025 in the 2016-2025 TDP 10-Year Implementation Plan. Proposed Service Expansions are unfunded improvements identified for 2036 and beyond as documented in Section 4.
	1.3 Establish inter-county, regional transit connectivity along at least one (1) major transportation corridor by 2025.	1.3 No action this period - The Citrus Hernando Express was identified for implementation in 2025 and the Inverness-Ocala Express an unfunded need in the 2016-2025 TDP 10-Year Implementation Plan. Proposed inter-county, regional service is identified as an unfunded need for 2036 and beyond as documented in Section 4.
	Policy 1.1 Improve service headways to 60 minutes on existing routes by 2025.	**Assessment** 1.1 See response to Objective 1.1
	1.2 Develop inter-county transit services along the Suncoast Parkway.	1.2 No action this period - The Citrus Connector Express and Suncoast Parkway Express connecting Hernando and Pasco counties via the Suncoast Parkway proposed for implementation starting in 2038 in the 2040 LRTP Cost Affordable Plan adopted August 2015.

Goal	Objective / Policy	Implementation Assessment
Goal 1 Maintain, improve, and enhance an efficient and safe public transit system that maximizes community benefits through increased mobility opportunities.	**Policy** 1.3 Add/expand weekend service on existing routes.	**Assessment** 1.3 Included with frequency/hours of service expansion identified for implementation in 2024 and 2025 of the 2016-2025 TDP 10-Year Implementation Plan. The addition of Saturday service is identified as an unfunded need in Section 4.
	1.4 Perform scheduled maintenance activities for all transit vehicles to keep them operable and reduce overall vehicle costs.	1.4 All vehicles received scheduled maintenance during this period
	1.5 Provide park-and-ride opportunities at key transfer locations to enhance regional travel options, system usage, and convenience.	1.5 Specific locations for shared-use park-and ride lots were identified for implementation in 2025 of the 2016-2025 TDP 10-Year Implementation Plan to accompany new intercounty service (Citrus-Hernando Express) between Citrus and Hernando counties via the proposed Suncoast Parkway extension. Identified as an unfunded need concurrent with implementation of the Citrus Hernando Express in Section 4
Goal 2 Increase awareness and visibility of public transit services in Cirtus	**Objective** 2.1 Add/expand weekend service on existing routes.	**Assessment** 2.1 As the opportunities present themselves, representatives of Citrus County Transit attend community events to provide information to citizens on transit services provided throughout the county. Staff attended 3 Resource Expos where information was provided to citizens regarding the transportation services provided throughout Citrus County on April 11, 2018, April 19, 2018, and October 24, 2018. Additionally, several Citrus County Transit Representatives manned phone lines during the Key Training Telethon on July 28, 2018.

Goal	Objective / Policy	Implementation Assessment
Goal 2	**Policy**	**Assessment**
Increase awareness and visibility of public transit services in Cirtus	2.1 Develop and maintain a public involvement process that includes surveys, discussion groups, interviews, public workshops, and participation in public events, at a minimum.	2.1 Public outreach for transit is integrated into other planning efforts as appropriate. See responses to Objective 2.1.
	2.2 Distribute bus schedules and system information through Internet applications and in public places throughout the county for residents and visitors.	2.2 Bus schedules are maintained in several areas around the county, including public libraries, the Key Training Center in Lecanto and the Citrus County Courthouse in Inverness.
	2.3 Conduct an on-board survey at least annually to monitor changes in user demographics, travel behavior characteristics, and user satisfaction.	2.3 It is anticipated this will occur within the next two years.
	2.4 Develop and implement a transit marketing plan that educates potential riders, increases citizen awareness, and enhances ridership as new/expanded transit services are initiated.	2.4 While no formal transit marketing plan has been developed, Citrus County Transit does utilize various outreach methods, including community events and different forms of transit marketing. The Citrus County website is updated routinely with public information regarding service and scheduling
	2.5 Identify and engage key partners, including major employers, workforce development agencies, chambers of commerce, health and community services, and other public and private entities that can enhance the ability to reach potential riders.	2.5 Collaborative efforts of the Transportation Disadvantaged Coordinating Board, which consists of the Agency for Health Care Administration, CareerSource Employ Florida, Citrus county Schools, Disabled Citizens, and Citrus County Resource Center.
Goal 3	**Objective**	**Assessment**
Increase awareness and visibility of public transit services in Citrus	3.1 Support land use planning and regulations that encourage transit-supportive development.	3.1 Coordination with the County Planning and Zoning Department is expected to continue.

Goal	Objective / Policy	Implementation Assessment
Goal 3	**Objective**	**Assessment**
Increase awareness and visibility of public transit services in Citrus	3.2 Implement transit as an alternative mode of transportation along CR 491 by 2030.	3.2 Regular service on the deviated and paratransit routes is being provided.
	3.3 Support the use of development incentives such as impact fee credits for developers and major employers to promote public transit.	2.2 Continued coordination and collaboration with Planning and Development is expected to continue.
	Policy	**Assessment**
	3.1 Develop safe, comfortable, and useful transit facilities at major destinations incorporating seating, shelters, signage, and bicycle storage as deemed appropriate by location and ridership demand.	3.1 Bus stop improvements were identified for implementation in the second half (2021-2025) of the 2016-2025 TDP 10-Year Implementation Plan and carried forward for implementation in 2021-2026, as documented in Section 4. Opportunities
	3.2 Coordinate with Citrus County Planning and Development and attend development review meetings to discuss a more formal integration of transit considerations into the development review process.	3.2 Continued coordination and collaboration with Planning and Development is expected to continue.
	3.3 Promote transit improvements toward areas with supportive land-use patterns, higher residential density and commercial intensity, and key trip attractors.	3.3 Continued coordination and collaboration with Planning and Development is expected to continue.
	3.4 Where applicable, consider bus stop accessibility in the identification and prioritization of sidewalk and bicycle facility improvements.	3.4 Continued coordination and collaboration with Planning and Development is expected to continue.

Goal	Objective / Policy	Implementation Assessment
Goal 4		
Pursue coordination activities with regional entities and neighboring counties	**4.1 Ensure coordination and consistency with local and regional plans for the future provision of public transit service in Citrus.**	**4.1 This 2018/19 Annual Progress Report documents the differences between the 2016-2025 TDP and adopted 2040 LRTP Cost Affordable Plan and makes the updated 10-year TDP Implementation Plan consistent with the adopted 2040 LRTP Cost Affordable Plan.**
	4.2 Identify areas for cooperative efforts with neighboring county transit systems, including THE Bus in Hernando County and Sun Tran in Marion County.	**4.2 Discussions pertaining to regional transit service will occur as appropriate**
	Policy	**Assessment**
	4.1 Meet at least annually with transit staff in Hernando county to better understand existing and future transit services and to identify coordination requirements associated with public transit services across county lines	**4.1 Hernando County as well as MPO staff regularly meet with Citrus County Transit to coordinate transit services.**
	4.3 Facilitate discussions with staff from FDOT District 7 and its current R/TIE's program, and adjacent counties regarding future coordination and consolidations of transit management and operations in the region.	**4.3 Citrus County Transit participates in the District 7 R/TIE's Program and coordinates with adjacent counties regarding transit operations.**

Section 4.: Updated Implementation and Financial Plan

As part of this annual progress report process, the 10-year Implementation Plan presented in the 2016-2025 TDP Major Update was reviewed and updated based on accomplishments made over the past year, changes to programmed improvements included in the 2040 LRTP Cost Affordable Plan, and input from Citrus County Transit and MPO staff, as appropriate. The updated 10-year Implementation Plan is presented in this section.

Service Improvements

The following service improvements are identified as unfunded in the 10-Year Implementation Plan for FYs 2019-2028.

Existing Service Improvements

- Increase service frequency to 60 minutes on existing routes. This improvement was originally identified for implementation in 2024 in the 2016-2025 TDP 10-Year Implementation Plan and moved to implementation in 2030 to be consistent with the adopted 2040 LRTP Cost Affordable Plan.
- Expand early/late service on all routes by 3 hours on weekdays. This improvement was originally identified for implementation in 2025 in the 2016-2025 TDP 10-Year Implementation Plan and moved to implementation in 2030 to be consistent with the adopted 2040 LRTP Cost Affordable Plan.
- Add back Orange Line Bus service on Saturdays, which was eliminated on May 20, 2015. This improvement was originally identified for implementation in tandem with the increase service frequency/hours of service expansion in the TDP 10-Year Implementation Plan and identified as a separate need consistent with the 2040 LRTP Needs Plan.

New Service Improvements

- Ocala Express – This express service would run north from Inverness along US 41 and SR 200 and connects to Ocala in Marion County and is identified for implementation in 2036 (outside of the TDP implementation plan horizon) consistent with the adopted 2040 LRTP Cost Affordable Plan.
- Citrus-Hernando Express – This improvement would provide commuter express service along SR 44 and on the proposed Suncoast Parkway from Citrus County Transit's office in Lecanto to the Mariner Square transfer center in Hernando County, and was originally identified for implementation in 2025 in the 2016-2025 TDP 10-Year Implementation Plan. This service is dependent on the completion of the Suncoast Parkway extension into Citrus County and has been identified as an alternative route for inter-county service in the 2040 LRTP Needs Plan.

This improvement is included as an unfunded need in the 2018-2027 10-Year Implementation Plan consistent with the adopted 2040 LRTP

Capital/Infrastructure Improvements

- **Purchase Transit Software and Radio System**

  Phase 2 still in progress for RouteMatch Software

- **Establish Shared-Use Park-and-Ride Lots** – In conjunction with the proposed regional express service to Hernando County, three shared-use/joint-use park-and-ride lots would be established.

  As indicated previously, these park-and ride facilities should be established as shared-use lots, where potential riders would park in already-available spaces. No capital costs are assumed for developing the shared-use lots. The locations for these shared-use park-and-ride lots assume implementation of the Citrus-Hernando Express and are therefore identified as an unfunded need in the 2018-202 10-Year Implementation Plan.

- **Continue Vehicle Replacement and Acquisition** –Citrus County Transit should continue its bus replacement/acquisition program, which provides for a five-year life span for its buses. Table 4-1 presents the updated vehicle replacement and acquisition program. Once service improvements are implemented beyond the 10-year planning horizon, Citrus County Transit should review its planned vehicle acquisitions to support the planned service expansions.

Table 4-1: Vehicle Replacement Plan

Fiscal Year	Deviated Fixed-Route Bus	Paratransit Bus
2018	3	3
2019	4	4
2020	4	0
2021	0	0
2022	2	2
2023	0	3
2024	4	4
2025	4	0
2026	0	0
2027	3	3
Total	**24**	**19**

- **Add Shelters, Benches, and Other Transit Infrastructure** – Citrus County should add a limited number of transit infrastructure (e.g., bus shelters, benches, bike racks, etc.) on current and future routes as funding becomes available.

Policy/Other Alternatives

Other potential improvements include various general enhancements that are not necessarily route specific or capital-related. These improvements are drawn primarily from information in current plans/studies as well as input from public involvement efforts performed as part of the TDP. Other needed improvements identified for the next 10 years are as follows:

- **Reduce the Number of Route Deviations** – Citrus County Transit should reduce the number of route deviations to two per one-way trip on the Orange Line Bus service. Limiting the number of deviations would allow Citrus County to provide deviations within the full ¾-mile of its routes, as required by the ADA.
- **Continue/Enhance Route-Level Performance Monitoring Program** – Performance monitoring programs track the performance and efficiency of routes and the system and are a tool used by transit agencies for ensuring the provision of the most efficient and effective transit service. The following two measures are recommended in addition to the performance measures currently used by the performance monitoring program for the Orange Line Bus. ○
    - ***Passenger Trips per Revenue Mile –*** The ratio of passenger trips to revenue miles of service. This is the key indicator of service effectiveness that is influenced by the levels of demand and the supply of service provided.
    - ***Passenger Trips per Revenue Hour –*** The ratio of passenger trips to revenue hours of operation.
- **Explore Transforming the Current System to a Traditional Fixed-Route Service** – The long-term goal for Citrus County Transit should be to transform its deviated fixed-route system into a traditional fixed-route system.
- **Continue Transit Marketing Program** – It is recommended that Citrus County explore every avenue to continue and expand the scope of its current marketing activities within the next 10 years.

The updated 10-Year Implementation Plan including both funded and unfunded needs is summarized in the tables below.

Table 4-2: 10-Year Implementation (2019-2028) Service Improvements

Improvement	Implementation Year	Notes
Improve service frequency to 60 minutes on existing route	Unfunded need	Assumes maintaining weekday service only; the addition of Saturday service is included as a separate unfunded need. Included for implementation in 2030 in 2040 LRTP Cost Affordable Plan.

Improvement	Implementation Year	Notes
Extend 3 hours of early/late service on all existing routes.	Unfunded need	Assumes maintaining weekday service only; the addition of Saturday service is included as a separate unfunded need. Moved for implementation in 2028 in 2040 LRTP Cost Affordable Plan.
Citrus-Hernando Express	Unfunded need	Identified in the 2040 Needs Plan as an alternative route via the Suncoast Parkway extension into Citrus County
Add back Saturday service to existing service	Unfunded need	Included for implementation in the 2040 LRTP Needs Plan.
Citrus Springs deviated fixed route	Unfunded need	Included for implementation in 2039 in 2040 LRTP Cost Affordable Plan.
Inverness-Ocala Express	Unfunded need	Included for implementation in 2036 in 2040 LRTP Cost Affordable Plan.
US 19 Express	Unfunded need	New service included in the adopted 2040 LRTP Cost Affordable for implementation in 2038. Included as an unfunded need in the TDP Implementation Plan.

Table 4-3: 10-Year Implementation (2019-2028) Capital/ Infrastructure Improvements

Improvement	Implementation Year	Notes
Vehicle replacement and acquisition	2017-2026	Remains funded for the duration of the 10-Year Implementation Plan.
Purchase transit software	2017-201 9	Software purchase planned for FY 2017.
Bus stop infrastructure	2022-2026	Remains funded for the second half of the 10-year Implementation Plan.
Establish shared-use park-and ride lots	Unfunded need	To be pursued with implementation of the Citrus-Hernando Express. No capital costs are assumed for developing the shared-use lots.
Other transit technology improvements	Unfunded need	Remains as an unfunded need in the TDP Implementation Plan.

Table 4-4: 10-Year Implementation (2019-2028) Other Improvements

Improvement	Implementation Year	Notes
Reduce the number of route deviations.	2017-2026	Included for the duration of the 10-Year Implementation Plan. No specific service changes are assumed and therefore no financial impacts are included in the 10-Year Implementation Plan.
Explore transforming the current system to a traditional fixed-route service.	2017-2026	Included for the duration of the 10-Year Implementation Plan. No specific service changes are assumed and therefore no financial impacts are included in the 10-Year Implementation Plan.
Continue transit marketing program.	2017-2026	Included for the duration of the 10-Year Implementation Plan. No financial impacts are included in the 10-Year Implementation Plan.
Promote Transportation Demand Management (TDM) strategies.	2017-2026	Included for the duration of the 10-Year Implementation Plan. No financial impacts are included in the 10-Year Implementation Plan.

Table 4-3 presents the updated 10-Year Financial Plan for FYs 2019-2028. Updated capital and operating costs and revenues were provided by Citrus County Transit staff and key assumptions in this progress report are consistent with those included in the Citrus County 2016-2025 TDP Major Update Final Report.

Table 4-5: 10-Year Financial Plan

Cost/Revenue	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	10-Year Total
Operating Costs											
Maintain Existing Deviated Fixed-Route Transit Services	$552,855	$569,441	$586,524	$604,120	$622,243	$640,910	$660,138	$679,942	$700,340	$721,350	**$6,337,863**
Existing Deviated Fixed-Route Service Improvements	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Proposed New Transit Services	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Maintain Existing Paratransit Services	$1,615,644	$1,664,113	$1,714,037	$1,765,458	$1,818,422	$1,872,974	$1,929,163	$1,987,038	$2,046,649	$2,108,049	**$18,521,548**
Total Operating Costs	**$2,168,499**	**$2,233,554**	**$2,300,561**	**$2,369,577**	**$2,440,665**	**$2,513,885**	**$2,589,301**	**$2,666,980**	**$2,746,990**	**$2,829,399**	**$24,859,411**
Capital Costs											
Vehicles	**$680,000**	**$370,800**	**$0**	**$371,526**	**$270,120**	**$788,696**	**$429,856**	**$0**	**$646,045**	**$887,234**	**$4,444,277**
Replacement Vehicles - Buses (Section 5310)	$680,000	$370,800	$0	$371,526	$270,120	$788,696	$429,856	$0	$646,045	$887,234	**$4,444,277**
Replacement Vehicles - Vans (Section 5307)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Additional Vehicles for New Deviated Fixed-Route Services	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Additional Vehicles for Existing Service Improvements	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Other Capital/Infrastructure	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Bus Stop Infrastructure	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Total Capital Costs	**$680,000**	**$370,800**	**$0**	**$371,526**	**$270,120**	**$788,696**	**$429,856**	**$0**	**$646,045**	**$887,234**	**$4,444,277**
Operating Revenues											
Federal Section 5307 for Operating	$398,747	$410,709	$423,031	$435,722	$448,793	$462,257	$476,125	$490,409	$505,121	$520,274	**$4,571,187**
FDOT State Block Grant	$199,374	$205,355	$211,516	$217,861	$224,397	$231,129	$238,063	$245,205	$252,561	$260,138	**$2,285,599**
Existing Local Funds-Other Revenues	$753,262	$775,860	$799,136	$823,110	$847,803	$873,237	$899,434	$926,417	$954,210	$982,836	**$8,635,305**
Federal Section 5311 for Operating	$317,192	$326,708	$336,509	$346,604	$357,002	$367,712	$378,744	$390,106	$401,809	$413,864	**$3,636,251**
Commission for TD Operating Funds	$446,021	$459,402	$473,184	$487,379	$502,001	$517,061	$532,572	$548,550	$565,006	$581,956	**$5,113,131**

Cost/Revenue	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	10-Year Total
Farebox Revenues - Existing Service	$53,903	$55,520	$57,186	$58,901	$60,668	$62,488	$64,363	$66,294	$68,283	$70,331	**$617,937**
Farebox Revenues - New and Improved Service	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Total Operating Revenues	**$2,168,499**	**$2,233,554**	**$2,300,561**	**$2,369,577**	**$2,440,665**	**$2,513,885**	**$2,589,301**	**$2,666,980**	**$2,746,990**	**$2,829,399**	**$24,859,411**
Capital Revenues											
Federal Section 5310 for Buses	$680,000	$370,800	$0	$371,526	$270,120	$788,696	$429,856	$0	$646,045	$887,234	**$4,444,277**
Federal Section - 5311 for Other Capital	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Federal Section 5339 For Other Capital	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Federal Section 5339 for New Vehicles	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Total Capital Revenues	**$680,000**	**$370,800**	**$0**	**$371,526**	**$270,120**	**$788,696**	**$429,856**	**$0**	**$646,045**	**$887,234**	**$4,444,277**
10-Year Cost & Revenue Summary											
Total Revenues	**$2,848,499**	**$2,604,354**	**$2,300,561**	**$2,741,103**	**$2,710,785**	**$3,302,581**	**$3,019,157**	**$2,666,980**	**$3,393,035**	**$3,716,633**	**$29,303,688**
Total Costs	**$2,848,499**	**$2,604,354**	**$2,300,561**	**$2,741,103**	**$2,710,785**	**$3,302,581**	**$3,019,157**	**$2,666,980**	**$3,393,035**	**$3,716,633**	**$29,303,688**
Revenues Minus Costs	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	
Rollover from Prev. Year	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	

Appendix A: 2040 LRTP Cost Affordable Plan Route Map

Map 5-7: Citrus County 2040 Cost Affordable Transit Plan

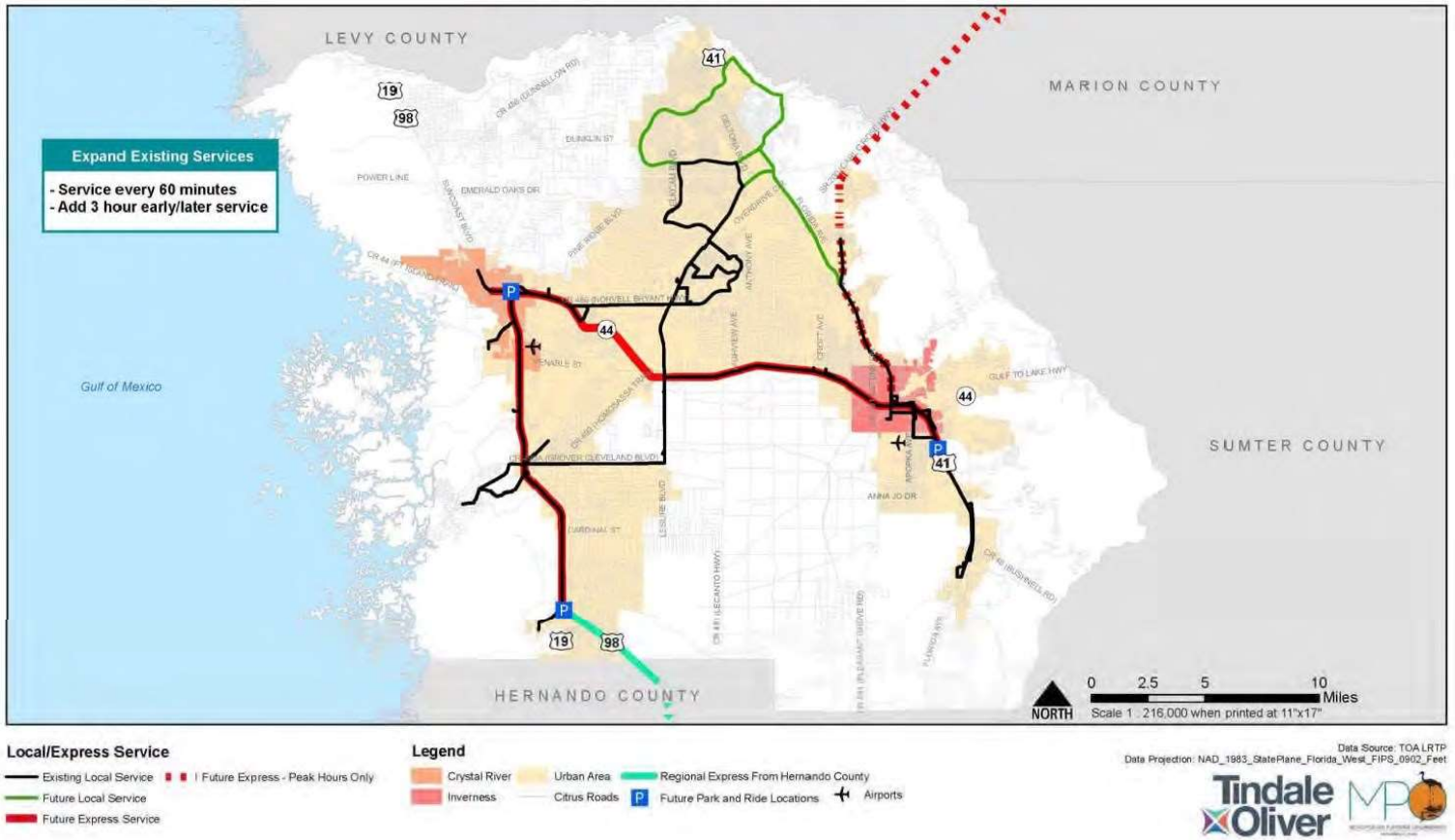


Table 5-13: Citrus County Cost Affordable Transit Plan

Project Description	Implementation Year	Capital Costs (YOE*)			Operating Cost (YOE)	Total Cost (YOE)
		Replacement Vehicles for Existing Services	*Vehicle Purchases for New Services*	*Infrastructure*		
Continue existing fixed-route service	Ongoing	$7,005,721	$0	$0	$36,640,200	$43,645,921
Expand hours of service 3 hrs on all routes	2030	$0	$0	$0	$8,211,283	$8,211,283
Increase frequency to 60 mins on existing routes	2028	$0	$6,593,019	$0	$24,781,130	$31,374,149
Crystal-Inverness Limited Express (90-min)	2039	$0	$434,189	$0	$2,662,724	$3,096,913
Citrus Springs Connector (90-min)	2039	$0	$434,189	$0	$2,662,724	$3,096,913
US 19 Express (90-min)	2038	$0	$421,543	$0	$3,947,465	$4,369,008
Ocala Express (90-min); peak only (2 trips AM, 2 PM)	2036	$0	$3,041,914	$0	$1,807,683	$4,849,597
Additional bus stop infrastructure	2020-2040	$0	$0	$831,108	-	$831,108
Total		$7,005,721	$10,924,854	$831,108	$80,713,209	$99,474,892

Notes:

1. Transit improvements funded by mixture of local, State, and federal revenue sources. Fare revenues used only to cover operating expenses.

2. Local sources for operating include local general revenues and matching funds for Federal Section 5311, FDOT Urban Corridor, and Service Development Grants.

3. For Capital, local sources include general funds and/or other future local sources to be determined.

4. State sources for operating include FDOT Urban Corridor and Service Development Grants. State Block Grant funds not included but expected to be available in near future.

5. Federal Section 5310 and 5311 assumed for funding operating and/or capital improvements.

6. Table 5-15 shows the distribution of various sources of transit funding for LRTP transit improvements.

Hernando County Transit Development Plan Major Update (2020-2029)

Draft Report
July 2019



Tindale Oliver

MPO
METROPOLITAN PLANNING ORGANIZATION
HERNANDO/CITRUS

TheBUS
HERNANDO COUNTY TRANSIT

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SECTION 1 INTRODUCTION

The Hernando County Board of County Commissioners (BOCC) currently provides fixed-route bus transit services in the Hernando County and in northwest Pasco County in the immediate region. The existing fixed-route bus service consists of four routes that serve primarily the areas of Brooksville and Spring Hill as well as major corridors in between. Complementary ADA paratransit service also is provided to persons with disabilities who live within a ¾-mile buffer of the fixed-route local bus system.

This study was initiated by the Hernando County Metropolitan Planning Organization (MPO) in coordination with the Hernando County Transit Division to update Hernando County's Transit Development Plan (TDP), the 10-year strategic guide for public transportation in the community that is updated every five years. It represents the transit agency's vision for public transportation in its service area during this time period.

Objectives of the Plan

The main purpose of this study is to update the TDP for the fixed-route transit services provided by TheBus system, Hernando County's transit system, as required by State law. Upon completion, this TDP will result in a 10-year plan for transit and mobility needs, cost and revenue projections, and community transit goals, objectives, and policies.

TDP Requirements

TDP requirements were formally adopted by the Florida Department of Transportation (FDOT) on February 20, 2007. Major requirements of the TDP Rule include the following:

- Major updates must be completed every five years, covering a 10-year planning horizon.
- A Public Involvement Plan (PIP) must be developed and approved by FDOT or be consistent with the approved MPO PIP.
- FDOT, the Regional Workforce Development Board, and the MPO must be advised of all public meetings at which the TDP is presented and discussed, and these entities must be given the opportunity to review and comment on the TDP during the development of the mission, goals, objectives, alternatives, and 10-year implementation program.
- Estimation of the community's demand for transit service (10-year annual projections) must be made using the planning tools provided by FDOT or a demand estimation technique approved by FDOT.

An additional requirement for TDPs was added by the Florida Legislature in 2007, when it adopted House Bill 985. This legislation amended s. 341.071, Florida Statutes (F.S.), requiring transit agencies to "specifically address potential enhancements to productivity and performance which would have the effect of increasing farebox recovery ratio." FDOT subsequently issued guidance requiring the TDP and each annual update to include a 1–2-page summary report on farebox recovery ratio and strategies implemented and planned to improve it as an appendix.

TDP Checklist

This 10-year plan meets the requirements for a major TDP update in accordance with Rule Chapter 14-73, Florida Administrative Code (F.A.C.). Table 1-1 is a list of TDP requirements from Rule 14-73.001. The table also indicates whether or not the item was accomplished in this 10-year plan.

Organization of This Report

This report is organized into 10 major sections (including this Introduction).

Section 2 presents the **Baseline Conditions** for Hernando County. This includes a physical description of the study area, a population profile, and demographic and journey-to-work characteristics. Land use trends, major transit trip generators and attractors, economic factors, existing roadway conditions, and major employers also are explored.

Section 3 summarizes the results of **Existing Services Evaluation**. This section discusses the results of the trend analysis conducted for fixed-route bus services in Hernando County, which reviews the performance of the public transportation system over time, from fiscal years 2014 to 2017. The results of a peer review analysis are also discussed in Section 3. This type of analysis compares the performance of the public transportation system with other transit systems selected as having similar characteristics at a given point in time.

Section 4 presents the **Public Involvement** efforts undertaken as part of this TDP process and summarizes the activities undertaken. The goal of the public involvement activities is to increase the likelihood of active participation from citizens and stakeholder agencies during the development of the updated plan. Input from the public is critical, as the 10-year plan provides a strategic guide for public transportation in the community over the next 10 years.

Section 5 includes **Situation Appraisal** and a review of transit policies at the federal, local, and regional levels of government. Various transportation planning and programming documents are summarized, with an emphasis on issues that may have implications for TheBus. Transit plans such as Comprehensive Plans and TDPs were reviewed. A Situation Appraisal also was developed based on the public involvement results presented in Section 4 and the key findings from the review of transit policies.

Section 6 discusses **Goals and Objectives**, which are an integral part of a transportation plan because they provide the policy direction to achieve the community's vision. The goals and objectives presented were prepared based on the review and assessment of existing conditions, feedback received during the public involvement process, and the review of local transportation planning documents.

Section 7 summarizes the **Transit Demand Analysis** conducted as part of this TDP process. Analysis techniques are summarized, followed by the results of each analysis used to assess demand for transit services in Hernando County, which were then combined with the baseline conditions assessment, performance reviews, public involvement feedback, and reviews of relevant plans and studies to yield a building block for evaluating the transit needs for the next 10 years.

Section 8, Alternatives Development and Evaluation, presents the development of potential transit improvements for the 10-year transit plan for Hernando County. The proposed improvements for fixed-route service represent the transit needs for the next 10 years. Once the improvements were prioritized using the evaluation process, they were used to develop the 10-year implementation and financial plans, which will be presented in the Hernando County plan. As Hernando County continues to grow, the prioritized transit needs will assist the MPO in selecting and implementing service improvements as funding becomes available.

Section 9 summarizes the **10-year Transit Development Plan**, including the 10-year implementation program and finance plan for TheBus fixed-route bus transit service. Recommended 10-year transit needs are presented, and an implementation plan is provided with a summary of cost-feasible projects and unfunded needs. The 10-year financial plan is presented, including a summary of the assumptions and capital and operating costs used in its development.

Section 10 summarizes the techniques and approaches to help make **Plan Implementation and Coordination** for TheBus TDP successful after adoption. This section identifies implementation strategies, including using tools and outreach materials from the TDP process while building and continuing the outreach for TheBus.

Table 1-1: TDP Checklist

Public Involvement Process	
√	Public Involvement Plan (PIP) drafted
√	PIP approved by FDOT
√	TDP includes description of Public Involvement Process
√	Provide notification to FDOT
√	Provide notification to Regional Workforce Board
Situation Appraisal	
√	Land use
√	State and local transportation plans
√	Other governmental actions and policies
√	Socioeconomic trends
√	Organizational issues
√	Technology
√	10-year annual projections of transit ridership using approved model
√	Assessment of whether land uses and urban design patterns support/hinder transit service provision
√	Calculate farebox recovery
Mission and Goals	
√	Provider's vision
√	Provider's mission
√	Provider's goals
√	Provider's objectives
Alternative Courses of Action	
√	Develop and evaluate alternative strategies and actions
√	Benefits and costs of each alternative
√	Financial alternatives examined
Implementation Program	
√	Ten-year implementation program
√	Maps indicating areas to be served
√	Maps indicating types and levels of service
√	Monitoring program to track performance measures
√	Ten-year financial plan listing operating and capital expenses
√	Capital acquisition or construction schedule
√	Anticipated revenues by source
Relationship to Other Plans	
√	Consistent with Florida Transportation Plan
√	Consistent with local government comprehensive plan
√	Consistent with MPO long-range transportation plan
√	Consistent with regional transportation goals and objectives
Submission	
	Adopted by Hernando Board of County Commissioners
	Submitted to FDOT

SECTION 2 BASELINE CONDITIONS

The analysis of data and conditions related to public transit provides an opportunity to gain an understanding of the environment in which the transit system is operating. This information provides the foundation upon which to review trends and forecasts and helps identify areas of opportunity for development of future transit services.

This section reviews the study area in the context of Hernando County TDP and documents existing baseline data. The following components were reviewed for consideration:

- Overview of study area
- Population and employment densities
- Socio-demographic characteristics and trends
- Travel behavior and commuting trends
- Major activity centers and trip generators
- Tourist and visitor levels
- Roadway and traffic conditions
- Current and future land use

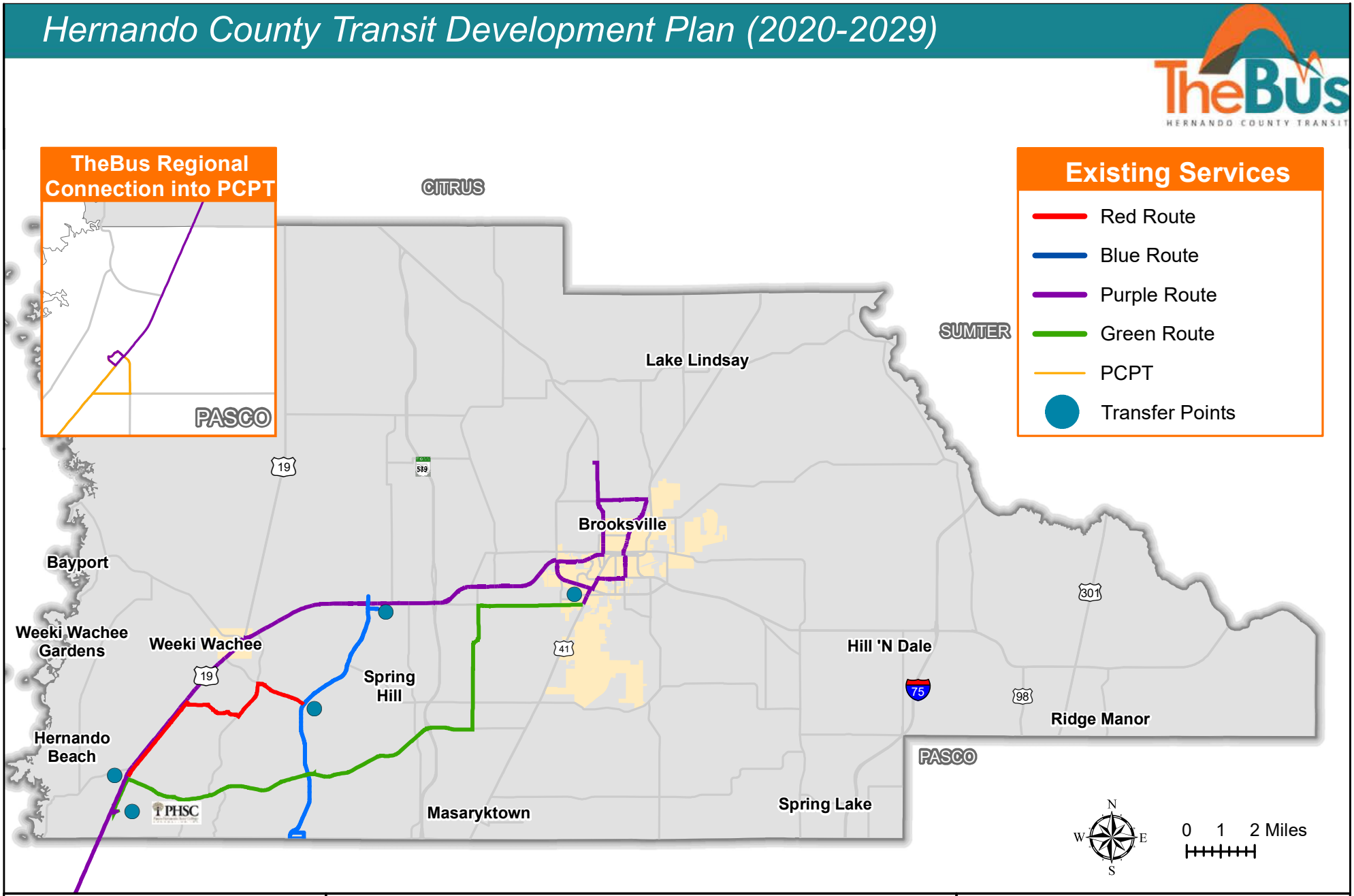
In addition to summaries for each of these key areas, a series of maps and tables also was used to illustrate selected population, demographic, and socioeconomic characteristics. Data from the U.S. Census, American Community Survey (ACS), Bureau of Economics and Business Research (BEBR) of the University of Florida, Hernando-Citrus MPO, and TheBus were used as primary data sources. The data were supplemented by data from local and regional agencies and other sources, as available.

Overview of Study Area

Hernando County is located in west central Florida and is bordered on the north by Citrus County, on the east by Sumter County, on the west by the Gulf of Mexico, and on the south by Pasco County. It is part of the greater Tampa Bay region and the Tampa Bay Regional Planning Council's geography. The total land area of the county is 473 square miles. Map 2-1 illustrates the study area for the TDP.

Hernando County is a historically rural county that has grown to include two municipalities—Brooksville, the county seat, and Weeki Wachee—as well as the unincorporated areas (e.g., Census Designated Places) of Spring Hill (the county's sole Urbanized Area, as designated by the MPO), North Weeki Wachee, Timber Pines, Ridge Manor, Brookridge, North Brooksville, South Brooksville, High Point, and Hernando Beach. Brooksville is located in the center of the county where US-41 and SR-50 intersect. It is the most populated area in the county, either incorporated or unincorporated, and is located in the southwest Hernando County between US-19 and SR-589. Five major highways intersect Hernando County—I-75, US-19, US-301, Suncoast Parkway, and US-41. Hernando County is home to 25 county parks and one Florida State park; 29 percent of the county is classified as conservation area, which includes the Withlacoochee State Forest, Weeki Wachee Preserve, and Chassahowitzka National Wildlife Refuge.

Hernando County Transit Development Plan (2020-2029)



Map 2-1
Study Area

Municipalities

Source: Hernando County MPO

Population Profile

Population Trends

Data from the 2000 U.S. Census and the 2010 U.S. Census, along with information from the 2017 ACS, were used to form the population profile for the study area in Hernando County. The total population grew from 130,802 to 170,377 persons, approximately 30 percent, during the 2000–2010 period. However, population growth slowed from 2010–2017, at approximately 5 percent (Table 2-1).

Table 2-1: Population Characteristics, Hernando County, 2000, 2010, and 2017

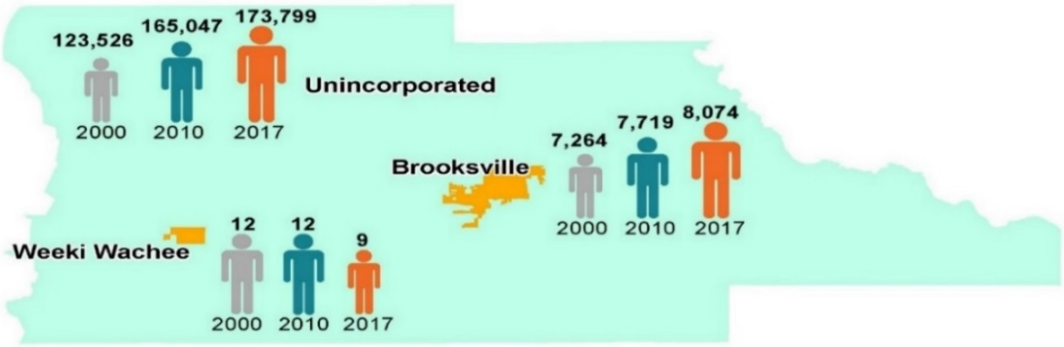
Characteristic	2000	2010	2017	% Change 2000–2010	% Change 2010–2017
Population	130,802	170,337	179,144	30.2	5.2
Households	55,425	82,958	85,726	49.7	3.3
Number of workers	109,225	140,088	149,770	28.3	6.9
Land area (square miles)	473	473	473	0.0	0.0
Person per household	2.32	2.38	2	2.6	-12.2
Workers per household	1.97	1.69	1.75	-14.3	3.5
Persons per square mile of land area	277	360	379	30.2	5.2
Workers per square mile of land area	231	296	317	28.3	6.9

Sources: 2000 & 2010 Census, 2013-2017 ACS 5-Year Estimates

Table 2-1 shows that both the total population and population density are increasing; number of persons per square mile of land density in particular experienced a significant increase, approximately 37 percent from 2000 to 2017. However, although density increased, a decrease in the number of persons per household was observed over the same period, suggesting that growth in the number of housing units occurred in tandem.

The unincorporated parts of Hernando County have grown at faster rates than Brooksville and Weeki Wachee. As shown in Figure 2-1 and Table 2-2, Brooksville's population grew 10 percent, Weeki Wachee's population declined, and unincorporated Hernando County's population grew approximately 29 percent from 2000 to 2017.

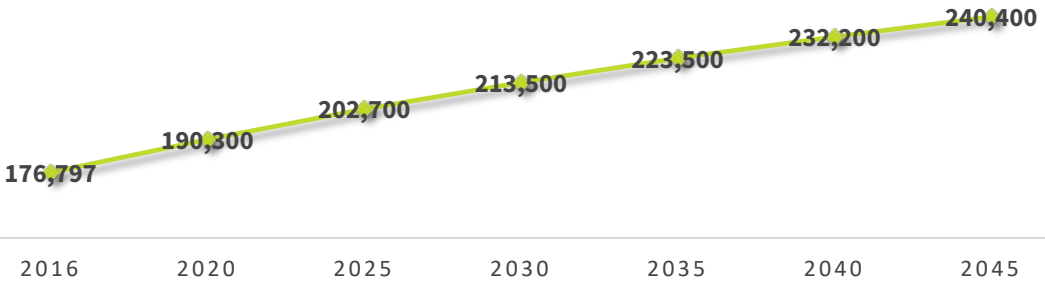
Figure 2-1: Population and Trends for Cities and Towns, Hernando County, 2000–2017



Source: BEBR 2017 Florida Statistical Abstract

Population estimates prepared by BEBR indicate that Hernando County's population is projected to grow approximately 13 percent by 2025, from 176,797 to 202,700 in 2025 and by approximately 26 percent, to 240,400 by 2045. Figure 2-2 shows the population projections for Hernando County from 2017 to 2045.

Figure 2-2: Population Projection, Hernando County, 2016–2045



Source: BEBR 2017 Statistical Abstract Florida

Population trends of the two municipalities and unincorporated areas also were evaluated using estimates from BEBR and revealed that population growth was projected for Brooksville and the unincorporated areas of Hernando County, but a decline was projected for Weeki Wachee. The majority of the population growth is projected to occur in unincorporated areas of the county, including Spring Hill, Hernando Beach, Ridge Manor, North Brooksville, South Brooksville, and High Point. Overall, population growth is projected for Hernando County as a whole, as shown in Table 2-2.

Table 2-2: Population and Trends for Cities and Towns, Hernando County, 2000–2017

Municipality	2000	2010	2017	% Change 2010–2017	Recent Trend	% Change 2000–2017	Full Trend
Brooksville	7,264	7,719	8,074	4.4%	↗	10.0%	↗
Weeki Wachee	12	12	9	-33.3%	↘	-33.3%	↘
Unincorporated	123,526	165,047	173,799	5.0%	↗	28.9%	↗
Total	130,802	172,778	181,882	5.0%	↗	28.1%	↗

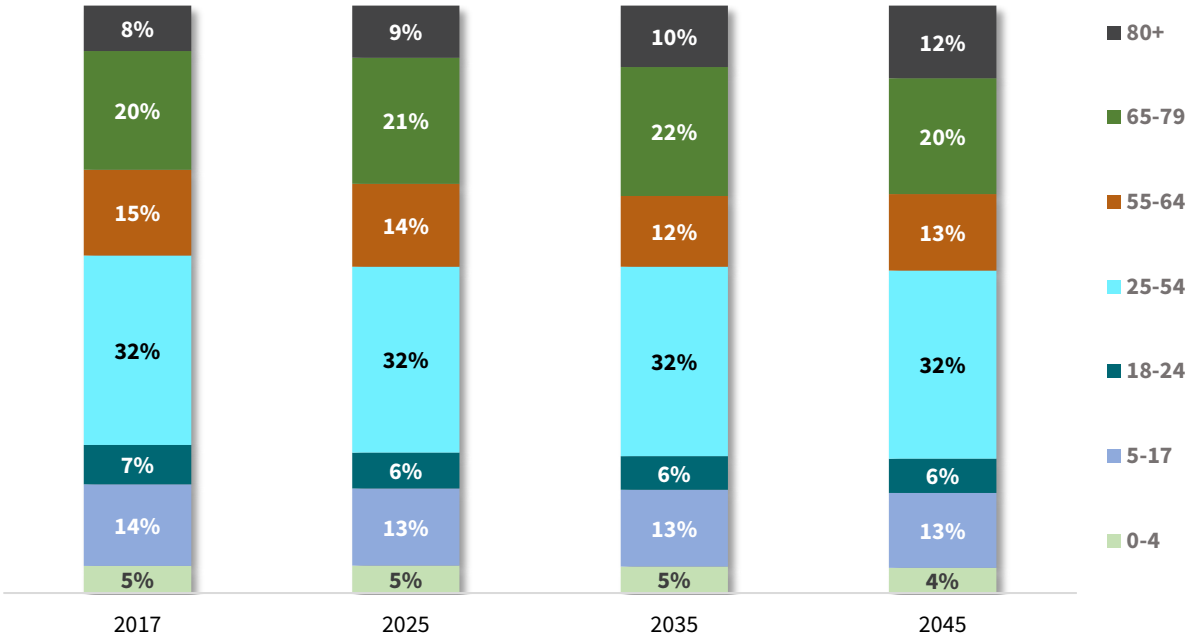
Source: BEBR 2017 Florida Statistical Abstract

Although Hernando County's population is projected to continue growing as a whole, the proportions of the population under age 16 and over age 65 also are projected to grow and are projected to comprise approximately 18 percent and 30 percent of the county population by 2025, respectively. However, although the proportion of residents over age 65 is projected to continue growing and is estimated to reach approximately one third of the population by 2045, the proportion of residents under age 16 will remain at approximately 18 percent of the population by 2035 and will fall to approximately 17 percent by 2045. The proportion of the population between ages 25 and 54 is projected to remain at approximately 32 percent through 2045.

Approximately 43 percent of Hernando County's residents are either over age 65 or under age 16. The over age 65 segment comprises approximately 28 percent of the population, and residents under age 16 comprise approximately 15 percent. Almost one third of residents (32%) are ages 25 to 54.

Compared to the rest of Florida, Hernando County comprises a higher proportion of residents over age 65 and is projected to maintain this age distribution (Figure 2-3). Approximately 20 percent of Florida's population currently comprises residents over age 65; however, in Hernando County, the same age group comprises approximately 28 percent. By 2025, the proportion of residents over age 65 is projected to comprise approximately 22 percent of Florida's population; however, Hernando County's population is projected to comprise just over 30 percent of residents over age 65. By 2045, the same age group is projected to reach approximately a quarter of Florida's population and approximately one third of Hernando County's population.

Figure 2-3: Trends in Population by Age, Hernando County, 2017–2045



Source: BEBR 2017 Florida Statistical Abstract

Population and Employment Densities

Population

Map 2-2 shows the projected population densities for Hernando County for 2019, developed based on the socioeconomic data that were developed to support the Hernando County 2040 Long Range Transportation Plan (LRTP). Map 2-3 shows the projected population densities for 2029, indicating that there will be more growth in unincorporated areas, such as Spring Hill and North Weeki Wachee. With 29,265 people projected to be added to the county by 2029, the key areas projected to experience the most growth include those north and west of Hill 'N Dale, particularly along SR-50; east of US-41 in Spring Lake; throughout Spring Hill, particularly around Pasco-Hernando State College; and east of the Suncoast Partway and west of Brooksville in the northern half of the county.

Employment

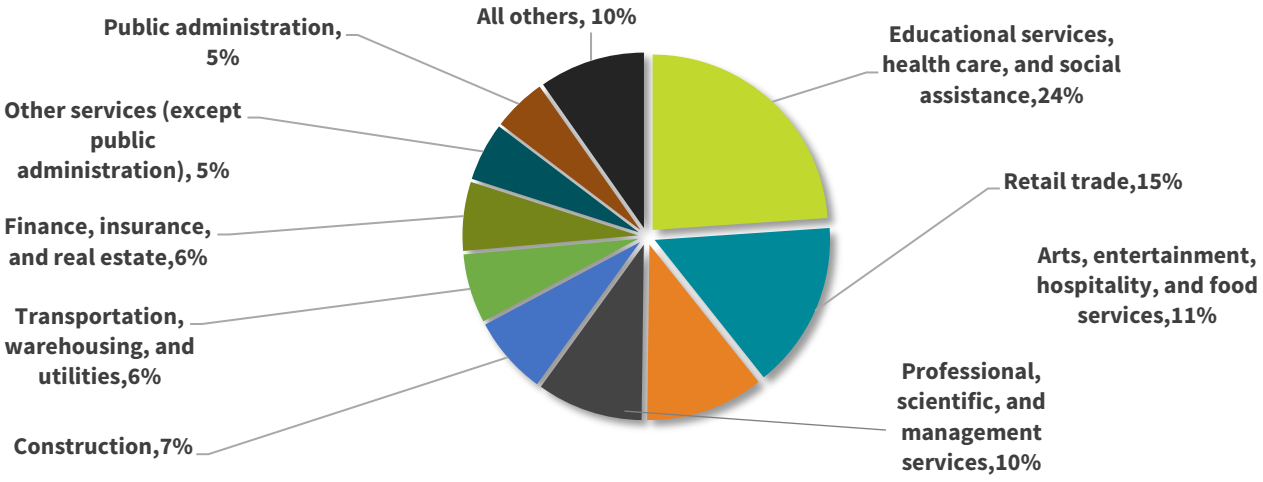
Map 2-4 shows the projected employment densities for Hernando County for 2019. The employment data also are based on socioeconomic data developed to support the Hernando County 2040 LRTP. Map 2-5 shows the projected employment densities for 2029. In base year 2019, the 67,340 employed persons are mainly concentrated in Spring Hill and Weeki Wachee Gardens, areas in which many attractors and retail destinations are located. Looking forward to 2029, the projected employed population grows 80,256 people. The areas near Masaryktown and along US-41 south of Brooksville will experience the majority of the employment growth. In the southeast corner of the county, Spring Hill will continue to be an area of high employment densities all the way to US-19 and the coast.

Demographic & Socioeconomic Characteristics and Trends

Labor Force

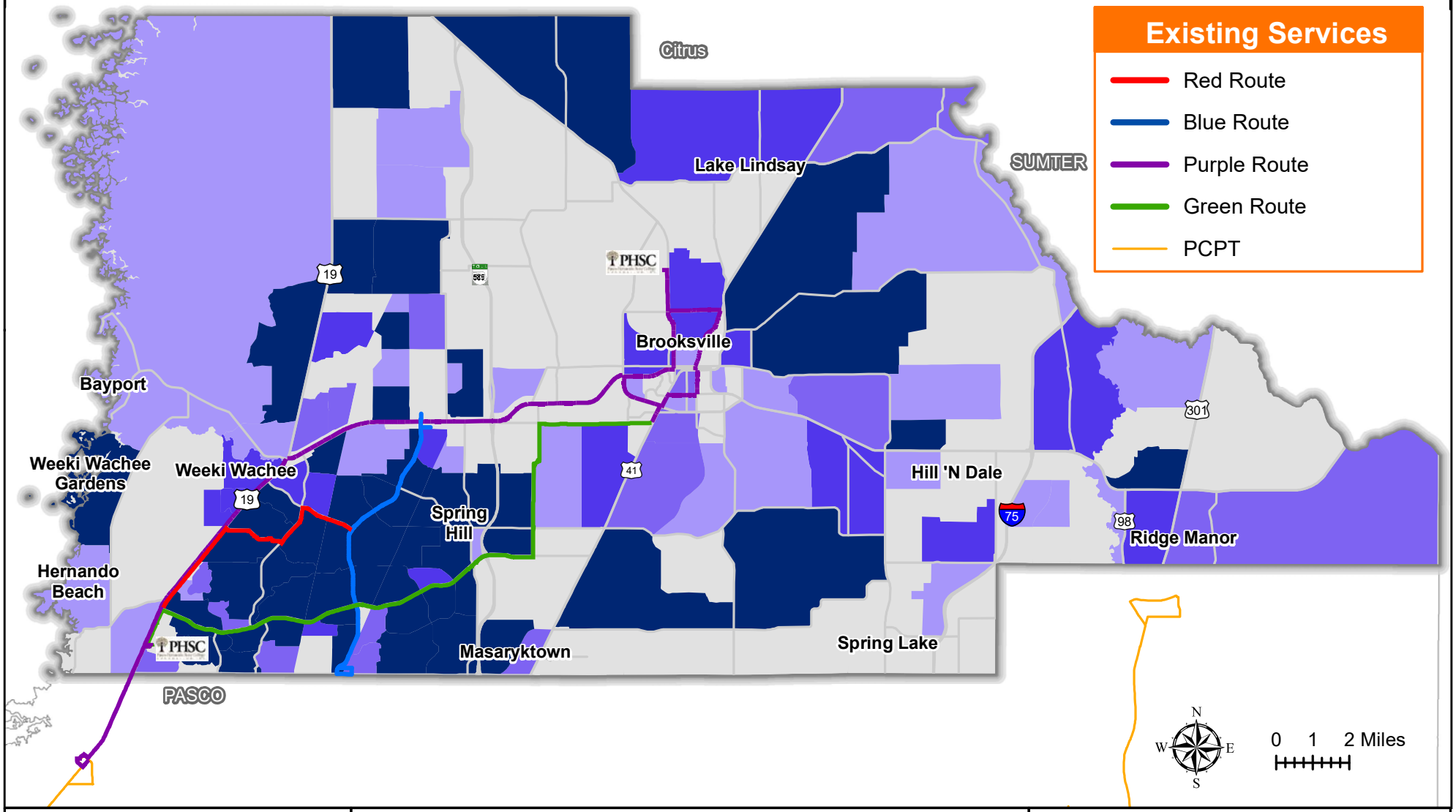
Figure 2-4 displays the percent of population broken down by industry in Hernando County. The largest sector includes educational services, health care, and social assistance, which comprises approximately 24 percent of the county's employment. Retail trade (15.4%) and arts, entertainment, hospitality, and food services (10.9%) round out the second quartile of employment by industry.

Figure 2-4: Labor Force Distribution by Industry, Hernando County, 2016



Source: 2012–2016 ACS 5-Year Estimates

Hernando County Transit Development Plan (2020-2029)



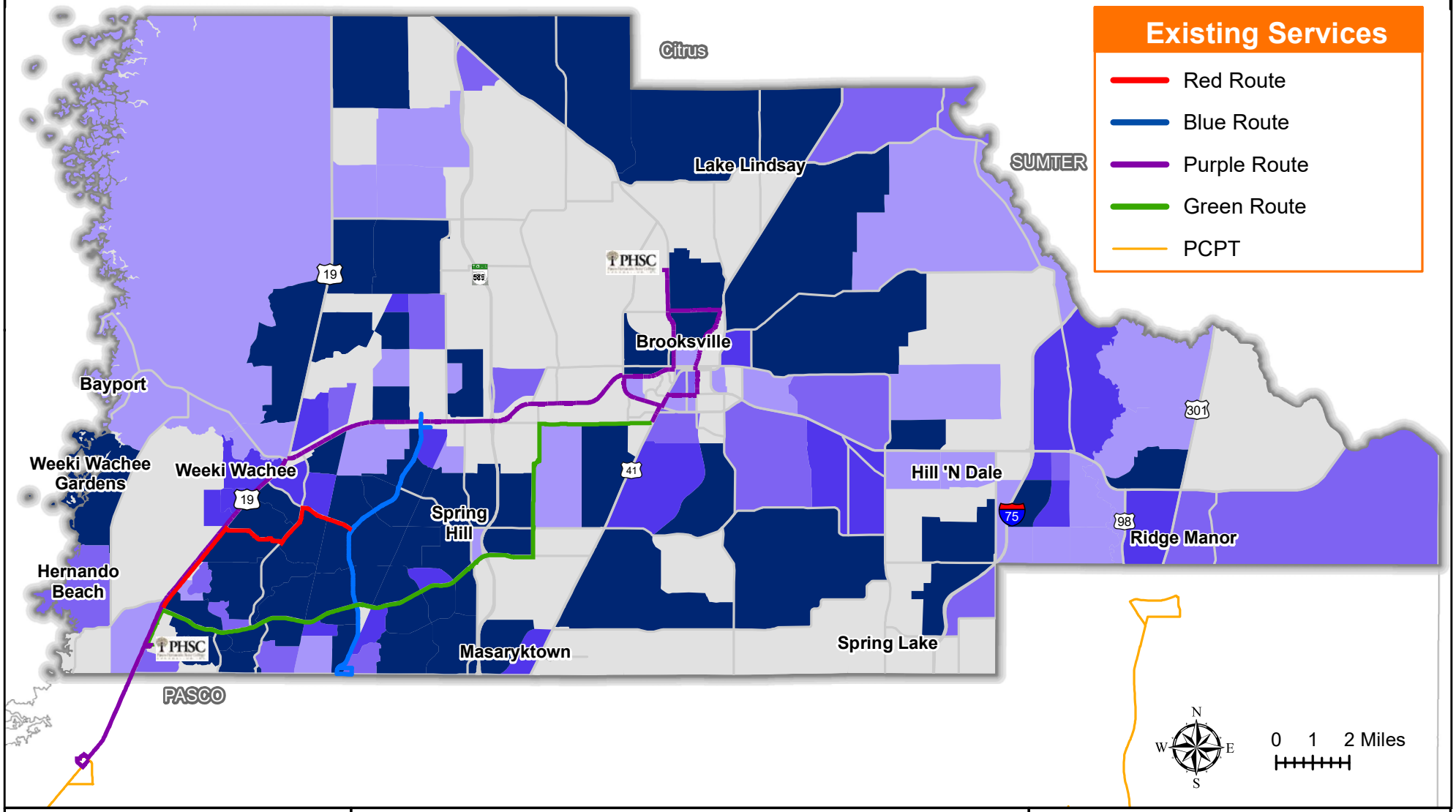
Map 2-2
Population Density (2019)

Source: Hernando County 2040 LRTP

Persons per Traffic Analysis Zone

- <500
- 500-750
- 751-1,000
- 1,001-1,250
- >1,250

Hernando County Transit Development Plan (2020-2029)



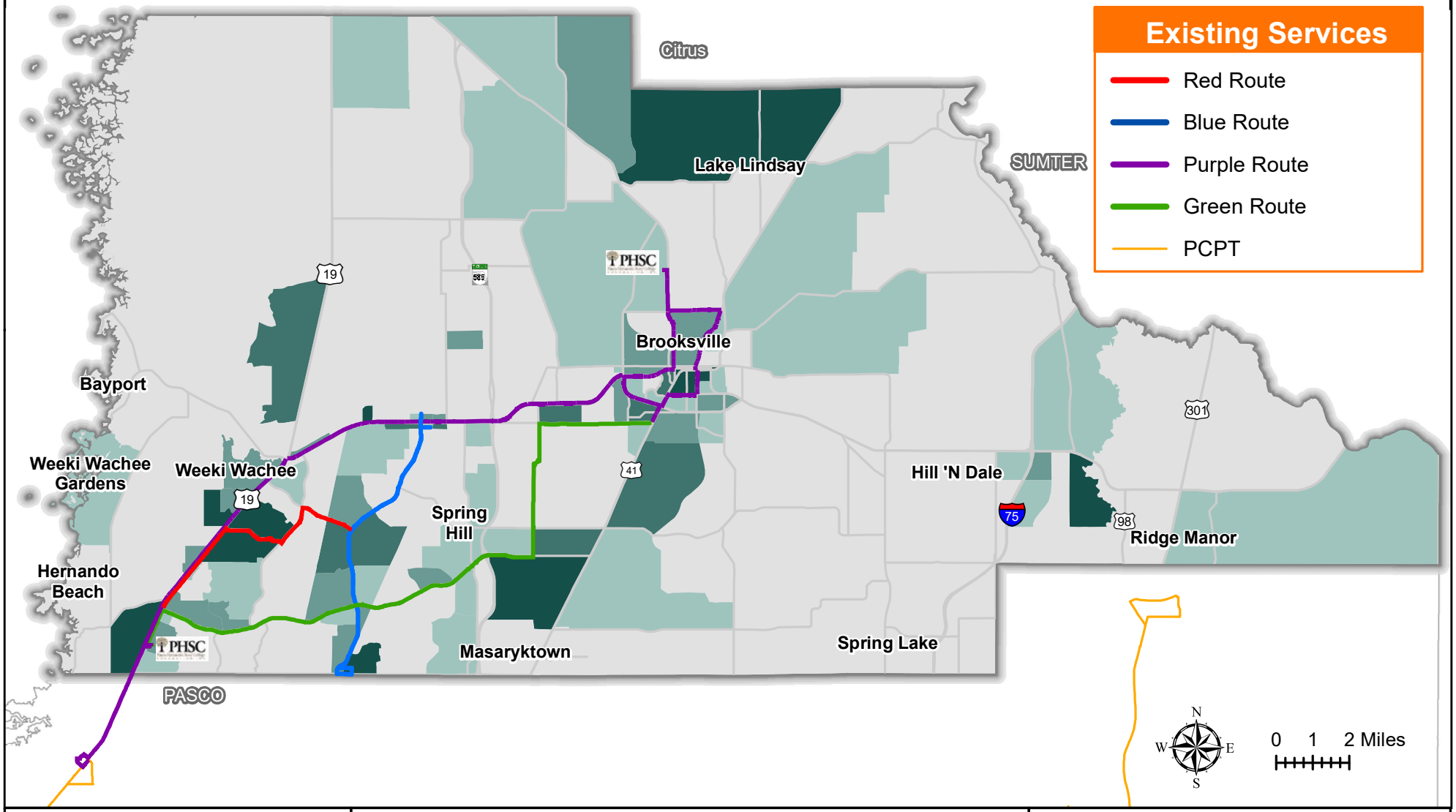
Map 2-3
Population Density (2029)

Source: Hernando County 2040 LRTP

Persons per Traffic Analysis Zone

- <500
- 500-750
- 751-1,000
- 1,001-1,250
- >1,250

Hernando County Transit Development Plan (2020-2029)



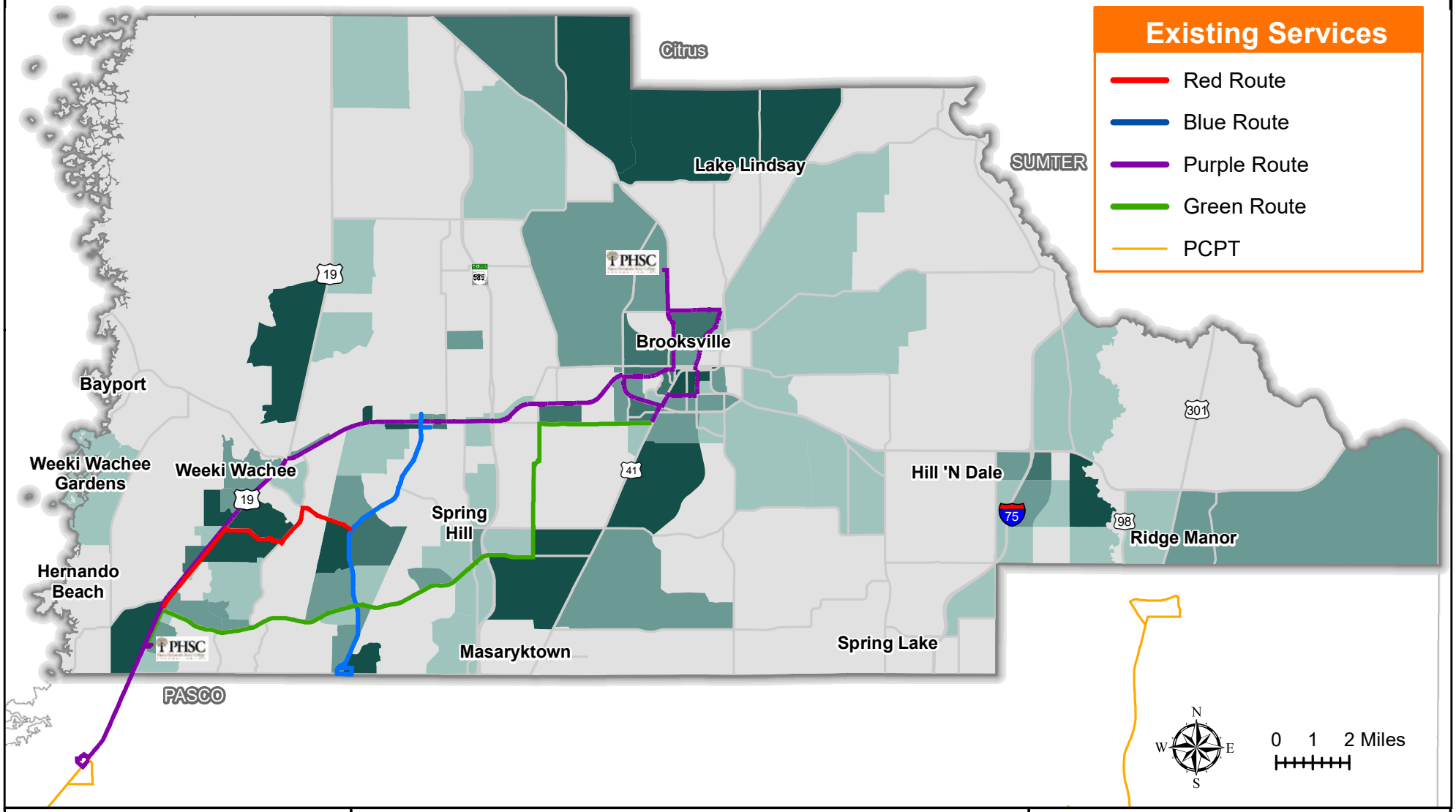
Map 2-4 Employment Density (2019)

Source: Hernando County 2040 LRTP

Jobs per Traffic Analysis Zone

- <250
- 250-500
- 501-750
- 751-1,000
- >1,000

Hernando County Transit Development Plan (2020-2029)



Map 2-5 Employment Density (2029)

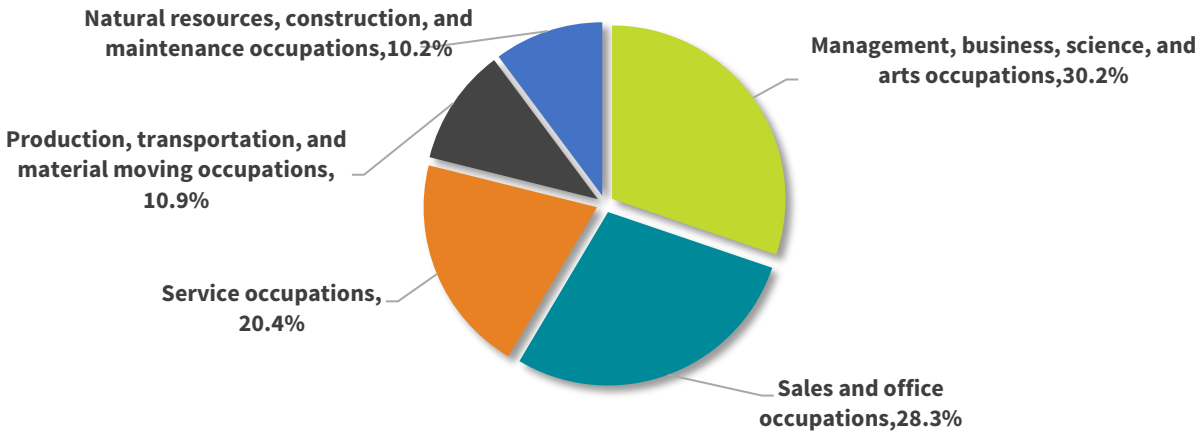
Source: Hernando County 2040 LRTP

Jobs per Traffic Analysis Zone

- <250
- 250-500
- 501-750
- 751-1,000
- >1,000

Figure 2-5 displays the percent of population broken down by occupation type in Hernando County. The largest occupation type includes management, business, science, and arts occupations (30.2%), followed closely by sales and office occupations (28.3%).

Figure 2-5: Labor Force Distribution by Occupation, Hernando County, 2016

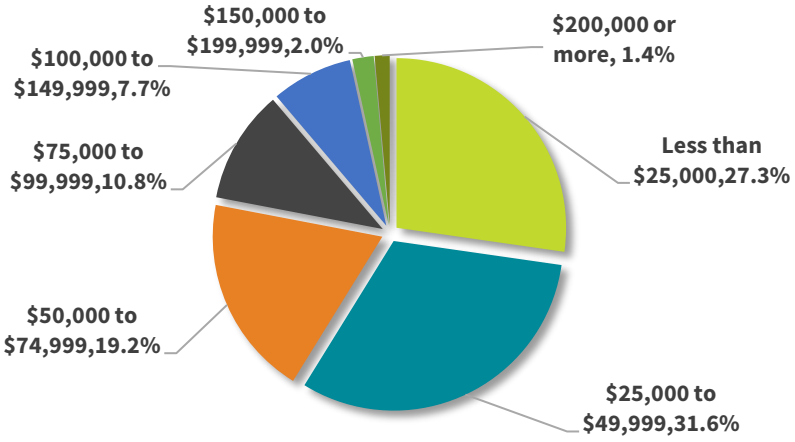


Note: % may not add to 100% due to rounding.
Source: 2012–2016 ACS 5-Year Estimates

Income Distribution

Earned income is an important factor in determining public transit needs. It can be inferred that persons with low income may be less likely to own a vehicle and, therefore, are more likely to use public transit. Figure 2-6 shows the distribution of income for residents in Hernando County.

Figure 2-6: Household Income, Hernando County, 2016



Source: 2012–2016 ACS 5-Year Estimates

According to 2012–2016 ACS 5-Year Estimates, more than a quarter of the households in Hernando County earned an annual income of less than $25,000, highlighting the need for transit services. Additionally, almost one third of households (31.6%) earned between $25,000 and $49,999.

Minority Populations

Hernando County is becoming more ethnically diverse, with all minority population segments growing since 2000. Table 2-3 lists some demographic characteristics of Hernando County for 2000, 2010, and 2016. Although gender distribution was virtually unchanged during this period, other key demographic changes were worthy of review, including a large increase in persons of Hispanic/Latino origin. Black or African American accounted for 6.3 percent, Native American 1.0 percent, Asian 0.2 percent, and other races 1.8 percent. Map 2-6 illustrates where minority populations live within Hernando County.

Table 2-3: Gender and Ethnic Characteristics, Hernando County

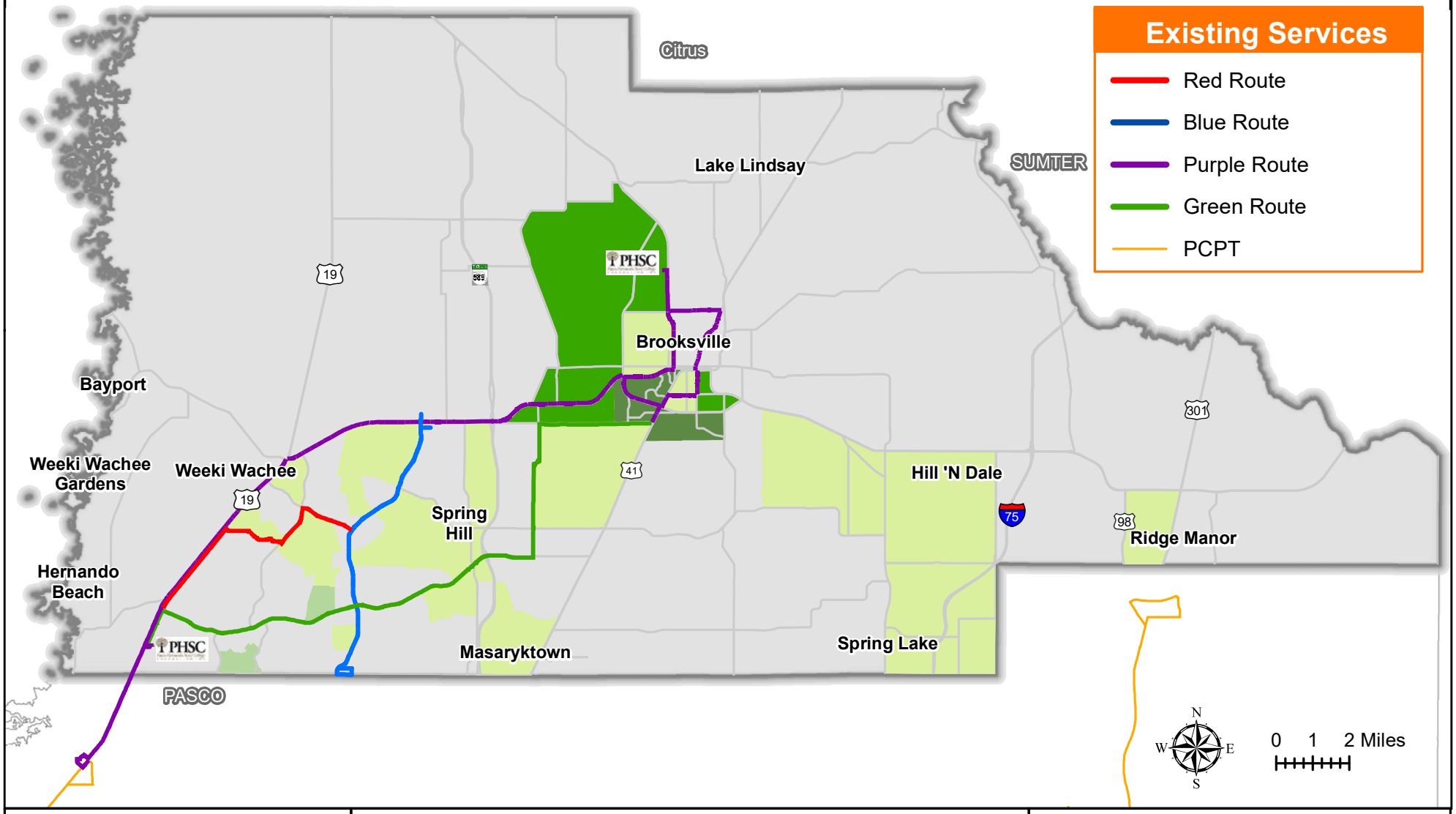
Characteristic	2000	2010	2016	Trend [1]
Gender				
Male	47.5%	47.9%	48.1%	↗
Female	52.5%	52.1%	51.9%	↘
Ethnic Origin				
White	92.9%	91.7%	91.8%	↘
Black or African American	4.1%	5.3%	6.3%	↗
American Indian and Alaska Native	0.3%	0.8%	1.0%	↗
Asian	0.6%	1.4%	1.7%	↗
Native Hawaiian and Other Pacific Islander	0.0%	0.1%	0.2%	↗
Other	1.4%	2.2%	1.8%	↗
Hispanic Origin				
Not of Hispanic/Latino origin	95.0%	82.9%	88.4%	↘
Hispanic/Latino origin	5.0%	9.7%	11.6%	↗

[1] Trend is shown if there was a significant change (absolute change of greater than 5% was considered significant).
Note: % may not add to 100% due to rounding.
Sources: 2000 & 2010 Census, 2012–2016 ACS 5-Year Estimates

Limited English Proficiency (LEP)

Table 2-4 provides a summary of the language(s) spoken at home by Hernando County residents age 5 and older. Approximately 89 percent of the population over age 5 speak only English, and the remaining 11 percent speak a language other than English. Of the 11 percent remaining, approximately 7 percent speak Spanish, and the remainder speak other Indo-European (2.6%), Asian and Pacific Island (0.6%), or other languages (0.3%). On average, about one-third of residents that speak a language other than English at home reported speaking English less than "very well"; in total, approximately 3.7 percent of the total county population over age 5 speaks English less than "very well."

Hernando County Transit Development Plan (2020-2029)



Map 2-6
Minority Population

Minority Percentage per Block Group

- <10%
- 10%-20%
- 21%-30%
- 31%-40%
- >40%

Source: ACS 5-year Estimates 2012-2016

Table 2-4: Language Spoken at Home, Hernando County, 2016

Population Segment	Total		% of Total
Population over 5 years	168,929		96.3%
Speak only English	150,605		89.2%
Speak a language other than English	18,324		10.8%
		% of Other than English	
Spanish	12,384	67.6%	7.3%
Other Indo-European languages	4,315	23.5%	2.6%
Asian and Pacific Island languages	1,091	6.0%	0.6%
Other languages	534	2.9%	0.3%
Speak English less than "very well"	6,191		3.7%
		% of Less than “Very Well”	
Spanish	4,414	35.6%	2.6%
Other Indo-European languages	1,184	27.4%	0.7%
Asian and Pacific Island languages	513	47.0%	0.3%
Other languages	80	15.0%	0.0%

Note: % may not add to 100% due to rounding.

Sources: Hernando-Citrus MPO LEP Plan, 2012–2016 ACS 5-Year Estimates

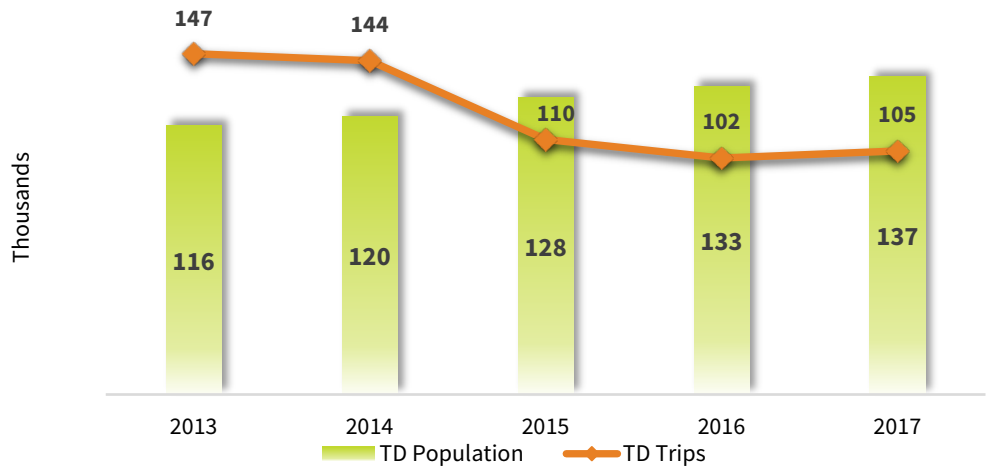
TD Population

In addition to fixed-route transit, Mid-Florida Community Services provides transportation for persons who are transportation disadvantaged (TD) in Hernando County. These services provide an important function to help increase access to activities such as health care, employment, and education for those who are older adults, have disabilities and/or low incomes, and are children of high risk or at-risk. The TD population includes individuals who meet the requirements to receive subsidized trips by the Commission for the Transportation Disadvantaged (CTD) Trust Fund allocated to the local Community Transportation Coordinator (CTC) by the CTD. The service is arranged based on need, with medical needs and life-sustaining activities receiving higher priority than work, business, or recreation.

For FY 2016–2017, Hernando County’s Mid-Florida Community Services (dba Trans-Hernando), a non-profit organization, received a Mobility Enhancement Grant of $141,505 to support enhancements to the current system, help the development of non-urbanized areas, aid the efficiency of services, and stimulate the participation of any private transportation providers. Trans-Hernando was approved to expand its current service hours and provide an additional three connector stops to its fixed-route service. In FY 2016–2017, almost 30,000 medical trips were provided and almost 75,000 employment, education, or training trips were provided. Overall, 114,068 trips were provided for the TD community.

According to the 2017 Florida CTD Annual Operator Report, approximately 75 percent of Hernando County’s residents are considered potential TD populations compared to the state’s proportion of approximately 42 percent. In 2017, Hernando County’s TD population was 182,835 residents, representing a 3 percent increase in residents that were transportation disadvantaged over the prior year. Figure 2-7 shows that over the 2013–2017 period, Hernando County experienced a 16 percent increase in its TD population, but a 40 percent decrease in the number of trips provided over the same period. The noticeable decline in trips, even with the rise of TD population, may be partially related to the reclassification of Medicaid to other providers and the reduction of funding made available to the CTC.

Figure 2-7: TD Trips Provided and TD Population, Hernando County, 2016



Source: FL CTD Annual Operator Reports

Education Attainment

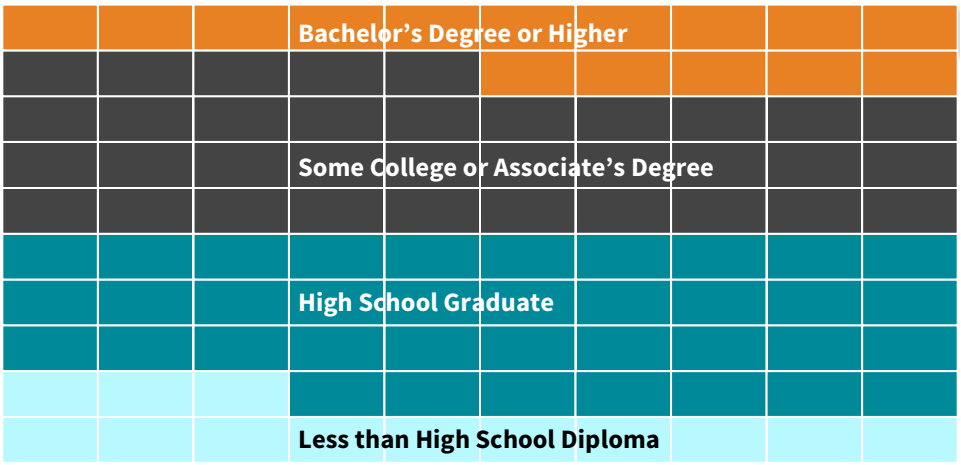
The county's population as a whole improved in achieving greater education attainment over the 2012–2016 period. Not only did the portion of the population not completing high school decrease, but the percent completing at least some college grew for every advanced degree category (Table 2-5). Figure 2-8 depicts the levels of educational attainment for Hernando County as of 2016. However, the rates of poverty for each level of educational attainment also increased over the same period.

Table 2-5: Educational Attainment and Poverty Incidence, Hernando County

Educational Attainment Level	2010			2016		
	Population > Age 18	*Percent*	*Percent in Poverty*	*Population > Age 18*	*Percent*	*Percent in Poverty*
Less than high school graduate	20,456	15.0%	17.8%	18,805	13.1%	23.9%
High school graduate (incl. equivalency)	52,174	38.3%	9.9%	53,007	36.9%	14.3%
Some college or Associate's degree	43,099	31.6%	8.9%	49,635	34.6%	11.3%
Bachelor's degree or higher	20,614	15.1%	4.1%	22,037	15.4%	6.5%

Note: % may not add to 100% due to rounding.
Sources: 2010 Census, 2012–2016 ACS 5-Year Estimates

Figure 2-8: Education Attainment, Hernando County, 2016



Note: Each box represents approximately 1 percent.
Source: 2012–2016 ACS 5-Year Estimates

Poverty Levels

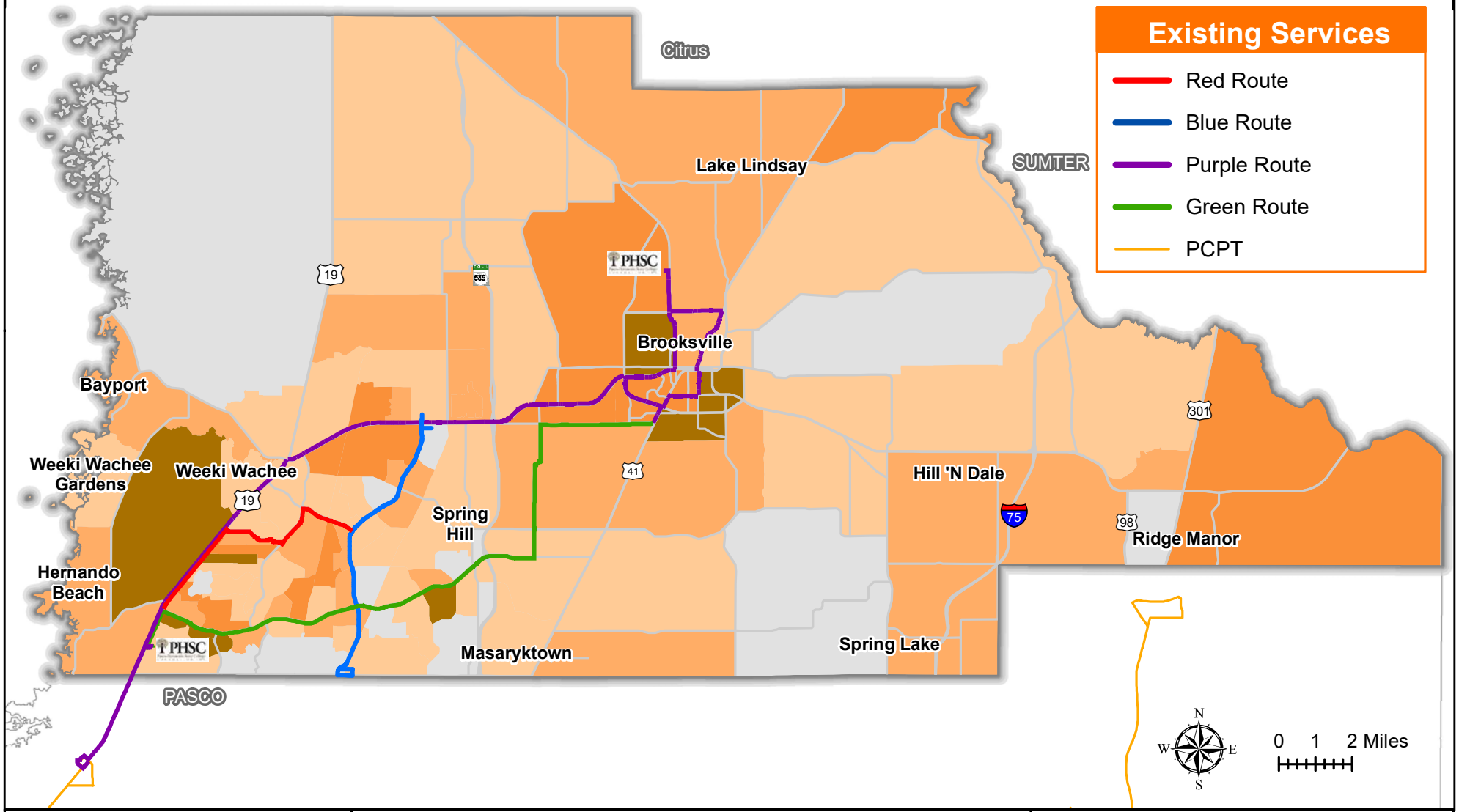
Income is a significant factor in determining transit needs. According to the 2012–2016 ACS 5-year Estimates, approximately 16 percent of Hernando County's population lives below the poverty level, whereas the proportion for Florida is 14 percent (Map 2-7). Since 2000, there has been a 51 percent increase in the proportion of the population that lives below the poverty line in Hernando County (10.3% in 2000 to 15.6% in 2016). The federal poverty threshold for a family of four was $24,600 in 2017. The median annual household income in Hernando County was $42,274, 15 percent lower than the median annual income in Florida, which is $48,900. Continued growth in this population segment of transit-dependent riders within the county may indicate a need to provide new or enhanced transit service to those areas.

Travel Behavior and Commuting Trends

Journey-to-Work

According to the 2012–2016 ACS 5-year Estimates, 17 percent of commuters in Hernando County spent 15–19 minutes traveling to or from work (Figure 2-9). The average commute time nationally and in Florida is 25–29 minutes, indicating that Hernando County has a lower-than-average commute time when compared with state and national trends. In 2005, Hernando County's average commute time was 30–34 minutes one-way, a substantial decrease in just over one decade.

Hernando County Transit Development Plan (2020-2029)



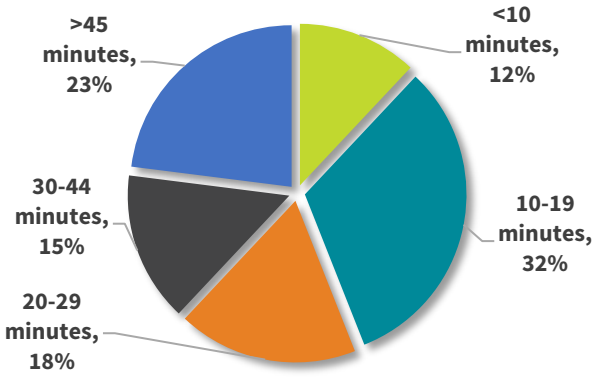
Map 2-7
Low Income

Percent of Low Income Households per Block Group

- <15%
- 16%-25%
- 26%-35%
- 36%-45%
- >45%

Source: ACS 5-year Estimates 2012-2016

Figure 2-9: Commuting Time, Hernando County

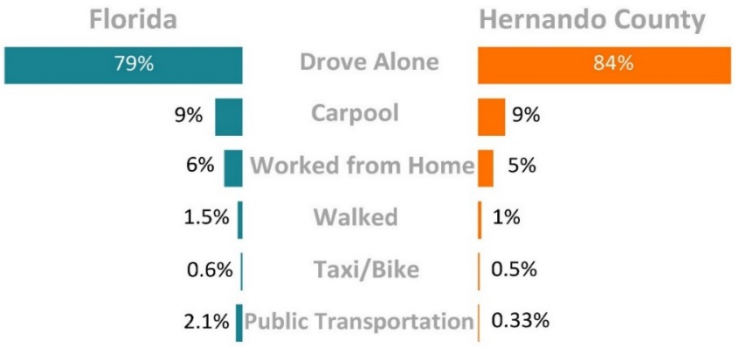


Source: 2012–2016 ACS 5-Year Estimates

Commuting Choices

A significant majority of Hernando County residents, 84 percent, chose to drive alone on their commute, five points higher than the state average of 79 percent. Figure 2-10 shows that the modes carpooling and walking to work trailed behind, at approximately 9 percent and 1 percent, respectively. Less than one percent of Hernando County residents chose to take public transportation for their commute compared to the 2.1 percent and 5.1 percent statewide and nationally, respectively.

Figure 2-10: Commuting Modes, Hernando County and Florida, 2017

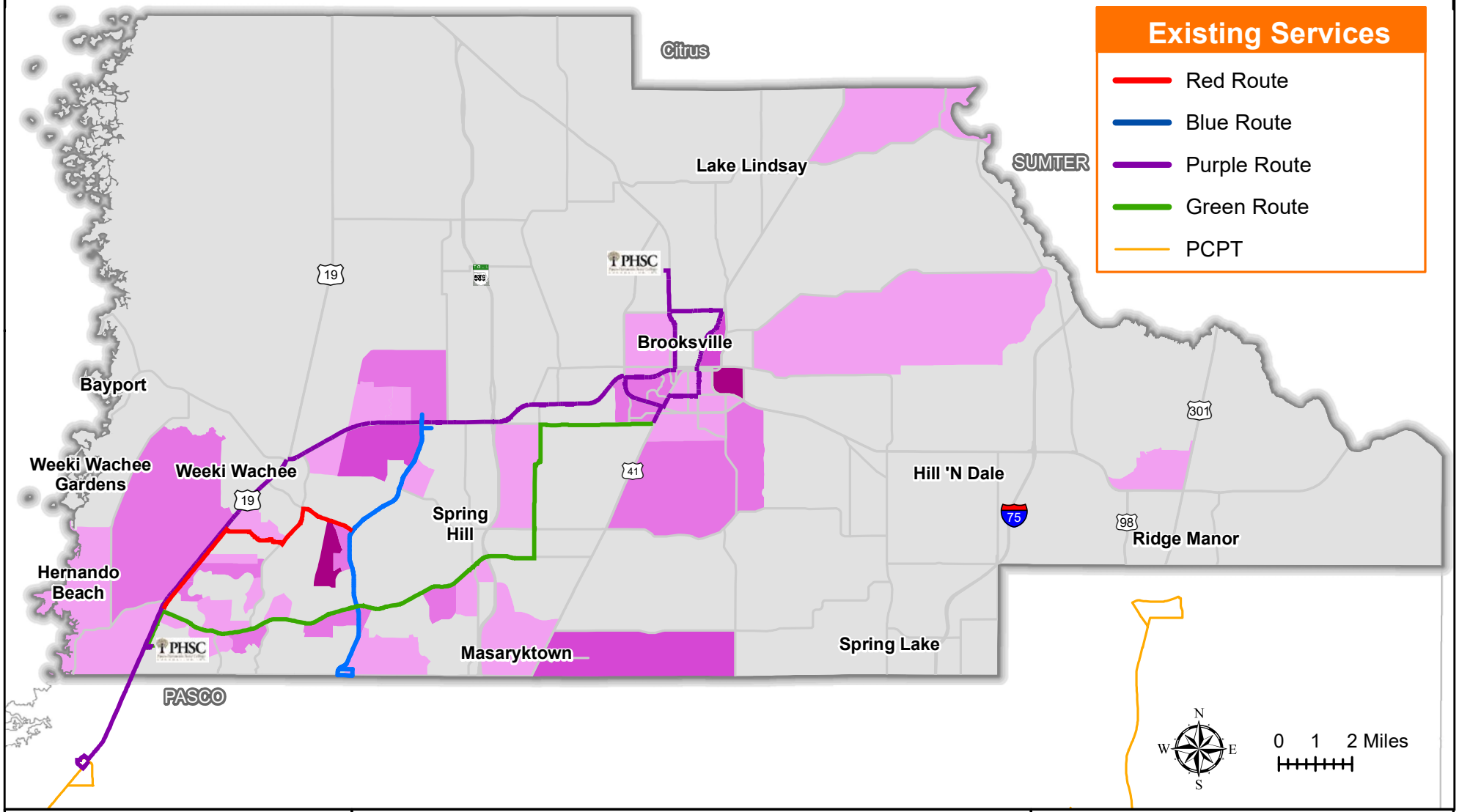


Note: % may not add to 100% due to rounding.
Source: FDOT Commuting Trends in Florida, 2017 Special Report

Automobile Ownership

Owning a vehicle can be a significant financial burden, particularly for households already near or below the poverty line; therefore, many households own no vehicles and are considered zero-vehicle households. These households are more likely to be dependent on public transportation for work, education, and recreation. Map 2-8 shows the areas of concentration of zero-vehicle households in Hernando County; 2.5 percent of households are considered zero-vehicle households, which is lower than the statewide rate of 6.6 percent and national rate of 8.7 percent, approximately 77 percent of

Hernando County Transit Development Plan (2020-2029)



Map 2-8
Zero Vehicle Households

Source: ACS 5-year Estimates 2012-2016

Percentage of Zero Vehicle Households by Block Group

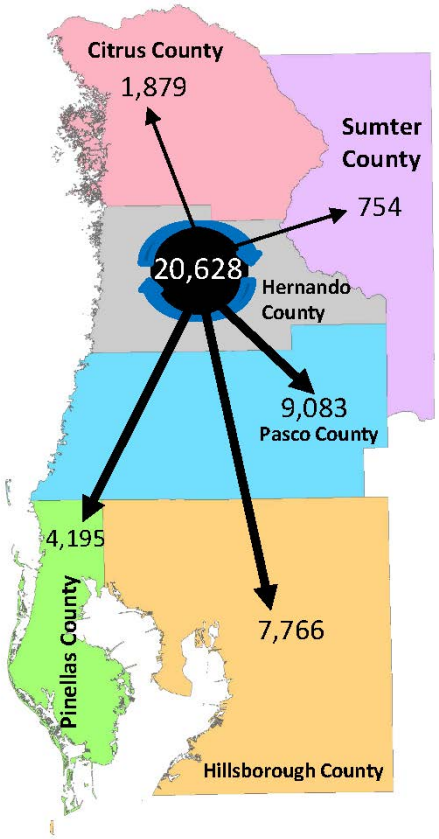
- <5%
- 5%-10%
- 11%-15%
- 16%-20%
- >20%

households have two or more vehicles available, and approximately 20 percent have one. Many of the areas with the greatest concentration of zero-vehicle households are areas currently served by TheBus network; however, there currently are no routes in Masaryktown and south of Brooksville.

Commuting Inflows/Outflows

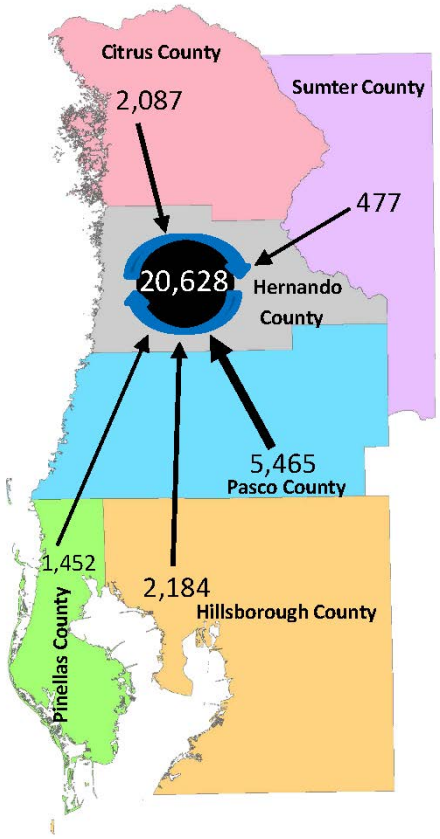
To assess the regional trends and patterns of commuters, an analysis using 2015 Longitudinal Origin-Destination Employment Statistics (LODES) data ("OntheMap," U.S. Census Bureau) was completed. This analysis provides geographic commuting patterns of jobs by their location of employment and residential locations based on Quarterly Census of Employment and Wages data concerning where workers live and work. Figure 2-11 shows regional commuting patterns by commuter outflow for Hernando County, and Figure 2-12 shows regional commuting patterns by commuter inflow for Hernando County based on the 2015 LODES data.

Figure 2-12: Commuting Outflow, Hernando County, 2015



Source: "OntheMap," U.S. Census Bureau

Figure 2-11: Commuting Inflow, Hernando County, 2015



Source: "OntheMap," U.S. Census Bureau

Approximately 41 percent of Hernando County's work force also lives in the county, and approximately 59 percent of residents who participate in the labor force commute to work outside of the county.

Table 2-6: Commuter Outflows, Hernando County, 2015

County	Number of Workers	Percent
Pasco	9,083	16%
Hillsborough	7,766	13%
Pinellas	4,195	7%
Citrus	1,879	3%
Sumter	754	1%
All Other Locations	10,842	19%

Note: 20,628 individuals live and work in Hernando County, comprising 41% of commuter outflow total.
Note: % may not add to 100% due to rounding.
Source: "OntheMap," U.S. Census Bureau

As shown in Tables 2-6 and 2-7, Pasco County is the top commuting destination and origin outside of Hernando County, where approximately 16 percent and 13 percent of commuters travel to/from, respectively. Hillsborough County follows behind Pasco County in both commuting destinations and origins outside of Hernando County at 13 percent and 5 percent, respectively. Some commuters traveled as far north as Duval County and as far east as Orange County.

Table 2-7: Commuter Inflows, Hernando County, 2015

County	Number of Workers	Percent
Pasco	5,465	13%
Hillsborough	2,184	5%
Citrus	2,087	5%
Pinellas	1,452	3%
Sumter	477	1%
All Other Locations	8,102	20%

Note: 20,628 individuals live and work in Hernando County, comprising 53% of commuter inflow total.
Note: % may not add to 100% due to rounding.
Source: "OntheMap," U.S. Census Bureau

Major Activity Centers and Trip Generators

The Spring Hill urbanized area is home to a large concentration of employment within Hernando County. Major trip generators for Hernando County include healthcare, retail, outdoor parks, and professional services locations. Major employers are listed in Table 2-8. Oak Hill Hospital, located to the west of the Suncoast Parkway and north of Weeki Wachee, is the top private sector employer in the county and also one of its primary medical centers. Walmart Super Centers are the top retail employer, and Hernando County Schools is the top public sector employer. An education center, the Spring Hill branch of Pasco-Hernando State College, is located in the southwest corner of the county.

Table 2-8: Major Employers, Hernando County

Rank	Employer Name	Employees
1	Hernando County Public Schools	3,002
2	Oak Hill Hospital	2,036
3	Walmart Super Centers	1,350
4	Hernando County Government	1,200
5	Publix	1,050
6	Walmart Distribution Center	1,020
7	Board of Commissioners	753
8	Southwest Florida Water Management District	736
9	Sheriff's Office	509
10	Winn Dixie	450

Source: Greater Hernando County Chamber of Commerce

Tourist and Visitor Levels

Although tourism is not a top industries, Hernando County is being promoted as a great destination for tourists seeking a variety of nature-based activities. Hernando's Chamber of Commerce aspires for the county to continue to be a world-famous destination by promoting its unique features such as spring-fed water parks, freshwater springs, and other natural attractions to boost its local economy through tourism. For cyclists and outdoor enthusiasts, the Suncoast Parkway provides a significant stretch of bikeway and is used by thousands of riders every year.

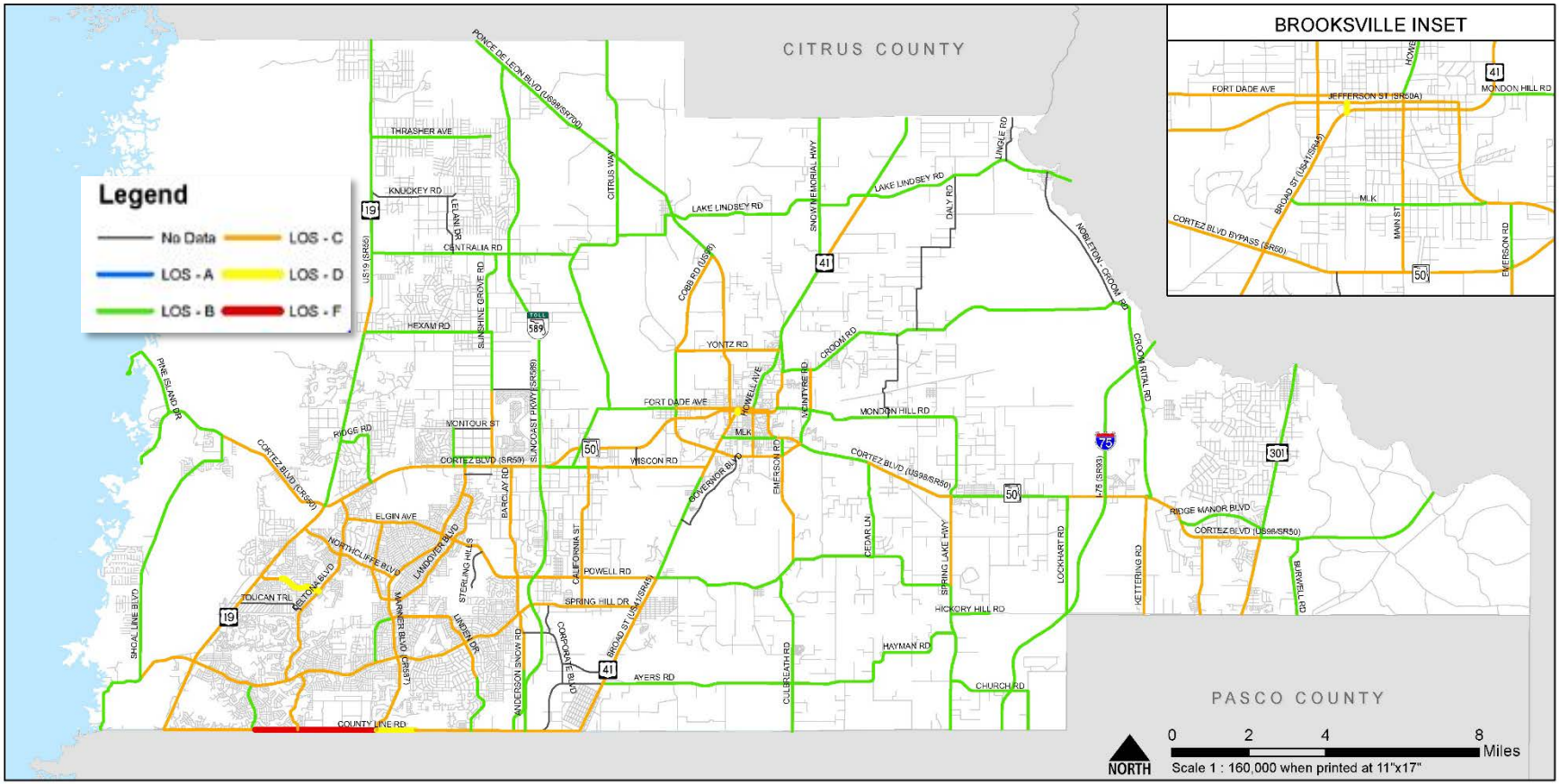
Weeki Wachee is home to the most famous tourist attraction in the county, a 538-acre park with natural springs with a mermaid show that attracts an estimated half million visitors each year. Visitors can rent kayaks, go on river boat cruises, or swim. Other recreational centers in Hernando County include Withlacoochee State Forest, Buccaneer Bay, Rogers Park, and the Weeki Wachee Preserve.

Roadway and Traffic Conditions

The Hernando-Citrus MPO's 2040 LRTP identifies a variety of goals and projects with respect to reducing and avoiding congestion on the county's roadways. Additionally, a handful of segments and intersections as part of key roads have been identified to benefit from congestion management improvements, including programs, road expansions/modifications, and intelligent transportation system (ITS) projects. Current conditions of the roadways are summarized in Figure 2-13.
By 2040, the MPO anticipates that some of its mobility goals will begin to be impeded by increases in congestion if the identified mitigation strategies are not pursued. Transit services are identified as a means to mitigating congestion and are cited as part of a number of strategies outlined by the MPO, thereby opening up the opportunity for transit to be a key tool for the MPO to achieve its goals. It is anticipated that the MPO will continue to work with TheBus to achieve its goals and projects aimed at reducing congestion, as transit services are identified as a key demand management strategy. The most congested corridors/segments include the following:

- County Line Road from Cobblestone Drive to Mariner Boulevard
- Intersection of W Jefferson Street and S Broad Street
- Forest Oaks Boulevard from Forest Villas Circle to Deltona Boulevard
- County Line Road from Mariner Boulevard to Farnsworth Boulevard

Figure 2-13: Congested Roadways, Hernando County, 2019



Source: Hernando-Citrus 2040 LRTP

Current and Future Land Use and Densities

A review of current and emerging land uses was conducted for the baseline conditions assessment. The future land use maps from Hernando County and Brooksville, shown in Figures 2-14 and 2-15, were reviewed, and the following key trends were observed.

Hernando County

- The areas of Hernando County classified as residential uses (yellow) typically are located in the areas immediately outside the Brooksville municipal boundaries, in the Spring Hill urbanized area, and, to a lesser extent, along US-19 north of Spring Hill towards Citrus County, along SR-50 north of Spring Hill, and along US-98 and SR 50 from Hill 'N Dale and Ridge Manor.
- The areas of Hernando County classified as planned developments (light brown) are located in three principal areas—the eastern part of Spring Hill (e.g., south of Spring Hill Drive, north of Masaryktown, and roughly bounded east-west by US-41 and SR-589), the eastern part of the county along I-75 (e.g., east of Spring Lake, west of Ridge Manor, and roughly bounded north-south by US-98/SR-50 and the Pasco-Hernando county border), and between US-98 and the Hernando-Citrus county border north of Lake Lindsey Road.

A significant total area is classified as conservation land (green), rural (light green), or mining (burgundy); the first two are concentrated in the periphery of the county (with the exception of the Spring Hill urbanized area), and the third is concentrated northwest of Brooksville.

Brooksville

- Brooksville is centered on the commercial centers along N and S Broad Street and along SR-50/Cortez Boulevard. Immediately adjacent to these commercial corridors is a wide variety of land uses.
- Few areas of the city are designated as multi-family residential (tan); the majority of northern Brooksville and parts of central Brooksville are designated as single-family residential (yellow). However, areas designated as multi-family/mobile home residential are scattered throughout the city, typically adjacent to commercial areas and arterials.

In addition to these commercial and residential uses are a number of mixed-use districts and planned development areas. The mixed-use districts are located in northeastern Brooksville (e.g., north of Mondon Hill Road, south of CR-480 W, and west of Weatherly Road) and southern Brooksville (e.g., Southern Hills Plantation Club). The planned development areas are located in south-central Brooksville (e.g., south of E Dr. Martin Luther King Boulevard, north of SR-50/Cortez Boulevard, and west of US-98) and southern Brooksville (e.g., north of Powell Road and west of Culbreath Road).

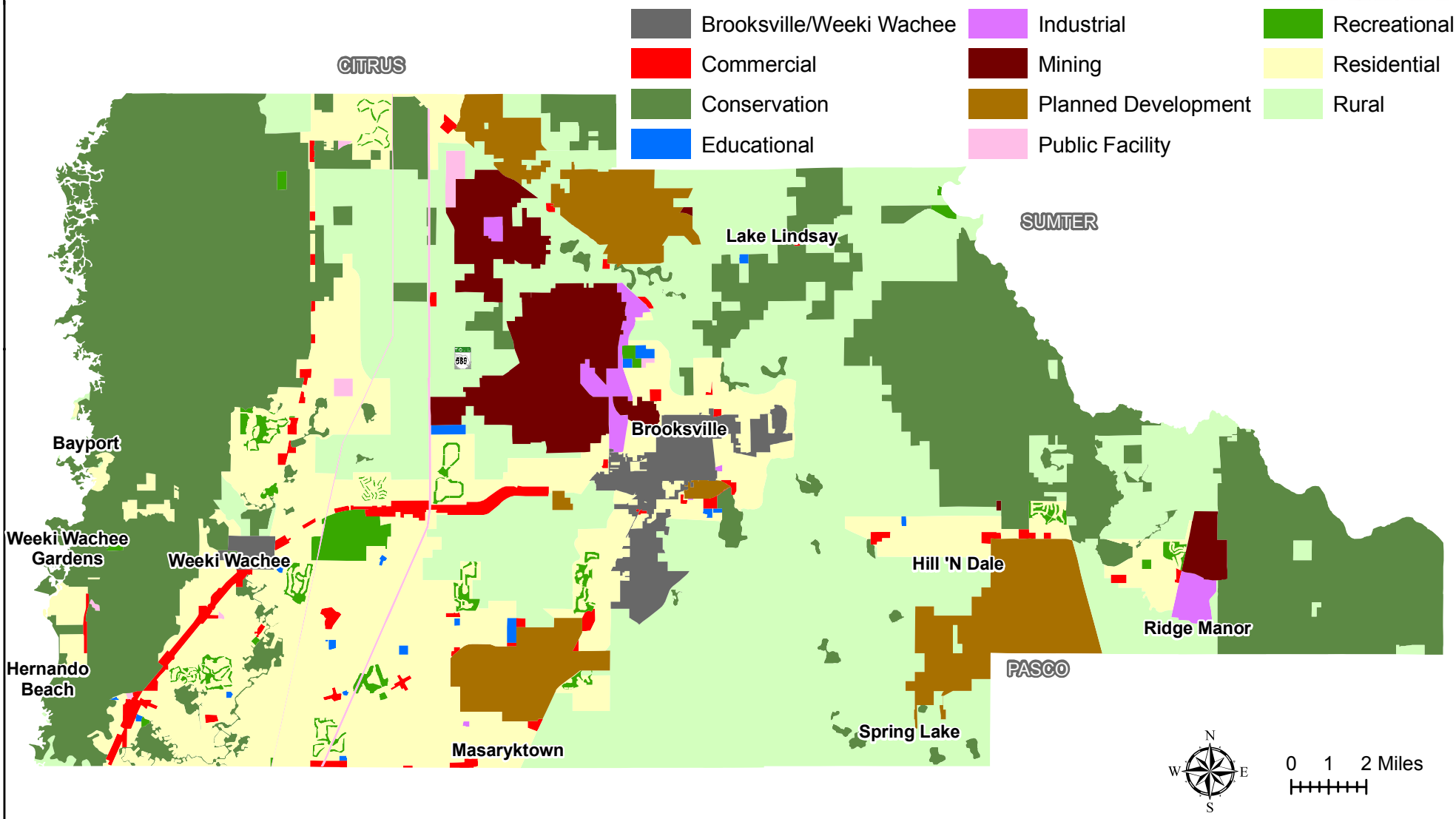
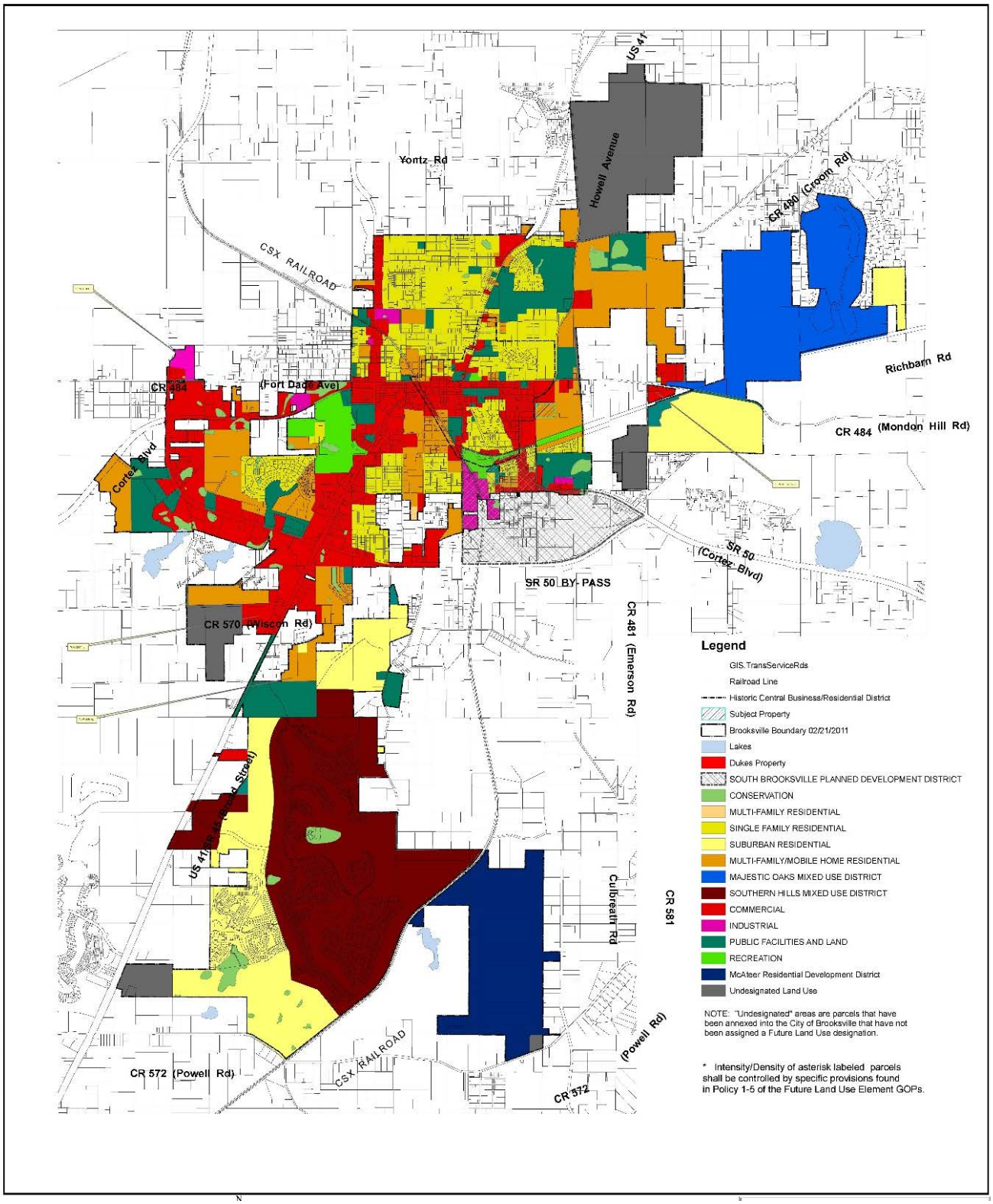


Figure 2-14: Future Land Use

Source: Hernando County MPO

Figure 2-15: City of Brooksville Future Land Use



Source: City of Brooksville Future Land Use

SECTION 3 EXISTING SERVICES EVALUATION

Existing public transportation services in Hernando County include both fixed-route and paratransit services. TheBus, including the fixed-route bus system and its complementary Americans with Disabilities Act (ADA) demand-response paratransit service, is governed by the Hernando County BOCC. In addition, Mid-Florida Community Services (dba Trans-Hernando) provides door-to-door TD service for county residents who are unable to drive or do not have available transportation due to age, income, or disability. A brief summary of TheBus and Trans-Hernando services is provided in the next section.

To assess how efficiently TheBus supplies fixed-route transit service and how effectively those services meet the needs of the area, a trend and peer analysis of critical performance indicators is presented to provide a starting point for understanding the existing system's level of performance.

Overview of Existing Transit Services

TheBus

Fixed-route service has been provided in Hernando County for more than 15 years and has been expanded multiple times in Brooksville and the urbanized area of the county. Currently Hernando County operates its transit system through a purchased transit service including complementary ADA, by a contract with a transit operator. Current service includes four routes that operate Monday through Friday with 60-minute headways, an improvement from the 75-minute headways of several years back.

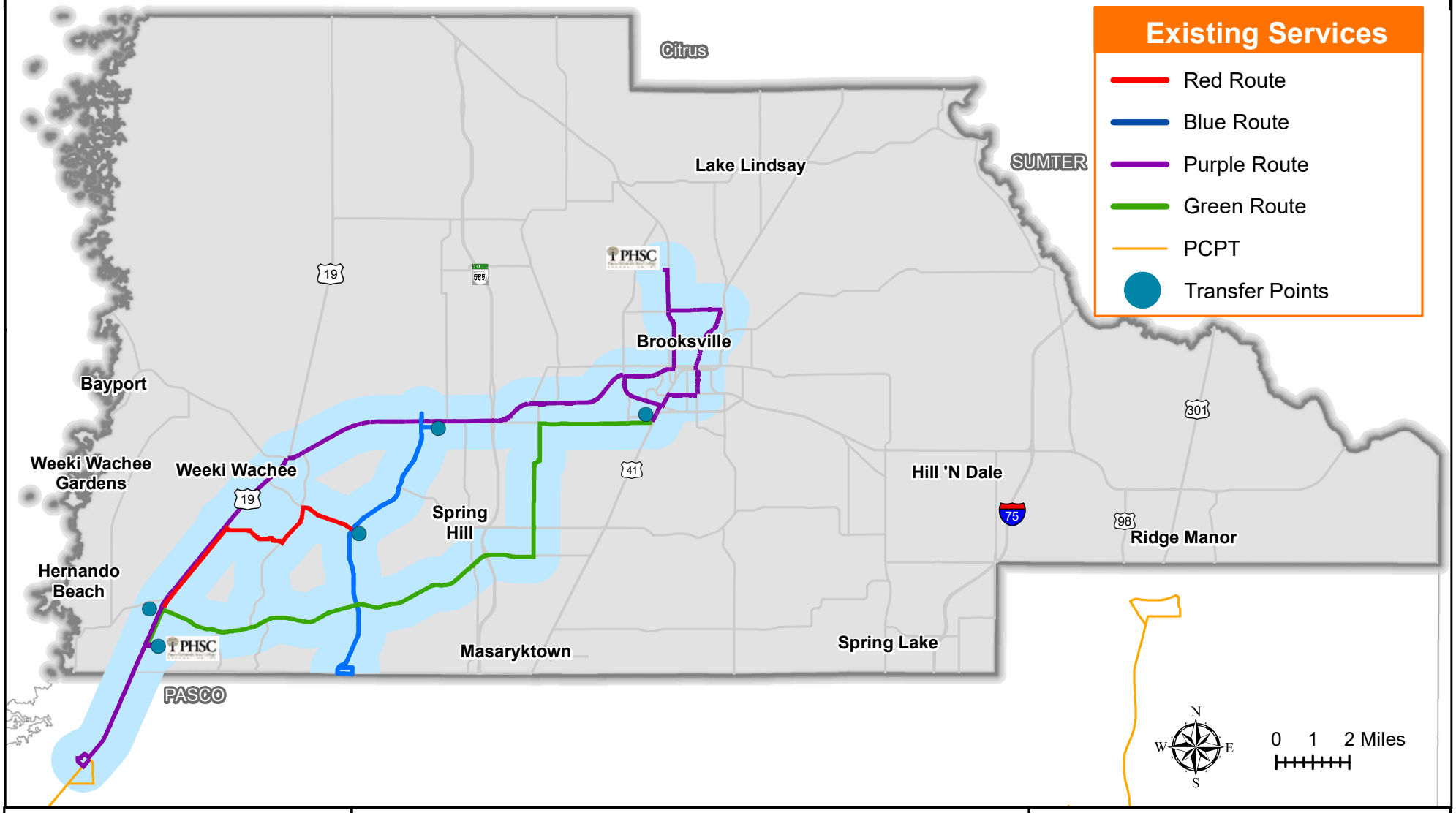
In addition to improved frequencies, a connection to Pasco County's transit services was made since the last TDP. As part of the Purple route extension, service on US-19 was established in 2016 to help serve Hernando's residents connect between the two counties. The County also added a new route to the fixed-route system, the Green route, connecting residents to the airport, education centers, and medical centers in Spring Hill area.

More detailed summaries of the fixed-route bus service are presented later in this section, including type of services provided, fares, and facilities. Map 3-1 shows the existing fixed-route services and key transit facilities Hernando County and the complementary ADA paratransit service area.

Complementary ADA Paratransit Service

In addition to fixed-route bus, services for persons qualifying under ADA is provided, complementing the existing public transportation service for residents who live within ¾ mile on either side of the fixed-route system but are unable to access due to an eligible disability. TheBus provides and schedules appointments for ADA service one day prior to a trip and during office hours, Monday through Friday from 8:00 AM to 5:00 PM. Scheduled pickup times for ADA service are from 5:50 AM to 7:35 PM, and trips have a one-hour pickup window. ADA card holders may ride TheBus for free by showing their eligibility photo identification card to the driver. Visitors in Hernando County whose ADA eligibility has been determined by another transit or public agency also may use their ADA eligibility identification card to use the transit service.

Hernando County Transit Development Plan (2020-2029)



Map 3-1
Existing Routes

3/4-mile ADA Paratransit Service Area

Source: Hernando County MPO

Trans-Hernando

The CTD has contracted with Trans-Hernando to provide paratransit services for Hernando County. Also officially designated as the CTC for Hernando County since 2000, Trans-Hernando provides the door-to door TD service for county residents who are unable to drive or do not have available transportation due to age, income, or disability. To qualify with Trans-Hernando, riders must complete an application to receive services; once deemed eligible, riders can make reservations for Monday through Friday for a trip between 7:30 AM and 4:00 PM, with services provided during a two-hour window. These services are available primarily to help meet basic needs, medical needs, and provide access to available shopping. When there is available service, Trans-Hernando also provides seats to those who need to get to a bank, hairdresser, hospital, or other recreational needs. The standard fee associated with a trip is $5.00 each way and $10.00 round trip, although a reduced fee is available based on income level, employment, and veteran status and upon proof of status. These services are funded by FDOT, CTD, and private donations.

Fixed-Route Service Overview

A summary of current fixed-route service, fare structure, recent ridership trends, and inventory of transit facilities and vehicles is presented in Table 3-1 to provide a complete snapshot of TheBus system.

Table 3-1: TheBus Fixed-Route Services

Route Color/Name	Key Locations/Corridors Served	Weekday Service Frequency	Days of Service	Weekday Span	FY 2018 Ridership
Purple	Pasco County via US-19 through Brooksville city loop	60 min	Monday–Friday	5:30 AM–7:20 PM	50,280
Green	Spring Hill Dr from PHSC Spring Hill to transfer station in Brooksville on SR-50	60 min	Monday–Friday	6:00 AM–7:00 PM	34,894
Blue	Mariner Blvd from Pasco County line to Coastal Way Plaza	60 min	Monday–Friday	6:00 AM–7:00 PM	25,268
Red	Spring Hill Dr Transfer Center via US-19 to Mariner Commons Transfer Center	60 min	Monday–Friday	5:45 AM–5:40 PM	16,630

Source: TheBus

Fares

The regular one-way cash fare on TheBus system is $1.25. Also available for purchase are 12 One-Way, 18 One-Way, transfers, and monthly passes. TheBus offers discounts for children under age 6, students, older adults, and persons with disabilities, as shown in Table 3-2. To be eligible for reduced fares, riders must show their ADA eligibility card or TheBus reduced-fare photo ID (except if under age 6). TheBus

reduced-fare photo ID is for persons age 65 and older, students, Medicare recipients, or those who are disabled.

Table 3-2: TheBus Fares and Passes

Fare Category	Regular	Reduced
One-Way	$1.25	$0.60
Transfers	$0.50	-
12 One-Way tickets	$10	-
18 One-Way tickets	$15	-
Monthly Pass	$25	$12.50

Source: TheBus website

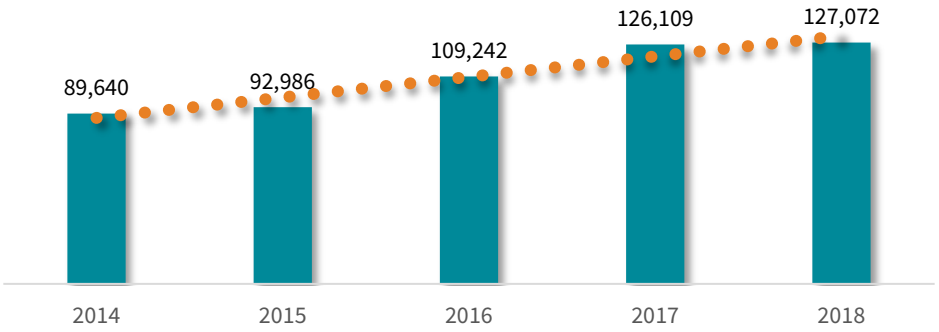
TheBus passes can be purchased via cash, money order, and debit/credit card (unless noted) at the following locations:

- Main Library, 238 Howell Avenue, Brooksville 34601
- Spring Hill Library, 9220 Spring Hill Drive, Spring Hill 34608
- West Hernando Library, 6335 Blackbird Avenue, Weeki Wachee 34613
- Pasco-Hernando State College North Campus Bookstore, 11415 Ponce De Leon Boulevard, Brooksville 34601
- Pasco-Hernando State College Spring Hill Campus Bookstore, 450 Beverly Court, Spring Hill 34606
- Brooksville City Hall, 201 Howell Avenue, Brooksville 34601 (cash or money order only)
- Tax Collector's Office/Westside Government Center, 7489 Forest Oaks Boulevard, Spring Hill 34606 (cash or money order only)

Ridership Trends

Figure 3-2 summarizes the ridership trends on TheBus for 2014–2018. Whereas transit ridership has declined nationally and regionally for the last few years, TheBus ridership has increased by 42 percent in five years analyzed, showing a growing demand for the system.

Figure 3-1: TheBus Passenger Trips, 2014–2018



Source: Hernando County, TheBus

Facilities

Mariner Square Shopping Center Transfer Station on Cortez Boulevard in Spring Hill served as the major transfer point for fixed-route services until recently, but the agreement to use the facility has now expired. In FY 2017, Hernando County installed benches and shelters at 89 bus stops along various routes. By adding a new route to the fixed-route system (Green route), Hernando County also added approximately 88 bus stops.

Vehicles

A summary of the current vehicle inventory for TheBus fixed-route and ADA services is provided in Table 3-3 and summarized further in Table 3-4. In addition, Hernando County acquired one new Gillig fixed-route bus and one paratransit vehicle to help replace its aging fleet, now with two spare vehicles to aid the Red, Blue, and Purple routes for peak travel periods.

Table 3-3: TheBus Vehicle Inventory

	Veh#	Description	Year	Coach Type	Model ID	Vehicle Past Recommended Life?
Fixed Route	19411	Gillig low floor	2002	Gillig	31' Low Floor	Yes
	19412	Gillig low floor	2002	Gillig	31' Low Floor	Yes
	19413	Gillig low floor	2002	Gillig	31' Low Floor	Yes
	18897	Transit bus cutaway	2011	Arboc	Chevrolet g4500	Yes
	18898	Transit bus cutaway	2011	Arboc	Chevy g4500	Yes
	18899	Transit bus cutaway	2011	Arboc	Chevy g4500	Yes
	19429	Gillig low floor	2015	Gillig	31' Low Floor	No
	20041	Gillig low floor	2016	Gillig	29' Low Floor	No
	20042	Gillig low floor	2016	Gillig	29' Low Floor	No
	20079	Gillig low floor	2017	Gillig	29' Low Floor	No
	21367	Gillig low floor	2018	Gillig	29' Low Floor	No
Demand Response	18891	Transit van cutaway	2013	Goshen	Goshen coach	Yes
	19441	Dodge caravan	2015	Dodge	Ada van	No
	20054	Ford e450	2016	Glaval	Universal 23'	No
	20055	Ford e450	2016	Glaval	Universal 23'	No
	20056	Ford e450	2016	Glaval	Universal 23'	No
	20038	Ford e450	2016	Glaval	Cutaway	No
	20828	Transit cutaway	2017	Glaval	Cutaway	No

Source: Hernando County

Table 3-4: TheBus Vehicle Inventory Summary

Bus Type	Total Number	Average Age	Percent At or Past Useful Life Benchmark
Bus	11	7	27%
Demand Response	7	2.4	14%

Source: Hernando County

Inventory of Existing Transportation Services

Other private and public agencies offer transportation services for specific client groups, as shown in Table 3-5. These private transportation providers were contacted for general information about the services offered, and the information provided is summarized in the table.

Table 3-5: Other Transportation Providers – Hernando County

Provider	Types of Services Provided			Levels of Service		Fare Structure	Types of Vehicles	Phone	Email
	General Service Area	Eligible Trip Purposes	Eligible Riders	Days of Operation	Hours				
CTC-Coordinated Contractors									
Medical Transportation Management (MTM)*	Hernando	All	Disabled, Older Adult, Medicaid Eligible, Transportation Disadvantaged	Mon-Sun	24/7	Variable	Wheelchair Van, Sedan, Ambulance	(636) 561-5686	tphelpdesk@mtm-inc.net
Access 2 Care*	Hernando	Ambulatory, Wheelchair	Medicaid, Medicare	Mon-Sun	24/7	Free for Medicare and Medicaid receivers	Wheelchair Van, Ambulance	(727) 282-1451	
Logisticare*	Hernando	Ambulatory, Wheelchair	Medicaid, Medicare, Older Adult	Mon-Sun	24/7	Variable	Sedan/Van	(404) 888-5800	network@logisticare.com
All Other Transportation Providers									
American Cancer Society Transportation Program	Statewide	Medical	Cancer Patient	Mon-Fri	24/7	Program uses volunteer and private contracted providers. Depending on need, discount vouchers are available for other than volunteer drivers	Sedan	(800) 227-2345	n/a
Black Coach Transportation Services	Hernando, Lake, Marion, Sumter	Any	Cancer Patient, Disabled, Older Adult, Private Pay Consumer, Veterans	Mon-Sun	24/7	$75-$80 Round Trip. Flat rates available for airport transport	Car, Non-Emergency Stretcher Van, Van, Wheelchair Van	(352) 461-7174	blackcoachexpress@gmail.com
Corporate Angel Network	Statewide	Medical	Cancer Patient	Mon-Fri	9:00AM-5:00PM	Free service	Airplane	(914) 328-1313	info@corpangelnetwork.org
Greyhound Bus	Statewide	Any	All	Mon-Sun	5:00AM-10:45PM	Fares dependent on distance	Bus	(813) 229-2174	webmaster@greyhound.com

Table 3-5: Other Transportation Providers – Hernando County (continued)

Provider	Types of Services Provided			Levels of Service		Fare Structure	Types of Vehicles	Phone	Email
	General Service Area	Eligible Trip Purposes	Eligible Riders	Days of Operation	Hours				
J and M Limousines	Spring Hill/Brooksville	Any	All	Mon-Sun	24/7	Fares dependent on distance	Sedan/van	(352) 688-2999	n/a
Hernando Car Service	County-wide	Any	All	Mon-Sun	24/7	$2.00/miles	Sedan/van	(352) 797-5596	n/a
Lyft	National	Any	Any	Mon-Sun	24/7	Fare dependent on distance	Sedan	n/a	support@lyft.com
MedFleet Systems	Hernando, Pasco, Pinellas	Any	Medicaid Eligible, Private Pay Consumer	Mon-Sun	24/7	Medicaid - $1 each way if qualified, Wheelchair Van, base price $30 one way plus $2.50/mile; Stretcher Van, base price $75 one way, plus $3.00/mile	Ambulance, Non-Emergency Stretcher Van, Wheelchair Van	(727) 376-7240	n/a
Mobility Freedom of Florida	Statewide	Recreation, Errands	Disabled	Mon-Fri	9:00AM-5:00PM	1 Day rental $135; 2-4 Days $120; 5-20 Days $90; 21-29 Days $85; 30 Days $80	Wheelchair Van	(352) 429-3972	cindy@mobilityfreedom.com
Olympus Limousine, Inc	Hernando, Hillsborough, Pasco, Pinellas	Any	Private Pay Consumer	Mon-Sun	24/7	Fares dependent on distance	Bus, Car, Limousine/ Luxury Car, Van	(800) 841-8838	info@olympuslimo.com
Stretcher/Wheelchair Inc.	Hernando, Pasco, Pinellas	Errands, Medical, Recreation	Disabled, Older Adult, Private Pay Consumer	Mon-Sat	6:00AM-6:00PM	Wheelchair Van, $28.00 base rate each way, plus $3.00 per mile Stretcher Van, $85.00 base rate each way, plus $3.00 per mile	Mini-Bus, Non-Emergency Stretcher Van, Wheelchair Van	(727) 845-4454	stretcherlimo@aol.com
Sunnyvale Medical Transport, Inc.	Statewide	Medical	Cancer Patient, Disabled, Older Adult, General Public, Private Pay Consumer	Mon-Sun	24/7	Fares dependent on distance	Bus	(863) 381-3565	dwrkwklw@gmail.com

Table 3-5: Other Transportation Providers – Hernando County (continued)

Provider	Types of Services Provided			Levels of Service		Fare Structure	Types of Vehicles	Phone	Email
	General Service Area	Eligible Trip Purposes	Eligible Riders	Days of Operation	Hours				
Terri's Taxi and Errand Service	Citrus, Hernando, Levy, Marion, Pasco, Sumter	Errands, Medical, Recreation	Disabled, Older Adult, Medicaid Eligible, Private Pay Consumer	Mon-Sun	24/7	$3 flat rate, $1.50 per mile	Sedan	(352) 726-3723	ttaxi66@aol.com
The BusBank	Statewide	Recreation, Errands	Disabled, Older Adult, General Public, Private Pay Consumer	Mon-Fri	8:00AM-6:00PM	Fares dependent on distance	Bus	(312) 476-6100	n/a
Trans Hernando Para Transit	Hernando	Any, Medical	Medical Eligible, Transportation Disadvantaged	Mon-Fri	8:00AM-5:00PM	Transportation Disadvantaged, $10.00 round trip Approved Medicaid, no charge	Wheelchair Van	(352) 799-1510	transhernando@mfcs.us.com
Transcare Plus, Inc.	Citrus, Hernando, Pasco	Medical	ADA Eligible, Cancer Patient, Disabled, Older Adult, General Public	Mon-Sun	24/7	Variable	Ambulatory Van, Non-Emergency Stretcher Van, Wheelchair Van	(352) 340-5096	transcareplus@gmail.com
Yellow Cab of Hernando County	Hernando, Pasco, Pinellas	Any	ADA Eligible, Disabled, Older Adult, Medicaid Eligible, Private Pay Consumer	Mon-Sun	24/7	$3.25 for first 1/4 mile; then $2/mile	Sedan	(352) 686-0607	info@yellowcabflorida.com
Yellow Cab of Pasco County	Collier, Hernando, Lee, Pasco, Pinellas	Medical	Disabled, Older Adult, Private Pay Consumer	Mon-Sun	24/7	Meter starts at $3.25 for first 1/4 mile plus $2.00/mile. Medicaid and Americans with Disabilities need pre approval	Car, Mini-Bus	(888) 459-7827	info@yellowcabflorida.com
Uber	National	Any	All	Mon-Sun	24/7	Fares dependent on distance	Sedan	n/a	support@uber.com
Wheelchair/Stretcher Limo	County-wide	Any	All, wheelchair accessible	Mon-Fri	6:00AM-7:00PM	Dependent on qualifying program with Hernando County	Wheelchair Van	(727) 845-4454	n/a

Trend Analysis

To assess how efficiently TheBus supplies fixed-route transit service and how effectively those services meet the needs of the area, a trend analysis of critical performance indicators and measures was conducted to examine the performance of its fixed-route services over a five-year period.

To complete this trend analysis, data from the Florida Transit Information System (FTIS) were used, which includes validated NTD data for 2013–2017 for transit agencies in Florida. Using the same measures, a peer system review analysis also was conducted and summarized followed by this trend analysis. This compares various TheBus fixed-route performance characteristics to a group of transit peers using the most complete, recent national transit data at the time of the analysis, 2015 NTD data.

Analysis Indicators and Measures

Various performance measures were used to present the data that relate to overall system performance. Three categories of indicators and performance measures were analyzed for the trend and peer analysis of the existing transit service:

- **Performance Indicators** – quantity of service supply, passenger and fare revenue generation, and resource input
- **Effectiveness Measures** – extent to which the service is effectively provided
- **Efficiency Measures** – extent to which cost efficiency is achieved

The trend analysis was organized by the type of measure or indicator and include statistics, figures, and tables to illustrate TheBus' performance over the past five years. This analysis includes statistics that summarize selected system performance indicators, effectiveness, and efficiency measures for the five-year period. The findings of the trend analysis are presented by indicator in Table 3-6, and a complete summary of the results is provided in Appendix B.

Trend Analysis Summary

- **Service Consumption** – All service consumption metrics have been increasing over the five-year analysis period except for service area population density. This suggest that riders are using TheBus increasingly.
- **Service Supply** – Passenger trips per capita increased by approximately 14.4 percent, which corresponds with the increase in service consumption overall. Passenger trips per revenue hour decreased (-16.9%) and revenue miles per capita increased (46.4%), suggesting that riders are using TheBus more, but they are not using it during all hours that service is provided, leaving room for increased efficiency with TheBus.
- **Quality of Service** – The number of vehicles operated in maximum service increased by 75 percent in the five-year period, suggesting that there has been more service, which corresponds with the increase in revenue hours.
- **Cost Efficiency** – Operating costs increased over the five-year period, at 41.7 percent, corresponding with an increase in operating expense per capita. Although the operating

expenses increased, the operating expense per passenger trip and operating expense per revenue mile decreased, -7 percent and -27.4 percent, respectively. This suggests that although service and ridership have increased, there is room for improvement with cost efficiency.

Table 3-6: TheBus Fixed-Route Trend Analysis, 2013–2017

Indicator/ Measure	2013	2014	2015	2016	2017	% Change (2013–2017)	Status[1]	Desired Trend[2]
General Indicators								
Service Area Pop	86,848	87,136	87,479	115,427	115,715	33.2%	↗	↗
Service Area Pop Density	1,379	1,383	1,389	1,297	1,300	-5.7%	↘	↗
Passenger Trips	82,770	89,640	92,986	109,242	126,109	52.4%	↗	↗
Revenue Miles	206,983	225,165	229,513	369,627	403,876	95.1%	↗	↗
Revenue Hours	11,613	12,459	12,438	19,526	21,291	83.3%	↗	↗
Total Operating Exp	$810,769	$843,282	$747,355	$1,180,758	$1,148,545	41.7%	↗	↘
Vehicles in Max Svc	4	4	4	7	7	75%	↗	↗
Effectiveness Measures								
Revenue Miles per Capita	2.38	2.58	2.62	3.20	3.49	46.4%	↗	↗
Passenger Trips per Capita	0.95	1.03	1.06	0.95	1.09	14.4%	↗	↗
Passenger Trips per Rev Hr	7.13	7.19	7.48	5.59	5.92	-16.9%	↘	↗
Efficiency Measures								
Operating Exp per Capita	9.34	9.68	8.54	10.23	9.93	6.3%	↗	↘
Operating Exp per Passenger Trip	$9.80	$9.41	$8.04	$10.23	$9.11	-7.0%	↘	↘
Operating Exp per Revenue Mile	$3.92	$3.75	$3.26	$3.19	$2.84	-27.4%	↘	↘
Farebox Recovery	n/a	8.08%	8.62%	n/a	8.17%	1.1%*	↗	↗
Average Fare	$0.72	$0.76	$0.69	$0.73	$0.74	3.8%	↗	↗

[1] Status assigned only if trend is outside 1 standard deviation of trend average.

[2] Desired Trend for General Indicators based on expanding transit system.

*2013 and 2016 data not available, based on 2014–2017 trend.

Source: NTD FTIS

Farebox Recovery Report

In addition to the summary of the most recent farebox recovery trend for TheBus fixed-route service, a more detailed analysis and set of recommendations to improve the farebox recovery rate is provided as part of Appendix A.

Peer Review Analysis

In addition to the trend analysis presented previously, a peer system review was conducted to assess how TheBus compares to similar/peer transit agencies. The peer review analysis, when combined with the trend analysis of an overall transit performance evaluation, provides an excellent starting point for understanding the efficiency and effectiveness of a transit system.

Peer System Selection Methodology

A fixed-route peer system selection was conducted using 2015 NTD data available in the FTIS database. The 2015 data for all systems reported in NTD were then compared with 2015 data for TheBus. The pool of possible peers was assessed and subsequently scored through an objective assessment of nine standard variables, including the following:

- Geography (southeastern U.S.)
- Average speed (revenue miles/revenue hours)
- Passenger trips
- Revenue miles
- Service area population
- Service area population density
- Total operating expense
- Vehicles operated in maximum service
- Revenue hours

The peers were first selected based on geographic location (southeastern states), including Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Texas, and Virginia. Fixed-route systems operating in these states were added to the pool of possible peers and analyzed based on the eight remaining criteria. A potential peer received 1.0 point when one of the eight criteria was within 1 standard deviation of TheBus' performance value. A peer received 0.5 points for each criterion that fell within 2 standard deviations of TheBus value. Table 3-7 shows the final set of selected peer systems for the peer system review analysis.

Table 3-7: Selected Peer Systems for TheBus Peer Review Analysis

Agency Name	Location
Suffolk Transit (Suffolk)	Suffolk, VA
Hub City Transit (Hub City)	Hattiesburg, MS
East Alabama Regional Planning and Development Commission (EARPDC)	Anniston, AL
City of Miramar – Public Works Department (Miramar)	Miramar, FL
Jonesboro Economical Transportation System (JETS)	Jonesboro, AK

Peer Review Analysis

The results of the peer review analysis of Hernando County's fixed-route bus service during 2016 (after the peer selection was made using 2015 data) are shown in Table 3-8. Findings are presented by key indicators/measures in terms of their deviation above or below the peer group mean and a general assessment of the result. Following the table, a summary of the overall results is provided.

Table 3-8: TheBus Fixed-Route Peer Review Analysis, 2016

Indicator/Measure	TheBus % from Mean	Assessment
General Indicators		
Service Area Population	-9.8%	n/a
Service Area Population Density	-19.4%	n/a
Passenger Trips	-11.9%	Can improve
Revenue Miles	-52.0%	Can improve
Revenue Hours	39.1%	Good
Total Operating Expense	35.2%	Can improve
Vehicles Operated During Max Service	23.5%	Good
Effectiveness Measures		
Passenger Trips per Capita	-26.8%	Can improve
Passenger Trips per Revenue Hour	-39.5%	Can improve
Revenue Miles per Capita	15.0%	Good
Efficiency Measures		
Operating Expense per Capita	0.76%	Good
Operating Expense per Passenger Trip	42.1%	Can improve
Operating Expense per Revenue Mile	-15.1%	Good
Farebox Recovery	11.2%	Good
Average Fare	33.4%	Good

Source: NTD FTIS

Peer Analysis Summary

- **General Performance Indicators** – TheBus placed above the peer mean in revenue hours, total operating expense, and vehicles operated during maximum service and placed under the peer mean in passenger trips, service area population, and revenue miles. TheBus can improve on passenger trips, service area population, revenue miles, and total operating expense. TheBus placed an average of 24.54 percent below the mean in metrics that suggest room for improvement in the amount of service provided given population levels. TheBus placed an average of 32.61 percent above the mean in metrics related to efficiency of service provided.
- **Effectiveness Measures** – TheBus placed below the peer mean for most effectiveness measures. Passenger trips per capita and passenger trips per revenue hour were below the mean; revenue miles per capita was above the mean. Revenue miles per capita scoring 15.02 percent above the mean suggests that TheBus is effective at serving those using TheBus for longer distances.
- **Efficiency Measures** – TheBus placed above the peer mean in every metric except operating expense per revenue mile. This suggests that TheBus is maximizing its funding per person and receiving a higher farebox recovery rate than most peers of the same size.

SECTION 4 PUBLIC INVOLVEMENT

This section outlines the public involvement activities planned and conducted for Hernando County's 2020–2029 TDP. Prior to conducting public involvement activities, a Public Involvement Plan (PIP) that describes all outreach activities to be undertaken during the development of the TDP was prepared. The activities included in the PIP provide numerous opportunities for involvement by the general public and representatives of local agencies and organizations. A copy of the PIP developed for the Hernando County TDP is included in Appendix A. Summarized in this section are findings based on the input received from these activities. The results of all public involvement activities were combined with findings from other components of the TDP to develop and evaluate the 10-year strategic transit plan for Hernando County, as summarized later in this report.

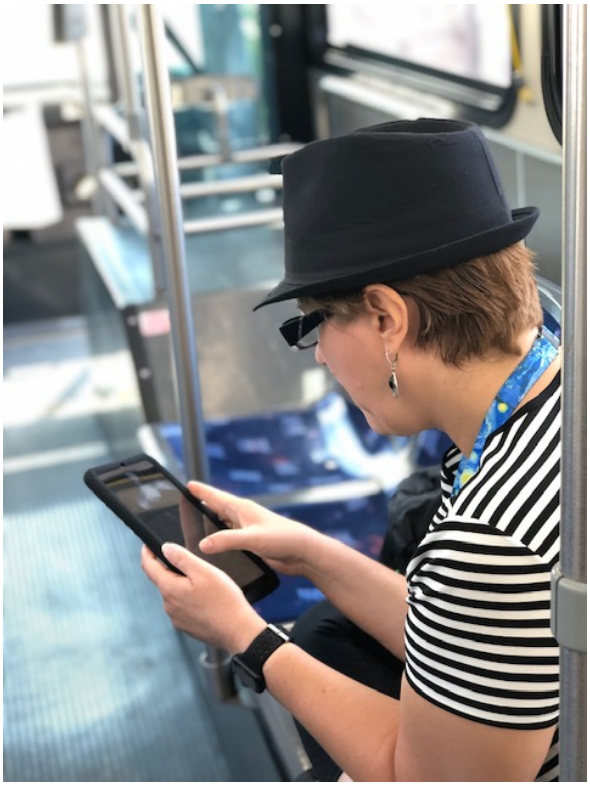
Summary of TDP Public Involvement Activities

Several public involvement activities and techniques were used with the Hernando County TDP process to ensure the opportunity for a range of community stakeholders to actively participate in the plan development process. The activities and techniques are summarized in greater detail in the following sections, and a tabulated summary of the events and public engagement/participation by outreach event is provided in Table 4-1.

Table 4-1: Key Public Involvement Activities

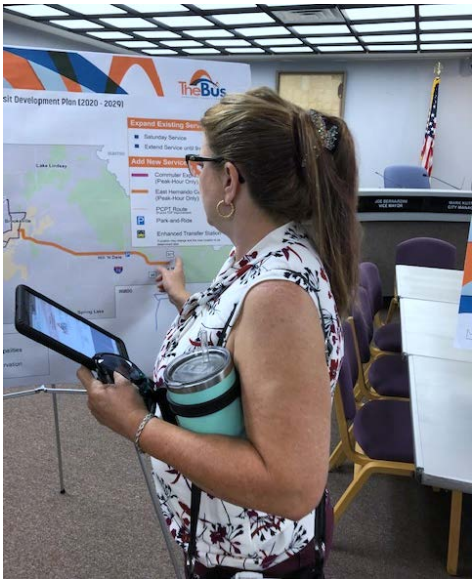
Outreach Activity	Date	Engaged/Participated
Stakeholder Interviews		
Community Stakeholders	December 2018–February 2019	17
	Total	**17**
Grassroots Outreach		
Farmer's Market	January–February 2019	10
Spring Hill Library		36
Heritage Festival		15
Walmart		15
	Total	**76**
Rider and Non-Rider Surveys		
Public Input Survey	January 2019–March 2019	61
Transit Priorities Survey	April 2019–May 2019	39
Bus Rider Survey	January 2019–March 2019	19
	Total	**119**
Open House Public Workshops		
Brooksville City Hall	April 2019	30
Spring Hill Library		32
	Total	**62**
	Total Participants	**274**


Service Types




2029 TRANSIT NEEDS


2029 TRANSIT NEEDS


TheBus
Expand Existing Service
Add New Service



Project Review Meetings

A Project Review Team was established to review project documentation and help guide the overall TDP update effort. The review team was established at the discretion of the MPO staff and included Hernando County Transit and MPO staff. The following meetings were held as part of this effort:

- **Meeting #1** – November 16, 2018; teleconference that served as kick-off for project and included discussions on overall objectives for TDP and review of project schedule, including future staff meetings, upcoming public outreach activities, and various data needs to complete TDP.
- **Meeting #2** – April 18, 2019, 12:00 PM, Hernando County Government Center; reviewed and discussed Project Review Team comments on TDP goals and objectives, necessary revisions; reviewed schedule for TDP and outreach; finalized comments on Technical Memorandum #2.

Stakeholder Interviews

One-on-one stakeholder interviews provide a forum to gather input from policy, agency, or community leaders concerning the vision for public transportation in their community. These direct conversations are conducted to enhance the understanding of location conditions for transit as assessed through the perceptions and attitudes of stakeholders within the community. A total of 17 stakeholders, selected by MPO/Hernando County staff, were contacted. Table 4-2 provides a list of the individuals contacted and those who were interviewed as part of this outreach effort. Of the 17 stakeholders contacted, 10 were interviewed from December 2018 through February 2019.

Table 4-2: TDP Stakeholders

Name	Organization	Title
Kevin Daugherty	Brooksville Airport	Airport Manager
Valerie Pianta	Hernando County Business Development	Manager
Bill Geiger	City of Brooksville	Director, Community Development
William Hall	School Transportation	Director, Fire, Safety & Security
Patricia Crowley	Hernando Chamber of Commerce	President/CEO
Donna Burdzinski	Pasco–Hernando State College, Spring Hill	Provost
Tim Beard	Pasco–Hernando State College, North	President – North Campus
Marilyn Pearson-Adams	Hernando Chamber of Commerce	Board Chair
Nicole Palmer	Walmart Supercenter Brooksville	Store Manager
Steve Smith	Walmart Supercenter Cortez Blvd	Store Manager
Jerome Salantino	Pasco Hernando Workforce Board	CEO
Andrew Chamberlain	Jericho Road Ministries	Executive Director
Mickey Smith	Oak Hill Hospital	CEO
Ken Wicker	Bayfront Health Brooksville	CEO
Robin Napier	Department of Health	Administrator
Luli Cannon	RMC Property Group	Realtor
Ronald Sikora	SITE Centers Corp	Property Manager

Interview Summary

A list of questions and discussion topics was developed for the interviews, and each stakeholder was provided the same questions and topics. The script for the interviews is included in Appendix B. The input received during these interviews was reviewed, and major themes were identified and are summarized in the following sections.

Overall, interviewees expressed the need for more frequent bus services in Hernando County, regional connections to access key employment and commercial hubs in the Tampa Bay region, and providing bus services later in the day to accommodate workforce and educational needs.

- **Service Improvements** – All stakeholders agreed that frequency and timeliness of TheBus needs to improve to attract more ridership and grow the service overtime. Key service improvements were as follows:
    - *More frequent bus service* – Stakeholders commented that more frequent service was necessary to connect residents to their appointments or jobs in a timely manner. Service reliability was also identified as necessary for those who depended on the service for work related trips.
    - *Weekend service* – Buses operating on weekends, especially on Saturdays, also was considered to be a necessary improvement to help those who work in service and medical industries or who cannot drive get to shopping and medical appointments.
    - *Later service* – Extending current services at least until 9:00 PM and, if possible, extended hours to 11:00 PM was also highlighted as a need to help those who work non-traditional hours.
- **New Areas for Service** – All stakeholders agreed that regional connectivity to Pasco County and other areas in Tampa Bay was essential to help link residents to shopping and work opportunities. It was noted that service to Citrus County would be helpful as well, but it was not as important as connecting to south of Pasco County. Service to Ridge Manor also was discussed, but low density and distance were considered factors, making such a service a long-term need.
- **Express Bus Service** – Some stakeholders noted that an express bus from core areas in Hernando County to Pasco County may be better than a traditional fixed-route service to address commuter needs and for others needing a faster connection to Tampa Bay.
- **Fare Policy** – Stakeholders agreed that the current $1.25 fare was reasonable but agreed that there should be options in addition to carrying exact change, such as mobile fare payment.
- **Awareness/Marketing** – All stakeholders were aware of TheBus and thought it was a necessary service for Hernando County. They also felt that there was a need for more education and awareness campaigns related to TheBus services. As a whole, stakeholders agree that a social media campaign would be a great way to raise awareness about service and increase ridership. It was also suggested that a free ride day once every six months would encourage passengers to try the service and residents to use TheBus more often.

More detailed and direct input from the stakeholder interviews/discussions included the following:

- Workers, older adults, low-income persons, and students use the service a lot.
- Workers and low-income persons use the bus; routes are needed that leave the county; more extended hours and later service are needed for those who leave work later.
- Major destinations are on US-19; need connection to Citrus County for work and training.
- Need more service, more frequent service, and extended/late service in Brooksville and core areas such as Spring Hill.
- Need to expand public awareness of services offered.
- Use local funding sources such as partnerships with local businesses or companies with a larger presence.
- Increase frequency; need regional connections with express-type bus.
- Major destinations are the two college campuses, which need a connector bus; need a connector bus to Dade City–Pasco County campus from the Spring Hill and Brooksville campuses.
- Social media campaigns are underused, could be implemented more to get the word out to increase ridership.
- Additional taxes would be a hard sell with the community, but could raise private funds.
- Best way to get more people to use services is have a free day every six months and an increase in bike racks on buses and at bus stations.
- Expand public awareness about TheBus, including TV broadcasts and commercials.
- Weekly reduced pass is important because low-income population cannot afford to spend money all at once.
- Need park-and-ride lots; would increase number of people willing to use the bus, could also be used for people who want to go to other counties for work but do not have a nearby route.
- Need for route on Suncoast Parkway to both Pasco and Citrus counties, possibly starting at SR-50 and then to SR-52 or SR-54.
- Need regional transportation to Pasco County and maybe even further south, maybe a limited express bus; not many people need to go further south beyond Pasco.
- Low-income persons and older adults have difficult transportation conditions due to lack of comfort at bus stops and no money for gas or other transportation options; some bus stops do not have benches, coverings, or sidewalks connecting them to the bus stop.

Rider and Non-Rider Surveys

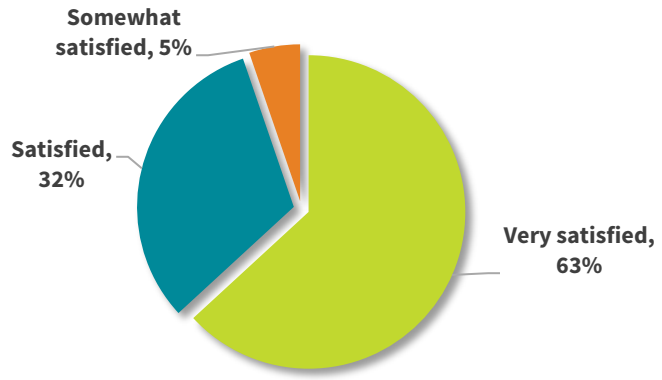
Bus Rider Survey

A bus rider survey was conducted in January 2019 by TheBus to collect information on travel frequency, user satisfaction, and desired future improvements. A 15-question paper survey was developed

exclusively for bus riders to gauge their opinions and was distributed to riders by bus operators and collected at the end of their trip. All surveys were in English. In total, 19 surveys were completed. The survey was self-administered and offered to all persons boarding buses on the day of the survey. Key findings are organized and summarized below.

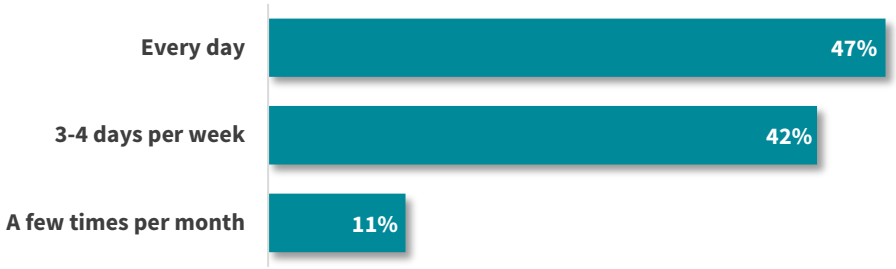
Figure 4-1 shows that the majority of passengers (63%) were very satisfied with the current transit system.

Figure 4-1: Satisfaction with Current System



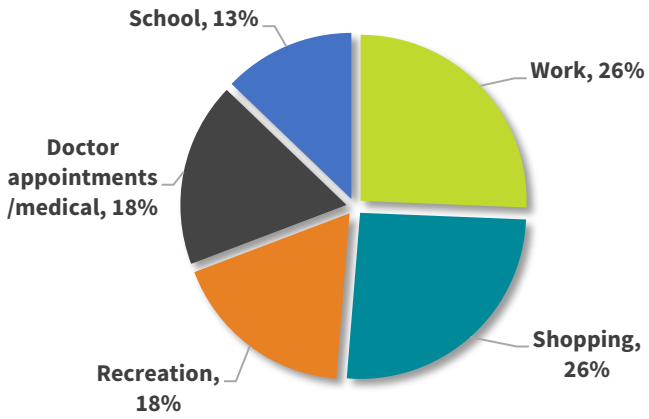
When asked how often they used TheBus, 47 percent of passengers responded that they used the service every day (Figure 4-2).

Figure 4-2: Frequency of Ridership



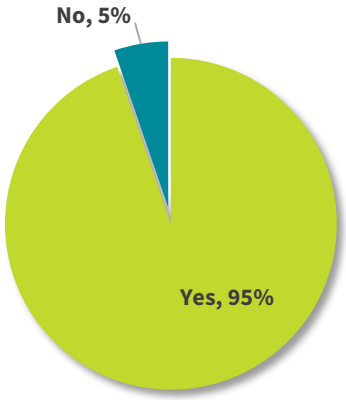
As shown in Figure 4-3, more than half of the passengers (52%) responded that they use TheBus for work and shopping (26% each), followed by recreation (18%), medical (18%), and school (13%).

Figure 4-3: Trip Purpose



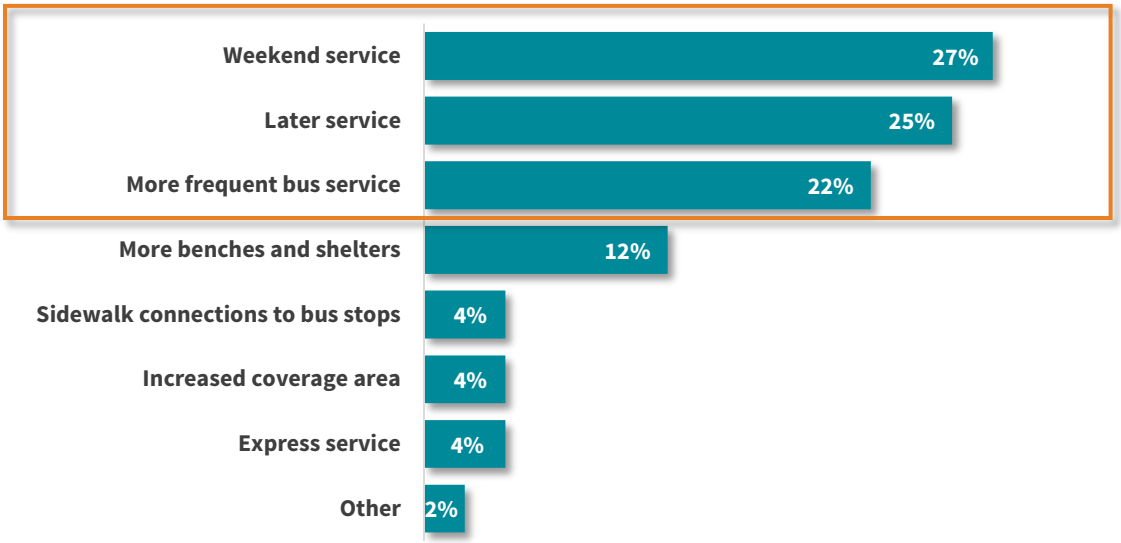
A large majority of respondents (95%) agreed that there was a need for additional transit services in Hernando County (Figure 4-4).

Figure 4-4: Need for Additional Transit



Riders were asked what they believed were necessary improvements for TheBus in the next 10 years. The top three improvements that passengers would like to see were weekend service (27%), later service (25%), and more frequent bus service (22%), shown in Figure 4-5.

Figure 4-5: Top Three Service Improvements



Grassroots Outreach Activities

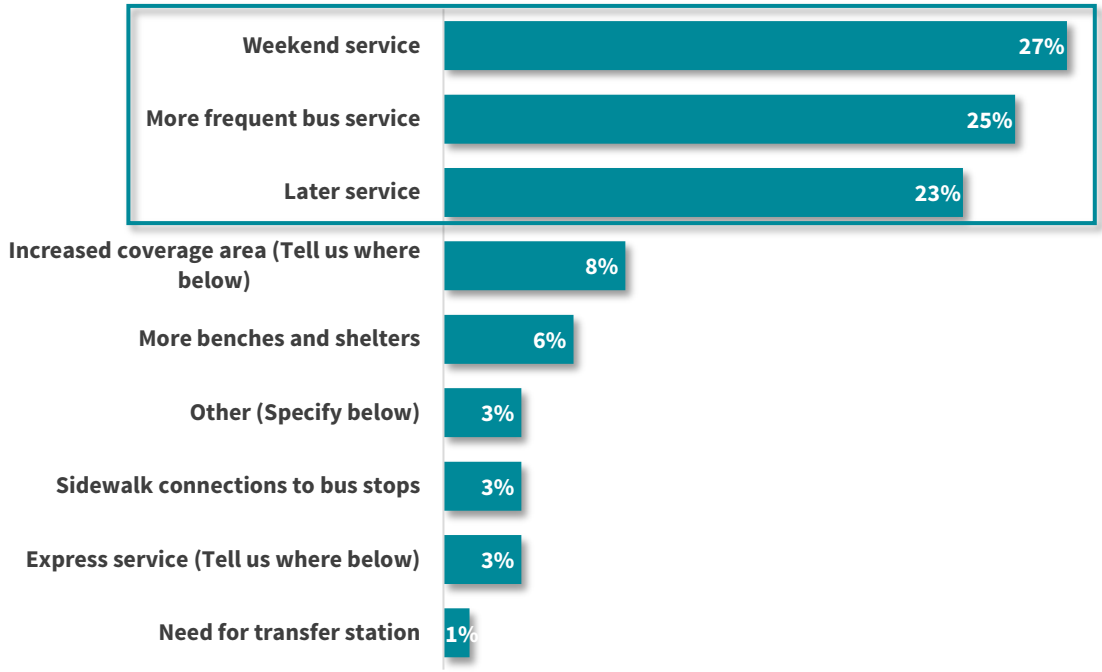
Grassroots outreach events at already-planned public events or at key activity centers also were used to engage the community and gather input and to raise awareness and encourage transit use. Staff of the MPO and TheBus jointly conducted four grassroots events in January and February 2019 to capture a range of opinions and perspectives with respect to the TheBus services. The events also used a TDP public input survey. In total, 76 people participated at the four events, as summarized below:

- ***Farmer's Market, 615 Old Hospital Drive, Brooksville*** – On January 20, 2019, Hernando/Citrus MPO/TheBus staff conducted a TDP outreach event to engage the participants and gather input on transit. As it was a weekend event, there was opportunity to capture a wider audience to provide awareness about TheBus and capture ideas from residents and visitors attending the event.
- ***Walmart, 7305 Broad Street, Brooksville*** – On January 25, 2019, Hernando County MPO/TheBus staff set up a table at the entrance of the Walmart to collect survey input and raise awareness about the ongoing 10-year TDP update. The shopping center is one of the busiest locations in the county and is a key bus transfer location, capturing current and potential riders.
- ***Spring Hill Library*** – Hernando County MPO/TheBus established a survey drop-off location at the Spring Hill Library to collect input from the general public from January 23–February 1, 2019.
- ***Heritage Festival*** – Hernando County/TheBus staff attended the festival on February 16, 2019, to educate the public about the TDP and obtain their input on how transit should grow in the county in the next 10 years. As a large weekend event in Brooksville celebrating Hernando County, this was an opportunity to attain a wide array of viewpoints and raise awareness about TheBus.

During the outreach efforts, fliers and information regarding the TDP were distributed in addition to the survey. Graphics demonstrating current and future population and employment within TheBus service area were presented to help engage the public and illustrate the impending growth of the area. The Farmer's Market yielded 10 surveys, with residents suggesting later service and weekend service. Surveys resulting from the outreach event at Walmart indicated desires for more frequent service and express services to denser areas, as did surveys collected from the Spring Hill library event.

The perspectives gathered during this effort were an important contribution to the diversity of the public outreach respondent samples. Although few new patterns or prevailing preferences were revealed during these efforts, the results substantiated other public outreach findings. Figure 4-6 shows the results of respondents' top three transit improvements. Weekend service was the most popular choice (27%), followed by more frequent bus service (25%) and later service (23%).

Figure 4-6: Top Three Service Improvements



Public Input Survey

An online public survey began in January 2019 via social media platforms, email blasts, and TheBus website. The survey was available through March to gather public input during grassroots events. In total, 15 questions were asked to gauge willingness to use public transit and the community's transit needs, determine public awareness of transit issues in Hernando County, and gather demographic information of survey respondents. In total, 61 surveys were completed.

Summary of Public Input Survey Results

When asked whether they had ever used public transportation outside of Hernando County, 79 percent of respondents answered that they had, as shown in Figure 4-7.

Figure 4-7: Have you ever used public transportation outside of Hernando County?

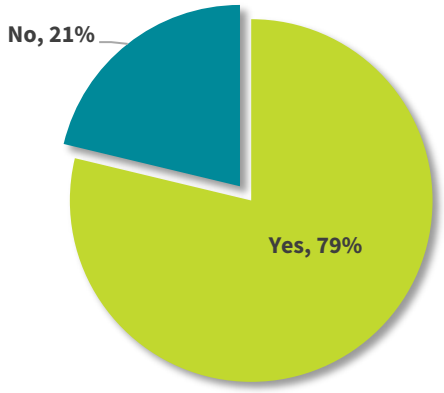


Figure 4-8 shown that approximately half (54%) of respondents had used TheBus services, and 39 percent agreed that they are satisfied with the service, as shown in Figure 4-9.

Figure 4-8: Have you used TheBus services?

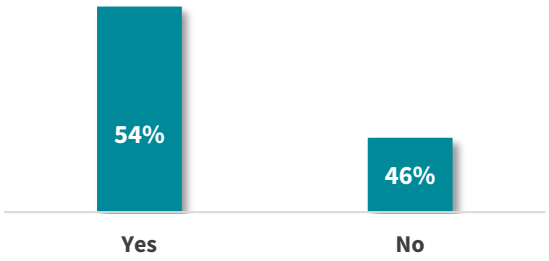
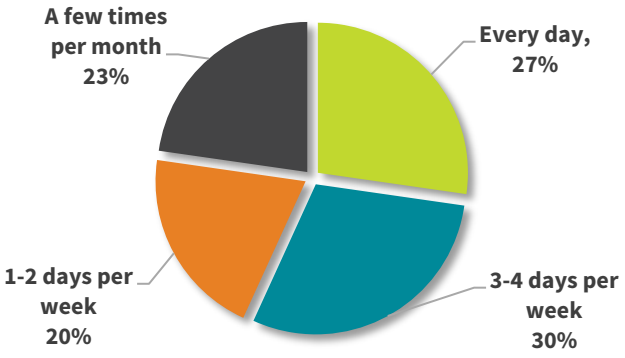


Figure 4-9: How satisfied are you with TheBus services?



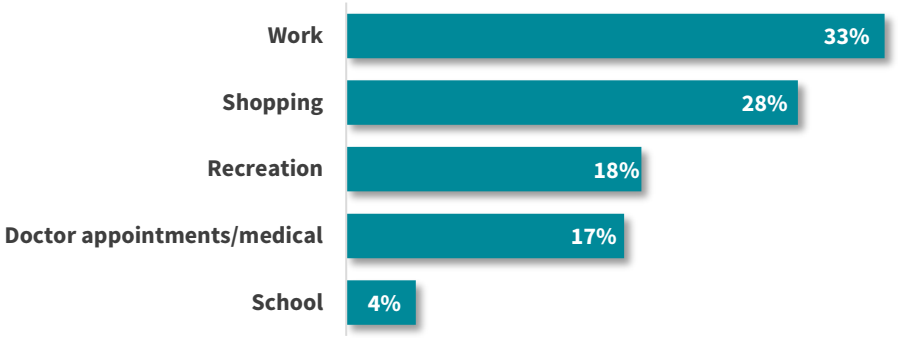
For those who currently used TheBus, 30 percent used the service 3–4 days per week. Figure 4-10 shows that approximately 27 percent used TheBus every day, 20 percent used it 1–2 days per week, and 23 percent used it a few times per month.

Figure 4-10: How often do you ride TheBus?



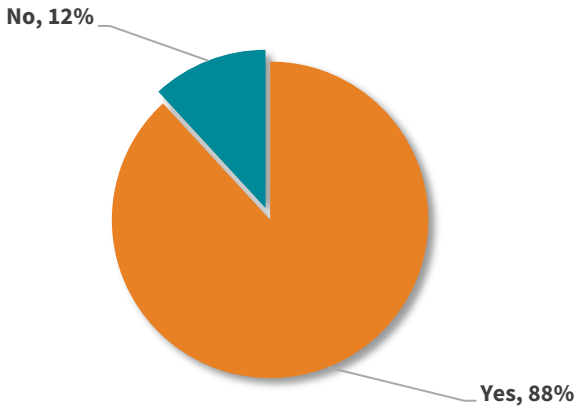
When asked why they used the transit system, responses indicated that the most popular answer, at approximately 33 percent, was work, followed by shopping (28%), recreation (18%), doctor appointments/medical (17%), and school (4%), as shown in Figure 4-11.

Figure 4-11: Trip Purpose



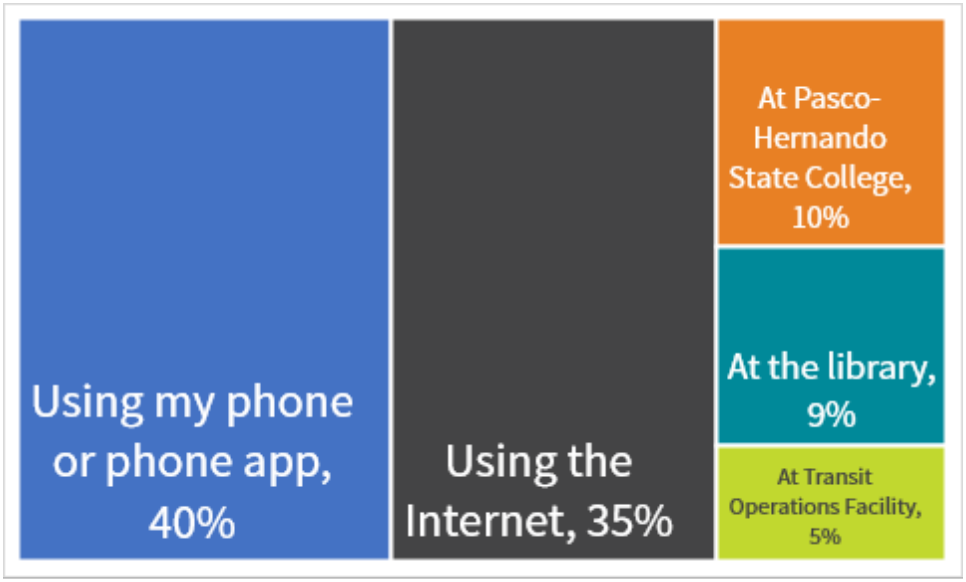
As shown in Figure 4-12, participants were asked if $3.00 for a one-day pass with unlimited rides would benefit riders; a majority (88%) responded that it would.

Figure 4-12: Do you think $3 for a one-day pass would benefit riders?



Approximately 40 percent of participants indicated that they would like to use a phone or app to purchase bus fares, and 35 percent said they would like to use the Internet, purchase at Pasco-Hernando State College (10%), at the library (9%), or at a transit operations facility (5%), as shown in Figure 4-13. A majority, 75 percent, specified that they would like to purchase bus fares using technology.

Figure 4-13: Methods to Purchase Bus Tickets



Although only 54 percent indicated that they had used TheBus before, 91 percent indicated that there was a need for additional transit service in Hernando County (Figure 4-14). The top three improvements that participants would like to see were weekend service (24%), more frequent bus service (21%), and later service (17%) (Figure 4-15).

Figure 4-14: Is there a need for additional transit service in Hernando County?

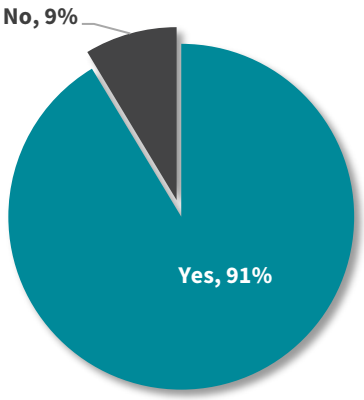
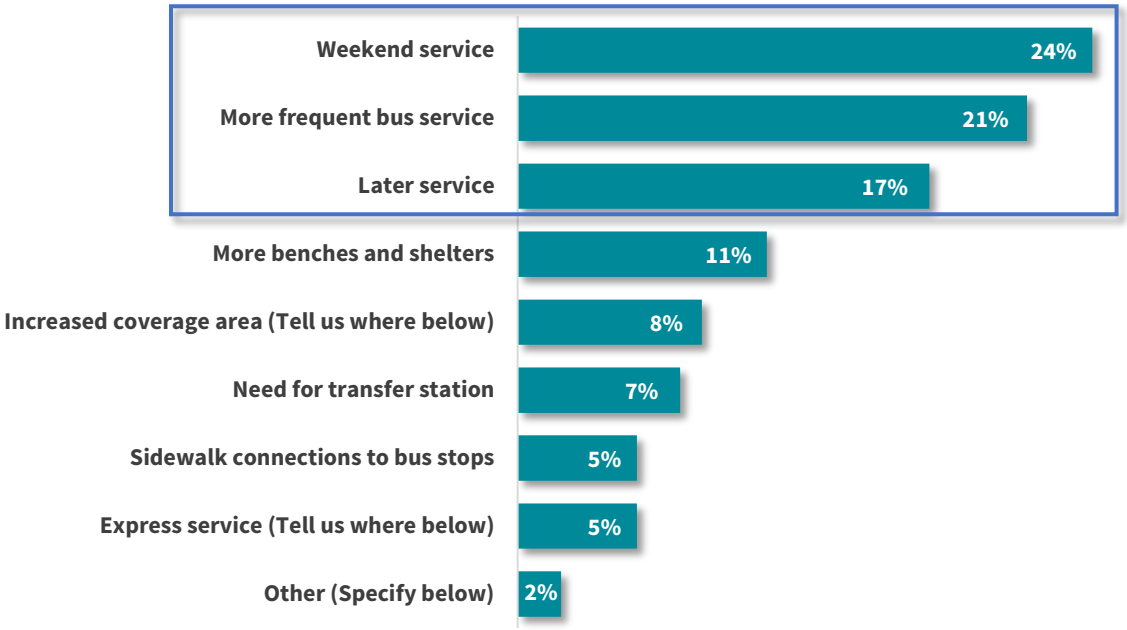
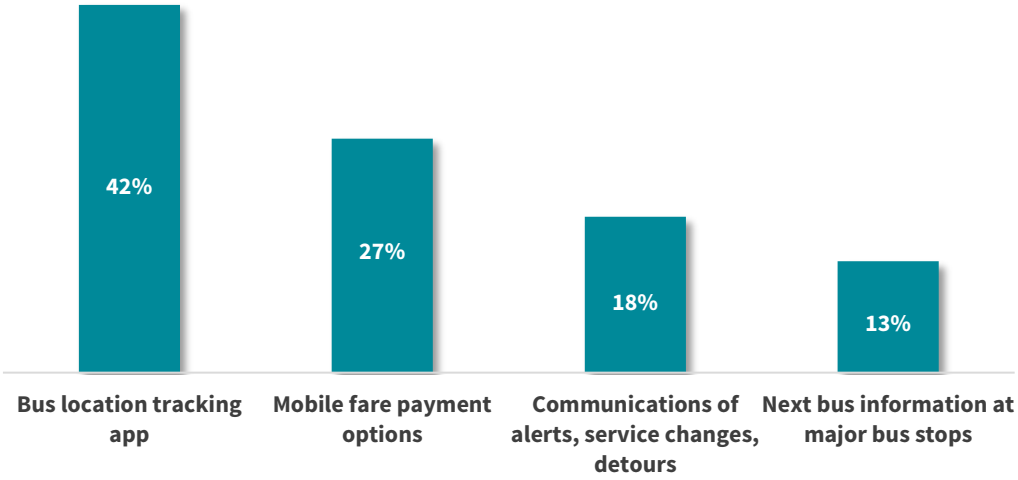


Figure 4-15: Most Important Transit Improvements



When asked what technology improvement they would like to see most, 42 percent indicated a bus location tracking app, 27 percent indicated a mobile fare payment options, 18 percent indicated communications of alerts, service changes, and detours, and 13 percent indicated next bus information at major bus stops (see Figure 4-16).

Figure 4-16: Most Important Technology Improvements



Participants were asked if they had ever used other rideshare services; 42 percent indicated they used Uber/Lyft, followed by taxi service (48%) and medical transportation (9%). No respondents indicated that they used social services transport (TD). Participants indicated that they chose these alternative services because of convenience/time (60%), the destination was outside of TheBus area (32%), and the cost (8%) (Figure 4-17).

Figure 4-17: Alternative Modes Services Preferred

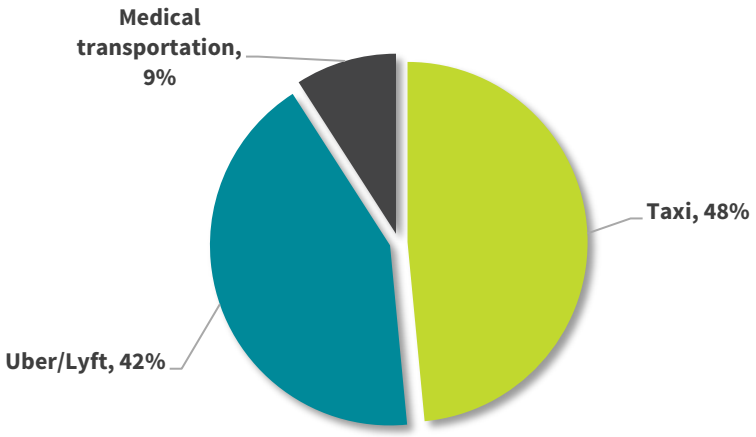
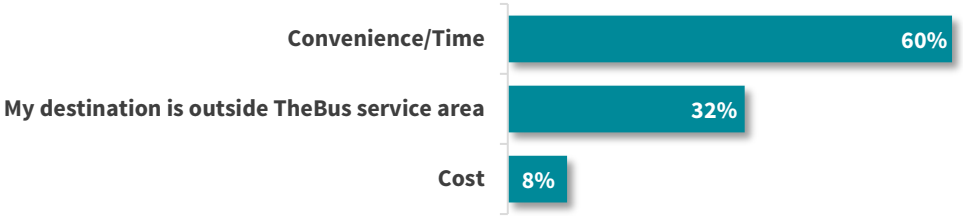


Figure 4-18: Reason for Preferring Alternative Modes



To gather demographic data about the respondents, they were asked to indicate their age. Figure 4-19 shows that the most common age group was 41–60, followed by 25–40 at 23 percent, over age 60 at 19 percent, and 18–24 at 13 percent; no respondents were under age 18.

Figure 4-19: What is your age?

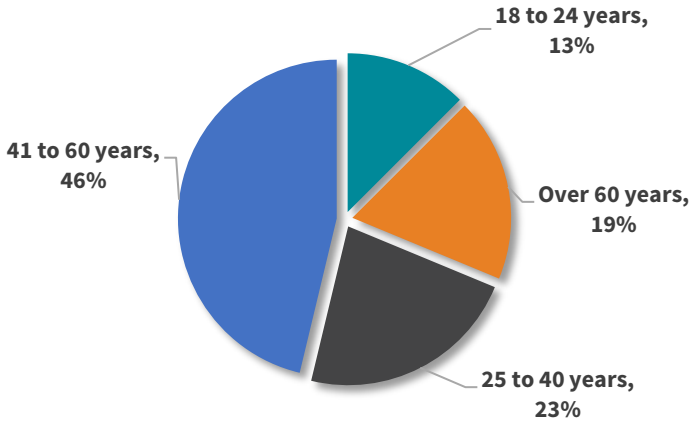
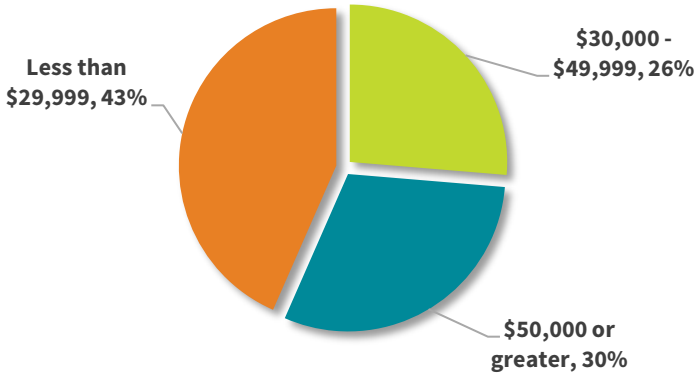


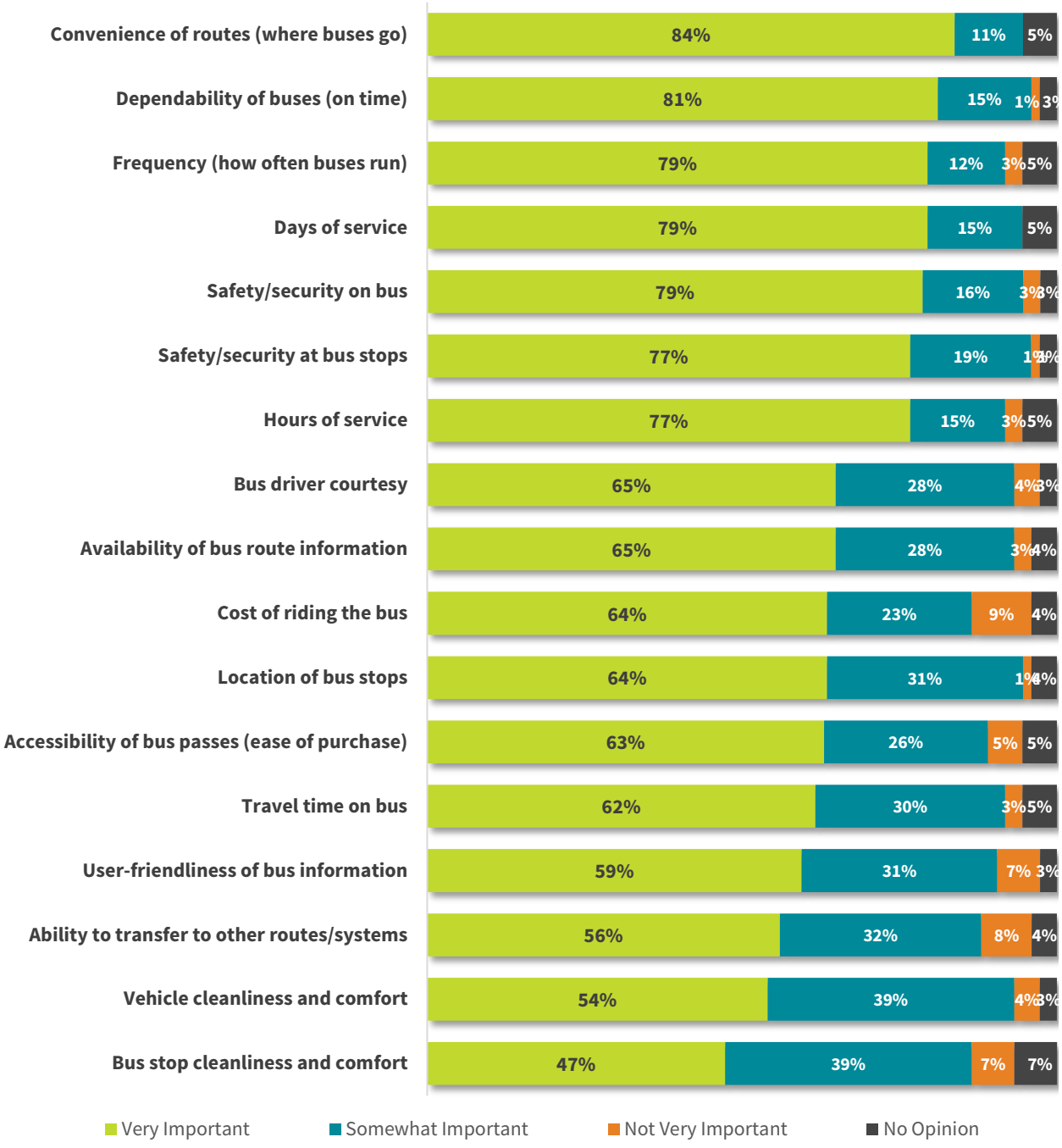
Figure 4-20 shows that the distribution of total household income of respondents varied; the most common income was less than $29,999 (43%), followed by $50,000 or greater (30%) and $30,000 to $49,999 (26%).

Figure 4-20: What is your annual household income?



Aspects of transit were listed and participants were asked to indicate which were the most important to them. As shown in Figure 4-21, the top three aspects that were rated as Very Important were convenience of routes (84%), dependability of buses (81%), and frequency (79%).

Figure 4-21: Ranking of Transit Characteristics



Open House Public Workshops

To identify how TheBus can improve its services, two open house public workshops were held in April 2019, each focusing on identifying general attitudes regarding transit in Hernando County and needed improvements to the current TheBus system. In these informal workshops, participants could come and go as they pleased, and no formal presentations were made.

Brooksville Workshop

The first public workshop was held at the Brooksville City Hall Council Chambers in Brooksville from 10:00 AM to 12:00 PM on April 18, 2019. Brooksville City Hall is in Hernando County's downtown surrounded by retail and restaurants. The workshop was attended by 30 participants who asked questions and provided input, with 21 completing surveys. Of those who attended and completed a survey, 71 percent had never used TheBus, 24 percent used it once a week, and 5 percent rode once a month. The following are key findings from the Brooksville City Hall workshop.

Adding Saturday service was the most popular service improvements indicated by participants (32%), as shown in Figure 2-22. Also, adding the East Hernando Connector SR-50 and the Commuter Express on the Suncoast Parkway were selected as necessary improvements, both supported approximately 26 percent of respondents. Approximately 16 percent expressed interest in extending service hours until 9:00 PM (Figure 4-22).

Figure 4-22: Top-Ranked Service Improvements

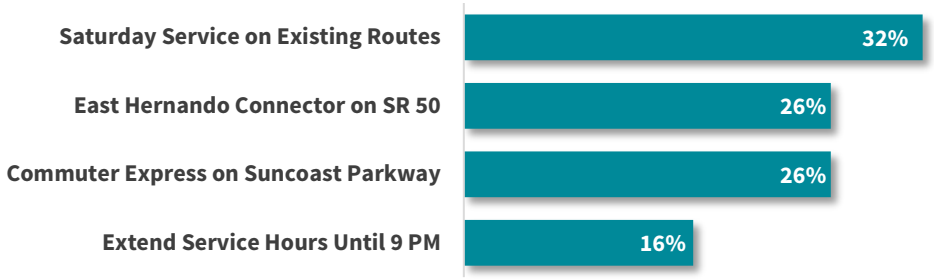
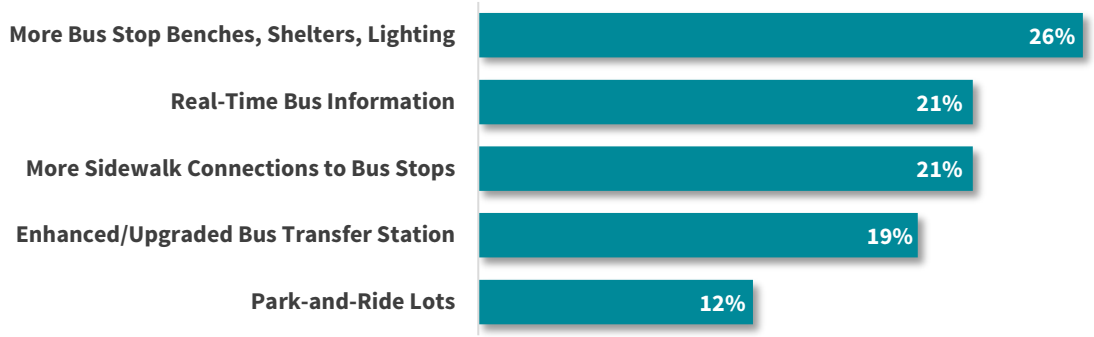


Figure 4-23 shows a summary of the priorities expressed at the Brooksville public workshop on future transit services in Hernando County. More bus stop benches, shelters, and lighting were cited as the most important improvements followed by real-time bus information and more sidewalk connections to bus stops.

Figure 4-23: Top Infrastructure and Technology Improvements

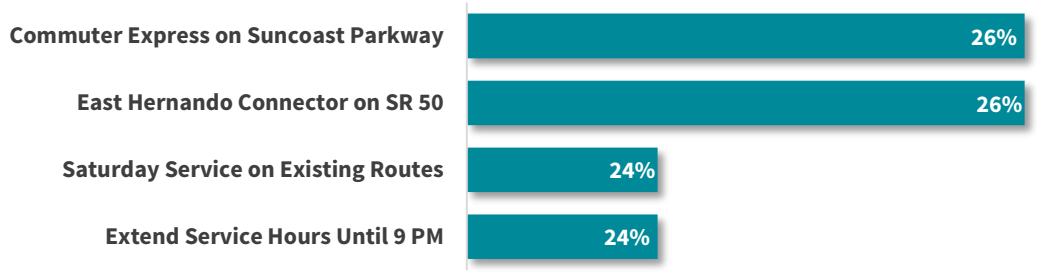


Spring Hill Workshop

The second public workshop was held at the Spring Hill Library in Spring Hill from 2:00–4:00 PM on April 18, 2019. The Spring Hill Library is located in the most densely-populated community in the southern part of Hernando County. The workshop was attended by 32 participants who asked questions and provided input, with 21 completing surveys. Approximately 70 percent of survey respondents had never used TheBus services, and the remaining 30 percent reported using it once per month, once per week, or more than once per week. The following are key findings from the Spring Hill Library workshop.

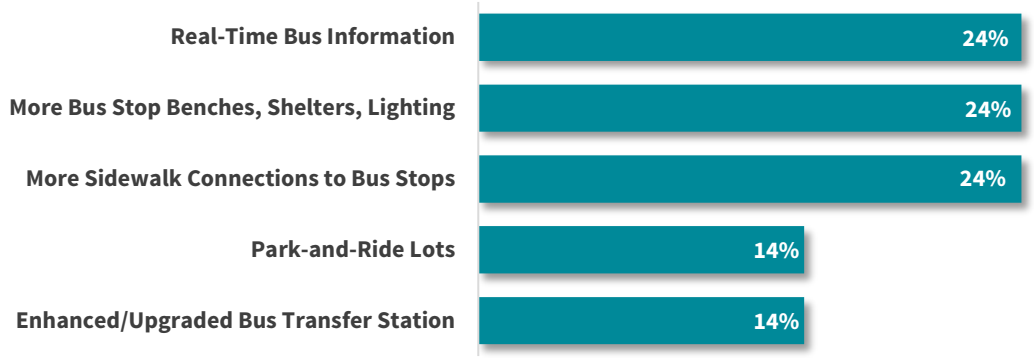
Participants responded positively to improving TheBus services by adding a Commuter Express on the Suncoast Parkway and an East Connector on SR-50, each supported by 26 percent. As shown in Figure 4-24, approximately 24 percent each favored extending service hours until 9:00 PM and adding Saturday service on existing routes.

Figure 4-24: Top-Ranked Service Improvements



Real-time bus information, followed by more bus stop infrastructure such as benches, shelters, and lighting, and more sidewalk connections to bus stops, were indicated as the top three TheBus improvements. Figure 4-25 shows a summary of the future transit service priorities expressed at the Spring Hill Library public workshop.

Figure 4-25: Top Infrastructure and Technology Improvements

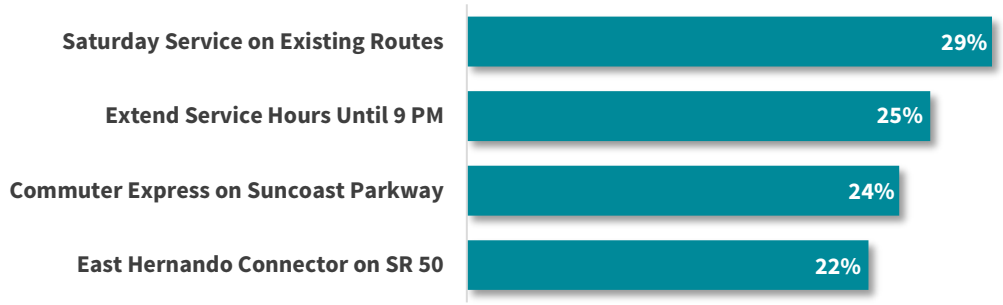


10-Year Transit Priorities Survey

During the period starting with the public workshops on April 18, 2019, a survey was available online and at workshops for attendees and the general public to gather feedback on the identified transit alternatives and identify any additional areas of need. In total, 39 surveys were completed. Respondents were asked to indicate their use of TheBus; approximately 67 percent had never used TheBus, 23 percent noted using it more than once per week, 8 percent used it once per month, and 3 percent used it once per week. A copy of the survey instrument is provided in Appendix C.

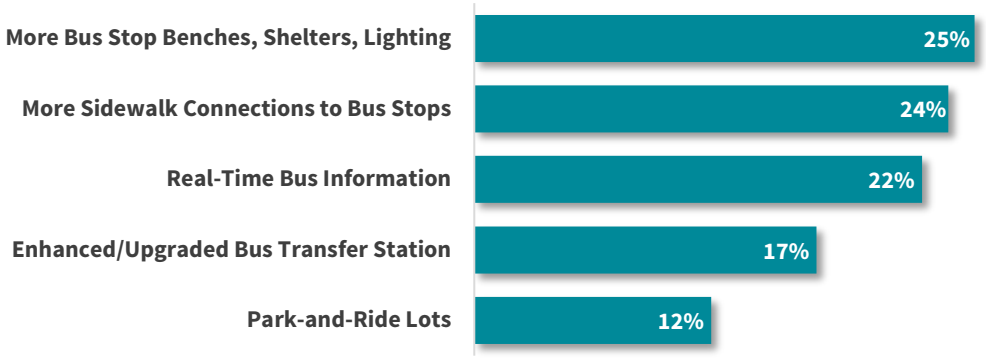
Adding Saturday service on existing routes was the most popular improvement to the existing network, with approximately 29 percent expressing support. As summarized in Figure 4-26, extending service hours until 9:00 PM was also received favorably (25%), followed by a Commuter Express on the Suncoast Parkway (24%) and an East Hernando Connector on SR-50 (22%).

Figure 4-26: Top-Ranked Improvements to Existing Services



Support for potential technology/capital improvements was widespread across each of the alternatives. The top three potential improvements were more bus stops, benches, and lighting, followed by more sidewalk connections to bus stops and real-time bus information. The final ranking for each of these improvements is presented in Figure 4-27.

Figure 4-27: Top-Ranked Infrastructure/Technology Improvements





Other Outreach Efforts

TheBus will continue to use its existing public engagement electronic media platforms and website to expand the reach of the TDP outreach program. Part of the Hernando County MPO website has been used to promote the TDP, on which the public can be linked to the latest public survey. The website also will be used to raise awareness about opportunities for public participation via workshops or other outreach events.

SECTION 5 SITUATION APPRAISAL

A TDP is a strategic planning document that includes an appraisal of factors in and out of the transit service area that affect the provision of transit service. Florida Rule 14-73.001 notes that, at a minimum, a Situation Appraisal should include the effects of land use, State and local transportation plans, other governmental actions and policies, socioeconomic trends, organizational issues, and technology of the transit system.

The following sections synthesize previous efforts for the TDP and present a plans review to develop an assessment of the full operating environment for TheBus. This assessment serves as the basis for the formulation of the future goals and objectives for transit in Hernando County.

Review of Plans

Numerous agencies/organizations conduct studies to produce plans and policies for addressing local and regional transportation issues. In addition, various Federal and State plans and regulations may impact the provision of transit services in Hernando County.

This plans and policy review is intended to help Hernando County understand and support the pursuit of existing goals while pursuing its own goal of creating a viable and accessible transit system in Hernando County. Relevant transportation planning and programming documents are summarized, with an emphasis on issues that have implications for transit services in Hernando County. Additionally, selected plans produced in Hernando County related to land use were reviewed to summarize and call attention to community goals, objectives, and policies that may have implications for current and future transit services.

The following local, regional, State, and Federal plans and studies were reviewed to understand current transit policies and plans with potential implications for transit services in Hernando County:

- Local Plans
    - City of Brooksville Comprehensive Plan (CP)
    - Hernando County Comprehensive Plan (CP)
    - Hernando County TDP Major Update
    - Hernando County TDP Annual Progress Report
    - Hernando County Transportation Disadvantaged Service Plan (TDSP)
    - Hernando/Citrus MPO 2040 Long Range Transportation Plan (LRTP)
- Regional Plans
    - Pinellas Suncoast Transit Authority 2016-2025 TDP Major Update
    - Hillsborough Area Regional Transit 2018–2027 TD P Major Update
    - Pasco County Public Transit 2019–2028 TDP Major Update
    - 2017 Crystal River Congestion Management Process Study
    - 2018 Hernando/Citrus Coastal Connector Study

- Tampa Bay Regional Transit Feasibility Plan
- Tampa Bay Area Regional Transit Authority (TBARTA) Master Plan
- Tampa Bay Area Regional Transit Authority (TBARTA) Transit Vision Plan

- State and Federal Plans
  - State of Florida Transportation Disadvantaged 5-Year/20-Year Plan
  - FDOT's Complete Streets Implementation Update: Handbook and Design Manual
  - Florida Transportation Plan: Horizon 2060 (FTP)
  - Fixing America's Surface Transportation (FAST) Act

The transportation planning and programming documents are summarized in Tables 5-1, 5-2, and 5-3 by their geographic applicability, type of plan, responsible agency, overview of the plan/program, and key considerations for the Situation Appraisal.

Table 5-1: Local Plans, Policies, and Programs

Plan Title	Geographic Applicability	Most Recent Update	Type of Plan	Responsible Agency	Plan/Program Overview	Key Considerations/Implications for TDP
Brooksville Comprehensive Plan	City of Brooksville	2017	CP	Brooksville	Addresses land use, transportation, capital projects, public facilities, recreation, government coordination, conservation, and development goals, among others, for the city.	Provides goals for ensuring a safe, efficient, and quality transportation system; establishes a policy of monitoring modal split, transit trips per capita, and automobile occupancy rates to measure the system's efficiency. Key strategy identified is to expand transit service into areas with demonstrated need, such as assisted living facilities and low-income neighborhoods. In addition to supporting the County in its efforts to provide public transportation services (providing bus stops, constructing connections to transit routes, increasing public awareness), some policies are set to support the objective of strengthening the entire multimodal network: • Development regulations (compact, mixed-use development in prioritized corridors) and design standards for parking (maximum parking requirements or elimination thereof, park-and-ride lots, and on-street parking), circulation systems, and access points will ensure adequate transit, bicycle, and pedestrian site access to promote these modes in place of single occupant vehicles. • Bicycle and pedestrian connections from residential areas will be provided to transit terminal areas. • Site plan review and traffic circulation system will encourage transit-friendly design features along roadways. • Participation in TDM measures with MPO and FDOT will encourage use of transit.
Hernando County Comprehensive Plan	Hernando County	2018	CP	Hernando County	Addresses land use, transportation, capital projects, public facilities, and economic development goals, among others, for the county.	Discusses the intention to invest in expanding service and upgrade number of existing transit shelters to ADA compliance standards. Prescribes several transit-supportive goals, objectives, and policies, such as the need to develop transit-oriented design strategies, a frontage road network for transit service, encourage maximum use of the right-of-way, improve connections with pedestrian and bicycle networks, promote the expansion of aviation, long term transit solutions such as rail, and coordinate with other transit agencies to meet regional mobility needs and improve opportunities for the county.
TDP Major Update	Hernando County	2015	TDP	MPO	Emphasizes transit improvements and additions in key corridors; outlines cost feasible plan and focuses on connections with Pasco county.	Identified funded and unfunded projects including enhanced services, express services, new transit center, or weekend/extended services to come to fruition. Weekend Services recommended for all routes on TheBus system. New route proposed on Spring Hill Drive to serve as a connector to the airport.
TDP Annual Progress Report	Hernando County	2018	TDP	MPO	TDP Annual Progress Report, provides status report on transit improvements identified in major TDP update.	Provides updates on variety of facility, service, and capital projects: • For capital projects, County continued to work with MPO to install benches and/or shelters. Accomplished installing equipment at 57 bus stop locations along fixed-routes. • For service projects, TheBus implemented more frequent service on all routes (improved to 60-min headways improved from 120-min previously). Expanded Purple Route service to connect with Pasco County via US 19. On other projects, County and MPO continued to improve bus stop safety and ADA accessibility at bus stops.
Transportation Disadvantaged Service Plan (TDSP)	Hernando County	2018	TDSP	Hernando County/MPO	Major TDSP update, emphasizes improvements and additions that serve needs of transportation disadvantaged population in an efficient and cost-effective manner.	Identifies key populations in need (older adult and low-income populations). Guiding policies as part of outlined goals and objectives, relevant to broader TheBus system include: • Adjusting fixed-route schedules to meet demands of TD population, expanding service in areas of Hernando County where no fixed-route service exists. • Augmenting current fixed-route service gaps. Transferring eligible and qualified riders from paratransit service to fixed-route system to improve cost effectiveness and resource efficiency.
Hernando/Citrus MPO 2040 Long Range Transportation Plan	Hernando & Citrus counties	2018	LRTP	Hernando/Citrus MPO	Major update to LRTP that includes Hernando County's 20-year vision of transportation projects for the area.	Includes a plan for one cent local government infrastructure surtax for community involvement. Highlights on improving service in the long term include: • Expanding/enhancing existing routes/network • Enhancing ADA accessibility at existing bus stops • Increasing access between surrounding counties and Hernando County via public transportation

Table 5-2: Regional Plans, Policies, and Programs

Plan Title	Geographic Applicability	Most Recent Update	Type of Plan	Responsible Agency	Plan/Program Overview	Key Considerations/Implications for TDP
TBARTA Master Plan	District 7	2015	Regional Plan	TBARTA	Update to Master Plan that serves as regional LRTP. Continues to examine high capacity corridors that deserve attention to improve mobility within region. Also incorporates region's six MPO LRTP adopted Cost Feasible Plans and Needs Plans.	Update acknowledges that growth in Tampa Bay region expected to grow 43% by 2040; as a result, commute times expected to double by 2040. Since a majority of cross-country travel occurs between Hillsborough, Pasco, and Pinellas counties, plan identifies regional and future priority projects to target in coming year(s). Single regional plan necessary to move forward with regional transportation vision that begins with these priority projects: I-275/SR60/Memorial Interchange, SR-54/56 Corridor Improvements, Gateway Express, Howard Frankland Bridge, Tampa Bay Express Starter Projects, and Westshore Multimodal Center and Connections to Downtown Tampa & Airport.
TBARTA Transit Vision Plan	District 7	2015	Regional Plan	TBARTA	Extending to 2040, explores possibilities for regional fixed-guideway services, premium transit or express service, and commuter transit services.	Regional transit service by 2040 and beyond includes Regional Fixed-Guideway (service operating on rail or within a dedicated transit lane), Regional Premium Transit (BRT or express bus service in express lanes or water ferry or similar), and Regional Commuter Transit (commuter express bus service or similar).

Table 5-3: State and Federal Plans, Policies, and Programs

Plan Title	Geographic Applicability	Most Recent Update	Type of Plan	Responsible Agency	Plan/Program Overview	Key Considerations/Implications for TDP
State of Florida Transportation Disadvantaged 5-Year/20-Year Plan	Florida	2007	State	Florida Commission for the Transportation Disadvantaged (FCTD)	Purpose is to accomplish cost-effective, efficient, unduplicated, and cohesive transportation disadvantaged services within its respective service area.	Develop and field-test model community transportation system for persons who are transportation disadvantaged; create strategy for FCTD to support development of universal transportation system.
Florida Department of Transportation's Complete Streets Implementation Update: Handbook and Design Manual	Florida	2018	State	Florida Department of Transportation	Developed as a way to create alternative transportation systems to facilitate "Complete Streets" focused design.	Plan includes: • Revising guidance, standards, manuals, policies, and other documents • Updating the way decision making is processed • Modifying the evaluation of performance • Managing communication between agencies • Update training and education in agencies
Florida Transportation Plan: Horizon 2060 (FTP)	Florida	2005	State Transportation Plan	FDOT	Requires, as part of Florida Statutes, pursuit to make Florida's economy more competitive and communities more livable and looks at 50-year transportation planning horizon.	Supports development of state, regional, and local transit services through series of related goals and objectives, emphasizing new and innovative approaches by all modes to meet needs today and in future.
FAST Act	National	2015	Federal Transportation legislation	114th US Congress	Enacts five years of funding for nation's surface transportation infrastructure, including transit systems and rail transportation network. Provides long-term certainty and more flexibility for states and local governments, streamlines project approval processes, and maintains strong commitment to safety.	• Increases dedicated bus funding by 89% over life of bill. • Provides stable formula funding and competitive grant program to address bus and bus facility needs. • Reforms public transportation procurement to make federal investment more cost effective and competitive. • Consolidates and refocuses transit research activities to increase efficiency and accountability. • Establishes pilot program for communities to expand transit through use of public-private partnerships. • Provides flexibility for recipients to use federal funds to meet their state of good repair needs. • Provides for coordination of public transportation services with other federally assisted transportation services to aid in mobility of older adults and individuals with disabilities.

Situation Appraisal

As an important component of a TDP major update, a Situation Appraisal is an assessment of the operating environment that enables the transit agency to develop an understanding of the transit context for its service area. This context includes several specific elements through which the transit in Hernando County will be assessed. This assessment will leverage input gathered from a review of relevant plans, studies, and programs; and the results of technical evaluations of TheBus services conducted previously in this TDP, as well as the following elements:

- Socioeconomic trends
- Travel behavior and trends
- Public involvement
- Land use
- Organizational attributes and funding
- Technology
- Regional Coordination

Socioeconomic Trends

It is important to understand the trends and markets that could be impacted by or may benefit from public transportation services to better assess the impact of the growth in population on public transportation needs. Key findings from an assessment of socioeconomic trends conducted for this TDP are summarized as follows:

- Hernando County has experienced continued population and employment growth and is projected to experience population growth of approximately 11 percent by 2025 and approximately 32 percent by 2045.
- The county's population is older than the average for Florida counties. The median age of residents in Hernando County is 48.9, which is above the statewide median of 41.6, and is expected to continue to trend higher based on the most recent BEBR projection data by age group, which estimates that the age 65 or older age group will grow the fastest. BEBR data shows that 28 percent of the county's population were age 65 or older in 2017, and that number is anticipated to grow to 32 percent by 2045.
- Unincorporated areas are among the fastest-growing in the county, collectively growing by more than 29 percent since 2000 and consisting largely of residential areas just north of the County line.
- Most future population growth for Hernando County is projected to occur outside the urban core, but near key corridors in the areas by Spring Hill. These areas have a predominantly medium- to high-residential land use character with a variety of commercial uses along the major thoroughfares, and most currently have hourly transit service.
- Poverty status for individuals increased considerably, from 10.3 percent in 2000 to 15.6 percent in 2016.

- The proportion of the population that identifies as Hispanic more than doubled, increasing from 5 percent in 2000 to 11.6 percent in 2016.
- Areas with the high employment will continue to include the SR-50/US-19 corridor in the Spring Hill area, Weeki Wachee Gardens, the Brooksville-Tampa Bay Regional Airport and Technology Center, and areas of Brooksville.



Implications

Continued population growth in existing and growing suburban areas in unincorporated Hernando County will lead to inefficiencies in providing traditional bus service; therefore, service delivery innovations may be required to serve these growing areas. In addition to attracting new riders in suburban areas, maintaining mobility and freedom for the aging adult population is a key consideration for future transit service and may require service on-demand type public transit to ensure that the needs of the aging population are met.

The data also show that the traditional transit market, including low-income, minority, and older adults, may continue to be the major part of TheBus ridership. This indicates the need to, at a minimum, maintain the current service and make it reliable, safe, and efficient service for this key rider market while improving/enhancing it when financially feasible.

However, the provision of more frequent transit services and enhanced regional connections may support the needs of both current and potential riders of all ages and income levels if the County desires to grow transit to become a viable option of travel. The ability for residents to access jobs within Hernando County or adjacent counties from low-income areas will remain a critical need for TheBus going forward. Continued success depends on the ability of TheBus to tailor services that will expand its rider base and capture new transit markets and riders.



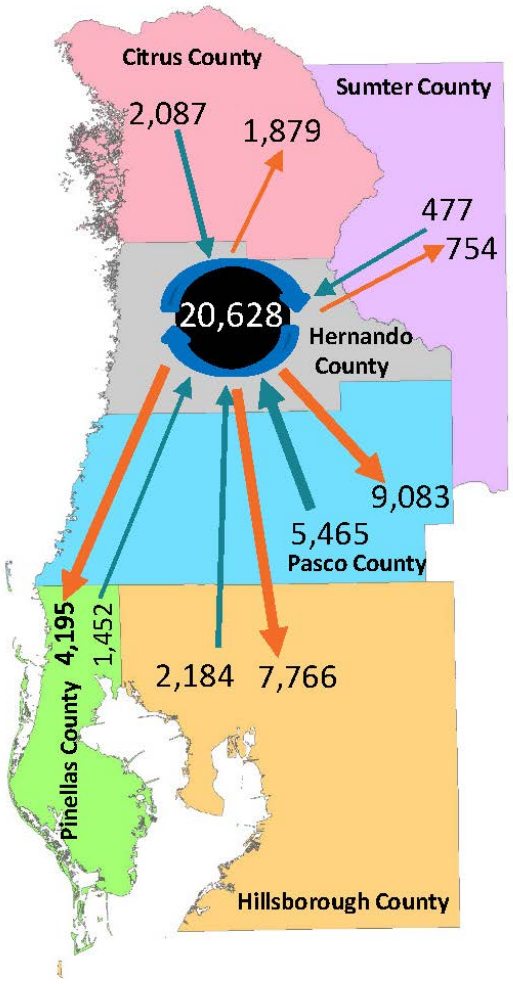
Travel Behavior and Trends

It is important to understand existing and expected local and regional travel behaviors and conditions to determine possible impacts or benefits affecting transit. Several key findings are summarized below based on the data analyzed previously:

- Major trip attractors in Hernando County include the Brooksville-Tampa Bay Regional Airport; major big-box retailers/supermarkets such as Walmart, Publix, and Winn Dixie; outdoor parks/recreational areas; medical facilities such as the Oak Hill Hospital; and educational facilities such as the Pasco-Hernando State College campuses.
- When typical travel behaviors are considered, more than 80 percent of commuters drove alone, but some participated in carpooling (9%) in 2016. The typical commute in the county is less than 20 minutes (44%), and more than 62 percent of commutes are less than 30 minutes. According to the ACS 2012–2016 5-Year Estimates, less than one percent of commuters traveled to work using public transportation in Hernando County in 2016.

- Based on 2016 ACS data, Hernando County had 60,732 employed residents, but only 41 percent lived and worked within the county, indicating nearly 60 percent of commuters traveling out the county for work on a daily basis.
- More than three times as many commuters leave Hernando County each day for work in Hillsborough County as those who live in Hillsborough County who travel to Hernando County, and nearly twice as many leave for Pasco County as those who live in Pasco County and travel to Hernando County, as shown in Figure 2-1.
- More than three times as many commuters leave Hernando County each day for work in Hillsborough County as those who live in Hillsborough County leave for Hernando County, and nearly twice as many leave for Pasco County as those who live in Pasco County and travel to Hernando County.

Figure 2-1: Travel Patterns in Hernando County



Implications

Hernando County should continue to pursue improvements that make its services more competitive with the single-occupant automobile and attract a higher share of travel. Whereas an operating environment consisting of low-density suburban land use patterns makes it difficult to meet the need to provide services locally and regionally, transit services may have to be uniquely designed to meet the needs of those depending on public transportation to access work, shopping, and educational services.

For Hernando County to attract a more diverse group of riders and increase ridership levels significantly, an overall increase in transit frequencies to connect key employment centers locally and regionally may be needed. Becoming a viable transportation alternative that can compete with the single-occupant vehicle and attract choice ridership is critical to the future of transit in Hernando County. With increased attention locally and regionally on transit, a more well-connected and frequent transit service can help establish transit as an integral part of the overall transportation network in the county and region.

Public Involvement

Many public involvement activities have been conducted or are planned to gather feedback from area residents and transit users. Events already conducted include several grassroots outreach events at various locations in Hernando County, including libraries, farmer's markets, major retail locations, etc. In addition, a public input survey was distributed to current riders and the general public in both electronic and printed formats. These outreach events are important because they engage the community and raise awareness about the TDP process as well as TheBus services. These events have generated a wide range of ideas for the existing service and for future transit enhancements.

Several key themes that emerged from the TDP public outreach include the following:

- **More Service Frequency/Hours** – Public feedback emphasized the need for more frequency as a high priority. Implementing later evening hours at night was also a high priority for users and stakeholders. Current riders also indicated a desire for service that runs until approximately 11:00 PM.
- **Weekend Service** – Stakeholders and respondents emphasized the desire for services to be provided on weekends, even if on a limited schedule. Without weekend service, many riders are unable to get service industry jobs or attend religions services.
- **Other Service Options** – On-demand services to fill first/last-mile mobility gaps and express service were mentioned by numerous stakeholders as a means to improve TheBus service and attract new ridership.
- **Infrastructure** – Riders emphasized the need for Hernando County to improve the comfort, safety, and accessibility of bus stops throughout the county. As part of efforts toward improving accessibility, riders noted that more sidewalk connections should be provided.
- **Expand Service Coverage** – Areas identified as needing new or expanded service include Hernando Beach, North Weeki Wachee, and Spring Lake as well as new or expanded regional connections to Citrus County, Pasco County, and Tampa.

Implications

Frequency improvements have remained one of the most costly improvements to make but has the most potential to attract new ridership to transit networks, including in Hernando County. TheBus frequency was improved to 60-minute headways few years back and the system since then has increased its ridership significantly. Another increase in frequency, even just on selected routes or times may help generate more demand and increase its attractiveness in the community. TheBus has an ongoing effort to increase bus stop level comfort and ADA compliance to make bus stops accessible. In addition, span-of-service extensions also will help connect transit-dependent residents to a wider array of jobs and provide more flexibility for workers who rely on TheBus services. Weekend service, currently not provided by TheBus, also may attract riders who travel for work and other purposes. It will convince riders who currently use it regularly on week days but unable to use it to continue to go to work on weekends. Therefore, at least a limited level of service may be helpful to make transit not just a weekday option.

Land Use

To better assess the impact of local land use conditions and policies on public transportation needs, it is important to identify current and future areas of the county that may benefit the most from the provision of public transportation services. Key findings from a review of current and future land use conditions are summarized as follows:

- The land use pattern in Hernando County is predominantly low-density residential in nature, with significant areas designated for rural, mining, and conservation uses. There are a few pockets of commercial uses, particularly along major corridors, and planned developments in the southern half of the county. In the 2040 Comprehensive Plan, the maximum density dwelling unit per acre was increased from 16 to 22 to help promote high density developments.
- Brooksville is centered on the commercial centers along N and S Broad Street and along SR-50/Cortez Boulevard. However, immediately adjacent to these commercial corridors is a wide variety of different land uses. Although there are few areas of the city that are designated as multi-family residential, the majority of northern Brooksville and parts of central Brooksville are designated as single-family residential.
- Continued commercial land use growth along SR-50 and suburban growth in the Spring Hills area, primarily on the south side of SR-50, are anticipated in the next 10 years. With this continued commercial and suburban growth, TheBus will have renewed cause to identify new innovations in service delivery in order to remain cost-efficient.

Implications

TheBus should continue to focus on providing improvements to its existing network and connections with adjacent transit agency services. Improvements to existing transit service and frequency can make transit services more attractive and productive.

In the pursuit of providing a more productive and attractive service, Hernando County should continue to encourage coordination within the County and between County and City agencies to improve access to transit in proposed developments and land use decisions. (Some major developments such as the Quarry Preserve and the Spring Center have already included requirements for public transit.) If Hernando County coordinates service improvements and expansions in these areas, it can bolster existing economic development efforts, considering that transit is an engine of economic development and impetus for real estate investment, and also provide benefits for developers such as reduced parking needs, a multimodal pedestrian-friendly environment, and support for a greater mix of uses.

Additionally, TheBus should continue to support changes to Hernando County's comprehensive plan that would result in additional density and/or transit-supportive development adjacent to established higher-density/intensity areas or in developing nodes. The existing low-density residential pattern of development is a challenging environment in which to provide productive transit services in terms of passengers per revenue mile. TheBus also should continue to monitor route performance and adjust it as needed to react to possible changes in land use as Hernando County develops and as new residents

continue to move to the area to ensure that connections from growing residential areas to key employment centers exist.

Organizational Attributes and Funding

The current transit delivery framework for Hernando County involves the County and MPO maintaining their planning and oversight roles in conjunction with private provider RATPDev., serving as the transit operator. The County Transit Division is included in the Planning Department, which also manages the County's Comprehensive Plan and land development regulations. More importantly, the department conducts the review of new development projects and provides guidance to the Hernando County Planning Zoning Commission and the Board of County Commissioners.

The Transit Division coordinates the provisions of two types of public transportation—fixed-route and Americans with Disabilities Act (ADA) demand-response service.

Similar to many other small transit agencies in Florida, the major portion of public transit operating and capital expenditures in Hernando County is funded by federal grants. The remainder is provided primarily by FDOT and State grants, and local government funds are used as match for leveraging State and federal funds. In addition, farebox and advertising and other miscellaneous revenues also provide some assistance for covering operating costs. In 2015, Hernando County Commissioners voted to implement a "ninth cent" gas tax to raise the gas tax by three cents in order to fund transit. Hernando County has also secured funding from FDOT (service Development) and federal grants (Section 5311) to expand service into Pasco County to help regional connections and add the Green route.

Implications

Whereas the existing organizational structure has worked well and should continue for operating and administering TheBus, Hernando County should continue exploration of additional funding that may be necessary for any significant service enhancements in the future. This especially includes local funding streams, as they act as matching funds for securing other sources. Although new improvements may not have to be funded totally by local funding sources, additional local sources may be needed to leverage federal and State revenues.

Securing a dedicated long-term funding source for public transportation services is a goal that many transit providers aspire to achieve. Also, to assist any effort to market transit as an option that is worthy of local investment, the potential benefits from such expanded/fixed-route transit service need to be emphasized. Awareness of the returns on transit investment may positively influence local funding decisions as well as any discussions with the private sector to form public-private partnerships to help fund future transit.

Technology

Although Hernando County's transit system is smaller in scale and demand, the County has taken many steps to provide a system that is technologically-enhanced and up-to-date. As part of this, Route Match scheduling and dispatch technology was recently purchased and implemented. The County is in the process of implementing various additional types of technology projects to enhance the overall transit experience for its patrons.

Regional Electronic Fare System



TheBus is coordinating with the other regional partners on finalizing the implementation of the Flamingo Fares regional fare collection system, already fully launched by HART and PSTA and currently a pilot program with TheBus. Once implemented systemwide, Hernando County will use the system to improve the ease of fare payment, reduce bus-boarding times, and make transit easier and more attractive to new rider markets. When fully launched in Hernando County, the fare system will allow bus passengers to use a credit or debit card tap system, an app, preloaded fare card for rides in Hernando and other counties in the Tampa Bay region. Counties currently participating in Flamingo Fares are Hillsborough (HART/TECO Line Streetcar System), Pasco (PCPT), Pinellas (PSTA/Jolley Trolley), and Sarasota (SCAT).

Google Transit

Since 2016, Hernando County has used Google Transit to enable users of TheBus to view public transportation options to help them plan the best routes to get where they are going in the county. By combining schedule and route data developed by TheBus with the tools of Google Maps, Hernando County has made transit become easily accessible to its residents.

Additionally, the County is monitoring or should review other applicable transit technologies that can be used to improve the efficiency and attractiveness of transit services. As Hernando County plans for the improvement of its existing transfer site and/or acquisition of another location for the transfer facility, considerations should be given for deployment of real-time bus arrival information displays and other technical upgrades as part of that facility upgrade.

In addition, battery-powered electric and/or autonomous buses often are seen as the future of bus service in the public transit industry. Although the majority of public transit buses in the U.S. currently run on diesel fuel, gasoline, and compressed natural gas (CNG), many agencies are looking to transition to electric buses for cost and environmental reasons. Continued investment into growing the capabilities of autonomous and connected vehicle technologies have brought them within reach for transit agencies. The potential benefits of these two technologies have led many agencies to explore how to fund and potentially undertake pilot projects in the future. To better understand the implications of these technologies, TheBus should monitor transit industry progress with these technologies.

Implications

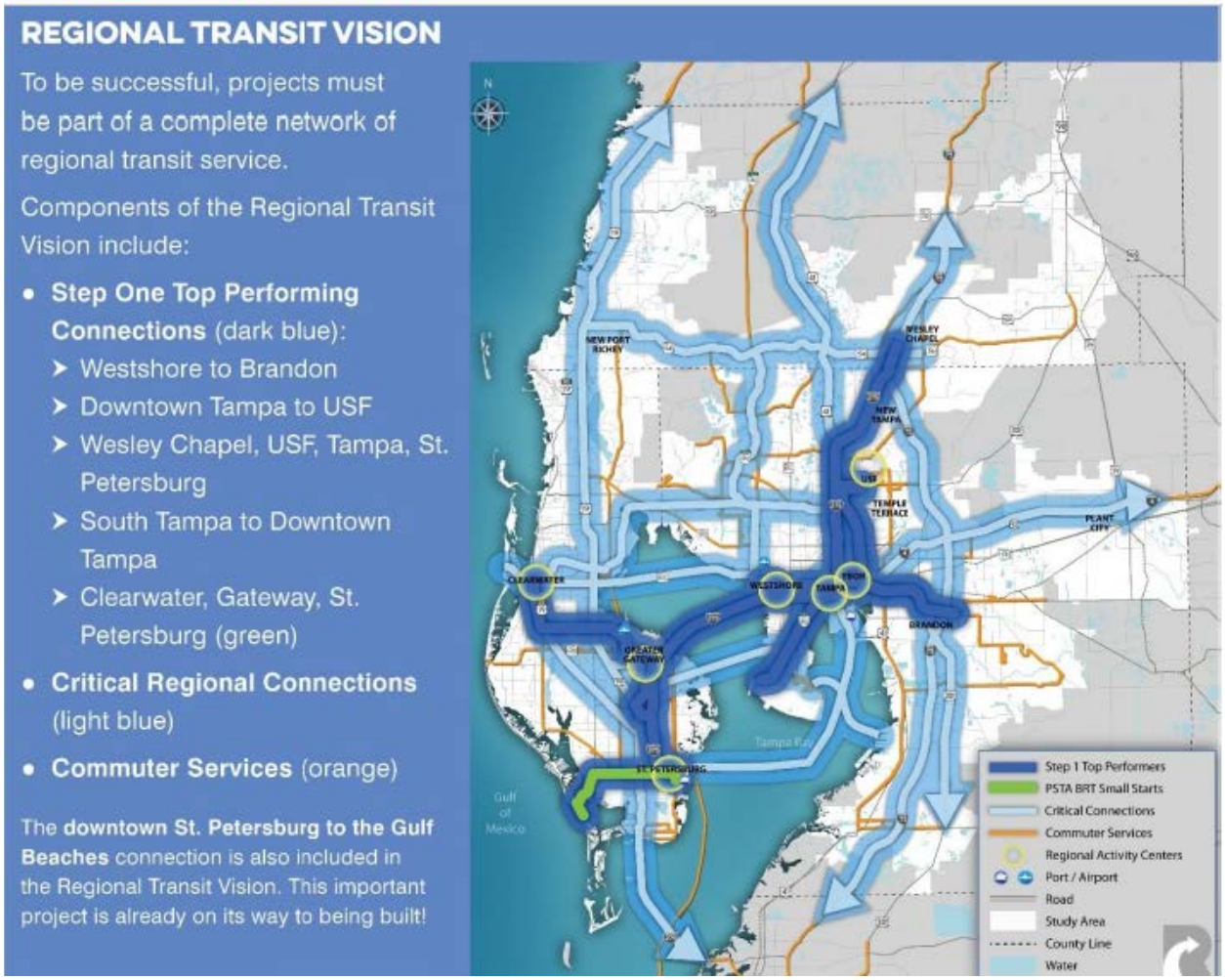
Although existing technology implementations such as Flamingo Fares offer the prospect of more efficient transit operations and more satisfied passengers, additional technology investments, which are quickly becoming more affordable, can continue to enhance operational efficiencies and overall rider satisfaction. Real time bus arrival information displays and mobile ticketing can enhance the information that the agency has access to in order to manage its daily operations as well as plan for service modifications, and even new services.

Regional Coordination

Regional coordination also was reviewed as part of Hernando County TDP, as the County is part of the regional transit network. Hernando County connected its services to Pasco County's transit services a few years ago and, ultimately, to other area transit networks such as HART, PSTA, and MCAT in Manatee County. In addition, the County is one of the five counties in Tampa Bay that falls under TBARTA's planning umbrella, making its network part of TBARTA's transit network.

Figure 2-2 shows the Regional Transit Vision developed recently by the Regional Transit Feasibility Plan prepared collaboratively by Tampa Bay region's transit agencies. Although the final catalyst project for further consideration and implementation did not include a connection to Hernando County, the regional network clearly identifies a number of critical connections and commuter routes to Hernando County.

Figure 5-1: Regional Transit Vision



Implications

With connections south to Pasco County and the rest of the regional transit network, Hernando County has been proactive in the regionalism discussion and should continue to play a key role as a partner in developing an effective and well-connected regional network. At this time, data and public outreach indicate a potential future need for connecting regionally on US-19 and the Suncoast Parkway; it also indicates much higher support and a strong desire for improving local connections first.

Although Citrus County is not part of TBARTA, it should also be a consideration for regional connections, as there is a sizable flow of commuters between the two counties, and the MPO's planning area also includes Citrus County.

SECTION 6 GOALS & OBJECTIVES

Goals and objectives are an integral part of TheBus TDP, as they provide the policy direction to achieve the community's vision while helping guide the agency as the county evolves. This section presents the goals and objectives to support the community's vision for transit services over the next 10 years. These TDP goals and objectives were updated based on a review and assessment of existing conditions, feedback received during the public involvement process, discussions with MPO staff, and the implications of the situation appraisal. First, the agency's overall mission and vision are provided, followed by the goals, objectives, and policies designed to help accomplish the transit mission.

Vision

Providing public transportation for enhanced mobility and sustained economic vitality, thereby improving the quality of life of the community and region.

Mission

Provide safe, efficient and accessible transit services to citizens and visitors in need of transportation and to evolve into a system that ultimately provides for the mobility of all residents and visitors in Hernando County offering a viable choice among travel modes.

Goals, Objectives & Policies

An updated set of goals and objectives has been developed for the TDP, as summarized below. For each goal, a series of objectives and policies is presented that outline how each goal will be achieved. In the following section, blue text denotes potential modifications and additions, and red text denotes the deletions compared to the prior Major TDP Update.

Goal 1 – Increase quality and level of transit services in Hernando County.

Objective 1.1 – Evaluate the need to expand the frequency of service to 30-minutes or less on better performing routes by 2024.

Objective 1.2 – Establish a second inter–county, regional transit connectivity along one additional major transportation corridor by 2024.

Objective 1.3 – By 2029, identify and implement innovative approaches to transit service in Hernando County, e.g., commuter/express deviated fixed-route bus service, shared-ride/ride-hail opportunities, express service, peak-hour service, vanpools, etc.

Objective 1.4 – Where feasible, include transit-oriented features in the design and construction of roadways along existing and planned bus routes.

Policy 1.1 *– Improve service headways to 30 minutes on better performing routes when funding becomes available.*

Policy 1.2 *– Provide regional transit services on Suncoast Parkway.*

Policy 1.3 *– Implement Saturday service on all existing routes.*

Policy 1.4 *– Implement projects or programs to manage or improve the State of Good Repair of transit capital assets as identified by TheBus Transit Asset Management Plan (TAM).*

Policy 1.5 *– Coordinate with TBARTA on regional transit connections.*

Policy 1.6 *– Operate a fleet of fixed-route vehicles with an average age of less than six years.*

Policy 1.7 *– Establish new/enhanced bus transfer center by 2025.*

Goal 2 – Increase transit ridership and improve cost efficiency.

Objective 2.1 – Increase the number of fixed-route passenger trips by 50 percent by 2024.

Objective 2.2 – Achieve and maintain an annual operating cost per one-way passenger trip between $3.00 and $10.00.

Objective 2.3 – Improve transit infrastructure comfort, accessibility, and compliance by providing more bus stop amenities and ensuring their compliance with ADA standards.

Policy 2.1 *– Increase the frequency of existing services to 30 minutes and increase service hours if demand warrants and funding is available.*

Policy 2.2 *– Improve existing transit services and implement new transit services, consistent with the 10–year transit priorities identified in the adopted TDP.*

Policy 2.3 *– Operate a fleet of fixed-route vehicles with an average age of less than six years by 2024.*

Policy 2.4 *– Explore new service innovations (i.e., on-demand, microtransit services, and same-day reservation technology, autonomous vehicle technology) to serve new areas, attract new ridership, and complement existing services.*

Policy 2.5 *– Coordinate with PCPT staff to ensure that schedules are properly aligned on existing and any future connections between the two counties.*

Policy 2.6 *– Coordinate with the City and County transportation planning staff to locate bicycle and pedestrian facilities adjacent to transit corridors and bus stop infrastructure.*

Goal 3 - Increase the visibility and name recognition of transit services and TheBus.

Objective 3.1 – Increase marketing and public outreach efforts to educate citizens and visitors about the benefits, availability, and characteristics of existing and planned transit services.

Policy 3.1 *– Maintain an ongoing public involvement process through surveys, discussion groups, interviews, public workshops, and participation in public events.*

Policy 3.2 *– Distribute bus schedules and system information in public places throughout the county for residents and visitors*.

Policy 3.3 *– Maintain and regularly update TheBus website with current service and schedule information.*

Policy 3.4 *– Conduct an on-board survey every three years or as part of major TDP updates to monitor changes in user demographics, travel behavior characteristics, and user satisfaction.*

Policy 3.5 *– Explore the provision of real-time transit information at transfer points or consolidate all information on mobile app or real time on bus.*

Policy 3.6 *– Upgrade and enhance TheBus website and integrate with the upcoming Flamingo Fares mobile application.*

Policy 3.7 *– Explore options to increase the number of ticket sales locations and allow online ticket sales.*

Policy 3.8 *– Explore innovative approaches to marketing transit to new audiences (e.g., coordinating marketing efforts with middle and high school media classes).*

Policy 3.9 *–Convert to an electronic fare system for rider convenience.*

Policy 3.10 *– Partner with local colleges and education centers to promote and sell bus passes.*

Goal 4 – Pursue coordination activities with regional entities and neighboring counties.

Objective 4.1 – Ensure coordination and consistency with local and regional plans for the future provision of public transit service in Hernando County.

Objective 4.2 – Identify areas for cooperative efforts with neighboring county transit systems including Pasco County Public Transportation (PCPT) and Citrus County Transit (CCT).

Policy 4.1 *– Meet at least two times a year with transit staff in neighboring counties to better understand existing and future transit services and to identify coordination requirements associated with public transit services and planning efforts across county lines.*

Policy 4.2 *– Participate on the TBARTA Board and its committees and regularly coordinate with TBARTA staff periodically to coordinate and cooperate on the TBARTA Regional TDP development and/or implementation process.*

Policy 4.3 *– Meet as appropriate with staff from applicable County agencies and the City of Brooksville to discuss the role of transit in their respective comprehensive plans.*

Policy 4.4 *– Facilitate discussions with staff from FDOT District 7 and its current R/TIES program, TBARTA, and adjacent counties to coordinate on regional plans.*

Goal 5 – Pursue transit-supportive land use and development.

Objective 5.1 – Support land use planning and regulations that encourage transit-supportive development.

Objective 5.2 – Support the use of development incentives such as impact fee credits for developers and major employers to promote public transit.

Policy 5.1 *– Continue to participate in the County's land use development review process and make recommendations for transit related amenities.*

Policy 5.2 *– Consider bus stop accessibility in the identification and prioritization of sidewalk and bicycle facility improvements.*

Goal 6 – Reduce environmental impacts caused by public transit and preserve, where possible, and enhance community social and environmental values.

Objective 6.1 – Evaluate the feasibility of converting part of the transit fleet to electric or alternative fuel vehicles as the existing stock reaches useful life maximums.

Objective 6.2 – TheBus should investigate opportunities to create and encourage bicycle and pedestrian use to promote nonautomotive trips and help with first/last mile transportation to bus stops.

Policy 6.1- *Evaluate fleet age and condition annually and evaluate feasibility of replacing aging vehicles with electric vehicles.*

Policy 6.2*- Install bike racks on all vehicles and at highly used bus stops to encourage alternative transportation to bus stops.*

SECTION 7 TRANSIT DEMAND ASSESSMENT

The purpose of this section is to summarize the demand and mobility needs assessment conducted as part of the 10-year TDP for Hernando County. When combined with the baseline conditions assessment, performance reviews, and findings from public outreach and relevant plan reviews, the demand assessment yields the building blocks for determining the transit needs for the next 10 years.

Transit demand and mobility needs were assessed using the following techniques:

- **Market Assessment** – Two market assessment tools were used to assess demand for transit services for the next 10 years. The tools assessed traditional and discretionary transit user markets in Hernando County for various time periods.
- **Ridership Demand Assessment** – Projected ridership demand for the existing fixed-route transit network was analyzed to gauge route-level and system-wide demand, assuming the maintenance of 2019 transit service levels and facilities. The projections were prepared using the Transit Boarding's Estimation and Simulation Tool (TBEST), the FDOT-approved ridership estimation software for TDPs.

These assessment techniques are summarized below, followed by the results of each technical analysis used to assess the demand for transit services in Hernando County.

Market Assessment

The TDP market assessment includes an evaluation from the perspectives of the discretionary rider market and the traditional rider market, the two predominant ridership markets for bus transit service. Analytical tools for conducting each market analysis include a Density Threshold Assessment (DTA) for the discretionary market and a Transit Orientation Index (TOI) for the traditional market. These tools can be used to determine whether existing transit routes are serving areas of the county considered to be transit-supportive for the corresponding transit market. The transit markets and the corresponding market assessment tool used to measure each are described below.

Discretionary Rider Markets

The discretionary market refers to potential riders living in higher-density areas of the county that may choose to use transit as a commuting or transportation alternative. The analysis conducted uses industry-standard density thresholds to identify the areas within Hernando County that exhibit transit-supportive residential and employee density levels today as well as in the future. Hernando County socioeconomic data, including dwelling unit/population and employment data developed as part of the adopted 2040 LRTP, were used to conduct the DTA. Using these through a process of data interpolation, existing (2019) and future (2029) dwelling unit and employment data were analyzed.

Three density thresholds, developed based on industry standards/research, were used to indicate whether an area contains sufficient density to sustain some level of fixed-route transit operations:

- **Minimum Investment** – reflects minimum dwelling unit or employment densities to consider basic fixed-route transit services (i.e., local fixed-route bus service).

- **High Investment** – reflects increased dwelling unit or employment densities that may be able to support higher levels of transit investment (i.e., more frequent service, longer service span, etc.) than areas meeting only the minimum density threshold.
- **Very High Investment** – reflects very high dwelling unit or employment densities that may be able to support more significant levels of transit investment (i.e., more frequent services, later service hours, weekend service, etc.) than areas meeting the minimum or high-density thresholds.

Table 7-1 presents the dwelling unit and employment density thresholds (in terms of Traffic Analysis Zone [TAZ]) associated with each threshold of transit investment.

Table 7-1: Transit Service Density Thresholds

Level of Transit Investment	Dwelling Unit Density Threshold[1]	Employment Density Threshold[2]
Minimum Investment	4.5–5 dwelling units/acre	4 employees/acre
High Investment	6–7 dwelling units/acre	5–6 employees/acre
Very High Investment	≥8 dwelling units/acre	≥7 employees/acre

[1] TRB, National Research Council, TCRP Report 16, Volume 1 (1996), "Transit and Land Use Form," November 2002, MTC Resolution 3434 TOD Policy for Regional Transit Expansion Projects.

[2] Based on review of research on relationship between transit technology and employment densities.

Maps 7-1 and 7-2 illustrate the results of the 2019 and 2029 DTA analyses conducted for Hernando County, identifying areas that support different levels of transit investment based on existing and projected dwelling unit and employment densities. These maps also include the existing TheBus transit route network to gauge how well the current transit network covers the areas of Hernando County that are considered supportive of at least a minimum level of transit investment.

Results

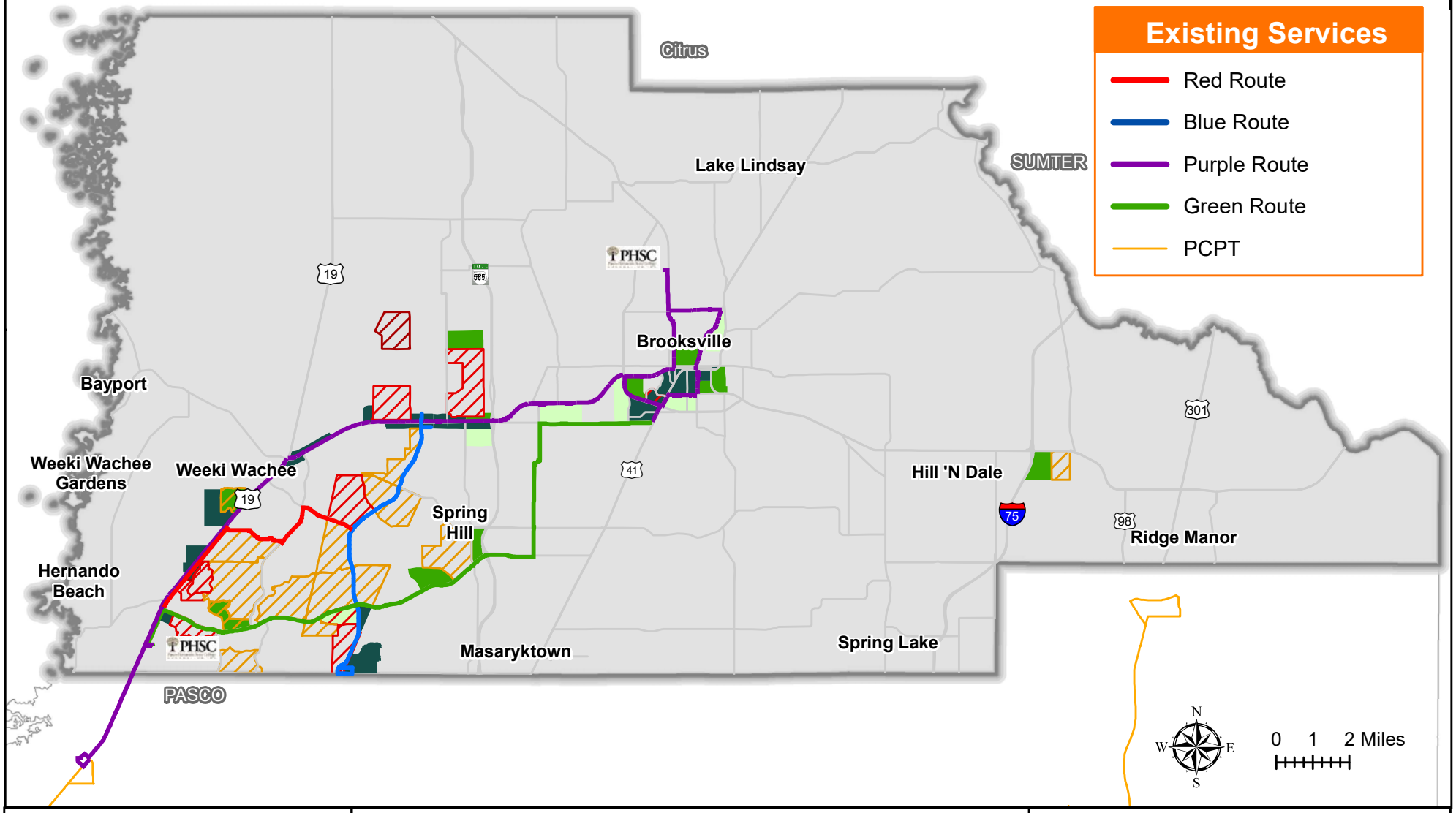
The 2019 DTA analysis indicates that the discretionary transit markets are derived mainly from population densities rather than from employment densities and can be summarized as follows:

- The majority of the areas exhibiting minimally supportive dwelling units or employment density of transit investment in 2019 and 2029 are in the southwestern and central areas of Hernando County, particularly along US-19, in Spring Hill, and in Brooksville.
- The majority of areas that meet the threshold for transit investment are adjacent to the current TheBus network. All current routes border the majority of the "Minimum" and "High" dwelling unit and employment thresholds. In 2029, all current routes will be adjacent to the majority of all levels of dwelling unit and employment thresholds.
- The areas that are considered "High" and "Very High" dwelling unit thresholds for transit investments are in Spring Hill and near the Pasco–Hernando State College. From 2019 to 2029, some of these areas are projected to transition from "Minimum" dwelling unit densities to "High" or "Very High." Connecting areas to the north are expected to meet the "Minimum"

dwelling unit thresholds for transit investment which are located along the western portion of US 19 near the south county line.

- The areas that meet “High” or “Very High” employment density thresholds for transit investment in the 2019 DTA are concentrated in Brooksville, the county seat. Other areas that meet the “High” and “Very High” thresholds are scattered throughout the southwestern part of the county including the following:
    - Areas to the west of US-19, including Lakewood Plaza, Weeki Wachee Springs State Park, and Towne Square Mall
    - Along Cortez Boulevard, consisting of Mariner Square, Western Way Shopping Center, and the Oak Hill Hospital
    - Bordering the south county line to Pasco County and Mariner Boulevard
- Based on the 2029 DTA, all previously-listed areas continue to meet “High” and “Very High” employment and dwelling thresholds. However, some new areas located adjacent to the already-established areas will meet the “Minimum” employment and dwelling unit thresholds. Additionally, there will be increased employment growth from "High" to "Very High" in Hill ‘n Dale south of SR-50 and in between I-75 and SR-98.

Hernando County Transit Development Plan (2020-2029)



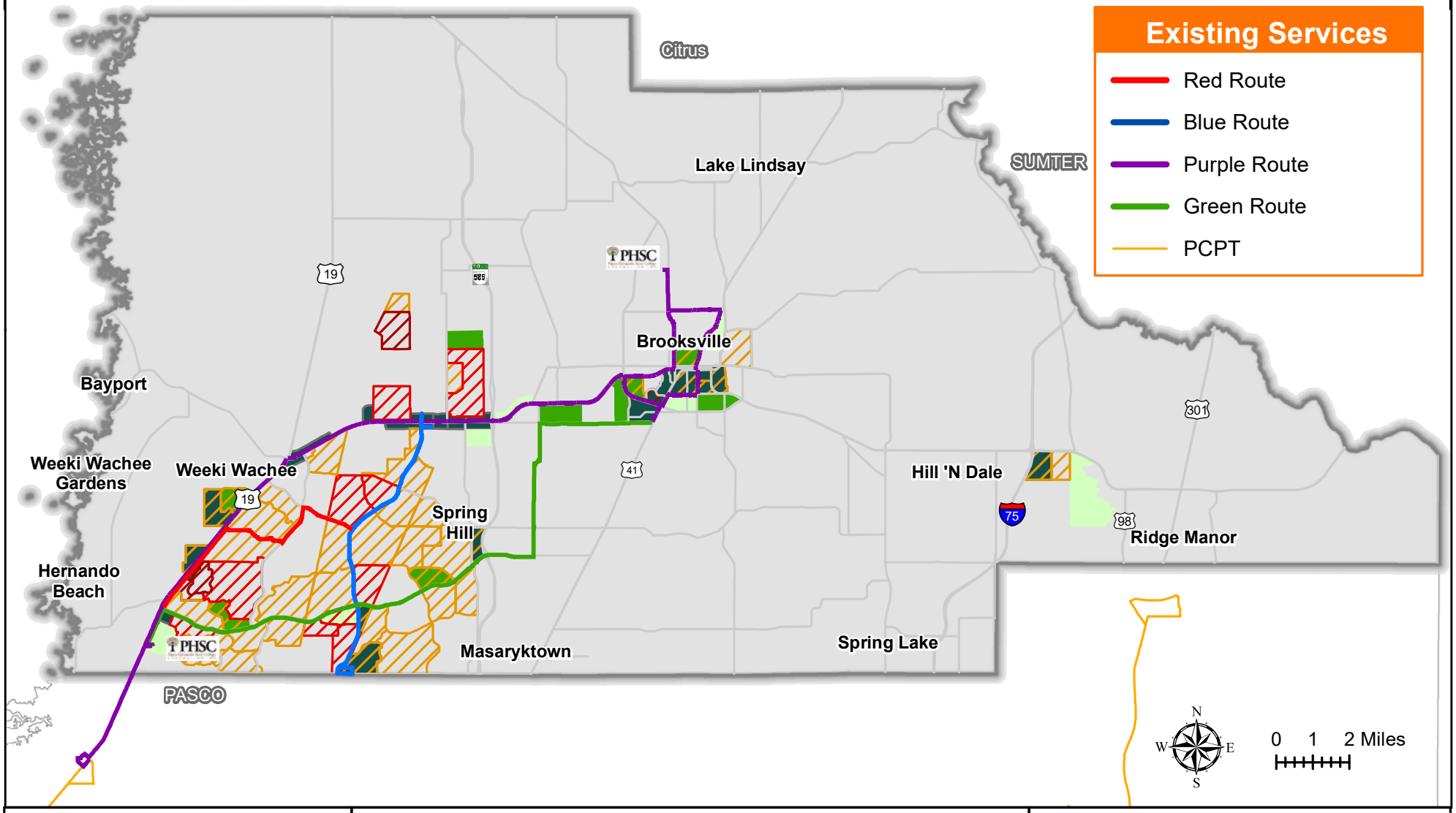
Map 7-1
Density Threshold Assessment (2019)

Source: Hernando County 2040 LRTP

Dwelling Unit Density Threshold
- Minimum
- High
- Very High

Employment Density Threshold
- Minimum
- High
- Very High

Hernando County Transit Development Plan (2020-2029)



Map 7-2
Density Threshold Assessment (2029)

Source: Hernando County 2040 LRTP

Dwelling Unit Density Threshold
- Minimum
- High
- Very High

Employment Density Threshold
- Minimum
- High
- Very High

Traditional Rider Markets

A traditional rider market refers to population segments that historically have had a higher propensity to use transit or are dependent on public transit for their transportation needs. Traditional transit users include older adults, youth, and households that are low-income and/or have no vehicles. For some individuals, the ability to drive is greatly diminished with age, so they must rely on others for their transportation needs. Likewise, younger persons not yet of driving age but who need to travel to school, employment, or for leisure may rely more on public transportation until they reach driving age. For lower-income households, transportation costs are particularly burdensome, as a greater proportion of income is used for transportation-related expenses than it is for higher-income households. Households with restricted income, such as those with no private vehicle, are more likely to rely on public transportation.

A Transit Orientation Index (TOI) was developed to assist in identifying areas of the county where these traditional rider markets exist. To create the TOI for this analysis, demographic data from the ACS 5-Year Estimates (2013–2017) were analyzed at the block group level for the demographic and economic variables shown in Table 7-2.

Table 7-2: TOI Variables

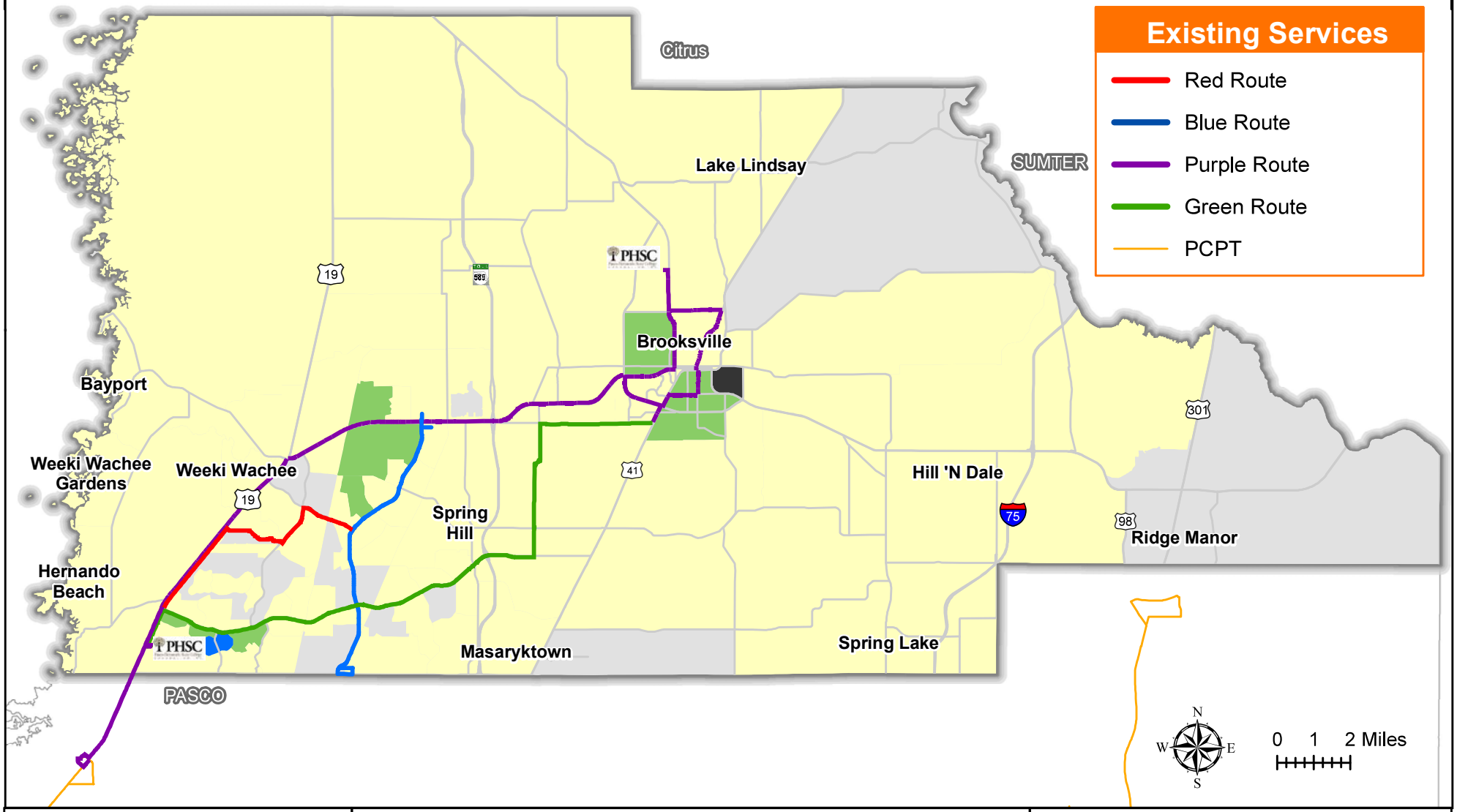
TOI Variable	Units
Population Age 14 and Under	Youth residents
Low-Income Population	$25,000 or less annual income for 4-person household
Households with No Vehicles	Zero-vehicle households
Population Age 65 and Over	Older adults

Using data for these characteristics and developing a composite ranking for each census block group, each area was ranked as “Very High,” “High,” “Medium,” or “Low” in their respective levels of transit orientation. Any block group with a population density less than 250 persons per square mile was ranked as “Very Low.” Map 7-3 illustrates the 2017 TOI, reflecting areas throughout the county with varying traditional market potential. The existing transit route network shows how well TheBus covers those areas.

Results

- Not many areas exhibit a “Very High” or “High” orientation toward transit; a “Very High” area is present in Brooksville adjacent to SR-50 and “High” orientation areas border along the Pasco–Hernando State College, Spring Hill campus.
- Areas that exhibit “Medium” transit orientation include along Cortez Road north of Spring Hill and clustered in Brooksville between US-41 and SR-50.
- Generally, the county has a low population density and a low orientation towards transit.

Hernando County Transit Development Plan (2020-2029)



Map 7-3
Transit Orientation Index

Source: ACS 5-year Estimates 2013-2017

Transit Orientation

- Very Low*
- Low
- Medium
- High
- Very High

*Population density is <250 persons per square mile

Ridership Demand Assessment

As another component of the transit demand assessment, projected transit ridership demand for the existing and approved 2019 fixed-route transit network was analyzed using the ridership forecast data from TBEST. This analysis was completed to gauge route-level and system-wide demand, assuming the maintenance of existing 2019 transit service levels and facilities.

T-BEST Overview

T-BEST is a comprehensive transit analysis and ridership-forecasting model that can simulate travel demand at the individual route level. The software was designed to provide near- and mid-term forecasts of transit ridership consistent with the needs of transit operational planning and TDP development. In producing model outputs, T-BEST also considers the following:

- **Transit network connectivity** – The level of connectivity between routes within a bus network; the greater the connectivity between bus routes, the more efficient TheBus service becomes.
- **Spatial and temporal accessibility** – Service frequency and distance between stops; the larger the physical distance between potential bus riders and bus stops, the lower the level of service utilization. Similarly, less frequent service is perceived as less reliable and, in turn, utilization decreases.
- **Time-of-day variations** – Peak-period travel patterns are accommodated by rewarding peak service periods with greater service utilization forecasts.
- **Route competition and route complementarities** – Competition between routes is considered. Routes connecting to the same destinations or anchor points or that travel on common corridors experience decreases in service utilization. Conversely, routes that are synchronized and support each other in terms of service to major destinations or transfer locations and schedule benefit from that complementary relationship.

The following section outlines the model input and assumptions, describes the T-BEST scenario performed using the model, and summarizes the ridership forecasts produced by T-BEST.

Model Inputs / Assumptions and Limitations

T-BEST uses various demographic and transit network data as model inputs. The inputs and the assumptions made in modeling Hernando County's TheBus transit system in T-BEST are presented below. The model used the recently released T-BEST Land Use Model structure (T-BEST Land Use Model 2018), which is supported by parcel-level data developed from the Florida Department of Revenue (DOR) statewide tax database. The DOR parcel data contains land use designations and supporting attributes that allow the application of Institute of Transportation Engineers (ITE)-based trip generation rates at the parcel level as an indicator of travel activity.

It should be noted, however, that the model is not interactive with roadway network conditions. Therefore, ridership forecasts will not show direct sensitivity to changes in roadway traffic conditions, speeds, or roadway connectivity.

Transit Network

The transit route network for all existing TheBus transit routes was created to reflect 2018 conditions, the validation year for the model. General Transit Feed Specification (GTFS) data for Hernando County's TheBus as of November 2018 was obtained from the Florida Transit Data Exchange (FTDE) as the base transit system. Data include:

- Route alignments
- Route patterns
- Bus stop locations
- Service spans
- Existing headways during peak and off-peak periods (frequency at which a bus arrives at a stop—e.g., 1 bus every 60 minutes)

The GTFS data were verified to ensure the most recent bus service spans and headways; edits were made as needed. Transfer locations were manually coded in the network properties.

Socioeconomic Data

The socioeconomic data used as the base input for the T-BEST model were derived from American Community Survey (ACS) Five-Year Estimates (2012–2016), Bureau of Labor Statistics, Bureau of Economic Analysis, 2015 InfoUSA employment data, and 2015 parcel-level land use data from the Florida DOR. Using the data inputs listed above, the model captures market demand (population, demographics, employment, and land use characteristics) within ¼-mile of each stop.

T-BEST uses a socioeconomic data growth function to project population and employment data. Using ACS socioeconomic data, population and employment growth rates were calculated. Population and employment data are hard-coded into the model and cannot be modified by end-users. As applied, the growth rates do not reflect fluctuating economic conditions as experienced in real time.

Special Generators

Special generators were identified and coded into T-BEST to evaluate the opportunity for generating high ridership. Hernando County special generators include the following:

- University – Pasco-Hernando State College, Spring Hill and North Campus
- Transfer Hubs – Mariner Square, Lakewood Plaza, US-19 Walmart, US-41 Walmart, Nature Coast Commons
- Hospitals – Oak Hill, Bayfront Health SPH, Bayfront Health Brooksville

T-BEST Model Limitations

It has long been a desire of FDOT to have a standard modeling tool for transit demand that could be standardized across the state, similar to the Florida Standard Urban Transportation Model Structure

(FSUTMS) model used by metropolitan planning organizations in developing long range transportation plans (LRTPs). However, whereas T-BEST is an important tool for evaluating improvements to existing and future transit services, model outputs do not account for latent demand for transit that could yield significantly higher ridership. In addition, T-BEST cannot display sensitivities to external factors such as an improved marketing and advertising program, changes in fare service for customers, fuel prices, parking supply, walkability and other local conditions and, correspondingly, model outputs may over-estimate demand in isolated cases.

Although T-BEST provides ridership projections at the route and bus stop levels, its strength lies more in its ability to facilitate relative comparisons of ridership productivity. As a result, model outputs are not absolute ridership projections, but rather are comparative for evaluation in actual service implementation decisions. T-BEST has generated interest from departments of transportation in other states and continues to be a work in progress that will become more useful as its capabilities are enhanced in future updates to the model. Consequently, it is important for Hernando County and TheBus to integrate sound planning judgment and experience when interpreting T-BEST results.

Ridership Projections

Using these inputs, assumptions, and 2018 route level ridership data obtained from TheBus, the T-BEST model was validated. Using the 2018 validation model as the base model, T-BEST ridership forecasts for this TDP major update planning starting year (2020) and horizon year (2029) were developed. The generated annual ridership forecasts reflect the estimated level of service utilization if no changes were to be made to any of the fixed-route services.

In addition, a 2029 TDP Needs Plan Scenario (described in detail in the next section) also was coded and modeled to assess the route-level and system ridership. The 2029 needs plan incorporates the following potential service changes:

- Saturday service on all current routes
- Extended service span until 9:00 PM on all current routes
- New Commuter Express route from future transfer station to SR-52 in Pasco County via SR-50 and Suncoast Parkway
- New peak hour connector service from Brooksville to Ridge Manor

Table 7-3 shows the projected number of annual riders by route for 2020, 2029, and the 2029 Needs Scenario as well as the corresponding average annual ridership growth rates derived from T-BEST. Table 7-4 lists estimated annual ridership for introduced Saturday service in the 2029 Scenario.

Table 7-3: Weekday Ridership Projections and Growth Rates for 2020–2029*

Route	2020 Base Network Forecast	2029 Base Network Forecast	2029 TDP Needs Network Scenario Forecast	% Change, 2020–2029 Base (No improvements) Network	% Change, 2020–2029 TDP Needs Network Scenario
Red	17,302	18,438	22,110	6.6%	27.8%
Green	36,618	38,978	44,778	6.4%	22.3%
Purple	52,536	56,404	60,738	7.4%	15.6%
Blue	26,342	28,242	30,222	7.2%	14.7%
Blue	26,342	28,242	30,222	7.2%	14.7%
Commuter Express	n/a	n/a	2,594	n/a	n/a
East Hernando Connector	n/a	n/a	4,223	n/a	n/a
Totals	**132,798**	**142,062**	**164,665**	**7.0%**	**24.0%**

* Based on T-BEST model

Table 7-4: Annualized Saturday-Only Ridership with 2029 TDP Needs Scenario*

Route	% Change, 2020–2029 TDP Needs Network Scenario
Purple	19,428
Green	7,358
Blue	4,770
Red	4,111
Commuter Express	No Service
East Hernando Connector	No Service
Totals	**35,667**

* Based on T-BEST model

Table 7-5: Total Weekly System Ridership Projections and Overall Growth Rates for 2020–2029*

Route	2020 Base Network Forecast	2029 Base Network Forecast	2029 TDP Needs Network Scenario Forecast	% Change, 2020–2029 Base (No improvements) Network	% Change, 2020–2029 TDP Needs Network Scenario
Purple	52,536	56,404	80,166	7.4%	52.6%
Red	17,302	18,438	26,221	6.6%	51.5%
Green	36,618	38,978	52,136	6.4%	42.4%
Blue	26,342	28,242	34,992	7.2%	32.8%
Commuter Express	n/a	n/a	2,594	n/a	n/a
East Hernando Connector	n/a	n/a	4,223	n/a	n/a
Totals	**132,798**	**142,062**	**200,332**	**7.0%**	**50.9%**

* Based on T-BEST model

Forecast Ridership Analysis

Based on the T-BEST model results for all day total system as shown in Table 7-5, maintaining the current system will result in only a moderate increase in ridership for all routes over the next 10 years. According to the projections, overall average annual ridership is expected to increase by just 7% by

2029, an annual growth rate of less than 1%. The model results for base show that the most ridership growth in the base (no improvements) network scenario will occur on the Blue and Purple routes within the next 10 years.

With the 2029 Needs Plan Scenario, total system ridership is estimated to increase by 51% compared to the 7% growth if no improvements are done to the system. Table 7-5 demonstrates the ridership estimation for each route and the system as a whole for all days, including weekdays and Saturdays. The table shows that each existing route will increase its ridership by around 33–53% over the next 10 year period. Breakdowns of individual route performance are outlined as follows:

- **Purple Route** – forecasted to have a total of 52,536 riders in 2020, and if no changes are made to the route, it is projected to generate more than 56,000 riders by 2026. However, after introducing Saturday service and later evening spans under the 2029 Needs Plan Scenario, total ridership for the Purple Route is expected to increase by 52.6%, up to 80,166 trips. This is over seven times higher than the 7.4% increase with no improvements and is the most growth any route has projected.
- **Red Route** – forecasted to have a total of 17,302 riders in 2020 and, given no service changes, would have increased by 6.6% to more than 18,000. After introducing Saturday service and later evening spans under the 2029 Needs Scenario, total ridership for the Red Route is expected to increase by 51.5%, up to 26,221 trips.
- **Green Route** – forecasted to have a total of 36,618 riders in 2020 and, if no improvements are implemented, would have increased by 6.6% to nearly 39,000 by 2026. After introducing Saturday service and later evening spans under the 2029 Scenario, total ridership for the Red route is expected to increase by 42.4%, up to 52,136 trips.
- **Blue route** – forecasted to have a total of 26,342 riders in 2020 and will increase to more than 28,000 in ridership by 2029 with no service changes. After introducing Saturday service and later evening spans under the 2029 Scenario, total ridership for the Blue route is expected to increase by 32.8%, up to 34,992 trips. This route could continue to see ridership growth once PCPT's Shady Hills Connector route (which is expected to meet with this route just north of County Line Road) is implemented.
- **Commuter Express on Suncoast** – proposed under the 2029 Needs Plan Scenario and does not have a current operating equivalent for comparison purposes. If implemented under the 2029 Needs Plan Scenario, this peak-hour-only route would generate 2,594 per year. More details on this route are presented in the next section.
- **East Hernando Connector** – proposed under the 2029 Needs Plan Scenario and also does not have a current operating equivalent for comparison purposes. If this service is implemented under the 2029 Needs Plan Scenario, the express route would generate more than 4,000 trips per year. More details on this route are presented in the next section.

Overall, forecasted ridership for the 2029 Needs Scenario is more than seven times higher than the 2029 No Improvements forecast, with 51% estimated ridership growth systemwide.

SECTION 8 ALTERNATIVES DEVELOPMENT AND EVALUATION

This section summarizes the development of potential transit improvements for the Hernando County 10-year TDP Major Update. The needed improvements, referred to as alternatives, represent the transit needs for the next 10 years and were developed without consideration of funding constraints.

The alternatives were developed based on information gathered through various data collection and public outreach efforts conducted throughout the TDP planning process. The identified service alternatives are then prioritized using a number of criteria and weights. The prioritized list of improvements summarized in this section will be used to develop the 10-year implementation and financial plans, to be summarized and included in the full Draft TDP.

Development of 10-Year Transit Needs

The 2020–2029 TDP transit alternatives consist of improvements that enhance existing TheBus services and expand transit service to new areas. The alternatives reflect the transit needs for the next decade and have been developed based on information gathered through the following methods:

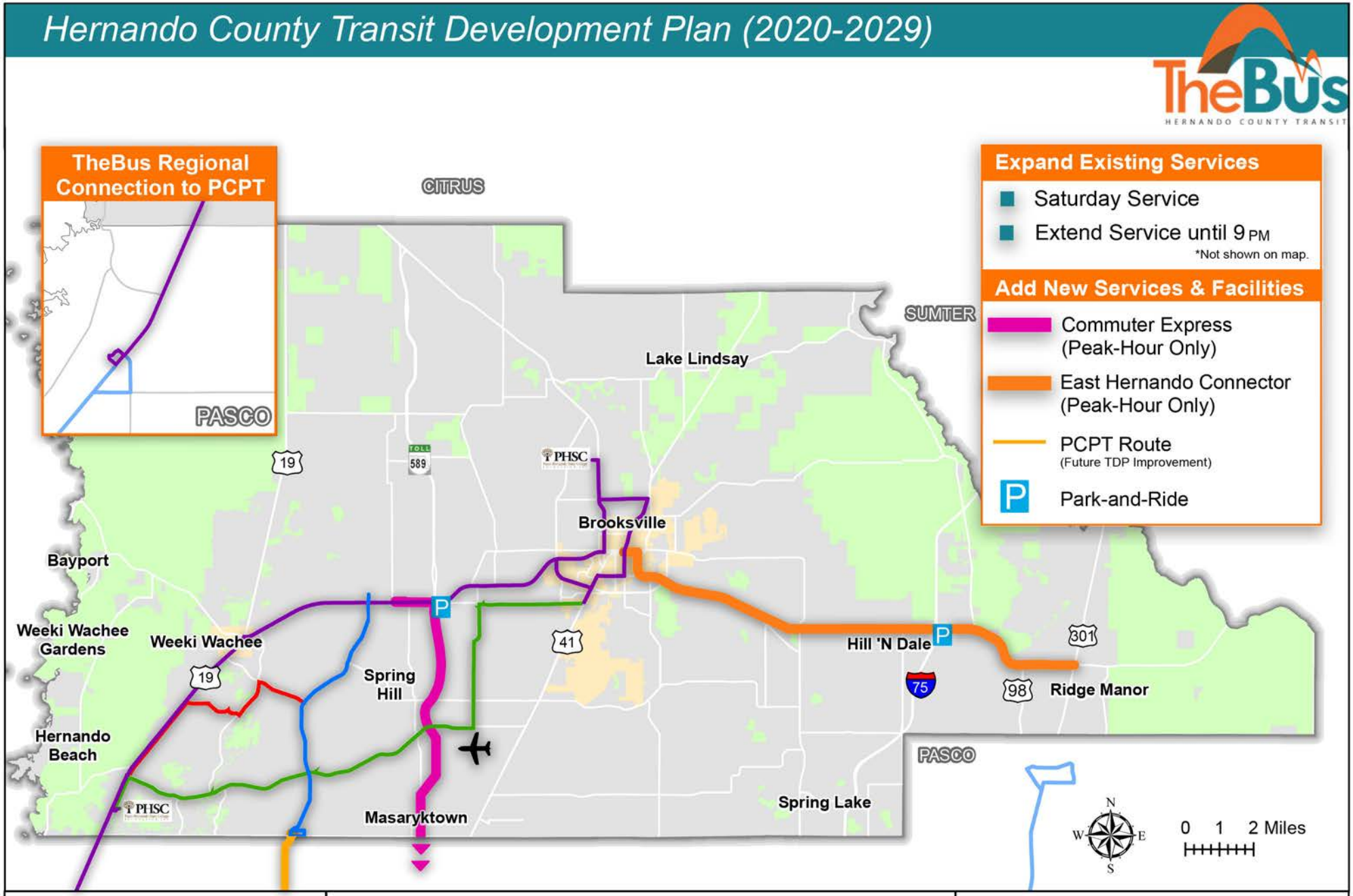
- **Public Input** – Multiple techniques were used to obtain substantive public input on transit needs throughout the TDP planning process. Public input surveys, grassroots outreach, stakeholder interviews, open house public workshops, and other communications were conducted to gather input from the public, stakeholders and the community in general regarding what alternatives should be considered for the next 10 years.
- **Situation Appraisal** – Hernando County's 10-year TDP is required by State law to include a situation appraisal of the operating environment in which the transit agency operates. This helps to develop an understanding of the operating environment of TheBus in the context of key elements as specified in the TDP Rule. The implications from the situation appraisal findings were considered in identifying potential transit alternatives.
- **TDP Goals & Objectives** – The goals and objectives updated as part of this 10-year TDP re-emphasize many of the agency's existing priorities, as well as outline new priorities for improvements based on transit needs. The objectives and policies often provide insight into transit needs within the community and the potential means with which to meet them.
- **Transit Demand Assessment** – As presented previously, an assessment of transit demand and needs also was conducted for Hernando County. The assessment included the use of various GIS-based analysis tools and an FDOT-approved ridership estimation software to develop projections of future ridership. These technical analyses, together with the baseline conditions assessment and performance reviews previously conducted, were used to help identify demand when developing transit alternatives.

Based on these methods, alternatives were identified and grouped into three categories, including service, infrastructure, technology, and policy improvements. Specific improvements identified within each category are summarized below and are depicted in Map 8-1, as applicable.

10-Year Transit Service Needs

- **Add Saturday service to all routes (8:00 AM–5:00 PM)** – Adding weekend service was one of the most desired needs expressed by the public during this and previous TDP outreach processes. This improvements adds Saturday service on all existing routes. This service, however, would be provided only from 8:00 AM to 5:00 PM only, as the demand may be different than it is for weekdays. However, based on utilization and demand and if adequate financial resources are available, TheBus may expand Saturday service later to match weekday service hours.
- **Extend service hours until 9:00 PM on existing routes** – Another major need identified by the public for potential implementation the next 10 years was extending the current span of service, which currently ends at approximately 7:00 PM. To make the existing services more attractive to current and potential riders who may have early and late travel patterns, this improvement would extend the current service span until 9:00 PM on weekdays for all routes, including the Red, Blue, Purple, and Green routes.
- **Establish East Hernando Connector (bus service on SR-50 from Brooksville to I-75)** – Identified as a need during the last several years, this route would connect east Hernando County to the rest of transit system, providing service on SR-50 from Brooksville to Ridge Manor and eventually connecting jobs and services in Brooksville and most of the central and west side of Hernando County with the east. This route would operate as an express route and will serve Ridge Manor only in the morning and afternoon peak hours.

Hernando County Transit Development Plan (2020-2029)



Map 8-1
2029 Transit Needs

Existing Services

- Red Route
- Blue Route
- Purple Route
- Green Route
- PCPT
- Municipalities
- Conservation

Source: Hernando County MPO

MPO Metropolitan Planning Organization Hernando/Citrus

Tindale Oliver

- **Implement Commuter Express Service on Suncoast Parkway** – With efforts by Hernando County and TBARTA towards a regional connected by transit, express service on the Suncoast Parkway has been identified as key regional need for many years. To provide a regional commuter express route to connect to major employment/ shopping centers south of Hernando County and to stay connected with a future regional transit network, peak-hour commuter express service is proposed for the Suncoast Parkway. However, as no express bus service need north of SR-54 has been identified by the recently-adopted Pasco County TDP, this service, which would begin at the proposed future transfer station (discussed later this this section) on Cortez Boulevard (SR 50) in Hernando County and operate on SR-50 and then on Suncoast Parkway south, would end at SR-52 in Pasco County. Once the SR-52 express, identified in the adopted Pasco County TDP is implemented, this would connect with Pasco County Public Transportation (PCPT) to provide additional connections regionally. The express service would operate two trips in the morning peak and two in the afternoon peak periods.

Capital/Infrastructure and Technology Needs

The following capital and infrastructure alternatives were developed for implementation the TDP's 10-year planning horizon:

- **Establish a major transfer facility** – TheBus should establish a transfer station to allow riders to conveniently transfer between routes. As Hernando County is planning to implement expanded fixed-route transit service and potentially add new routes, TheBus should consider establishing a transfer facility that can provide a convenient and safe location for transfers for its transit patrons. The enhanced facility should not only facilitate transfer between buses serving various areas of the county, but also should potentially provide adequate passenger amenities, including larger shelters, benches, information displays, bus pass outlets/kiosks, restrooms, vending machines, etc. In addition, if funding is available the facility could include space for TheBus administrative offices. Therefore, establishing a major transfer facility is recommended.
- **Real-time bus location app/displays** – With upgrades to current technology/dispatch software, Hernando County should explore the ability to offer real-time bus tracking information. Real-time bus information, available through a smart phone mobile app and via in-station sign displays to improve the riding experience and aid in attracting new ridership, is recommended.
- **Mobile fare program** – TheBus should continue to work with its regional partners to finalize the rollout of the regional Flamingo Fares program in Hernando County. The program will ensure seamless regional travel from Hernando County to the rest of the Tampa Bay region for residents of Hernando County and would improve the overall customer experience using the smart card and mobile fare platform. Implementation of the Flamingo Fares system will allow customers to cross county boundaries without transfer fees using the same smart card and/or smart phone app.

- **Vehicle Replacement and Acquisition Program** – TheBus should continue its vehicle fleet replacement and expansion to ensure the adequate number of vehicles and spares are available for maintaining current service as well as for any planned expansions of service in the next 10 years.
- **Bus Stop Infrastructure Program** – Hernando County should continue its current Bus Stop Infrastructure Program to purchase and installation of bus shelters, benches, bike racks, and other amenities to provide its riders a comfortable and safe experience at its bus stops to the maximum extent possible.
- **Shared park-and-ride facilities** – To support the proposed regional express services and the express service connecting Ridge Manor in east Hernando to Brooksville, two shared-use/joint use park-and-ride lots should be established at the following locations:
    - Suncoast Parkway/SR-50 interchange area
    - SR-50 and I-75 interchange area

  These lots are assumed to be operated as shared lots through an agreement with a land/property owner of the facility in the vicinity of these two locations. Per FDOT's *2012 State Park-and-Ride Guide*, the cost to maintain a parking space at a shared lot is minimal, approximately $12 per space per year.

Policy/Other Alternatives

Other potential improvements include various general enhancements that are not necessarily route-specific or capital-related. These improvements are drawn primarily from information in current plans/studies as well as input from public involvement efforts performed as part of the TDP. Other needed improvements identified for the next 10 years are as follows:

- **Expanded transit marketing program** – An expanded marketing program can help to significantly to increase public awareness, potentially generating more ridership. Marketing and public education are perhaps the most difficult tasks for public transportation systems, primarily due to the lack of available resources. However, it is recommended that Hernando County explore every avenue to expand the scope of its current marketing activities within the next 10 years. In addition, using social media such as Facebook also may help to attract bike riders and millennials (those born between the 1980s and early 2000s, also called Generation Y) to consider using transit once in a while if not regularly. These marketing activities are critical investments in the long-term development of the public transportation system.
- **Engagement of business community to develop employee bus pass/subsidy programs** – As another strategy to increase use of TheBus, especially targeting routes that serve key employers such as hospitals, major retailers, and industrial parks, TheBus should work with the business community to encourage them to become more proactive in providing commuter benefit programs that offer travel choices for their employees. By providing employees with free bus passes, commuter benefits programs also offer tax benefits to participating employers, making such program a "win-win" situation for both participating

employers and employees. These strategies also could increase demand for establishing park-and-ride lots at potential locations in the county.

Evaluation of Transit Alternatives

The remainder of this section summarizes the evaluation process for service alternatives developed for the TheBus TDP. Because many alternatives are identified, ranging from expansion of existing routes to implementation of new routes, it is important for TheBus to prioritize these improvements to effectively plan and implement them within the next 10 years using existing and/or new funding sources.

Alternatives Evaluation Methodology

A qualitative/quantitative methodology was developed to evaluate and prioritize the needs presented previously in this section. To prioritize and program these service improvements for potential implementation, it is important to weigh the benefits of each service improvement against the others.

The remainder of this section identifies and defines the evaluation criteria to be used in prioritizing the service improvements developed for the TheBus TDP and the methodology by which those criteria should be applied. The four evaluation categories that were identified for use in the methodological process to rank the alternatives are described as follows:

- **Community Support** – A key reason for the success of any improvement is its acceptance and support by the community it serves and impacts. The findings previously summarized from the extensive public outreach effort were reviewed to gauge public interest.
- **Ridership Demand** – Success of any route relies heavily on its productivity. Two GIS-based technical analyses conducted as part of the demand assessment were reviewed to assess the potential demand from discretionary and traditional markets for each improvement.
- **Regional Connectivity** – Connectivity between key regional hubs plays a critical role as TheBus focuses on enhancing and expanding its network to meet the demands of creating a truly multimodal transportation system.
- **Funding Potential** – Funding is often the most restrictive factor and, therefore, is one of the most heavily weighted criteria as funding for community transportation is primarily linked to the routes for which funding is applied.

Table 8-1 lists these evaluation categories and their corresponding descriptions, the associated measure, and the assigned weighting for each category. Using these criteria, each of the alternatives were then assigned a qualitative measure of Very High, High, Medium, or Low to determine their overall priority, as presented later in this section.

Table 8-1: Alternative Evaluation Criteria and Weights

Criterion	Measure	Description	Weight
Community Support	Public Input	Level of interest in specific alternatives during public outreach.	40%
Ridership Potential	Traditional Market	General overlap in "High" or "Very High" Transit Orientation Index (TOI), Density Threshold Assessment (DTA)	20%
	Discretionary Market	General overlap in areas that meet "Minimum" Density Threshold Assessment (DTA) tier for employment or dwelling unit density	
Regional Connectivity	Connections to Regional Hubs	Connections to regional transit networks/hubs in adjacent counties	15%
Funding Potential	Funding Feasibility/ Realistic Opportunities	Likelihood of securing stable operational/service funding	25%

Alternatives Evaluation Results Summary

Each alternative was evaluated using the criteria and process summarized previously; the detailed results of the evaluation are presented in Table 8-2. As shown, the nine improvements were given a ranking of "Very High," "High," "Medium," or "Low" based on the qualitative/quantitative evaluation process discussed previously. Next, an overall ranking was calculated by assigning a score to each of the ratings, where "Very High" received the highest score (7) and "Low" received the lowest score (1), and then deriving a weighted score based on the weight of each category/criteria for each improvement.

For example, "Extend service to 9:00 PM on All Routes" was ranked as "Very High (7)," "Medium (3)," "Medium (3)," and "Low (1)" for the respective criteria; once these rankings were combined into a single score (3.9 out of 7), it came in between the thresholds of "Medium (3)" and "High (5)."

Table 8-2: Alternatives Evaluation Results Matrix

TDP 10-Year Needs	Criteria				Weighted Score	Priority Rank
	Community Support	Ridership Potential	Regional Connectivity	Funding Potential		
Extend service hours until 9:00 PM on existing routes	VERY HIGH	MEDIUM	HIGH	HIGH	4.3	1
Saturday service to all existing routes	VERY HIGH	MEDIUM	HIGH	MEDIUM	4.0	2
Commuter Express service on SR-50/Suncoast Parkway	MEDIUM	LOW	HIGH	HIGH	2.3	3
East Hernando Connector	MEDIUM	LOW	LOW	LOW	1.4	4

Improvement alternatives are scored using ranking of "Very High," "High," "Medium," or "Low" based on qualitative/quantitative evaluation process in this report. Scores for each rankings as follows: Very High = 7, High = 5, Medium = 3, and Low =1.

Despite the extensive data reviewed in this plan, including market data and demand forecasts, setting transit priorities for the next 10 years relied heavily on the direction/vision set by the community and the realities of impending financial constraints to realize that vision within the plan timeframe.

The results of the evaluation are consistent with the community's vision for TheBus services, as summarized below:

- Extending service hours to 9:00 PM on all existing routes was ranked as the top priority for the system for the next 10 years. With a weighted average of 4.3, it scored Very High in community support, High in regional connectivity and funding potential, and Medium in ridership potential.
- Saturday service on all existing routes was ranked as the second priority, based on the criteria used above. It scored Very High for community support, High for regional connectivity, and Medium for "ridership potential" and "funding potential," with a weighted score of 4.0.
- As expected, East Hernando Connector serving the sparsely-populated Ridge Manor area, located further east of the current service area, was ranked at the bottom, receiving a weighted score of 1.4.

When developing a TDP corresponding implementation plan, these priorities should be balanced with the funding realities to determine to what degree that the community's vision can be realized over the next decade.

SECTION 9 10-YEAR TRANSIT DEVELOPMENT PLAN

This section presents the recommended and funded 10-year transit plan for Hernando County. Included is a brief summary of each service, capital/infrastructure, and policy improvement programmed for the plan, each of which is part of the 10-year transit needs plan summarized in detail and prioritized in Section 8. Finance and implementation plans for the 10-year TDP are presented, as is a summary of the capital and operating cost assumptions used in developing costs and revenues for the TDP finance plan and the financial and implementation plans developed for the recommended 10-year transit plan for TheBus system.

Recommended 10-Year Transit Plan

Recommended transit service improvements for the next 10 years were determined based on input from the public and TheBus/MPO staff and the evaluation of transit needs identified previously, as well as careful consideration of financial resources summarized later in this section.

Table 9-1 presents the service improvements for the recommended 10-year transit plan. Capital improvements such as the addition of a bus transfer center, bus stops, bus stop accessibility improvements, and vehicle purchases are expected to be implemented corresponding to the implementation of these improvements.

Table 9-1: TheBus 10-Year Transit Plan Service Improvements

Service Improvements	Operating Characteristics		
	Frequency	*Service Span*	*Day of Service*
Add Saturday service	60 min	8:00 AM to 5:00 PM	Saturday
Extend service hours until 9:00 PM	60 min	5:00 AM to 9:00 PM	Monday–Friday
Add East Hernando Connector	90 min	AM and PM Peak	Monday–Friday

Improvements to Existing Routes

- **Add Saturday service to existing routes (8:00 AM to 5:00 PM)** – Add Saturday service to all TheBus routes, with service from 8:00 AM to 5:00 PM.
- **Extend service hours to 9:00 PM on existing routes** – Extend current service end times to approximately 9:00 PM on weekdays for all routes, including Red, Blue, Purple, and Green.
- **Add East Hernando Connector (AM and PM express bus service from Brooksville to Ridge Manor on SR-50)** – Add two bus trips in the morning and two in the afternoon to connect Ridge Manor to Brooksville from Monday to Friday.

Capital/Infrastructure/Policy Improvements

- **Major transfer facility** – Establish a transfer facility that can provide a convenient and safe location for transfers for its transit patrons to accommodate expanded fixed-route transit service and potentially add new routes.
- **Mobile fare payment app** – Continue to work with regional partners to finalize the rollout of the regional Flamingo Fares program so riders can use a smartphone app to pay bus fare.

- **Vehicle replacement and acquisition program** – Continue vehicle fleet replacement and expansion to ensure that an adequate number of vehicles and spares are available for maintaining current service and for any planned expansions of service in the next 10 years.
- **Bus stop infrastructure and ADA accessibility program** – Continue the current program to purchase and install bus shelters, benches, bike racks, and other amenities to provide riders with a comfortable and safe experience at bus stops to the maximum extent possible; continue bus stop ADA accessibility improvements to ensure that stops are accessible to every type of rider.
- **Shared park-and-ride facilities** – Establish a shared-use/joint use park-and-ride lot to support the proposed express service connecting Ridge Manor to Brooksville, potentially at the SR-50/I-75 interchange area in east Hernando County northwest of Ridge Manor.
- **Expanded transit marketing program** – Using existing resources, expand the scope of current marketing activities and use low- to no-cost tools such as social media/Facebook to attract new riders.
- **Engagement of business community to develop employee bus pass/subsidy programs** – Work with the business community to encourage provision of commuter benefit programs that offer travel choices for employees.
- **Promotion/expansion of transportation demand management (TDM) strategies** – Continue to coordinate with the TBARTA Commuter Services program to promote and expand the use of TDM strategies, including alternative travel options such as transit, carpool, vanpool, etc.

10-Year Financial Plan

A 10-year financial plan was developed to facilitate implementation of the service and capital/ technology improvements identified previously. This section presents the capital and operating cost assumptions and the costs and revenues associated with that 10-year plan.

Cost Assumptions

Numerous cost assumptions were made to forecast transit costs for the time period from 2020 through 2029 based on a variety of factors, including service performance data from the current TheBus service and information and discussions with TheBus/MPO staff. These assumptions are summarized as follows:

- Annual operating costs for fixed-route and ADA paratransit services are based on information provided by Hernando County staff.
- A total of $1 million is identified for securing a land for the development of the future major transfer facility on Cortez Boulevard (SR-50). Currently, the cost of building the facility has not been determined at this time. The proposed new transfer facility for TheBus is expected to be fully funded by the Hernando County Local Option Ninth Cent Gas Tax proceeds.

- Based on information from TheBus staff, bus vehicles are assumed to cost $450,000 and ADA vehicles are assumed to cost $80,000 each. Table 9-2 summarizes the 10-year vehicle replacement plan for both fixed-route and ADA paratransit services.

Table 9-2: Vehicle Acquisition/Replacement Plan

Year	*Fixed-Route Buses*	*ADA Paratransit Vans*
2020	3	0
2021	0	2
2022	1	2
2023	2	1
2024	1	1
2025	1	0
2026	2	2
2027	3	2
2028	0	1
2029	1	1
Total	**14**	**12**

Source: TheBus

- A 10-year total of $1.5 million is assumed for continuing development and implementation of a Bus Stop Infrastructure Program to install signs and shelters and conduct ADA accessibility improvements.
- Approximately $2.5 million is assumed for preventive maintenance for the 10-year period.
- The capital plan includes purchasing a new bus wash for $40,000.

Revenue Assumptions

Revenues for fixed-route and ADA paratransit services were provided by TheBus staff; the major assumptions used in developing the revenues are as follows:

- A combination of Federal Section 5305d, 5307, and 5311 funds and FDOT Block and Service Development Grants is assumed to fund most operating costs.
- The implementation of Saturday and weekday late services is assumed to be funded partially by new FDOT Service Development Grants for the initial three years of the plan (grant program is for pilot projects and available only for three years with a 50% local match requirement).
- Local General Fund allocation for operating would continue at approximately $895,000, on average, for the next 10 years.
- Capital costs are assumed to be fully funded by Federal Section 5307 and Section 5339 funds.
- The cost of securing land (location to be determined) for the proposed major transfer facility is assumed to be covered by Hernando County Local Option Ninth Cent Gas Tax proceeds from TheBus transit reserves.

Recommended TDP Costs/Revenues

The costs and revenues developed for TheBus for the next 10 years are presented in Table 9-3. These were developed using the operating/capital cost and revenue assumptions previously summarized.

Table 9-3: 10-Year Costs and Revenues

Cost/Revenue	FFY 2020	FFY 2021	FFY 2022	FFY 2023	FFY 2024	FFY 2025	FFY 2026	FFY 2027	FFY 2028	FFY 2029	10-Year Total
Operating											
Costs											
Fixed Route Service	$1,556,465	$1,572,030	$1,587,750	$1,603,627	$1,687,417	$1,704,291	$1,721,334	$1,738,547	$1,755,933	$1,773,492	**$16,700,885**
ADA Paratransit Service	$1,037,644	$1,048,020	$1,058,501	$1,069,086	$1,079,777	$1,090,574	$1,101,480	$1,112,495	$1,123,620	$1,134,856	**$10,856,052**
Total Costs	**$2,594,109**	**$2,620,050**	**$2,646,251**	**$2,672,713**	**$2,767,193**	**$2,794,865**	**$2,822,814**	**$2,851,042**	**$2,879,552**	**$2,908,348**	**$27,556,937**
Revenues											
Federal Section 5305d	$79,000	$79,790	$80,588	$81,394	$82,208	$83,030	$83,860	$84,699	$85,546	$86,401	**$826,515**
Federal Section 5307	$788,757	$796,645	$802,917	$927,860	$937,083	$946,454	$955,918	$965,477	$975,132	$985,435	**$9,081,678**
FDOT Fed S5311 for Operating	$241,533	$243,948	$246,388	$248,852	$319,126	$322,317	$325,541	$328,796	$332,084	$335,405	**$2,943,990**
FDOT State S5305d	$9,875	$9,974	$10,073	$10,174	$10,276	$10,379	$10,483	$10,587	$10,693	$10,800	**$103,314**
FDOT State Block Grant	$394,378	$398,322	$402,305	$406,328	$410,391	$414,495	$418,640	$422,827	$427,055	$431,325	**$4,126,066**
FDOT Service Development for Operating	$111,815	$112,933	$115,756	$0	$0	$0	$0	$0	$0	$0	**$340,505**
Local Funds	$855,751	$864,309	$872,952	$881,681	$890,521	$899,426	$908,420	$917,505	$926,680	$935,946	**$8,953,190**
Program Income	$11,010	$11,120	$11,231	$11,344	$11,457	$11,572	$11,687	$11,804	$11,922	$12,041	**$115,189**
Farebox Revenues	$101,990	$103,010	$104,040	$105,080	$106,131	$107,193	$108,264	$109,347	$110,441	$110,993	**$1,066,489**
Total Revenues	**$2,594,109**	**$2,620,050**	**$2,646,251**	**$2,672,713**	**$2,767,193**	**$2,794,865**	**$2,822,814**	**$2,851,042**	**$2,879,552**	**$2,908,348**	**$27,556,937**
Revenues Minus Costs	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	
Rollover from Prev. Year	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	
Surplus/Shortfall	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Capital											
Costs											
Vehicles	**$1,263,050**	**$210,000**	**$610,000**	**$980,000**	**$530,000**	**$450,000**	**$1,090,000**	**$1,510,000**	**$80,000**	**$530,000**	**$7,253,050**
Replacement Vehicles - Section 5307	$900,000	$0	$450,000	$900,000	$450,000	$450,000	$900,000	$1,350,000	$0	$450,000	$5,850,000
New Vehicle - Section 5339	$363,050	$0	$0	$0	$0	$0	$0	$0	$0	$0	$363,050
Replacement ADA Vans	$0	$160,000	$160,000	$80,000	$80,000	$0	$160,000	$160,000	$80,000	$80,000	$960,000
Replacement Speciality/Service Vehicle	$0	$50,000	$0	$0	$0	$0	$30,000	$0	$0	$0	$80,000
Transit - Other	**$948,953**	**$846,982**	**$658,191**	**$664,587**	**$716,174**	**$1,485,460**	**$492,448**	**$502,172**	**$509,561**	**$519,748**	**$7,344,277**
Stop Amenities/ADA Compliance	$450,000	$300,000	$200,000	$200,000	$200,000	$0	$0	$0	$0	$0	$1,350,000
Administrative	$200,953	$206,982	$213,191	$219,587	$226,174	$232,960	$239,948	$247,147	$254,561	$262,198	$2,303,702
Transfer Facility	$0	$0	$0	$0	$0	$1,000,000	$0	$0	$0	$0	$1,000,000
Preventive Maintenance	$235,000	$240,000	$245,000	$245,000	$250,000	$252,500	$252,500	$255,025	$255,000	$257,550	$2,487,575
Equipment OTHER MISC	$13,000	$0	$0	$0	$40,000	$0	$0	$0	$0	$0	$53,000
Transit Shelter(s) & Amenities	$50,000	$100,000	$0	$0	$0	$0	$0	$0	$0		$150,000
Total Costs	**$2,212,003**	**$1,056,982**	**$1,268,191**	**$1,644,587**	**$1,246,174**	**$1,935,460**	**$1,582,448**	**$2,012,172**	**$589,561**	**$1,049,748**	**$14,597,327**
Revenues											
Federal Section 5307 for Buses	$900,000	$210,000	$610,000	$980,000	$530,000	$450,000	$1,090,000	$1,510,000	$80,000	$530,000	$6,890,000
Federal Section 5307 for Other Capital	$948,953	$846,982	$658,191	$664,587	$716,174	$1,485,460	$492,448	$502,172	$509,561	$519,748	$7,344,277
Federal Section 5339	$363,050	$0	$0	$0	$0	$0	$0	$0	$0	$0	$363,050
Total Revenue	**$2,212,003**	**$1,056,982**	**$1,268,191**	**$1,644,587**	**$1,246,174**	**$1,935,460**	**$1,582,448**	**$2,012,172**	**$589,561**	**$1,049,748**	**$14,597,327**
Surplus/Shortfall	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	
Local Option Gas Tax (Ninth Cent)											
Estimated Remaining Reserve	$2,100,000	$2,150,000	$2,200,000	$2,250,000	$2,300,000	$1,350,000	$1,400,000	$1,450,000	$1,500,000	$1,550,000	
10-Year Transit Development Plan											
Total Costs	$4,806,112	$3,677,032	$3,914,442	$4,317,300	$4,013,367	$4,730,325	$4,405,262	$4,863,214	$3,469,114	$3,958,096	$42,154,264
Total Revenues	$4,806,112	$3,677,032	$3,914,442	$4,317,300	$4,013,367	$4,730,325	$4,405,262	$4,863,214	$3,469,114	$3,958,096	$42,154,264
Surplus/Shortfall	**$2,100,000**	**$2,150,000**	**$2,200,000**	**$2,250,000**	**$2,300,000**	**$1,350,000**	**$1,400,000**	**$1,450,000**	**$1,500,000**	**$1,550,000**	

10-Year Implementation Plan and Unfunded needs

The implementation plan in Table 9-4 outlines funded and unfunded improvements for TheBus from 2020 through 2029. The table also shows the implementation years for funded improvements based on information available at this time. It is important to emphasize that the implementation schedule shown in the table does not preclude the opportunity to delay or advance any projects. As priorities change, funding assumptions do not materialize, or more funding becomes available, this project implementation schedule should be adjusted.

Table 9-4: 10-Year Implementation Plan and Unfunded Needs

TDP Improvement	Implementation Year
Fixed-Route Bus Service	
Add Saturday service to existing routes (8:00 AM to 5:00 PM)	2020
Extend service hours to 9:00 PM on existing routes	2020
Add East Hernando Connector (AM and PM bus service to Ridge Manor)	2024
Add commuter express service on Suncoast Parkway	Unfunded
Capital/Infrastructure/Technology	
Bus stop infrastructure/ADA accessibility improvements	2020–2029
Shared park-and-ride facilities	2020–2030
Major transfer facility (secure a location and development)	2025–2029
Real-time bus location app/displays	Unfunded
Policy/Other Improvements	
Implement regional mobile payment app	2020
Engage businesses to develop employee bus pass/subsidy programs	2020–2029
Coordinate with TBARTA to promote TDM strategies	2020–2029
Expand transit marketing program	2020–2029

SECTION 10 TDP IMPLEMENTATION & COORDINATION

Key factors to the successful implementation of any 10-year TDP, once the agency clear hurdles to get the plan approved, is to continue the support gathered and strengthen the collaboration built over the planning period. This section provides key elements to consider as Hernando County moves to implement its plan to grow the transit system into the vision outlined in the TDP.

Implementing the TDP

Due to various factors internal and external to the agency, the adoption of the TDP does not necessarily mean that Hernando County will be able to adhere to the implementation schedule identified in the TDP. However, the action items listed below may help to ensure that the most critical factors such as continued public support, adequate funding, and operational support are preserved until the next major TDP update:

- **Funding Support** – Address each recommendation and outline steps to take in the current and succeeding years to secure the best chance of obtaining the needed funding.
- **Operational Support** – Establish a blueprint to determine how a recommended alternative will be incorporated into the existing network from an operational perspective.
- **Progress Beyond Adoption** – Use the adopted TDP as a tool to justify and explain the reasons for continued investments to transit services and facilities.
- **TDP Annual Progress Report** – Use updates to provide needed motivation to reiterate the benefits of the recommended alternatives.

Post-Adoption Outreach and Marketing

Hernando County has conducted extensive public outreach as part of the TDP process that can be expanded to market other planning efforts, such as service initiation efforts, marketing programs and campaigns, and budget plans. The TDP Executive Summary, a concise summary of the plan (to be completed after plan adoption), should be extensively used as a tool to promote the plan beyond TDP adoption. It should be shared with TDP stakeholders to update them on their contribution and keep them engaged in post-adoption outreach and will be an effective medium to continue generating support for the TDP's recommendations.

Promoting the TDP after adoption and keeping the heightened public support will also improve the likelihood of achieving the implementation plan and funding support. Any themes or branding already in use or developed specifically for the Hernando County's 10-year TDP can serve as the foundation for a post-TDP marketing campaign.

Coordination with Other Plans

With potential implementation of expanded services, it is recommended that Hernando County consider a Comprehensive Operational Assessment (COA) and repeat it at least every five years to maintain operational health. Effective coordination on the timing of a COA may be beneficial in the goal

to provide efficient transit services. The findings of a COA can be fed into the capital and operational recommendations for the initial years of the 10-year plan so that near-term system improvements can be set.

Continuing the consistency with key State, regional, and local plan priorities should also be a primary focus of Hernando County. Coordinating the timing of the TDP major updates with the new Transit Asset Management Plan requirement should be considered, as both plans are designed to govern investment strategies based on needs.

In addition, the analyses completed during this TDP can be used to help update required plans for ADA access and Title VI service provisions, as they document how the system will meet or serve older adults, persons with disabilities, and populations that fall under Title VI protections. The adopted TDP can also be useful for other entities with subsequent planning efforts, such as local comprehensive plans, Florida's SIS Needs Plan, the MPO's UPWP and TIP, etc.

Continuing on Established Relationships

Throughout the TDP public involvement process, the MPO and TheBus identified transit advocates and educated the public on the importance of transit. These relationships should be leveraged to continue building support for the implementation strategies. These advocates may serve as facilitators for a "grassroots" outreach program or could become transit cheerleaders/ambassadors who can provide a foundation/support network for future outreach. These future efforts can build upon the tools and lessons afforded by the TDP and aid in prioritizing specific target markets to engage.

Hernando County TDP – A Strategic Blueprint for Transit

Although this planning effort was conducted to fulfill regulatory and administrative requirements so Hernando County can continue to receive State funding, it is also intended to serve as the strategic planning guide for future transit in the county. It analyses the operating environment, solicits broad input by coordinating with other plans, involves substantial public engagement, and explores community goals to define a future action plan. Therefore, the greatest value from this five-year planning effort will occur when TheBus uses it as a "living" document to plan and promote transit as an effective and viable alternative for everyone in Hernando County and the region.

APPENDIX A: Farebox Recovery Report

TheBus Fixed-Route Bus System
Hernando County, Florida

July 2019

Current Farebox Recovery Ratio

Farebox recovery (ratio) refers to the percent of a transit system's total operating expenses that are funded with fares paid by passengers and is calculated by dividing the total fare revenue collected by the total operating expenses. This value is reported by transit agencies to NTD using a standardized equation, as required for FTA grant recipients. The farebox recovery ratio for TheBus, the public transportation provider for Hernando County, was 8.17 percent in FY 2017. The background with regards to the farebox recovery ratio includes the following.

Prior Year Fare Studies and Changes

TheBus fares were last increased in 2008, when the base fare was increased to $1.25 and reduced fares were increased to $0.60. Reduced fares are available to students, older adults, children under age 6, individuals with disabilities, and Medicare cardholders. The $0.50 transfer fee was eliminated in November 2018.

Proposed Fare Changes for the Upcoming Years

Since the fare increase in 2008, no additional fare increases have been proposed.

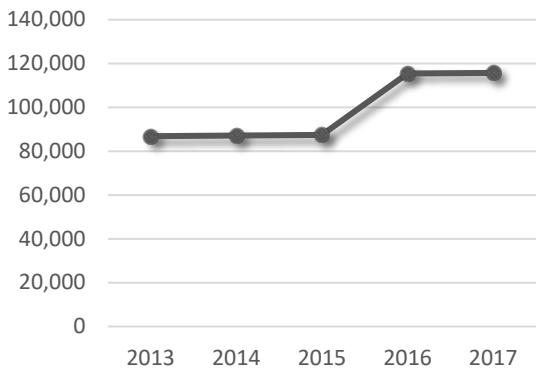
Strategies That Will Affect Farebox Recovery Ratio

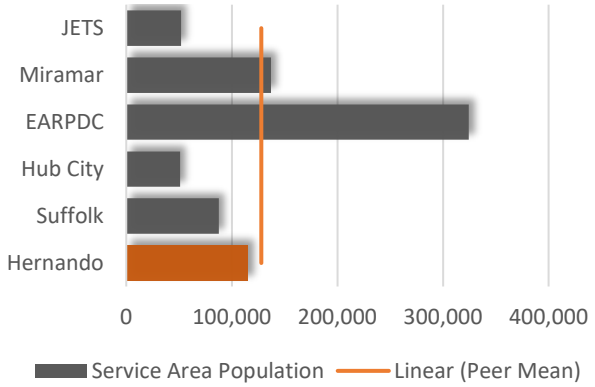
The following is a list of strategies TheBus will employ to improve the farebox recovery ratio:

- Conduct annual assessment on increasing charge for bus fare and opportunities for additional passes and present to Hernando County BOCC for further consideration.
- Minimize costs required to operate and administer transportation services.
- Increase ridership by transitioning paratransit service patrons to fixed-route service.
- Determine the most cost-effective service type on all major corridors, given demand, routings, and coverage area, ensuring that transit serves all major activity centers.
- Increase ridership while maintaining costs to operate and administer transportation services by engaging the public to refine services and aim to better meet the needs of customers.
- Improve attractiveness of transit service to riders through dissemination of real-time bus location information.
- Work with key employers, community-based contacts, and homeowner associations to expand marketing efforts aimed at increasing ridership and revenue for the fixed-route system.

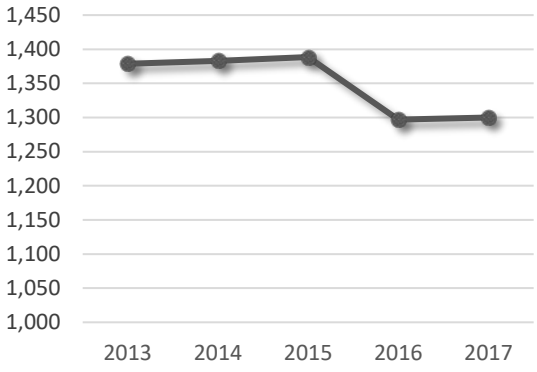
APPENDIX B: Trend and Peer Review Figures

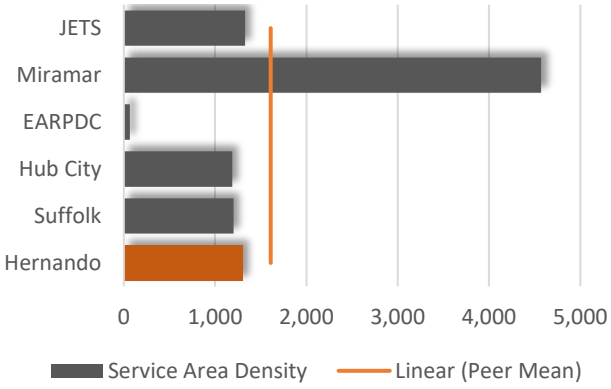
Service Area Population



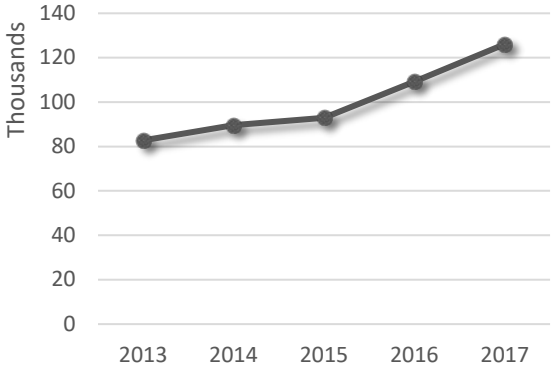


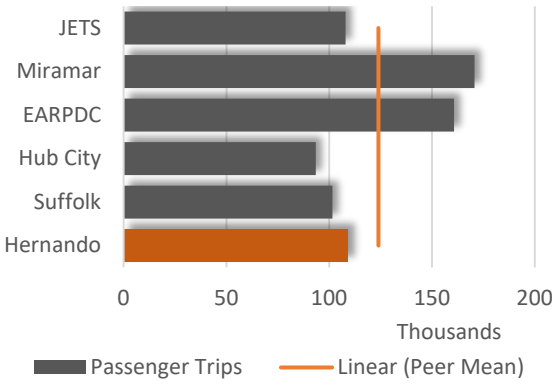
Service Area Population Density



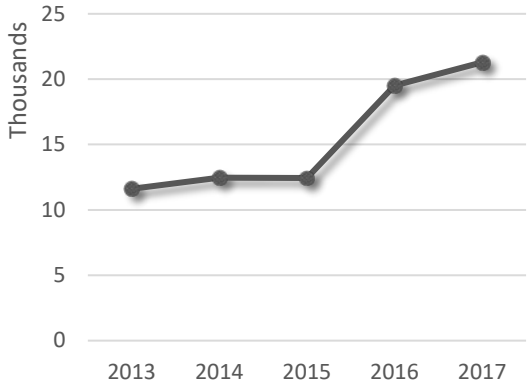


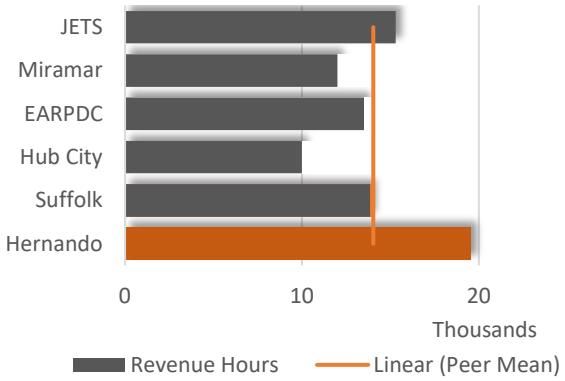
Passenger Trips



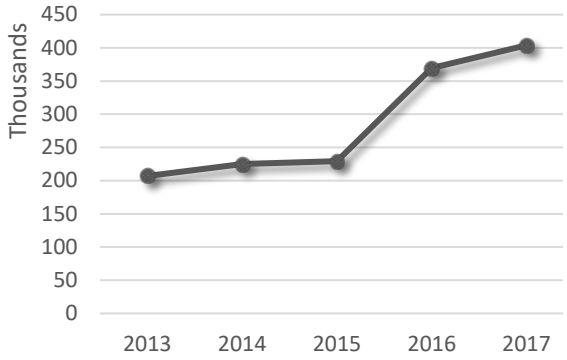


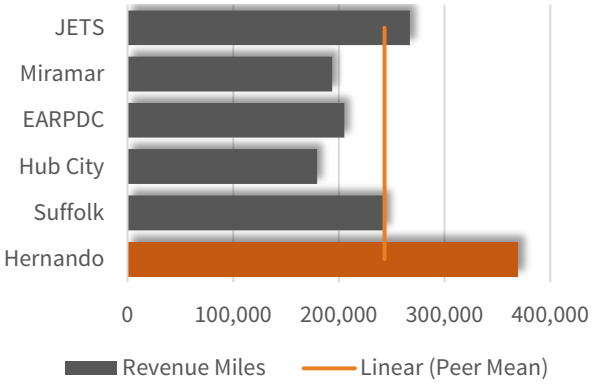
Revenue Hours



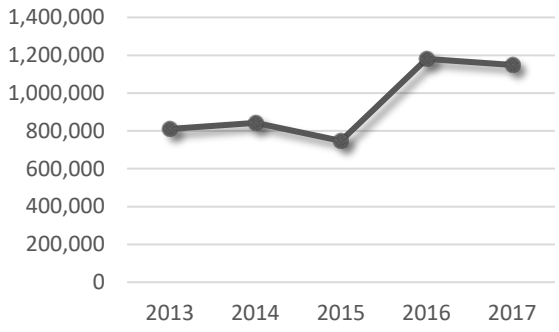


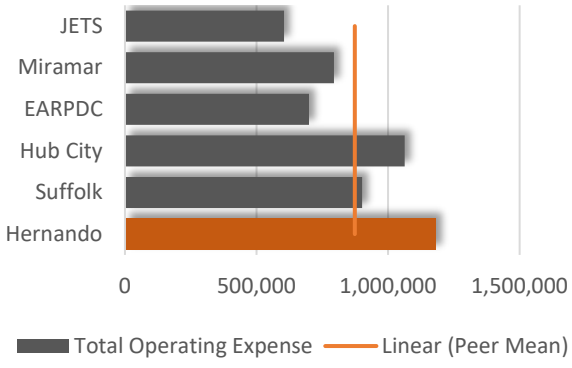
Revenue Miles



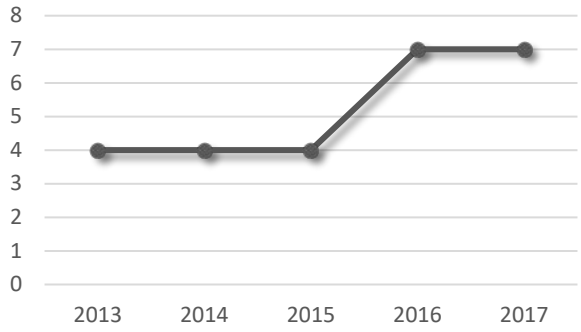


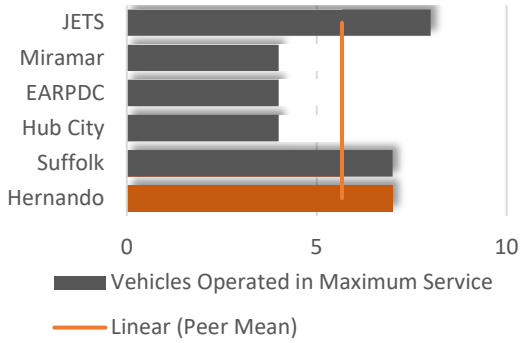
Total Operating Expense



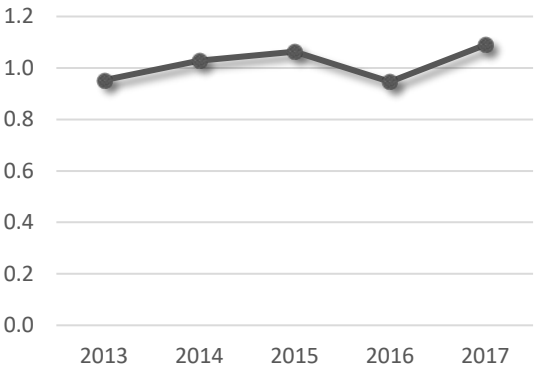


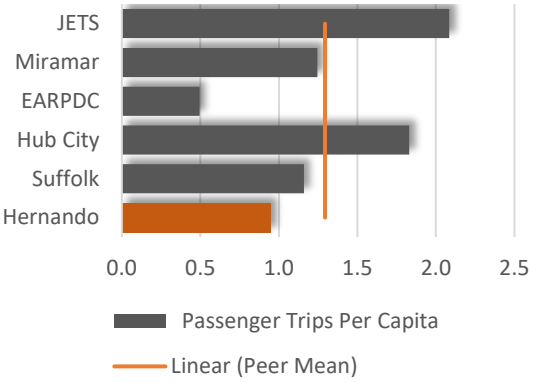
Vehicles Operated During Maximum Service



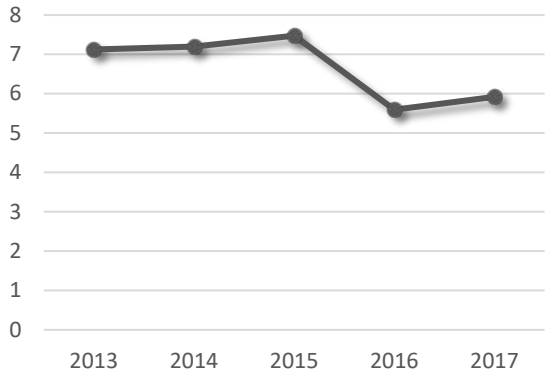


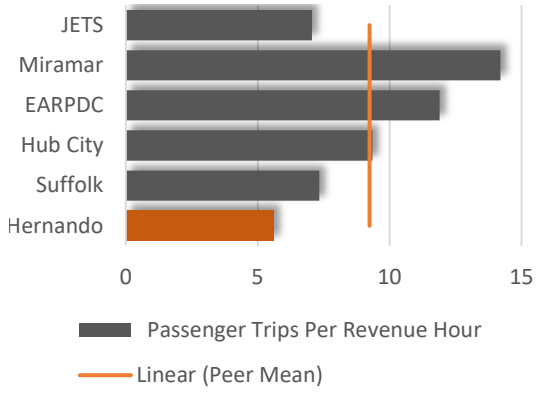
Passenger Trips per Capita



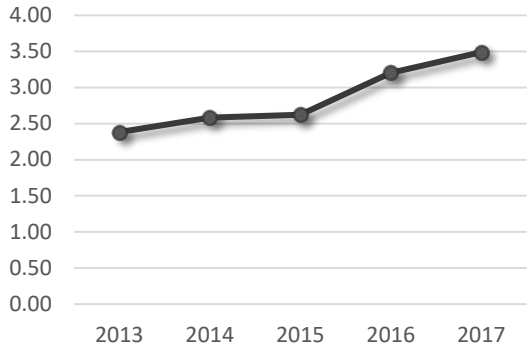


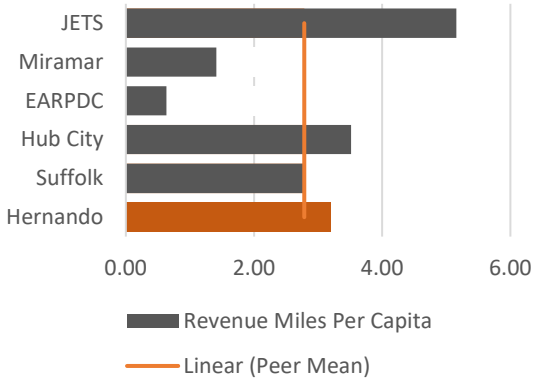
Passenger Trips per Revenue Hour



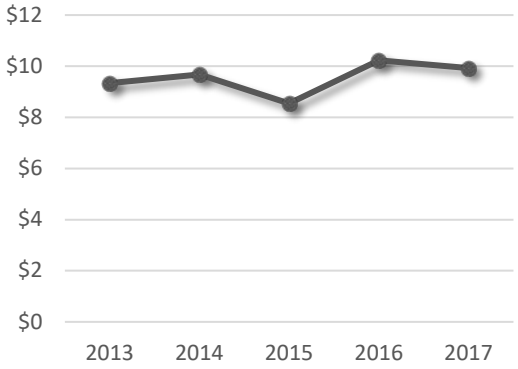


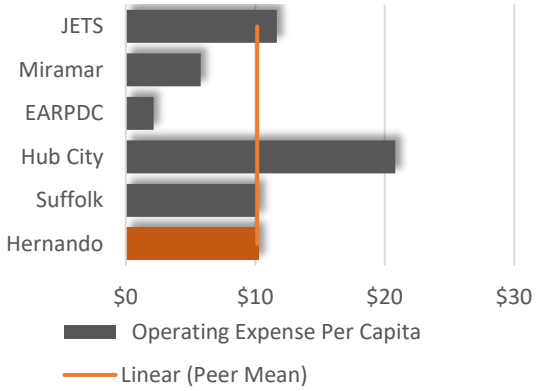
Revenue Miles Per Capita



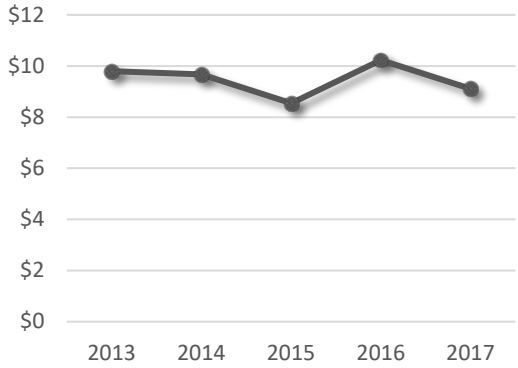


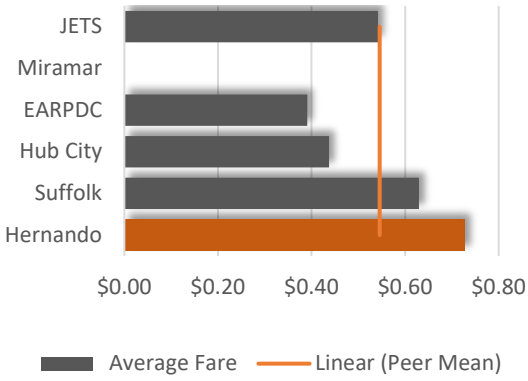
Operating Expense per Capita





Operating Expense per Passenger Trip





APPENDIX C: Public Involvement Materials

Hernando County 10-Year Transit Development Plan

Public Involvement Plan

Final

March 2019

Prepared for

METROPOLITAN PLANNING ORGANIZATION
HERNANDO/CITRUS

Prepared by

Tindale Oliver

SECTION 1: INTRODUCTION

The Hernando/Citrus Metropolitan Planning Organization (MPO), in collaboration with TheBus, the fixed-route bus transit service in Hernando County, is preparing its 10-year Transit Development Plan (TDP), which will provide a guide for development of the transit system over the next 10 years. As required by State statute every five years, this is a major update to its TDP. This update covers FY 2020 through 2029.

This Public Involvement Plan (PIP) provides an overview of the public outreach activities that will be undertaken as part of the TDP process. The PIP is designed to comply with TDP State statutory requirements and is consistent with the Hernando/Citrus MPO Public Participation Plan (PPP).

Rule 14-73.001 requires that the TDP preparation include the following activities:

- A PIP approved by the Florida Department of Transportation (FDOT) or the local MPO's PPP, approved by the Federal Transit Administration (FTA) and the Federal Highway Administration (FHWA).
- Description of the process used, and the public involvement activities undertaken.
- Solicitation of comments from FDOT, the MPO, and the regional Workforce Development Board (i.e., CareerSource Pasco Hernando) on the mission, goals, objectives, alternatives, and 10-year implementation program.
- Notification of all public meetings at which the TDP is presented to or discussed with FDOT, the MPO, and the regional Workforce Development Board.

Relevant requirements from the overall public participation strategy set out in the Hernando/Citrus MPO's PPP include for the MPO, to the maximum extent possible, to (1) hold public meetings at convenient and accessible locations and times, (2) employ visualization techniques to describe transportation plans and programs, and (3) make public information available in an electronically-accessible format, such as the MPO's website, as appropriate, to afford reasonable opportunities for consideration of public comment and opinion.

In addition, Hernando County, as a recipient of federal and state funding, is required to adhere to federal non-discrimination regulations, including those outlined in Title VI. Hernando County has developed and maintains a Title VI Plan, outlining the policies, procedures, services, and steps, that will guide the public involvement activities outlined in this PIP to ensure inclusive and representative participation, including those with disabilities, limited English proficiency (LEP), and/or other factors that may limit their participation. By reference, this PIP integrates the policies and procedures into the programs, activities, and services of this PIP.

TDP PUBLIC INVOLVEMENT PROCESS

The public involvement process for the development of the TDP seeks TheBus user and non-user public input on transit needs, priorities, and implementation strategies to enhance public transportation in Hernando County. As part of an effort to use the TDP process to improve services of TheBus, this outreach effort will ensure that a broad range of groups is consulted as part of the process, including passengers, major employers, human service providers, bus operators, and the public.

Key Objectives

The objectives of the TDP PIP include the following:

- To develop a multi-faceted communication model that will keep the public and all stakeholder groups informed about the status of the project.
- To clearly define the TDP purpose and objectives early in the process.
- To identify and document the concerns, issues, and needs of key stakeholders.
- To provide stakeholders with baseline information about the current state of TheBus and keep them fully informed throughout the study.
- To encourage participation of all stakeholder groups within the project area while paying special attention to underserved communities.
- To provide frequent opportunities and a consistent access point for community input.
- To identify tools to gather information from stakeholders who cannot participate in meetings, such as via email, online surveys, social networking tools, etc.
- To respond to community questions and comments when requested and provide contact information.

Phases of Outreach

The approach to this TDP's outreach consists of 2 phases:

- *Phase I* – During this phase, the TDP Project Team will conduct outreach to the community to seek public input on transit needs, including service and capital/infrastructure needs for the next 10-years. Stakeholder interviews, grassroots outreach, online surveys, and email/social media/website communication will be part of this phase.
- *Phase II* – Following extensive evaluation of the input received and development of recommendations, additional outreach, including surveys and public workshops will occur to seek public input on the recommendations, including service, priorities, and implementation strategies to enhance public transportation in Hernando County.

PUBLIC INVOLVEMENT ACTIVITIES

Numerous public involvement techniques were selected for inclusion in the PIP to ensure the active participation of the community. Table 1-1 presents the types of activities that will be completed for the TDP and the tools associated with each type of activity.

Table 0
TDP Public Involvement Activities

Public Involvement Activity		TDP PIP
Project Review/Coordination Calls/Meetings		✓
Website Outreach and Communications		✓
Social Media Networking and Email Outreach		✓
Collateral Materials and Visual Aids	Fact sheets & informational items	✓
	Visual aids	✓
Community Engagement, Review & Comment	Public workshops	✓
	Stakeholder interviews	✓
	Grassroots outreach	✓
	Paper and Online surveys	✓
	Email, mail, in person, and telephone comments	✓
Agency Coordination	Regional coordination	✓
	State, regional, and local officials	✓

The remainder of this section summarizes these activities in detail, including composition of the various committees and workshops and audiences for each of the activities along with an anticipated timeline for completion by month.

Efforts will also be made to gather input from individuals with limited English proficiency in Hernando County. To the extent possible, the project team will make Spanish-speaking individuals available to assist with public outreach events and/or provide pertinent materials such as surveys and workshop flyers in Spanish.

Project Kick-off Meeting

A kickoff meeting for the project was held to discuss the project scope, project schedule, milestones, and deliverables. The following items were key topics on the agenda:

- Discuss TDP goals and objectives – what this plan should achieve.
- Discuss project coordination/review strategies and overall schedule.
- Discuss timeline and strategy for public involvement efforts.

During this meeting, the Project Team clarified the high-level objectives for the TDP and how they can fit in with other planning efforts in Hernando County. Additionally, key timelines, particularly for near-

term anticipated completion dates, were discussed and clarified, and a substantial discussion took place regarding the composition and timeline for the public involvement activities that are set to take place over the succeeding months.

Project Review/Coordination Meetings

In addition to the kickoff meeting, two project coordination meetings with the MPO staff and any other agency as invited by MPO staff also are scheduled for the duration of the TDP planning process. These meetings would be conducted via telephone to provide an update on the project progress and discuss any deliverables/input on the TDP.

Conduct Stakeholder Interviews

The Project Team will conduct 15 stakeholder interviews that involve the Hernando/Citrus MPO and representatives of key public and private sector organizations to obtain a comprehensive understanding of the current public transportation system and the necessary future service enhancements to serve the community.

This process is key to the public involvement effort to enhance the understanding of those who rely on the system to get to and from work or conduct important trips. These interviews will be formal structured interviews with questions prepared by the Consultant to facilitate conversation and generate data about the TheBus system. These interviews will be conducted over the phone.

Public Input Surveys

The Project Team will conduct two surveys of the public (mostly targeting non-riders) to obtain information related to attitudes, latent demand, and general support of the community related to public transit services and to augment findings of the on-board survey.

The first survey will be conducted prior to development of potential service alternatives for the TDP, and the second will be developed as part of the alternatives refinement and prioritization process. The surveys will be available online, through social media, and in hard copy formats. Access to the online versions will be provided via links on the MPO website, TheBus website, Facebook, and other online platforms as available. A tablet-based and/or hard copy format will be provided at workshops, grassroots events, bus pass outlets, and partnering agencies. Participants in the public workshops will be encouraged to complete the surveys via tablets to improve the ease and accuracy of data collection and reporting.

Email-blasts also will be used to promote the online survey efforts. In addition, stakeholders participating in stakeholder interviews/discussions will be requested to distribute the survey links and

promote the availability of the online surveys. Attendees at other activities, the discussion group and Project Review Team members will be asked to distribute the links through their places of business, and TheBus and MPO staff will distribute the links/hard copies of the surveys at other locations for distribution.

Grassroots Outreach

MPO/TheBus staff will coordinate and conduct grassroots outreach efforts for at least two events/meetings in Hernando County. These will be held as standalone events or piggy-backing on already-planned community events such as farmer's markets or festivals or at locations where the public gathers, such as shopping malls, or at transit hubs to obtain input from the public about the TDP update process. The Project Team will provide display boards and surveys to MPO staff for grassroots events.

Open House Public Workshops

The Project Team will facilitate two open-house style public workshops as part of the TDP outreach process. These will be held as standalone events, piggy-backing on already-planned community events such as farmer's markets or festivals or at locations where the public gathers, such as shopping malls, or at transit hubs to obtain input from the public about the TDP update process.

It is anticipated that both workshops will be held later in the project to collect input on prioritizing potential transit service and capital alternatives/improvements. These workshops will include displays and interactive information exchange, public opinion surveys (tablet and/or hard copy), and enlistment for social media engagement. The events will be designed to capture information from seasonal and permanent residents about community values, needs, and priorities.

Event locations will be selected to ensure geographic coverage and expanded citizen participation. The findings and themes collected during the public open houses will be summarized for use in subsequent parts of TDP planning.

Review Comments and Suggestions

The Project Team will review any available comments and suggestions collected by TheBus or MPO staff from the Hernando County citizens (riders and non-riders) regarding existing and future transit services in the county for consideration in the TDP. The major themes and topics of this feedback will be summarized as part of the TDP's public outreach.

Social Media Outreach

The Project Team will develop content for social media such as Facebook and/or Twitter throughout the TDP process. After consultation with MPO staff, the content will be provided to TheBus staff for posting on Hernando County's Facebook and/or Twitter account(s).

Web and Email Outreach

The Project Team will coordinate with the MPO and TheBus staff on posting material on web and social media. TheBus website will be used as a platform to distribute the public outreach information described, including fliers, links to surveys, information about public workshops and other project meetings, project materials as appropriate, and contact information so the public can engage directly with agency staff or the Project Team.

Additionally, the Project Team will facilitate the dissemination of emails to key contacts within the community, as provided by the MPO staff, to provide information and updates similar to that available on the TDP webpage and social media networks. The Project Team will coordinate with TheBus and develop content for two e-mail blasts:

- At project initiation/beginning of public outreach
- To encourage participation in online survey/outreach events

TDP Presentations

One presentation of the TDP will be conducted at publicly-advertised meetings after the draft has been reviewed by the MPO and TheBus. These presentations will be provided to the MPO and its committees, as directed by TheBus staff.

Other Outreach Efforts

As part of the public outreach effort, fliers, fact sheets, and other materials will be developed as public involvement tools to distribute information about public outreach activities and upcoming public workshops, facilitate education about TheBus system during outreach events, and provide participants with a means for asking questions. Potential public involvement tools and resources include the following:

- *Fact sheets* will include information to distribute to the public at outreach events and public workshops and will offer an overview of the TDP and TheBus and promote the value and

importance of public involvement. They also will direct and encourage the public to reach out to TheBus staff to share questions and concerns.

- *Media releases* will be prepared and provided to the County Public Information Office for distribution as appropriate.
- *Fliers* will be developed to share information with the public, provide TDP updates, and educate the public on the public involvement process and the value of their participation. Fliers will direct the public to visit the TDP website and the TheBus Facebook/Twitter accounts to stay involved with and informed about the development of the TDP.
- *Project presentations* that are user-friendly and graphical will be developed to support the communication and adoption of the TDP and will be available for use by TheBus staff beyond the adoption of the TDP.
- *Presentation boards* will include exhibits such as service and demographic maps, plan proposals, and more at public workshops.

Table 2

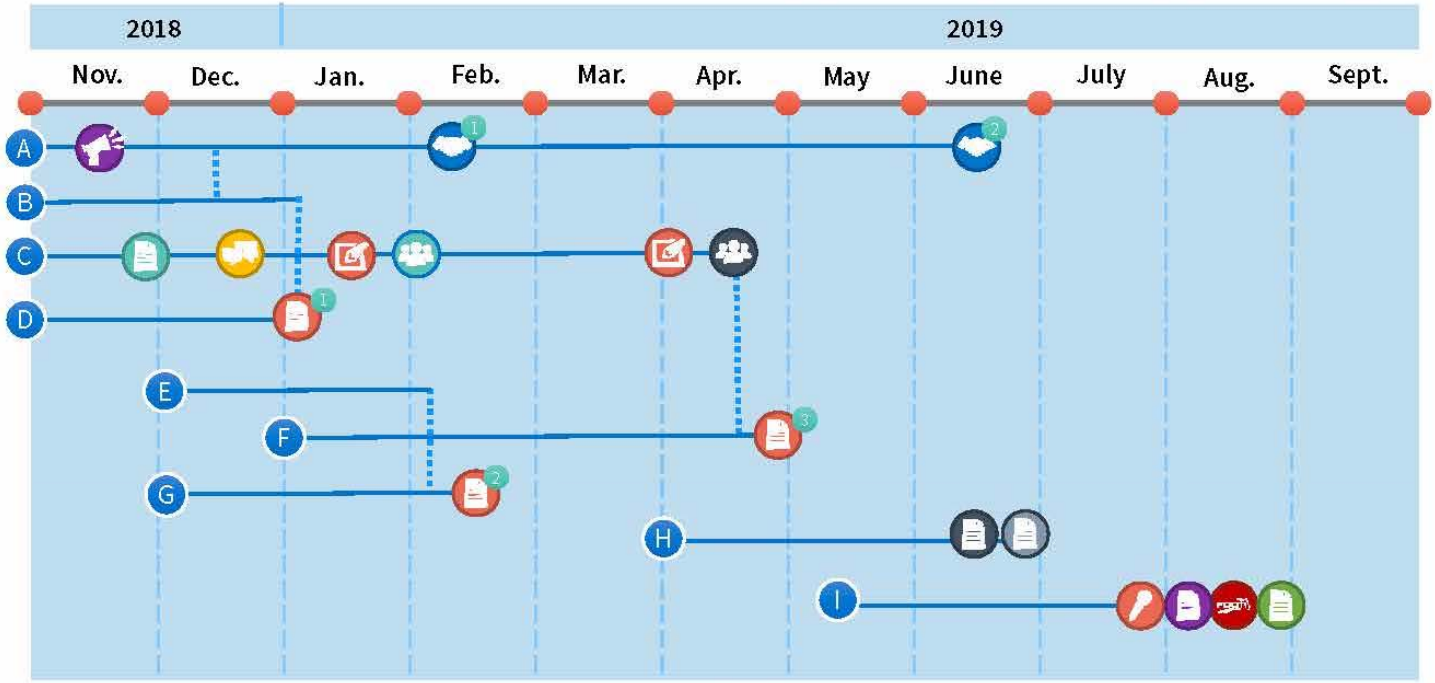
Tentative Public Outreach Schedule

Event	Anticipated Date
Project Coordination/Review Meetings	February 2019–June 2019
Stakeholder Interviews	January 2019
Grassroots Outreach	February 2019
Phase I–Public Input Survey	January–February 2019
Phase II–Public Input Survey	April-May 2019
Open House Public Workshops	April 2019
Social Media Outreach	January–May 2019
Web/Email Outreach	January–May 2019
Project Presentations	June 2019

TDP Project Schedule

Hernando County Transit Development Plan (TDP) Major Update

A	B	C	D	E	F	G	H	I
Initiate and Manage Project	Establish Baseline Conditions	Facilitate Public Involvement	Identify & Evaluate Existing Transit Services	Conduct Situation Appraisal	Estimate & Evaluate Demand & Mobility Needs	Review & Update Goals & Objectives	Prepare 10-Year Transit Development Plan	Final Deliverables



- Project Tasks
- Kick-off Meeting
- Review Committee Meetings
- Stakeholder Interviews
- Grassroots Outreach (MPO Staff)
- Public Workshops
- Presentations
- Public Input Surveys
- Public Involvement Plan
- Tech Memos/Reports
- Draft TDP
- Draft Exec. Summary
- Final TDP
- Final Exec. Summary & Other Deliverables
- Submittal to FDOT

TheBus
HERNANDO COUNTY TRANSIT

WANTS YOUR INPUT!



Hernando County 10-Year Transit Development Plan

Public Transit Workshops

The Hernando/Citrus Metropolitan Planning Organization (MPO) and Hernando County Transit (TheBus) want your input! Please stop by any time during the following two public workshops and let us know how you think Hernando County Transit should grow!

Public Workshop #1

Thursday, April 18, 2019 (10 AM - 12 PM)

Brooksville City Hall — Council Chambers
201 Howell Avenue
Brooksville
FL 34601
(Bus Route: Purple)

Public Workshop #2

Thursday, April 18, 2019 (2 PM - 4 PM)

Spring Hill Library
9220 Spring Hill Drive
Spring Hill
FL 34608
(Bus Route: Green)

Can't attend?
Take the on-line survey:

Go to : https://www.surveymonkey.com/r/HernandoTDPPrioritiesSurvey or Scan

**If needed, transportation can be provided for workshop attendees immediately following the workshop, contact TheBus at (352) 754-4444.*

If you are unable to attend one of the workshops, written comments will be accepted through May 31, 2019, and may be sent to:

Hernando/Citrus MPO
1661 Blaise Drive
Brooksville
FL 34601
352-754-4082
CRiecss@co.hernando.fl.us

SPECIAL ACCOMMODATIONS

Any person requiring special accommodations to attend or participate, pursuant to the Americans with Disabilities Act, should contact The Bus within at least three (3) business days before the workshops at (352) 754-4444.

For additional route and schedule information, please contact TheBus at (352) 754-4444) or *www.hernandocounty.us/departments/departments-n-z/transit-thebus*

TheBus HERNANDO COUNTY TRANSIT
MPO METROPOLITAN PLANNING ORGANIZATION HERNANDO/CITRUS
Tindale Oliver

NECESITA TU AYUDA!



Plan de Desarrollo de Transito de 10 Años de Hernando County

Talleres de Transporte Publico

Hernando/Citrus Metropolitan Planning Organization (MPO) y Hernando County Transit (TheBus) están planificando para su futuro, y necesitan tu ayuda! Por favor atender cualquiera de los dos talleres públicos y háganos saber como cree usted que deberá crecer Hernando County Transit!

Taller Publico #1

Jueves, Abril 18, 2019 (10 AM - 12 PM)

Brooksville City Hall — Council Chambers
201 Howell Avenue
Brooksville
FL 34601
(Ruta de Autobús: Purple)

Taller Publico #2

Jueves, Abril 18, 2019 (2 PM - 4 PM)

Spring Hill Library
9220 Spring Hill Drive
Spring Hill
FL 34608
(Ruta de Autobús: Green)

¿No Puede Asistir? Tome la Encuesta en Linea:

Visite la pagina de web: https://www.surveymonkey.com/r/HernandoCountyTransit2019 o Escanear

**Si es necesario, se puede proporcionar transporte a los asistentes al taller inmediatamente después del taller. Comuníquese con TheBus al (352) 754-4444 para hacer los arreglos.*

Si no puede asistir a uno de los talleres, puede enviar sus comentarios por escrito antes del 31 de Mayo del 2019 a esta dirección:

Hernando/Citrus MPO
1661 Blaise Drive
Brooksville
FL 34601
352-754-4082
CRiecss@co.hernando.fl.us

ACOMODACIONES ESPECIALES

Cualquier persona que necesite alojamientos especiales para asistir o participar, de conformidad con el Acta de Americanos con Discapacidades, debe ponerse en contacto con TheBus al menos tres (3) días hábiles antes del taller llamando al (352) 754-4444.

Para obtener información adicional sobre las rutas y horarios de TheBus, por favor contactar a TheBus al (352) 754-4444) o visite la pagina de web: *www.hernandocounty.us/departments/departments-n-z/transit-thebus*

HERNANDO COUNTY TRANSIT (TheBus) SURVEY

Please take a minute to help us plan for transit needs in Hernando County!

(1) Have you ever used public transportation <u>outside</u> of Hernando County?

- ☐ Yes
- ☐ No

(2) Have you used TheBus, Hernando County's transit service?

- ☐ Yes
- ☐ No

(3) What is your level of satisfaction with the transit system?

- ☐ Very satisfied
- ☐ Satisfied
- ☐ Somewhat satisfied
- ☐ Not satisfied

(4) If you currently use TheBus, how often do you use it?

- ☐ Everyday
- ☐ 3-4 days per week
- ☐ 1-2 days per week
- ☐ A few times per month

(5) For what purpose do you use the transit system? Check all that apply:

- ☐ Work (including volunteer work)
- ☐ Shopping
- ☐ Recreation
- ☐ School
- ☐ Doctor appointments/medical

(6) Do you think that $3.00 for a One-Day Pass (un-limited rides for one day) would benefit riders?

- ☐ Yes
- ☐ No

(7) What way would you prefer to purchase bus fares?

- ☐ Using the Internet
- ☐ At Pasco-Hernando State College
- ☐ Using my phone or phone app
- ☐ At the library
- ☐ At Transit Operations Facility

(8) Do you think there is a need for additional transit service in Hernando County?

- ☐ Yes
- ☐ No

(9) If you answered YES to question 8, select the <u>TOP THREE</u> transit improvements you would most like to see.

- ☐ More frequent bus service
- ☐ Express service, where?_____
- ☐ Later service
- ☐ Increased coverage area, where?_____
- ☐ Weekend service
- ☐ More benches and shelters
- ☐ Sidewalk connections to bus stops
- ☐ Need for transfer station
- ☐ Other, specify_____

(10) What <u>ONE</u> technology improvement would you like to see?

- ☐ Bus location tracking app
- ☐ Next bus information at major bus stops
- ☐ Mobile fare payment options
- ☐ Communications of alerts, service changes, detours

(11) Have you ever paid to use one of the following services rather than TheBus?

- ☐ Taxi
- ☐ Uber/Lyft
- ☐ Social services transport (TD)
- ☐ Medical transportation

(12) If you chose one from the aforementioned list, why?

- ☐ Cost
- ☐ My destination is outside TheBus service area
- ☐ Convenience/Time

(13) Your age is…

- ☐ Under 18
- ☐ 18 to 24 years
- ☐ 25 to 40 years
- ☐ 41 to 60 years
- ☐ Over 61 years

(14) What is the range of your total household income for 2018?

- ☐ Less than $10,000
- ☐ $10,000 - $19,999
- ☐ $20,000 - $29,999
- ☐ $30,000 - $39,999
- ☐ $40,000 - $49,999
- ☐ $50,000 or greater

Please continue survey on the other side of this page.

(15) Please rate how important each of the following aspects are to you.

		Very Important	Somewhat Important	Not Very Important	No Opinion
Service	a. Days of service	☐	☐	☐	☐
	b. Frequency (how often buses run)	☐	☐	☐	☐
	c. Hours of service	☐	☐	☐	☐
Location	d. Convenience of routes (where buses go)	☐	☐	☐	☐
	e. Location of bus stops	☐	☐	☐	☐
Time	f. Dependability of buses (on time)	☐	☐	☐	☐
	g. Travel time on bus	☐	☐	☐	☐
$	h. Cost of riding the bus	☐	☐	☐	☐
Ease	i. Accessibility of bus passes (ease of purchase)	☐	☐	☐	☐
	j. Availability of bus route information	☐	☐	☐	☐
	k. User-friendliness of bus information	☐	☐	☐	☐
Comfort & Safety	l. Vehicle cleanliness and comfort	☐	☐	☐	☐
	m. Bus stop cleanliness and comfort	☐	☐	☐	☐
	n. Bus driver courtesy	☐	☐	☐	☐
	o. Safety/security on bus	☐	☐	☐	☐
	p. Safety/security at bus stops	☐	☐	☐	☐

Other Comments and Suggestions

THANK YOU FOR YOUR PARTICIPATION!

METROPOLITAN PLANNING ORGANIZATION
HERNANDO/CITRUS

TheBus
HERNANDO COUNTY TRANSIT

Hernando County is conducting a public input survey for our 10-year Transit Development Plan (TDP). Please complete the following questions to help us understand how we can better meet the transit needs of Hernando County in the next 10 years!

1. Please indicate <u>your level of agreement</u> with the following potential service improvements.

Please see 2029 Transit Needs map to locate the proposed service improvements.

	Strongly Agree		Neutral		No Opinion
Improve Existing Services					
Saturday Service on Existing Routes	5	4	3	2	1
Extend Service Hours Until 9 PM	5	4	3	2	1
Add New Services					
Commuter Express on Suncoast Parkway (Peak-Hour Only)	5	4	3	2	1
East Hernando Connector on SR 50 (Peak-Hour Only)	5	4	3	2	1
Infrastructure/Technology Improvements					
Enhanced/Upgraded Bus Transfer Station	5	4	3	2	1
Park-and-Ride Lots	5	4	3	2	1
Real-Time Bus Information (Mobile App/Electronic Displays)	5	4	3	2	1
More Bus Stop Benches, Shelters, Lighting	5	4	3	2	1
More Sidewalk Connections to Bus Stops	5	4	3	2	1

4. How often do you use TheBus services?

_____I have never used it
_____Once a month or less
_____Once a week
_____More than once a week

If you have <u>any comments</u>, please use the space below and back of this page.

_____

_____

STAKEHOLDER INTERVIEW QUESTIONS
2020-2029 HERNANDO MPO/THEBUS TDP

PURPOSE OF INTERVIEW

- Working with Hernando/Citrus Metropolitan Planning Organization to develop 10-year transit development plan (TDP) for the TheBus that meet FDOT requirements for state funding eligibility.
- As part of the TDP process, meetings are held with members of the local business and political community to gauge their awareness of current public transit, as well as garner input as to need and viability of transit services in the county.
- The TDP also serves as an opportunity to discuss improvements that might be needed to the transit system and to discuss initiatives for future system growth.

BACKGROUND INFORMATION

- A TDP is a strategic guide for public transportation development in the county.
- The TDP:
    - Evaluates existing services,
    - Reviews demographic information of riders and their travel behaviors,
    - Summarizes local community and transit policies and priorities,
    - Gauges public perception through accessible activities for the general public and interested parties,
    - Compares the local transit system or community to other similar systems, and
    - Reviews performance of the local system.
- It is a ten-year implementation plan which provides recommendations on:
    - How, where, when, and if new transit services should be introduced to the transit system, and,
    - Adjusting, removing, or improving aspects of the transit system that may not be adequately serving the public or that is not meeting performance measures.
- Finally, a ten-year financial plan is constructed as part of the TDP that:
    - Estimates costs of existing and new services, and,
    - Projects known and potential revenues.
- Although transit systems are required to submit a TDP to FDOT, TDPs can also be very useful as they provide a review of the current transit system, provide a forum for public input, recommendations for improvements, and outline the cost of improvements.
- <u>TDPs are not budgets or CIPs and do not necessarily bind decision-makers to elements of the TDP</u>. However, great effort is put into developing a comprehensive overview of the transit system and planning for the future needs of the general public that can:
    - Encourage residents, businesses, and government officials to support and advocate use of public transportation,
    - Use transit to improve/manage congestion in the local area
    - Promote sustainable and environmentally friendly transportation, and
    - Provide transportation options that improve overall quality of life of residents
- Candid discussions and continued participation from stakeholders in the transit development process allows:
    - Decision-makers to become more knowledgeable about the transit planning process and,

- The County to construct and support a plan that not only has input from the local public, private and government sector, but helps foster consensus in the decision-making process ("everyone is on the same page").

Interview Questions

1. Are you currently aware of Hernando County's public transit system (TheBus) and its services?

2. Have you ever personally used TheBus? Why or why not?

3. Who do you believe uses the transit system? (Workers, Students, Elderly, Tourists/Visitors)

4. What groups of travelers seem to experience the most difficult transportation conditions (low-income, elderly, youth, commuters, etc.)? Why?

5. What type of transit services would you like to see more of in Hernando County? (More frequent bus service, Express Bus/Regional Connections, Increased Weekend Service, Early/Late Evening Service)

6. Is there a need for more service in core areas currently served by TheBus in Hernando County? Is there a need for transit service in other areas in Hernando County?

7. What do you think are the most significant issues facing transit users?

8. What are reasonable passenger fares for transit service? (please specify per trip or other)

9. Do you believe there is a congestion problem in Hernando County? (If yes, go to the next question, if no skip to question 11)

10. Do you believe that public transportation can relieve congestion in Hernando County? If so, are there specific areas that transit can play in alleviating this problem?

11. What are the major destinations/key locations within your community that people need to travel to?

12. What are the major destinations outside of your community where people are traveling to, from your area?

13. Is more regional transportation needed to connect Hernando County with surrounding areas (Pasco, Sumter, Citrus, Hillsborough, Polk, and Pinellas counties)?

14. What additional steps do you feel should be taken to increase the use of public transit in Hernando County?

15. Are you willing to pay additional local taxes for an expanded transit system?

16. What types of local funding sources should be used to increase transit service in the future? (i.e. private partnerships, advertising revenues, fare increases, ad valorem tax, sales tax, gas tax). Would you be interested in supporting a county tax or fee for transportation improvements, including transit, bicycle and sidewalk improvements.

17. Are there other transportation problems in the county (e.g. safe pedestrian and bicycle corridors)? If yes, please describe the type(s) of problems and any specific locations affected.

Fact Sheet

What is TheBus ?

Hernando County Transit (TheBus) provides fixed-route bus transit service in Hernando County. The services includes 4 routes serving Brooksville and Spring Hill areas and connecting to Pasco County on US 19.

Most routes operate 6 am–7 pm on weekdays with 60-minute frequency. The regular cash fare is $1.25, with discounts offered for students, children, older adults, individuals with disabilities, and Medicare card holders. Services are also available for persons unable to access transit because of a disability or distance from a route.

What is Hernando County TDP?

A Transit Development Plan (TDP) is being developed by the Hernando County Metropolitan Planning Organization (MPO) and TheBus to serve as a strategic guide for public transportation in Hernando County from 2020 to 2029. It will represent Hernando County's vision to promote transit growth and improvement over the next decade.

Scan & Take Survey!

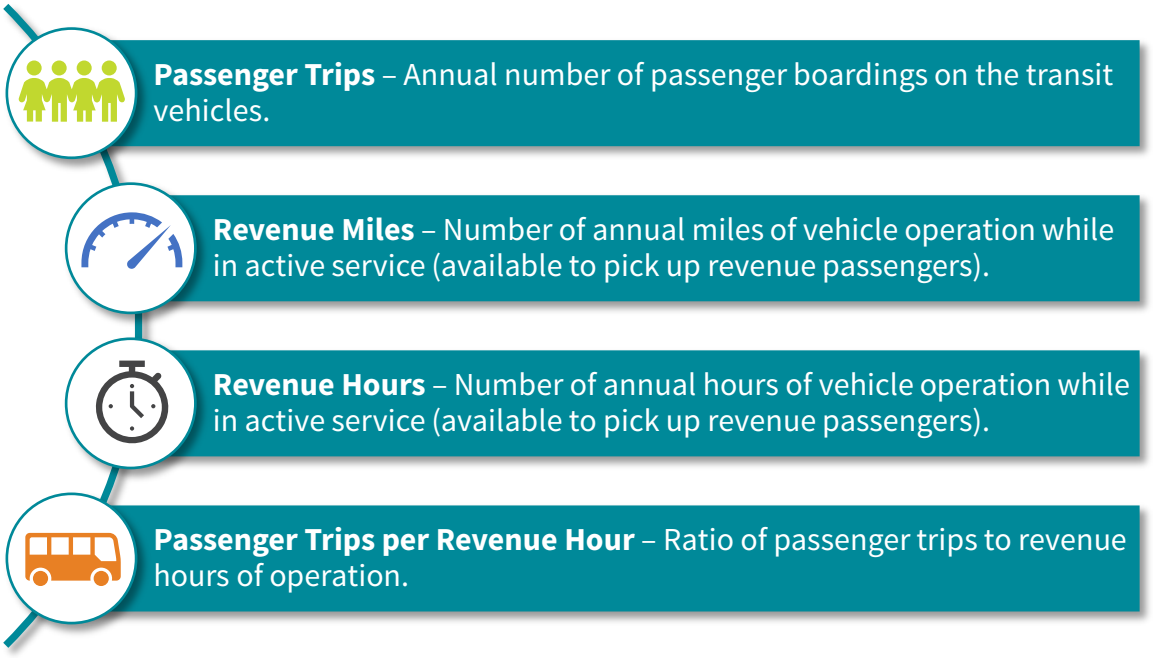
Why Do We Need Your Input?

Public participation is an important part of developing the TDP, and numerous public outreach activities will support the plan, including public workshops, online surveys, stakeholder interviews, grassroots outreach, and social media/web/email outreach. Your participation and input are needed so we can learn more about the public transportation needs and issues in Hernando County and the region.

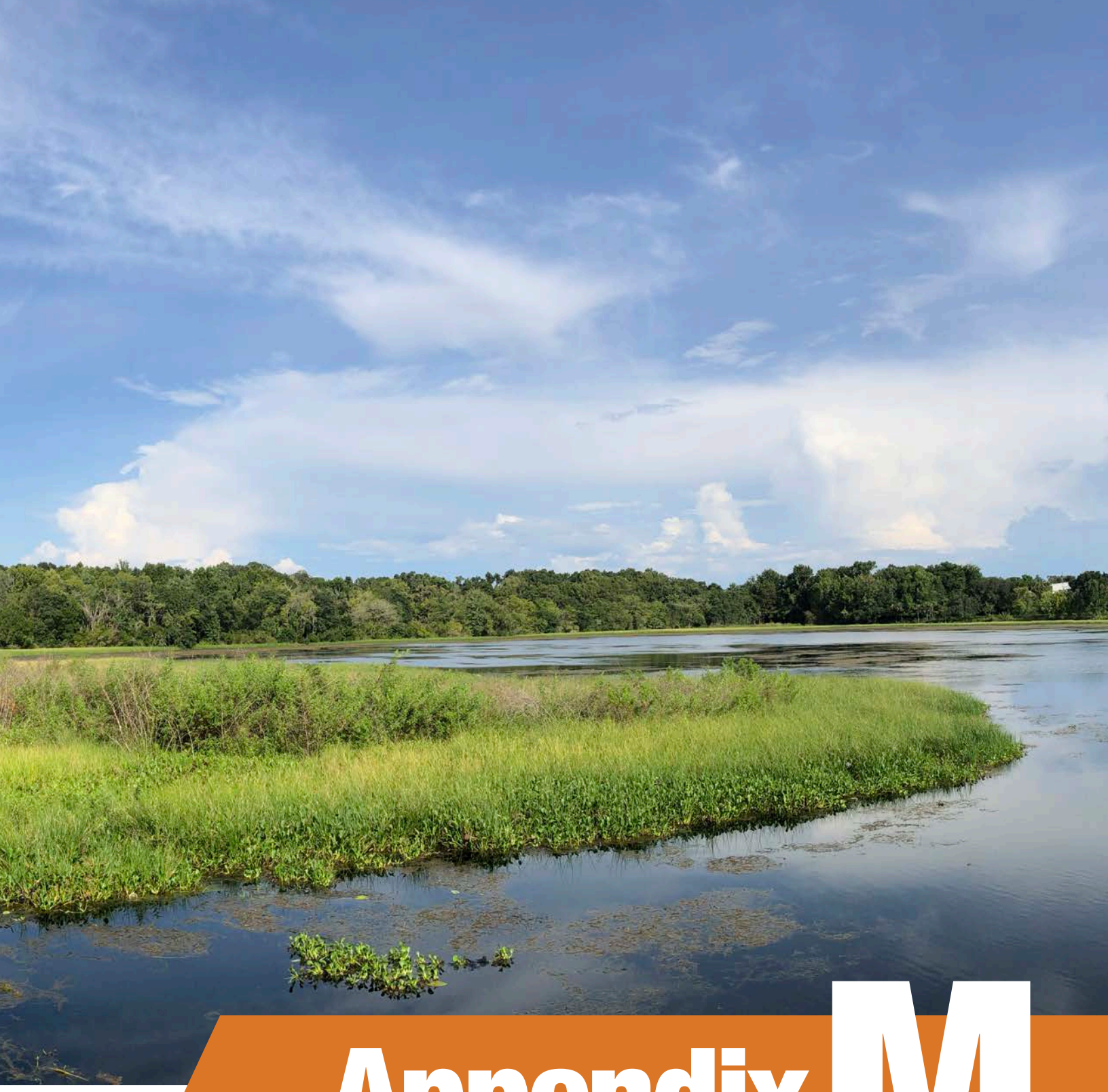
APPENDIX D: Performance Monitoring Program

TheBus Performance Monitoring Program

Once the proposed transit services are implemented, the following performance indicators and measures should be monitored by TheBus at least on a quarterly basis (in addition to any monitoring processes currently in place) for its fixed-route services as part of the recommended performance-monitoring program:



However, as new fixed-route-type services typically take up to three years to become established and productive, the performance data up to that point should be reviewed and interpreted cautiously. Although adjustments/modifications are encouraged, outright discontinuations based on performance monitoring data alone are discouraged.



Appendix M

BIKEWAYS AND TRAILS MASTER PLAN

BIKEWAYS AND TRAILS
master plan

Hernando/Citrus MPO
Bikeways and Trails Master Plan

Adopted June 2018



Prepared by

Tindale Oliver

METROPOLITAN PLANNING ORGANIZATION
HERNANDO/CITRUS

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FDOT Long Range Estimate Generic per Mile Costs
Funding Sources
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Presentations

Executive Summary

The Hernando/Citrus Metropolitan Planning Organization (MPO) Bikeways and Trails Master Plan represents a collaborative effort involving the community, the MPO, and committees to create the vision for the future of bicycling in Hernando and Citrus counties. It is the Bikeways and Trails Master Plan Vision that:

> Hernando and Citrus counties become communities where people can safely and easily ride bicycles and walk daily. A connected network of trails and on-street facilities will benefit the economy, public health, and quality of life for all members of the community.

This vision directs the development and expansion of the bicycle and trail network for both counties. The Plan brings together the prior work done in both counties and identifies expanded opportunities to put the vision into practice.

The Goals of this plan are as follows:

- **Safety** – Increase safety for people who walk and bicycle in Hernando and Citrus counties.
- **Connectivity** – Create a network of efficient, convenient bicycle and pedestrian facilities in Hernando and Citrus counties.
- **Equity/Livability** – Increase transportation choice and community livability through the development of an integrated multimodal system.
- **Health** – Encourage health and fitness by providing a safe, convenient network of facilities for walking and biking.
- **Economic Development** – Promote tourism and economic opportunities by developing a safe, connected network of biking and walking facilities.

In addition to MPO staff, committee and Project Advisory Team input, an extensive outreach effort included interactive workshops in each county as well as an on-line survey and use of a web-based mapping tool. Feedback highlighted safety as the #1 concern and a desire to be able to bicycle on safer, more comfortable facilities throughout each county.

The Plan

This Plan was developed in two parts—short-term projects identified through feedback that are smaller and collaborative or incorporated during routing resurfacing projects and a long-term vision that sets the tone for future roadway reconstruction projects.

The identified needs include trail crossings, locations for advisory signage, bike lane gaps, and short connector trail segments. It is recommended that coordination with City and County departments

continue after plan adoption to facilitate the incorporation of the identified projects into planned maintenance efforts wherever possible.

Safety and Crash Analysis

Crash data were evaluated early in the plan development process to identify areas that might benefit from additional analysis and/or infrastructure improvement. Crashes occurred throughout each county, and areas of higher crash concentration were found along US 19 in Hernando and Citrus counties and along Mariner Boulevard in Hernando County.

Policy/Program Recommendations

In addition to infrastructure recommendations, the Plan includes policy and program recommendations designed to improved safety and enhance the bicycling environment.

Vision

The Vision for this plan is for a safe, easy-to-use, and connected network of on-road and trail facilities that builds on work already being done, as well as a general public interest in safer places to bicycle. In 2017, the MPO adopted a resolution that all State roads include a separated trail or widewalk (wide sidewalk) in their designs. Citrus County has been including trails in their roadway expansion plans and has built trails where possible. Feedback and committee discussion encouraged the consideration that a separated trail be the preferred facility type when possible.

This Master Plan is meant to be a blueprint that provides guidance about facility improvements and policy recommendations aimed at accommodating bicycle and pedestrian modes of transportation, improving safety conditions, and ensuring coordination among jurisdictions, departments, and agencies. The plan acknowledges the work done by individual communities and seeks to enhance it.

Figures ES-1 and ES-2 illustrate the existing conditions and projects to be constructed in Hernando and Citrus counties by 2023. Figures ES-3 and ES-4 illustrate the bikeway and trail visions for each county, with an emphasis on providing the safest and most comfortable bicycling experience for residents and visitors alike.

Figure ES-1: Existing and Committed Bikeways and Trails Facilities in Citrus County (2018–2023)

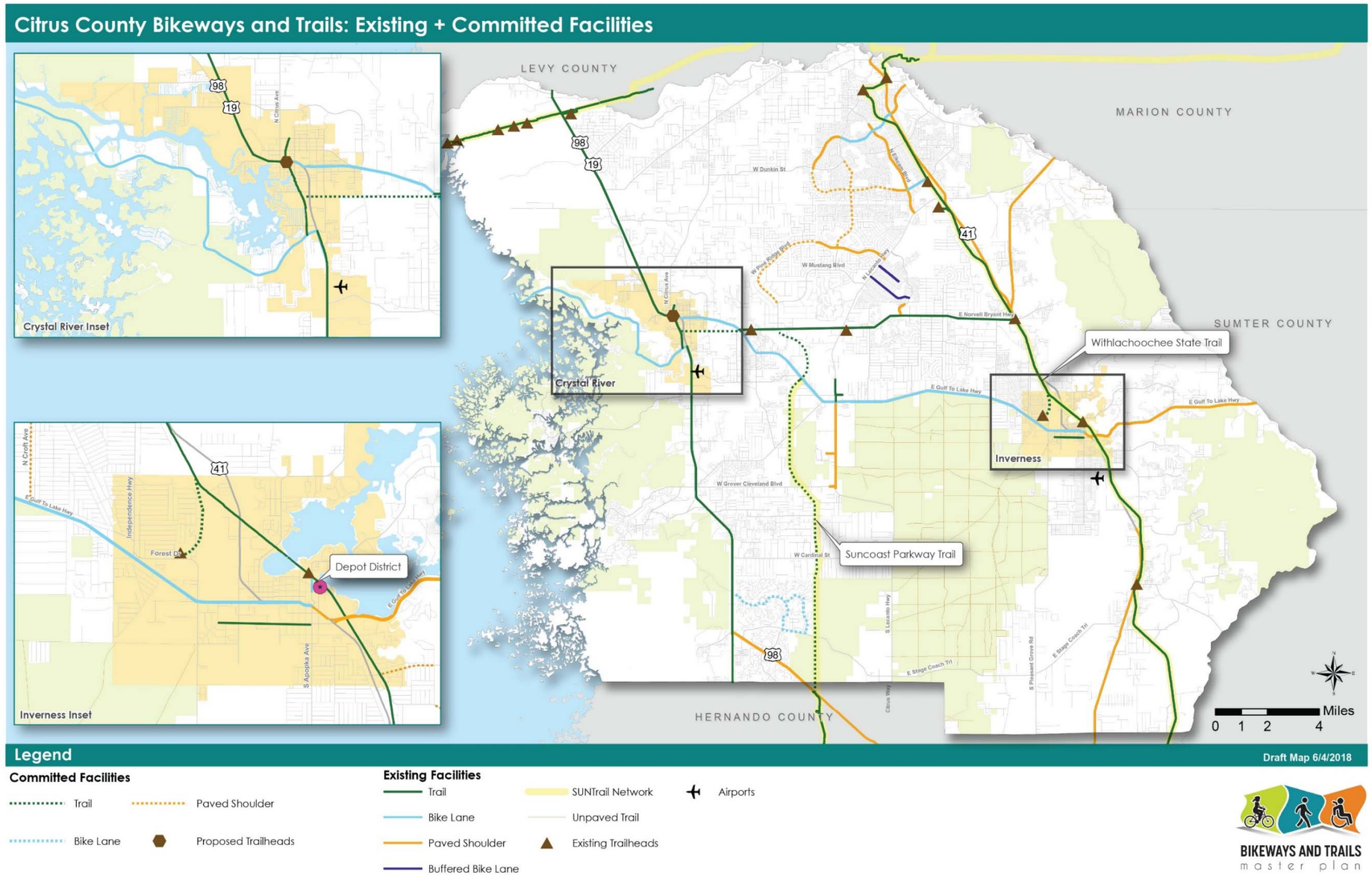
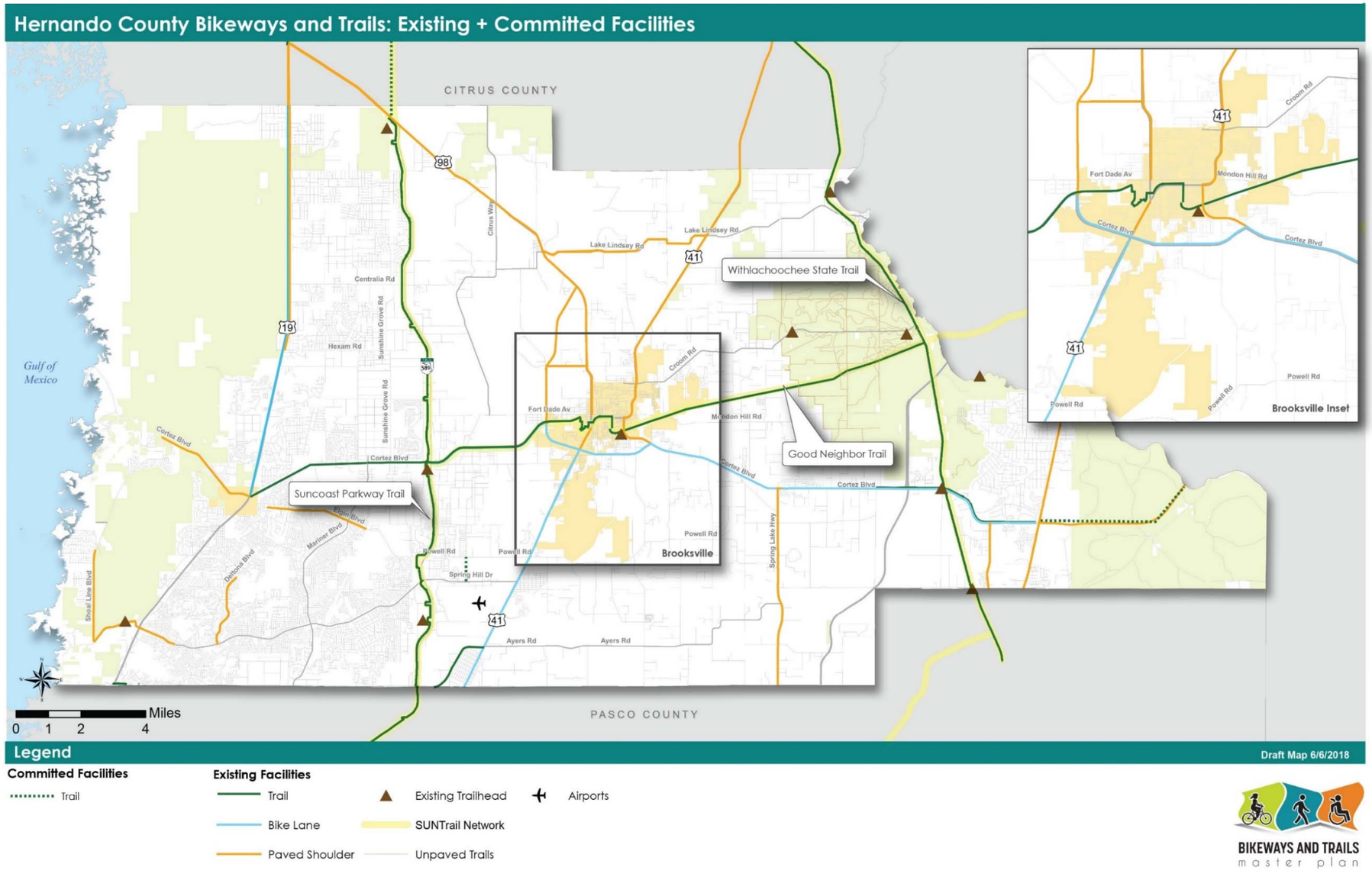


Figure ES-2: Existing and Committed Bikeways and Trails Facilities in Hernando County (2018–2023)



BIKEWAYS AND TRAILS
master plan

Figure ES-3: Vision for Bikeways and Trails Facilities in Citrus County

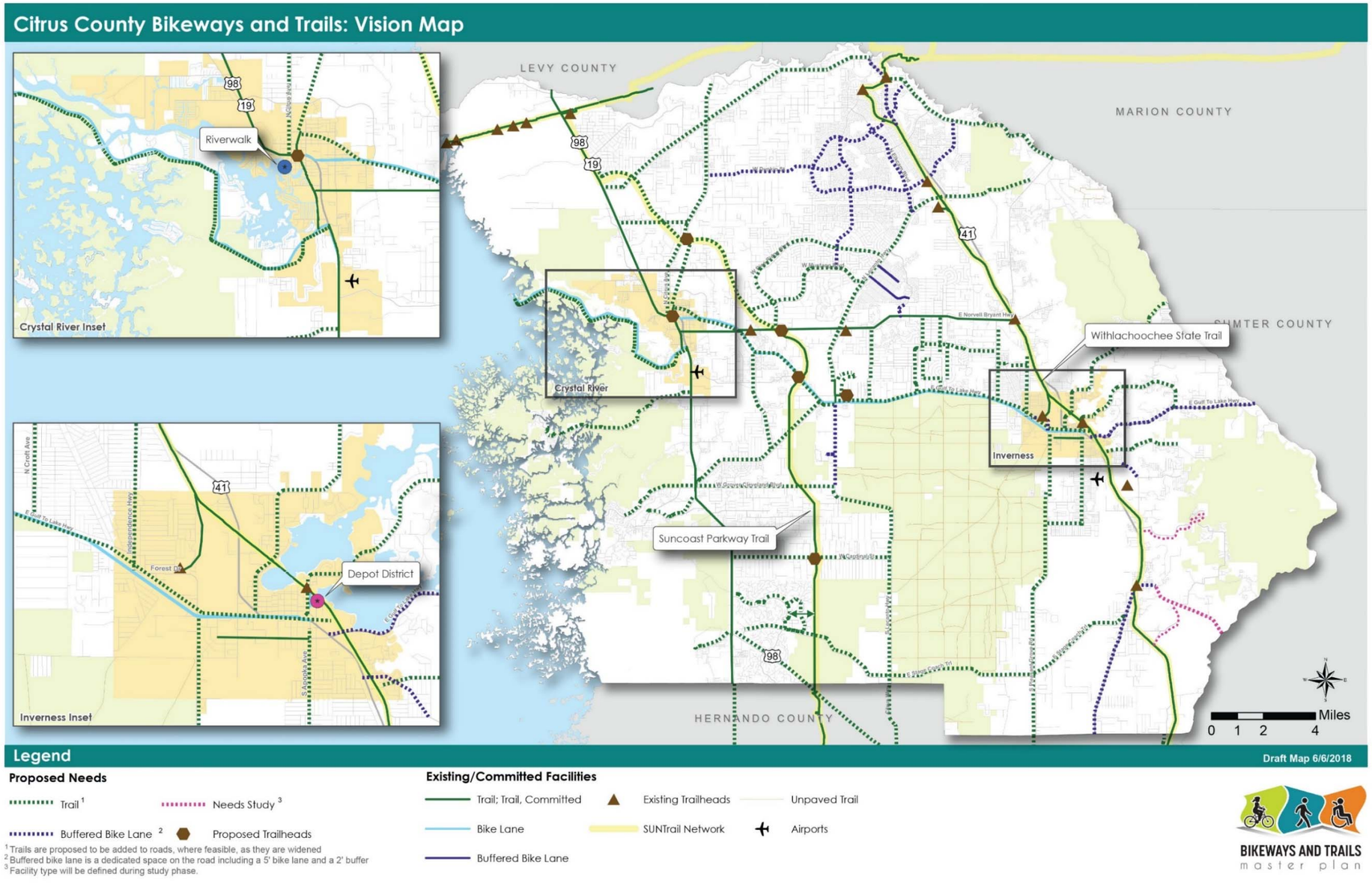
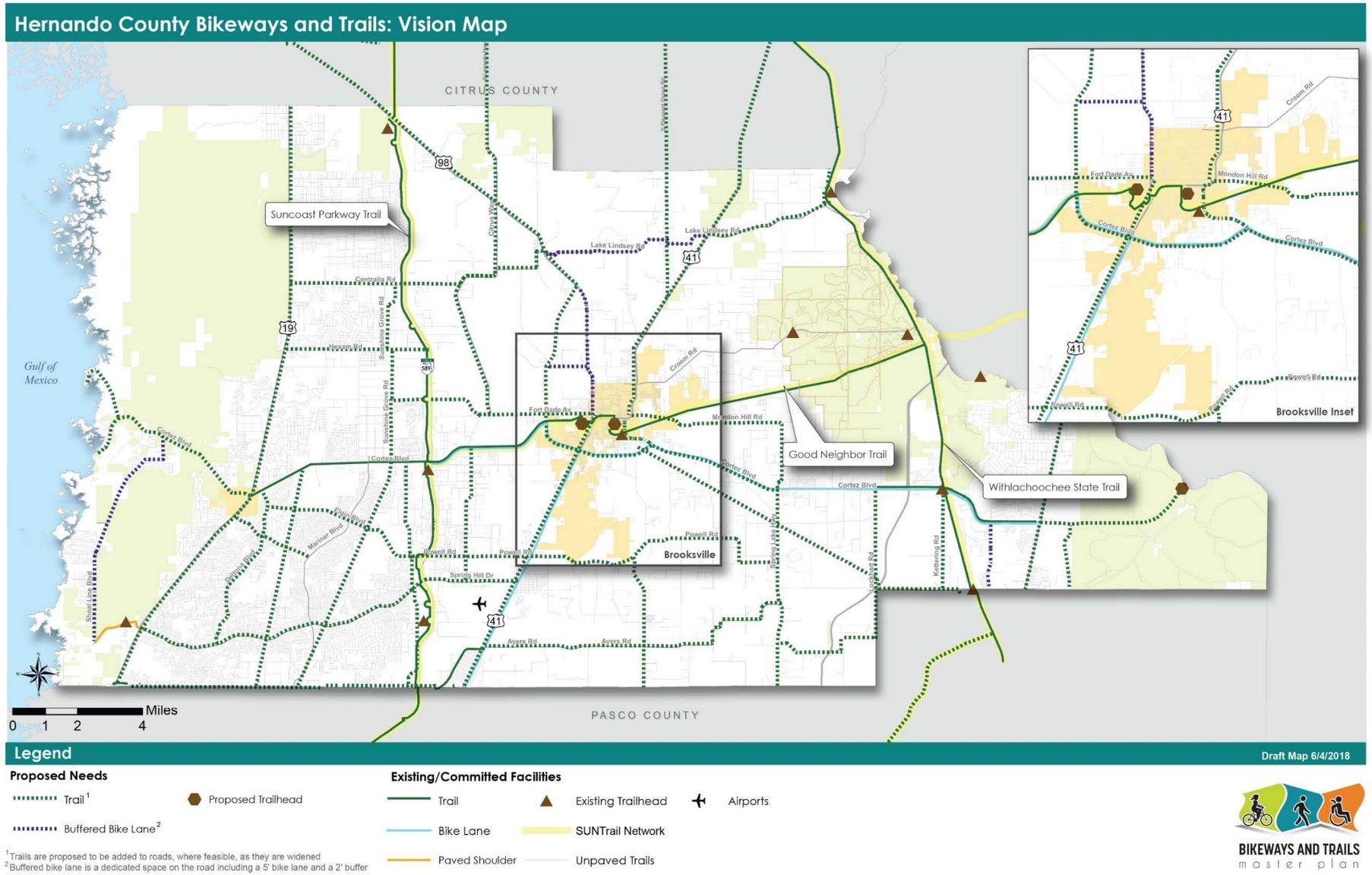


Figure ES-4: Vision for Bikeways and Trails Facilities in Citrus County



Plan Implementation Actions

Developing a plan is only the first step in the process to creating a robust and successful active transportation network. After plan adoption, collaboration and action are what make it successful. The following implementation actions have been developed to ensure the success of this Master Plan and should be reviewed on an annual basis:

- On January 30, 2018, the Hernando/Citrus MPO Board voted to support the Florida Department of Transportation's (FDOT) goal of zero serious auto-related injuries and deaths (Vision Zero). It also established a short-term target of 5% per year in reduction in traffic fatalities and serious injuries, based on a five-year rolling average. In support of the MPO Plan is reducing the number of bicycle and pedestrian injuries and fatalities by funding projects that will support this goal.
- Recognizing that it takes more than engineering solutions to resolve safety issues in Hernando and Citrus counties, the MPO will collaborate with the county governments, FDOT, and other agencies to identify and fund enforcement and education programs throughout both counties.
- Work should continue with FDOT to add bicycle and pedestrian facilities to State roads as they are resurfaced or expanded. Wherever possible, separated trails should be included in Project Development & Environment (PD&E) and design phases.
- This Master Plan is a living document and reflects the vision of the MPO and stakeholders as well as analysis done at the time of its revision. The priority projects identified according to the evaluation process will not preclude the addition or upgrade of bicycle and/or pedestrian facilities on County roads.
- The MPO will collaborate with County staff to ensure that the best possible bicycle and pedestrian facilities are incorporated into all upcoming county resurfacing and reconstruction projects.
- Coordination will continue with the Hernando and Citrus County Public Works departments to include trails and wider sidewalks on new roadways and roadway expansion plans.
- Coordination will continue with the cities of Inverness, Crystal River, and Brooksville, local agencies, and Hernando and Citrus counties on submission of projects to a list of projects to be considered for prioritization for funding.
- Coordination will continue with local governments for adoption of the Hernando/Citrus MPO Bikeways and Trail Master Plan into Local Comprehensive Plans, the Land Development Code, and City Master Plans and identification and protection of trail corridors.
- Coordination will continue with other government and non-government entities on regional planning issues related to the trail system including the Florida Department of Environmental Protection (FDEP), the Office of Greenways and Trails (OGT), the Florida Department of Affairs, and

others to pursue grant opportunities to develop the regional trail network in Hernando and Citrus counties.

- Coordination will continue with staff in adjacent counties, MPOs, OGT, and FDOT to plan for and construct trails and other bicycle infrastructure across county lines to help create a seamless and connected regional trail network.
- This Master Plan will be reviewed and revised as needed at least every five years. Interim updates to the map or Plan may be required to take advantage of opportunities with developers or local and county agencies.

Chapter 1 – Introduction

This inaugural Bikeways and Trails Master Plan is the culmination of significant coordination between Hernando/Citrus Metropolitan Planning Organization (MPO) staff and committees as well as dedicated citizens. It represents a wide range of perspectives and interests, all of which are focused on the same goal— improving bicycling conditions in Hernando and Citrus counties. This Master Plan identifies a number of ways to achieve this, both long- and short-term, including infrastructure, policy and program opportunities that will enhance the current conditions and make it possible to begin to achieve the Vision identified during plan development (see Chapter 5).

Following is a discussion of some of the concepts that led up to and were foundational in the development of the Master Plan.

Safety

The Tampa Bay area is considered the most dangerous place for walking and biking.[1,2] Although Hernando and Citrus counties are not included on Florida's top 10 list of high crash areas, every fatality and severe injury takes a toll on the community and family and friends of victims. The safety of bicyclists in every county should be paramount in any decision about bicycling infrastructure and was identified as the #1 goal by staff and the community for this Plan.

Vision Zero

Vision Zero is a multi-dimensional effort to eliminate all traffic fatalities and severe injuries while increasing safe, healthy, and equitable mobility for all. First implemented in Sweden in the 1990s, Vision Zero is increasingly being adopted by cities across the United States. It takes a traditional approach to safety and reconsiders some of the most basic assumptions made over the past decades to reduce the number of deaths on American roadways. The following table compares the traditional and Vision Zero approaches.

Table 1: Traditional vs. Vision Zero Approach to Traffic Safety

TRADITIONAL APPROACH	VISION ZERO APPROACH
Traffic deaths are INEVITABLE	Traffic deaths are PREVENTABLE
PERFECT human behavior	Integrate HUMAN FAILING
Prevent COLLISIONS	Prevent FATAL AND SEVERE CRASHES
INDIVIDUAL responsibility	SYSTEMS approach
Saving lives is EXPENSIVE.	Saving lives is NOT EXPENSIVE

[1] *Dangerous by Design* (2016), https://smartgrowthamerica.org/dangerous-by-design/.
[2] Statewide Analysis of Bicycle Crashes, FDOT (2017), http://www.fdot.gov/research/Completed_Proj/ SummarySF/FDOT-BDV29-977-23-rpt.pdf.

A commitment to Vision Zero encompasses the entire roadway network and all users. By committing to a reduction in crashes, all modes benefit. The recently-adopted MPO commitment to a 5% reduction in crashes can be supported by the Vision Zero approach.

Equity and Choice

According to AAA, car ownership is estimated to cost $8,500 per year.[3] For any family that is already struggling, this additional expense can mean tough choices. Although bicycling may not be the perfect answer in an area that is sprawling with homes and destinations far apart, bicycle ownership is an inexpensive option.

According to the National Household Travel Survey (NHTS), 41% of trips are three miles or less.[4,5] This distance is comfortable to travel by bicycle for most riders, so with the appropriate bicycle infrastructure, drivers might choose to bike instead of drive. Whereas this mode shift is more likely in cities and towns, where destinations tend to be closer together, as the population ages and needs change, it is worth considering changes in land use patterns to aggregate land uses to either minimize trips or support the use of other modes such as bicycle.

Benefits of Walking and Biking

The benefits of physical activity are well-documented and, as the population ages, facilitating low-impact activity becomes even more important. Across the US and in Hernando and Citrus counties and the Tampa Bay region, it has been confirmed that "if you build it, they will come." Trails such as the Withlacoochee State Trail and the Pinellas Trail have hundreds of thousands of visitors every year, and good walking and biking environments are increasingly considered a quality-of-life benefit that add value to neighborhoods.

Recent studies, including one from the Harvard School of Public Health, noted that walking and biking, particularly to work, can help manage weight loss, improve cardiovascular health, and possibly prevent cancer.[6] With public health care costs rising and the burden of those costs on every American, easy and convenient opportunities to improve public health are become more and more important.

Economics of Trails and Greenways

According to a presentation on the FL Department of Environmental Protection Trail Town web site, there are an estimated 1,000 Pinellas Trail users per day riding through Dunedin on an average weekend day

[3] https://newsroom.aaa.com/auto/your-driving-costs/.
[4] https://nhts.ornl.gov/.
[5] Todd Litman, "Short and Sweet," July 2017, http://www.vtpi.org/short_sweet.pdf.
[6] "Benefits of biking appear to outweigh the risks," https://www.hsph.harvard.edu/news/hsph-in-the-news/bicycle-commuting-benefits/.

and vacancy rates are down to 1% in 2017.[7] All this represents a huge change from the 1980s when Dunedin was a town in decline and vacancy rates were at 30%. This activity can be attributed to the town's willingness to embrace the Pinellas Trail as a primary focus. Inverness has adopted the same strategy with the Withlacoochee Trail and with the upcoming construction of the Coast to Coast Trail, Brooksville has the same opportunity.

The Coast-to-Coast Trail, running from St. Petersburg to Titusville, is projected to provide an annual economic benefit of $120 million to Central Florida. A major portion of this trail runs through Brooksville and Hernando County, and communities along the trail are anticipating growth and change. According to Eydie McCall, Titusville Economic Development Director:

> In the next 10 years, you're going to see a totally changed downtown…. Look at some of the other cities that had a trail connected to an even larger trail but didn't do much publicity to promote it. It caught on anyway because people like the way it feels downtown when they see families out cycling or on a bike hike.[8]

The West Orange and Pinellas trails have provided huge boosts to the towns they run through, improving the economies, driving down vacancy rates, and supporting job growth. Inverness has experienced this with its proximity to the Withlacoochee State Trail and actively promotes the trail and being a "bicyclers' paradise" and part of its economic development plans.

Plan Vision

With all of the previously discussed concepts in mind, the vision, goals, and objectives of the Bikeways and Trails Master Plan were developed by Hernando/Citrus MPO staff with input from the Project Advisory Team and are based, in part, on:

- Advisory Committee input
- Public outreach
- Existing vision and goal statements of MPO and County planning efforts
- Nationally-recognized performance measures for pedestrian and bicycle planning

The following Vision statement serves as guidance for the overall project and helps define success. Goals, objectives, and project evaluation criteria are an extension of the Vision and will help facilitate and track implementation progress.

> The Bikeways and Trails Master Plan Vision is that Hernando and Citrus counties become communities in which people can safely and easily ride bicycles and walk daily.

[7] https://floridadep.gov/sites/default/files/Dunedin%2C%20the%20Little%20Downtown%20That%20Could.pdf.
[8] "A New Path: Florida's Coast-to-Coast Trail Promotes Eco-Tourism and More," http://www.i4biz.com/featured-posts/new-path-floridas-coast-coast-trail-promotes-eco-tourism/.

A connected network of trails and on-street facilities will benefit the economy, public health, and quality of life for all members of the community.

Plan Goals and Objectives

As an extension of the Vision, goals help guide the implementation of the Master Plan and are concepts against which success and project selection can be measured. These measures can help make the Plan more effective over time. Specific targets may be set for the goals over time.

The Moving Ahead for Progress in the 21st Century (MAP-21) Act (2012) shifted the focus of State agencies and MPOs to a more data-driven approach and developed rules for identifying targets. The Fixing America's Surface Transportation (FAST) Act (2016) mandated that statewide and metropolitan long-range plans describe the performance measures and targets that states and MPOs use in assessing system performance and progress in achieving the performance targets. Performance measures being set at the State level will lead to evaluation at the state department of transportation and MPO levels. Per MAP-21, there are seven designated performance measures; the most relevant to this planning effort measures fatalities and serious injuries for non-motorized road users.

In response to the requirement that state DOTs set performance measures, the Florida Department of Transportation (FDOT) has adopted an aspirational goal of zero fatalities for all road users (Vision Zero). The Hernando/Citrus MPO Board affirmed its commitment to this goal in 2018, further supporting safety as the Master Plan's primary goal. Attendees at the public workshops for this Plan also affirmed their support for the goals of safety and connectivity. Additional goals and objectives related to the Vision statement also were identified. The Master Plan goals and objectives are as follows:



Safety

- Increase safety for people who walk and bicycle in Hernando and Citrus counties by supporting the construction of trails, bicycle facilities and enhanced crossings.



Connectivity

- Create a network of efficient, convenient bicycle and pedestrian facilities in Hernando and Citrus counties.



Equity/livability

- Increase transportation choice and community livability through the development of an integrated multimodal system.



Health

- Encourage health and fitness by providing a safe, convenient network of facilities for walking and biking.



Economic Development

- Promote tourism and economic opportunities by developing a safe, connected network of biking and walking facilities.

In addition to the rest of the introduction that includes the plan vision, goals and objectives, the report is organized into the following chapters:

- **Chapter 2 – Existing Conditions** describes the plan Vision, goals, and objectives and the existing conditions for bicycling in Hernando and Citrus counties.
- **Chapter 3 – Programs and Policy** discusses how, although infrastructure is the most critical component of a bikeway and trails network, policies must be in place to ensure that the trails and facilities are constructed. Programs play a role in creating a safer environment as well as supporting the desire to ride, whether for transportation or recreation.
- **Chapter 4 – Bikeways and Trails Toolbox** includes a discussion about bicyclist comfort and safety and describes bikeway and trail types and supporting elements and trends such as bike-sharing and e-bikes.
- **Chapter 5 – Recommendations/Implementation Plan** discusses the long-term plan vision and shorter-term needs identified during the public outreach process and includes funding and design guidance.

Chapter 2 – Existing Conditions

Hernando and Citrus counties each have the beginnings of connected bikeway networks, the basis of which are regional trails. Each county is home to significant regional trails that also serve shorter trips between destinations. On-road facilities or bike lanes often facilitate connections to trails. Table 2 and Figures 1 and 2 show the existing bicycle infrastructure and committed mileage, typically funded for construction over the next five years and found in the current FDOT work program, by county. Bicycle lanes are found on County or State roads.

Table 2: Existing Bike Infrastructure Mileage in Hernando and Citrus Counties

	Existing Mileage		Committed	
County	***Bike Lane***	***Trail***	***Bike Lane***	***Trail***
Citrus	63	83	6	18
Hernando	51	83		6

Regional trails, or those that cover multiple counties, connect Hernando and Citrus counties and their adjacent neighbors. The 46-mile long Withlacoochee State Trail (WST) starts in Pasco County and ends just south of Dunellen in Marion County, and the 42-mile long Suncoast Trail, which runs along the Suncoast Parkway, begins in Hillsborough County and currently ends at US 98 in Hernando County. The Coast-to-Coast trail, comprising segments of trail in eight counties, will run through Brooksville as the Good Neighbor Trail and is under construction.

Local trails, those that are within county boundaries, exist in both counties. Citrus County has a trail that runs most of the way along CR 486, and a trail was constructed along SR 50 in Hernando County east of the Suncoast Parkway. A continuation of that trail is planned west of US 301 to the Sumter County line.

Paved shoulders have been constructed along the many rural roads in both counties, primary for use by vehicles in emergency situations but they can also be used by bicyclists. A field review showed that shoulders typically drop after intersections forcing bicyclists to ride in the travel lane. Because of this and the fact that shoulders provide some of the least comfortable facilities for bicyclists, especially on high speed roads, they are not included as a facility in either county.



Paved shoulders along County road ends create unsafe conditions for bicyclists.

Figures 1 and 2 show the existing and committed bikeway and trail infrastructure in Citrus and Hernando counties.

Figure 1: Existing and Committed Bikeway and Trail Infrastructure in Citrus County, 2018–2023

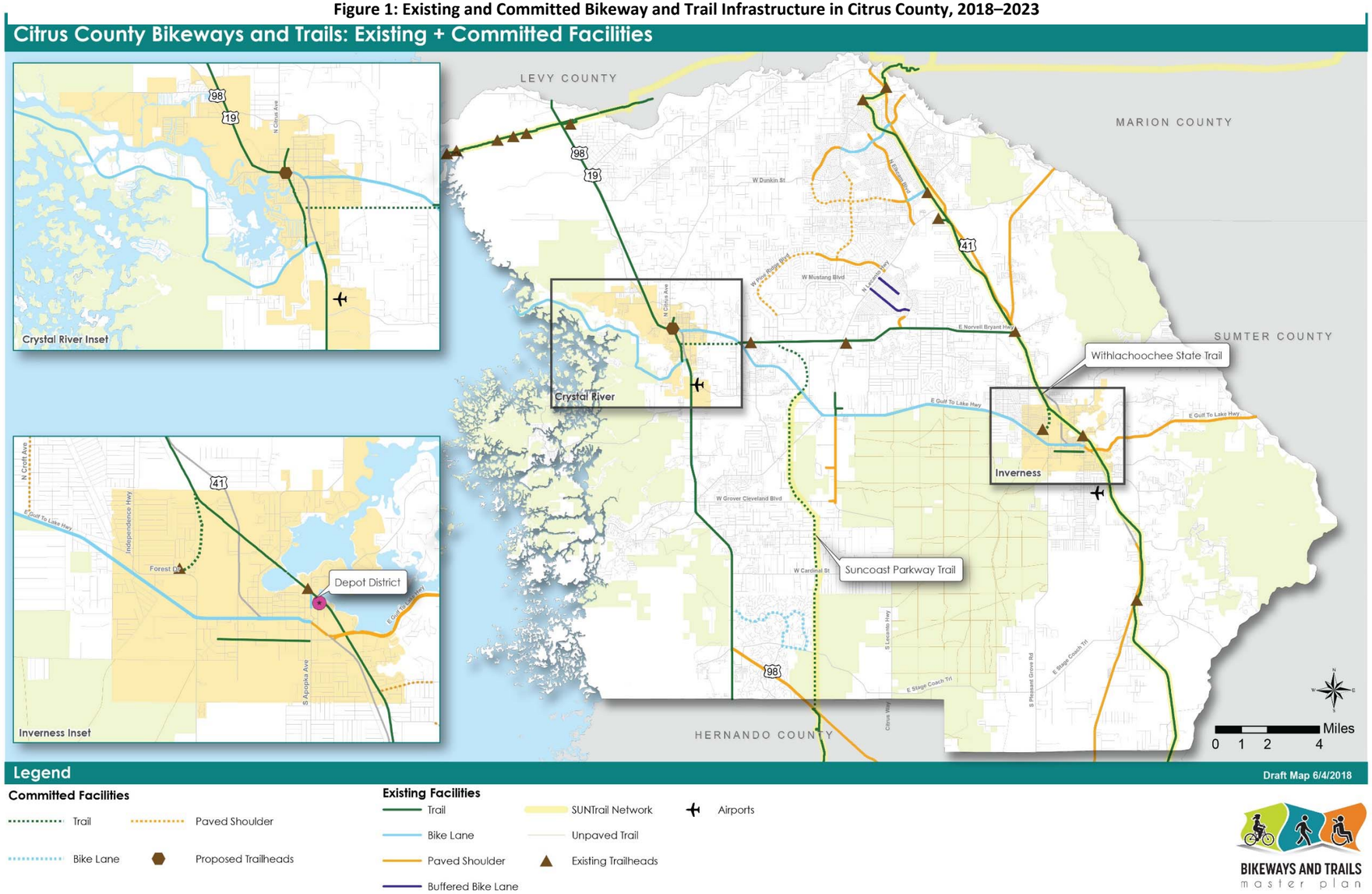
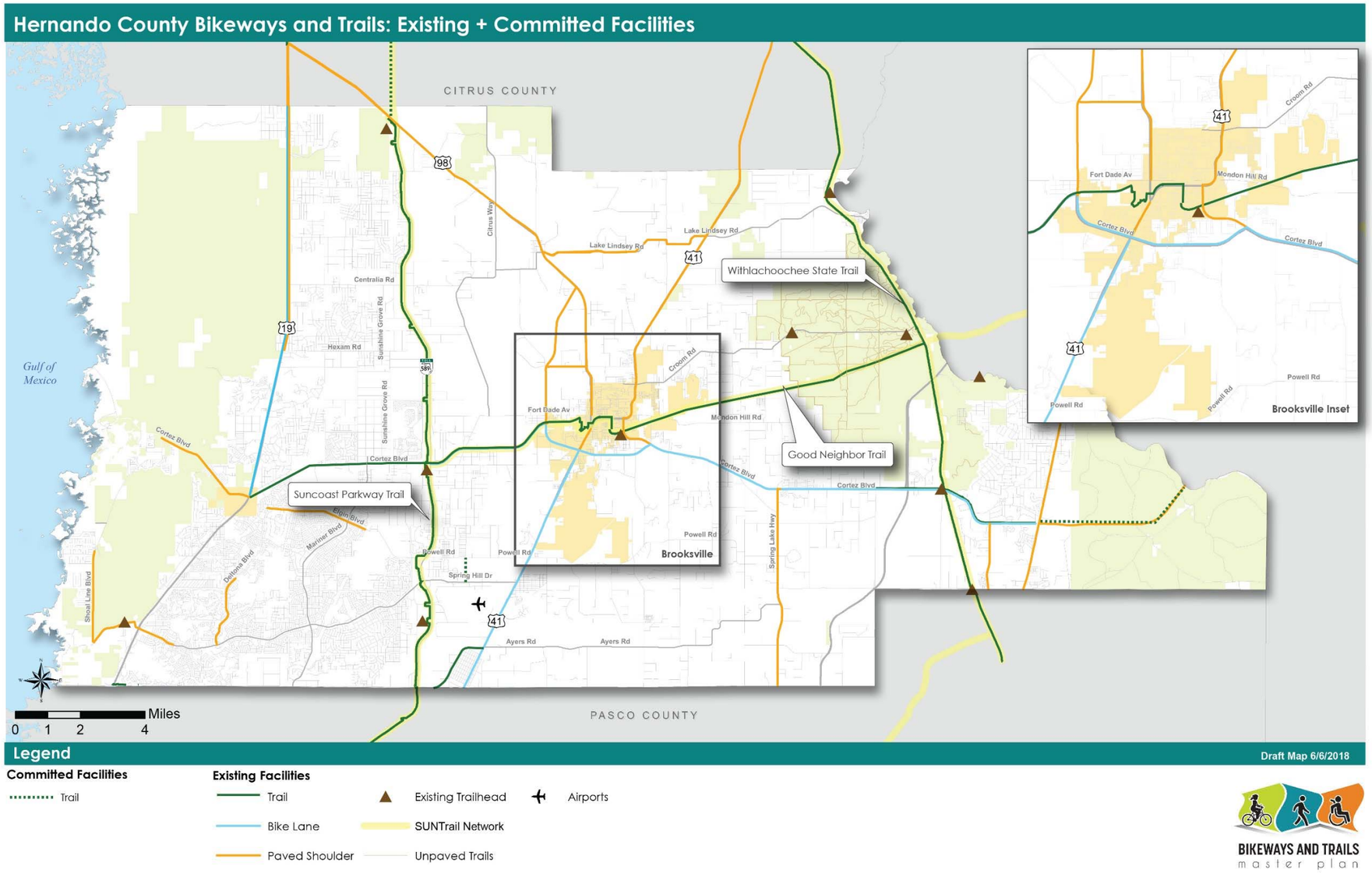


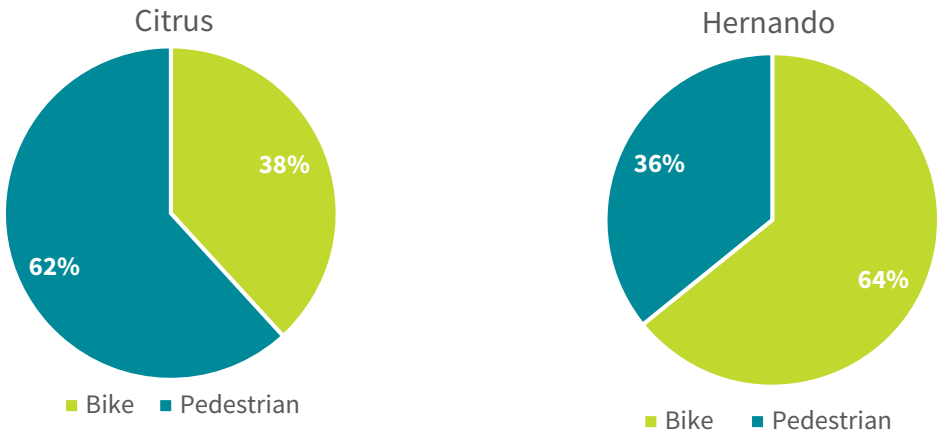
Figure 2: Existing and Committed Bikeway and Trail Infrastructure in Hernando County, 2018–2023



Safety

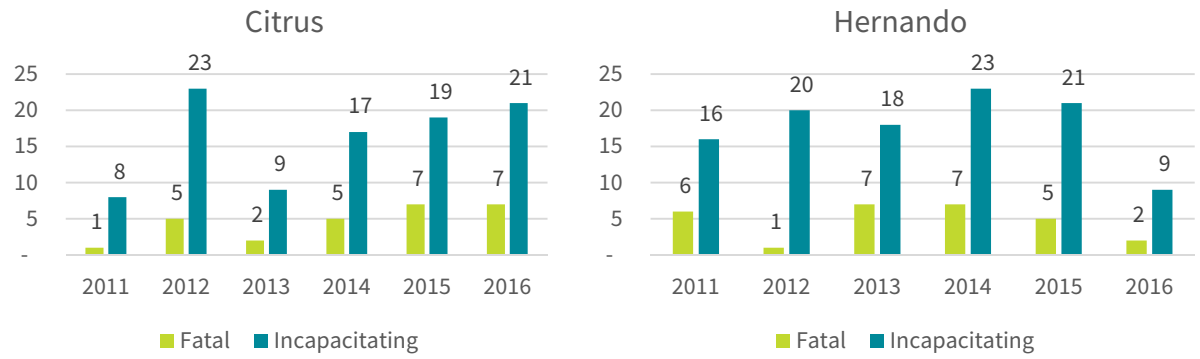
Reducing fatalities and injuries is a goal of the MPO's recently-adopted performance targets and a primary goal of this Master Plan. To help identify areas of concern for bicyclists and pedestrians, bicycle/pedestrian crash data from 2011 to 2016 were reviewed. (Individual crash reports were not reviewed as part of this project.) As shown in Figure 3, in Citrus County over the five-year period, a total of 437 crashes involved vulnerable users, with 62% involving a pedestrian and 38% involving a bicyclist. In Hernando County, bike crashes made up about 64% of all crashes and 36% involved pedestrians. Total crashes (606) were higher in Hernando County.

Figure 3: Bicycle/Pedestrian Crashes, Hernando and Citrus Counties, 2011–2016



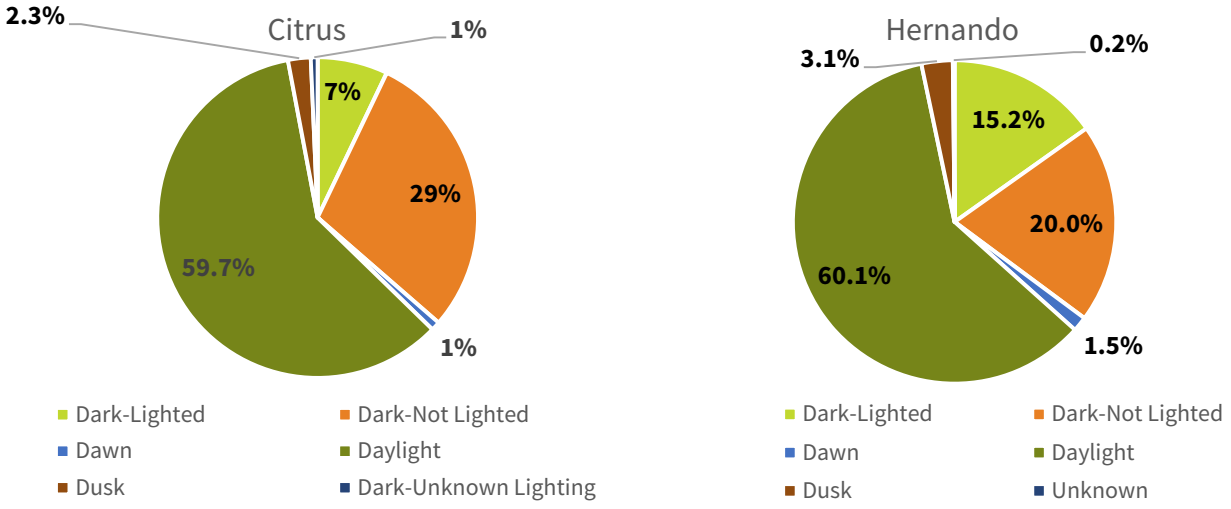
In Hernando County, fatal and incapacitating bicycle and pedestrian crashes accounted for 22% of total crashes in 2011–2016; in Citrus County, they were 28% of crashes. As shown in Figure 4, generally, in Citrus County, there has been an upward trend in incapacitating crash types, whereas fatalities have been fairly stable. In Hernando County, both incapacitating and fatal crashes experienced a decline in 2016, but generally stayed stable in previous years.

Figure 4: Fatal and Incapacitating Bicycle/Pedestrian Crashes, Hernando and Citrus Counties, 2011–2016



In both counties, as seen in Figure 5, the majority of bicycle and pedestrian crashes occurred in during daylight hours, suggesting that street lighting has not typically been a factor. Dark–not lighted conditions made up a larger majority of the crashes in Citrus County, accounting for 29% and 20% in Hernando County. Review of individual crash reports is recommended to better understand crash circumstances.

Figure 5: Bicycle/Pedestrian Crash-related Lighting Conditions, Hernando and Citrus Counties, 2011–2016



Crashes in both counties were analyzed for clustering to identify locations that most frequently have crashes. Figures 7 and 8 illustrate the high-crash locations in Citrus and Hernando counties, respectively. Areas of highest crash occurrence are recommended for further study to identify specific infrastructure changes that could be made. Proximity to crash cluster areas is also used as an evaluation criterion for project prioritization.

Figure 6: Crash Clusters, Citrus County, 2011–2016

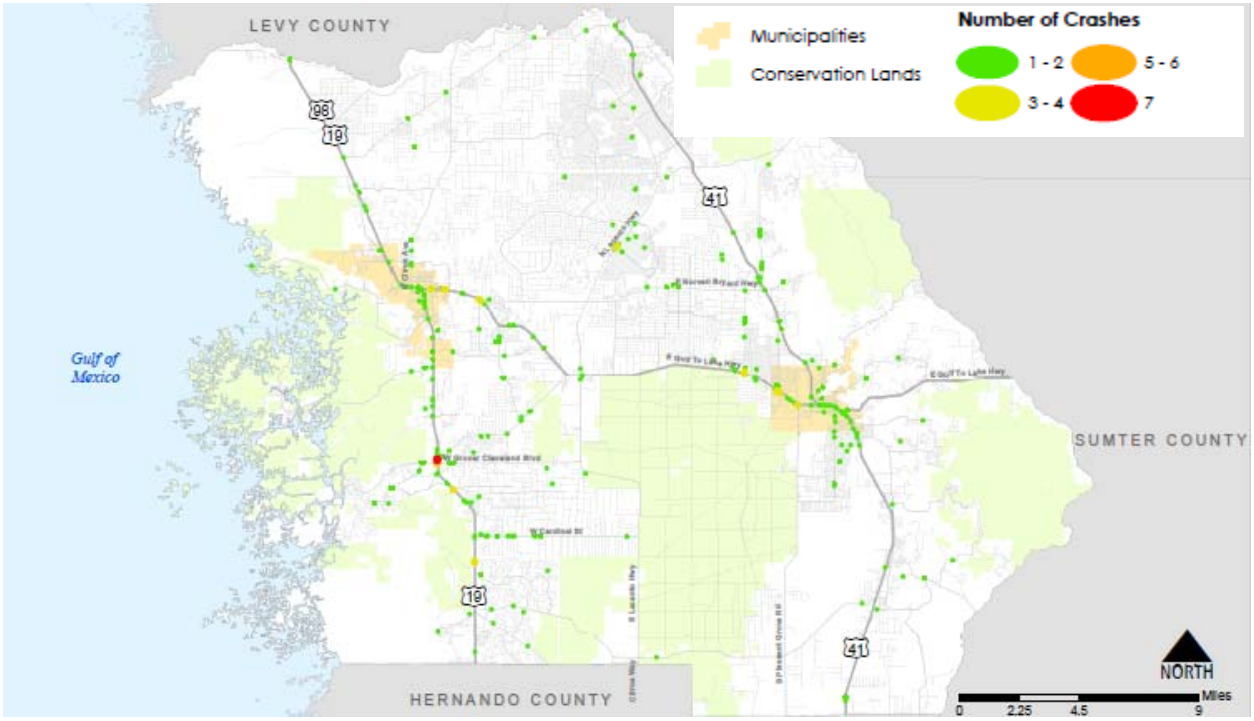
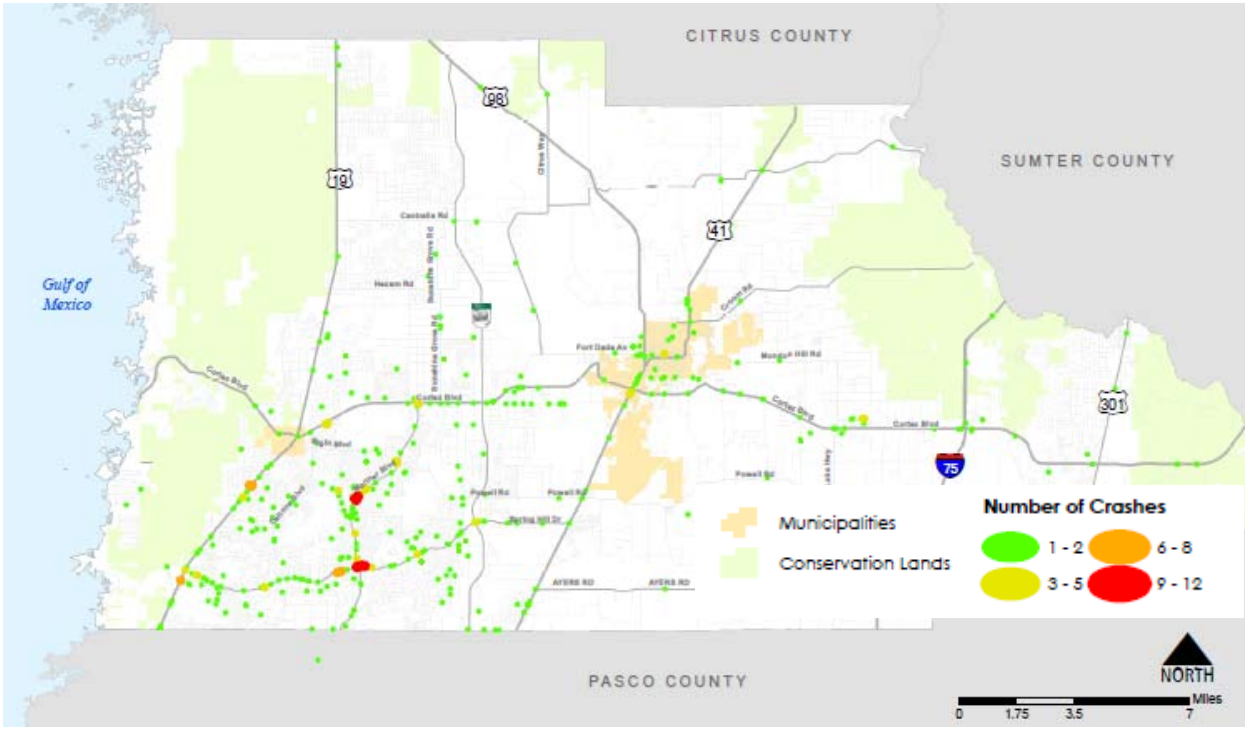


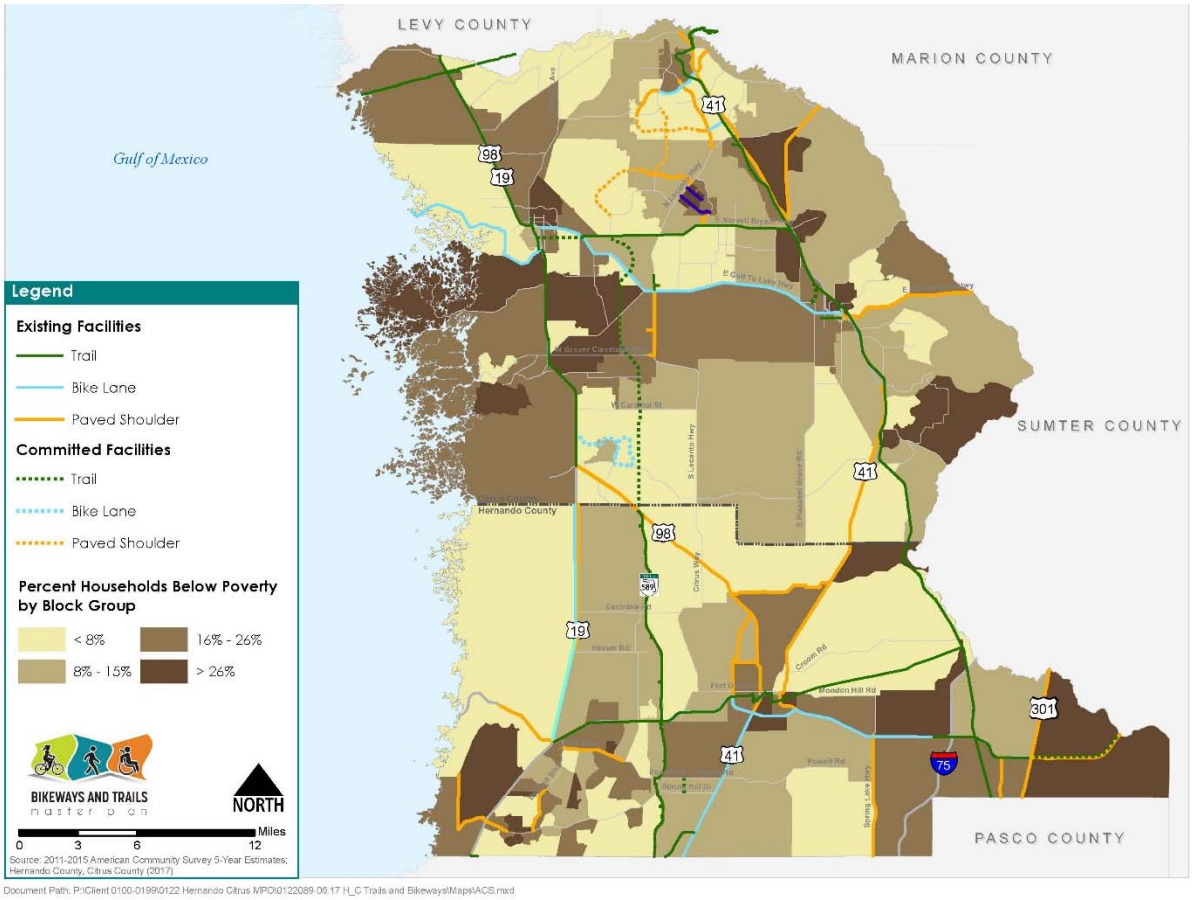
Figure 7: Crash Clusters, Hernando County, 2011–2016



Equity

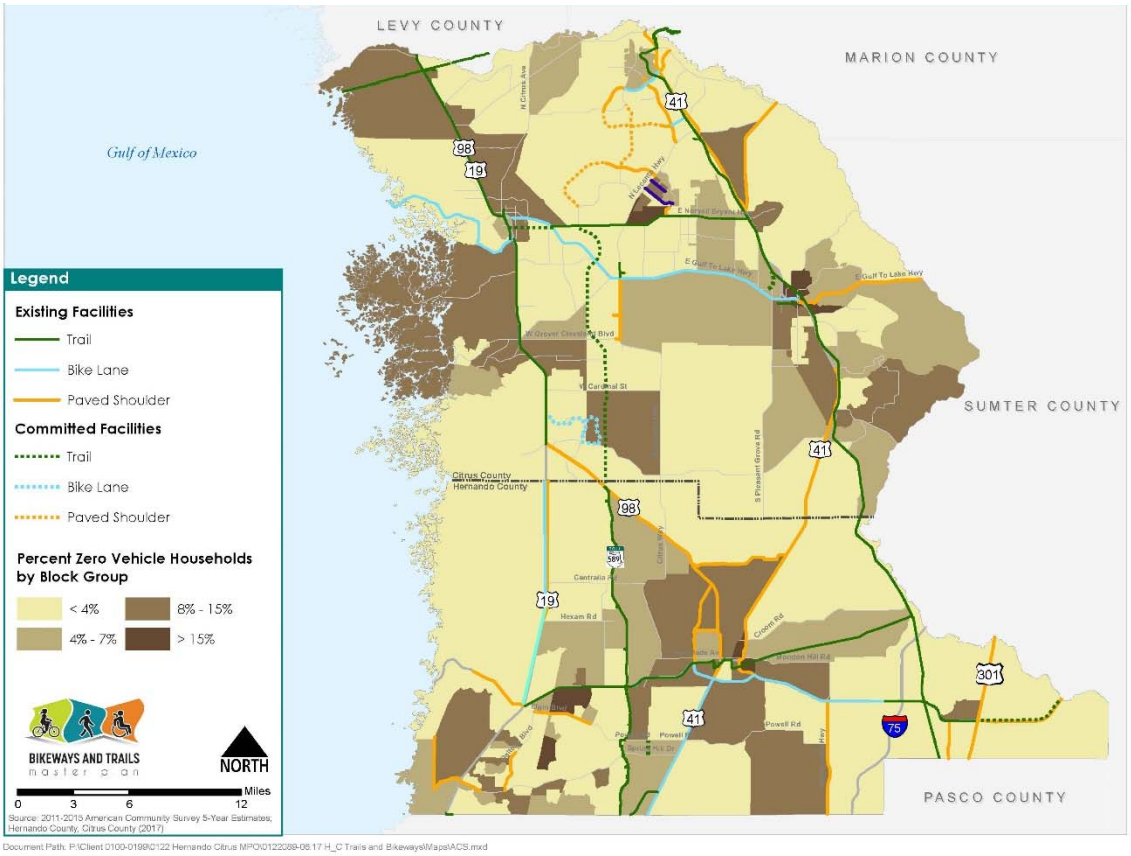
Figure 8 illustrates areas of poverty in Hernando and Citrus counties. Poverty is defined by the US Census as a family of four earning $22,000 or less. Owning a car is often an expense that is out of reach for many, it is important to acknowledge, especially in areas of poverty, that safe, convenient access to transit may be critical. Without a car, the mode of travel may be bus or bicycle.

Figure 8: Poverty Areas, Citrus and Hernando Counties, 2010–2015



The provision of sidewalk and bike lanes or other bicycle facilities creates opportunities for safe travel and may also extend the availability of the current transit system to users who are within a few miles of a stop or route rather than along the route. Figure 9 illustrates the areas of Hernando and Citrus counties in which car ownership is the lowest. The darkest areas indicate that 15% or more of households do not own a vehicle. For many in these areas, riding a bicycle is a necessity and is transportation, not recreation.

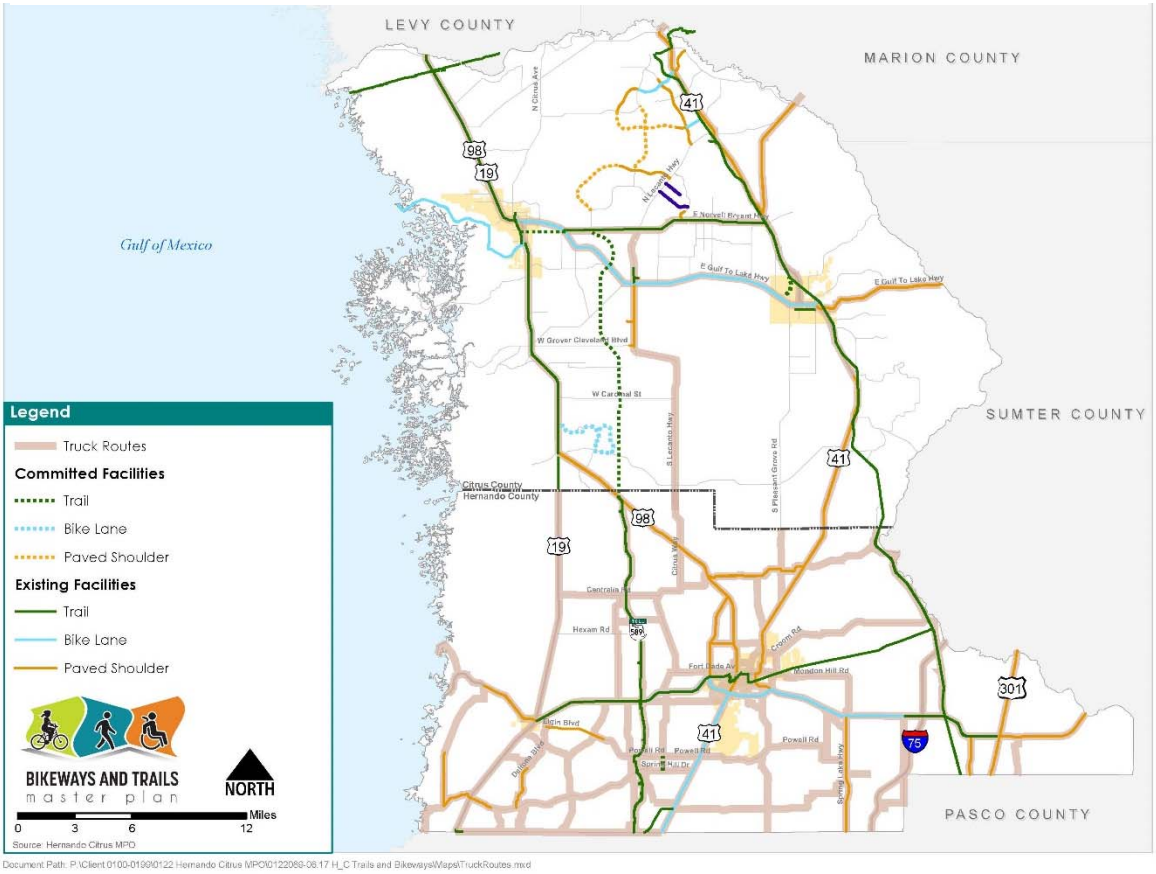
Figure 9: Households in Hernando and Citrus Counties with Zero Cars, 2010–2015



Truck Routes

All State roads and a majority of County roads are identified a truck routes. Although freight is important to the economies of both counties, it is important to remember that high volumes of trucks, especially those traveling at high speeds, have a negative impact on bicycle travel. Because County and State roads often are the only option for longer-distance travel by bicycle and car, consideration should be given to all modes. Especially outside of municipalities, the posted speed limit is often 45 miles per hour (mph) or higher. Generally 35 mph is the guidance for consideration of a separated facility (see Chapter 5). Figure 10 illustrates the locations of bike facilities or where they are proposed and where they overlap the truck routes.

Figure 10: Bike Facility Overlap with Truck Routes, Hernando and Citrus Counties



Regional Connections

The Hernando and Citrus bikeway and trail systems are developing at the local and regional levels. Within each county, primary trails such as the Suncoast Trail, the Coast-to-Coast Trail, and the Withlacoochee State Trail make up the backbones of the system, with local trails, County trails, and the roadway network acting as connections. It is also important to understand how Hernando and Citrus counties fit into an even larger context.

Tampa Bay Regional Transportation Authority (TBARTA) Regional Trail Priorities

In addition to hosting trails that are on the TBARTA regional trails maps, Hernando and Citrus counties have trails on the TBARTA Regional Multi-Use Trail Priority Project list. TBARTA is the regional planning agency covering Hernando, Citrus, Hillsborough, Pinellas, Pasco, and Manatee counties. This list covers trails in these counties and is an indicator of priority used to request and justify funding. The trails in Table 3 are on TBARTA's 2018 adopted list. A complete list of trails and the map can be found in the Appendix.

Table 3: TBARTA 2018 Priority Trails, Hernando and Citrus Counties

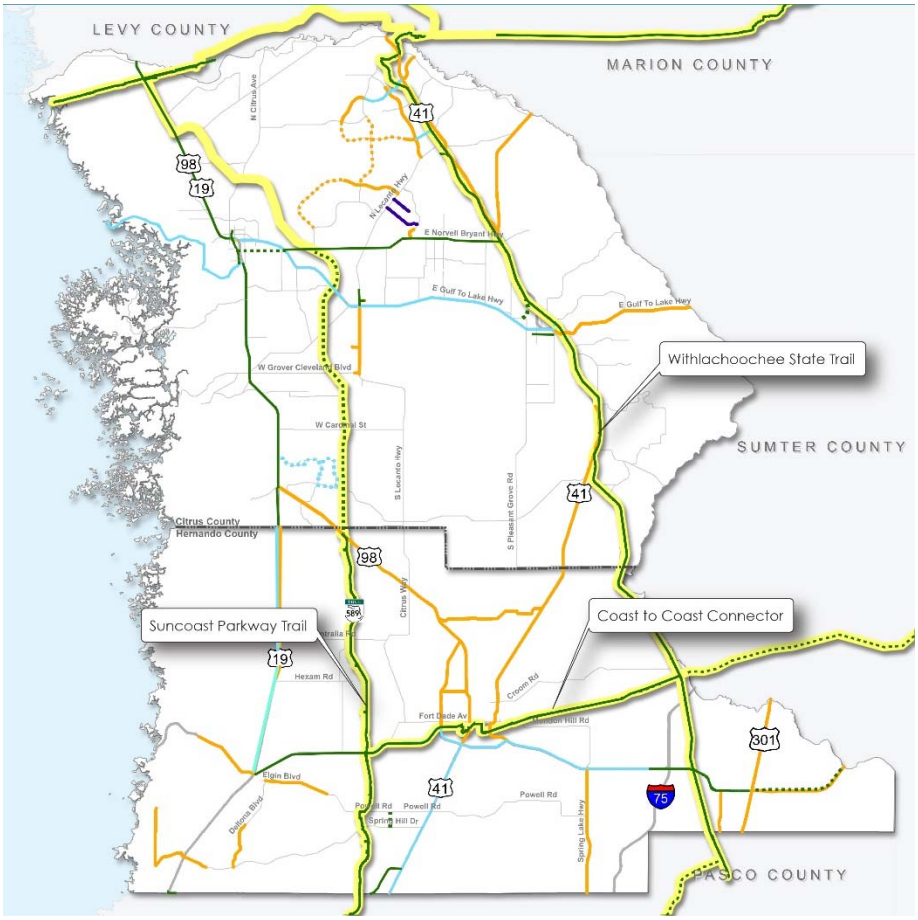
Rank	Name	County
2b	Suncoast Trail/Good Neighbor Trail Connector (Coast-to-Coast Connector – Good Neighbor Gap)	Hernando
7	Suncoast II	Citrus
10	Withlacoochee State Trail - Dunnellon Trail Connector	Citrus

Florida Greenways and Trails System

Both Hernando and Citrus counties include a number of land trail opportunities and priorities, as shown on the Florida Greenways and Trails System (FGTS) Plan and maps. The FGTS plan and maps are managed by the Florida Department of Environmental Protection, Office of Greenways and Trails.[9] The FGTS Plan establishes the vision for implementing a connected statewide system of greenways and trails for recreation, conservation, alternative transportation, healthy lifestyles, a vibrant economy, and a high quality of life. A map of the trail opportunities in the West Central region is included in the Appendix. Opportunities to connect to existing trails that are not yet funded for construction include the Orange Belt Trail in Pasco County and the extension of the Suncoast Trail north of CR 44. Figure 11 illustrates the regional trails that define the bicycle network in Hernando and Citrus Counties and the opportunities to connect within and to adjacent counties.

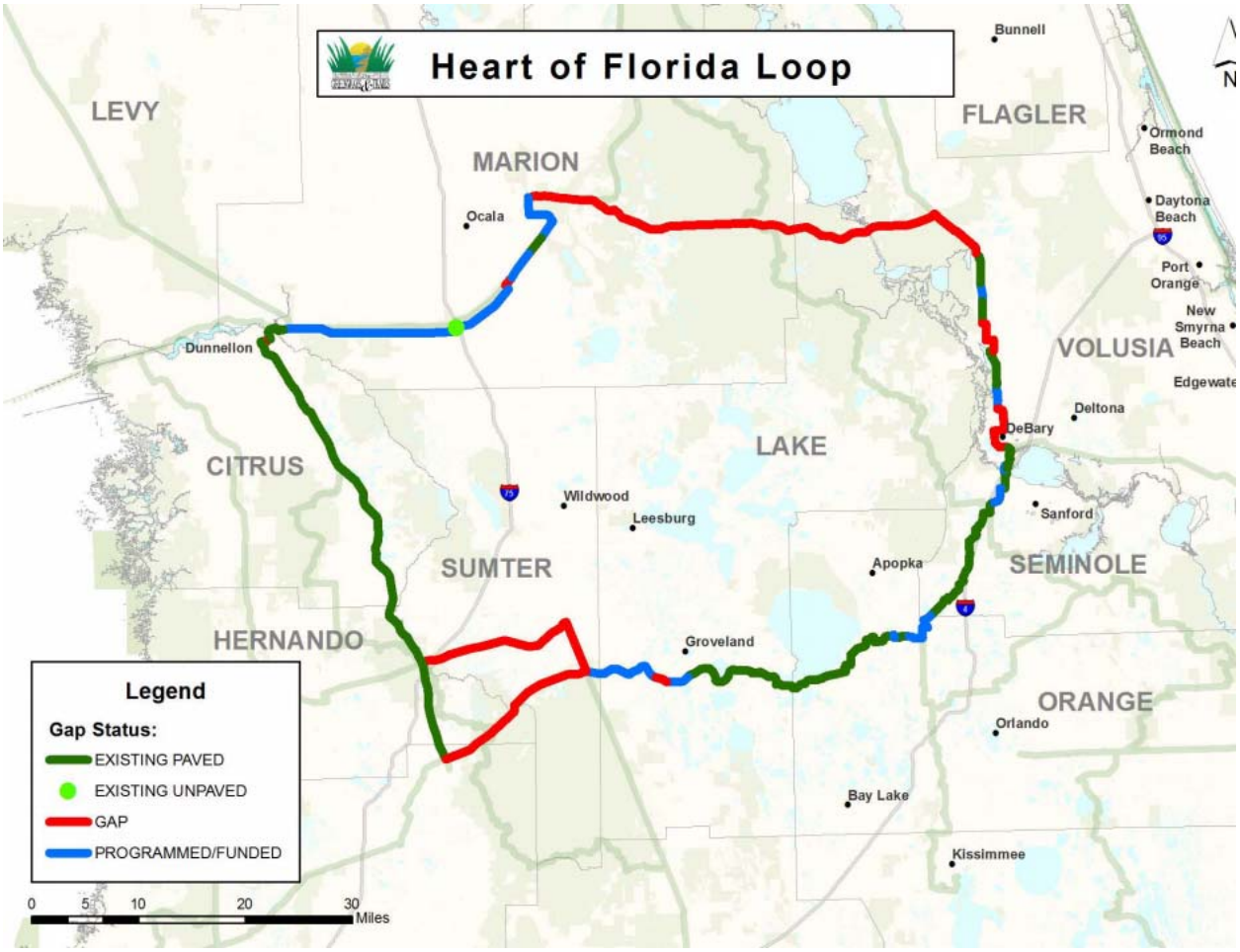
[9] https://floridadep.gov/parks/ogt/content/florida-greenways-and-trails-system-plan-and-maps.

Figure 11: Regional Trail System in Hernando and Citrus Counties



A map of the Heart of Florida Trail, shown in Figure 12, illustrates the connections with trails in Marion and Sumter counties and the larger loop trail connecting to Lake, Volusia, and Seminole counties. The Suncoast Trail, the Good Neighbor Trail, and the Withlacoochee State Trail in Hernando County are also part of the 250-mile long Coast-to-Coast Connector Trail running from St. Petersburg to Titusville.

Figure 12: Heart of Florida Loop Trail Running through Hernando and Citrus Counties



Local Plans

The Bikeways and Trails Master Plan works in concert with local planning efforts taking place in Crystal River, Inverness, and Brooksville. Although the plan focuses primarily on County and State roads, connections to and within communities in both counties are critical to the development of complete networks, making it possible for users to access destinations by bicycle and, for shorter distances, by foot. Continued coordination with local agencies to identify projects for placement on the MPO Priority List will support the goals of each community.

Chapter 3 – Programs and Policy

Creating a comfortable bicycling environment is a complex challenge that benefits from a multi-faceted approach. The "5 E's" (Engineering, Education, Enforcement, Encouragement, and Evaluation & Planning; 6 if Emergency Services included) offer a framework on which to build the program. Because each of these aspects works together and satisfies a different need, in addition to infrastructure, the Bikeways and Trails Master Plan includes recommendations about programs and policies. The emphasis on improving the infrastructure and designing roadways that encourage safe driving needs to stay at the forefront of the efforts to reduce crashes for all modes and the following programs ranging from education initiatives to policy changes can help achieve the goals identified above.

Programs

Safety programs are an important component of the Master Plan and part of the overall strategy to create an environment in which people can safely and easily ride bicycles and walk daily. Many programs are being implemented by MPOs and agencies throughout the US; those listed in Table 4 were selected because they can be implemented fairly rapidly by the MPO and its partners.

Table 4: Examples of Easily-Implementable Safety Programs

Type	Program
Education	• Walking and Biking Education (K–12) • Walk/Bike Smart • Bicycle Rodeos • Motorist Education/Outreach
Encouragement	• Bike Suitability Map • Walk/Bike to School Day • Florida Trail Town Program
Enforcement	• Bicycle Enforcement • Law Enforcement Officer Training
Evaluation/Planning	• Bike Counts • Miles Planned/Constructed

- **Walking and Biking Education (K–12)** – *The Bicycle and Pedestrian Curricula Guide,* published by the Safe Routes to School National Partnership, lists a number of different options for integrating bicycle and pedestrian education into the classroom. Bike/Walk Tampa Bay offers pedestrian, bicyclist, and driver safety presentations (WalkWise or BikeSmart Tampa Bay) to interested groups around Tampa Bay that target adults with brief interactive sessions covering the basics of walking and bicycling.

- **Bicycle Rodeos** – Bicycle rodeos are skill-based events that allow children to practice safe bicycling in a controlled environment. Usually for kids under age 12, they often are held along with bike safety inspections or helmet giveaways.
- **Motorist Education/Outreach** – Motorist education that encourages awareness of pedestrians and bicyclists and responsibilities on the road can be helpful in discouraging crashes. Current trends related to distracted driving and crashes suggest that motorists need to be reminded about the dangers of driving and texting.
- **Bike Suitability Map** – A bike suitability map helps to communicate the relative "comfort" of a facility to potential bicyclists. This can be an invaluable tool for riders who are both familiar and unfamiliar with local roads. It is recommended to be available in print and online.
- **Walk/Bike to School Day** – An international annual event, Walk/Bike to School Day is an opportunity to partner with local schools in support of safe walking and biking.
- **Florida Trail Town Program** – The Florida Office of Greenways and Trails (OGT) recently launched a new program to recognize and support trail towns in Florida. The program will highlight towns across Florida that cater to trail users. "A Florida Trail Town is a vibrant destination where people come together," said Doug Alderson, Assistant Bureau Chief of OGT. Communities can submit a questionnaire and self-assessment found on the Trail Town Program website.[10] Designated towns receive free metal trail town signs, stickers, and publicity.



The Florida Office of Greenways & Trails recently launched the Trail Town program to highlight the benefits of trails.

- **Law Enforcement Officer Training**[11] – Self-paced training on pedestrian safety and bicycle safety are available from the National Law Enforcement Academy Resource Network (NLEARN) and can be valuable tools. Alert Today Alive Tomorrow, FDOT's pedestrian- and bicycle-focused initiative, has developed several roll-call training videos for use by law enforcement officers.[12]
- **Usage Counts** – Communities across the US have begun counting users of their facilities, which often can lead to a better understanding of demand and can help with planning. The City of St. Petersburg conducts manual counts several times per year and will be installing trail counters at a number of locations in 2018. Counters could be placed along the Suncoast, Coast-to-Coast and Withlacoochee State trails.

[10] https://floridadep.gov/parks/ogt/content/florida-trail-town-program.
[11] https://www.iadlest.org/.
[12] https://www.alerttodayflorida.com/RollCall/.

Policy Review and Recommendations

In 2017, the Hernando/Citrus MPO adopted a resolution to request that FDOT include separated multi-use paths or widewalks in the design cross-section of State roads. Resolution 2017-01 reflects the MPO's support of developing bicycle/pedestrian-friendly infrastructure (see Appendix for reference). The following policies have been established to create the framework for implementation of this Master Plan.

Plan Policies

Funding

- Establish prioritization for funding projects based on safety, equity, and connectivity.
- Include bikeways in planned road construction projects, maximizing available construction funding and long-range planning efforts.
- Collaborate with counties and schools to identify Safe Routes to School funding candidates.

Opportunities

- Consult the Vision plan, which shows corridors where bicycle and pedestrian improvements should be considered when other improvement projects are planned.
- Work to increase bicycle and pedestrian facilities on all roads to make walking and biking more convenient.
- Encourage end-of-trip facilities, including secure bicycle parking and shower/changing facilities to make walking and biking more convenient.
- Establish preferred roadway cross-sections to assist in future roadway design.
- Make separated bikeways the preferred bikeway facility on County roadways with four or more lanes, traffic speeds of 45 mph, and/or more than 6,000 Average Daily Traffic (ADT). Separated facilities on roads with curbs may be separated bike lanes and shared-use paths or buffered shoulders on roads with no curbs.
- Increase opportunities for the Bicycle Pedestrian Advisory Committee (BPAC) and the Citizens Advisory Committee (CAC) to collaborate with County Engineering and Public Works departments to comment on Plan review and approve to ensure that what gets built is consistent with policies and vision.
- Work with schools to promote Walk/Bike to School Day.

Connectivity

- Coordinate with developers to connect project bicycle and pedestrian infrastructure to existing or planned trails within 100 ft. of development entrance.

- Enforce requirements that interconnections between developments are shown on project submittals. If there is no current adjacent development, opportunities to connect to the future development must be included in the project submittal.

Education and Enforcement

- Promote current rules and regulations for motorists, bicyclists, and pedestrians in a variety of formats to reinforce the need to comply with all appropriate laws.
- Identify locations in both counties with the highest number of crashes involving bicycles and pedestrians; provide educational outreach to residents and local police as part of an overall effort to reduce crashes in these locations.
- Work with local law enforcement as part of districtwide Community Traffic Safety Team (CTST) programs.
- Work with FDOT to develop educational and enforcement campaigns targeting Hernando and Citrus counties.
- Work with FDOT to identify resources to support additional enforcement campaigns, as needed.

Maintenance

- Support coordination among the MPO and City and County Maintenance offices for multi-use trails and facilities along and within State, County, and local rights-of-way.

Policy Review

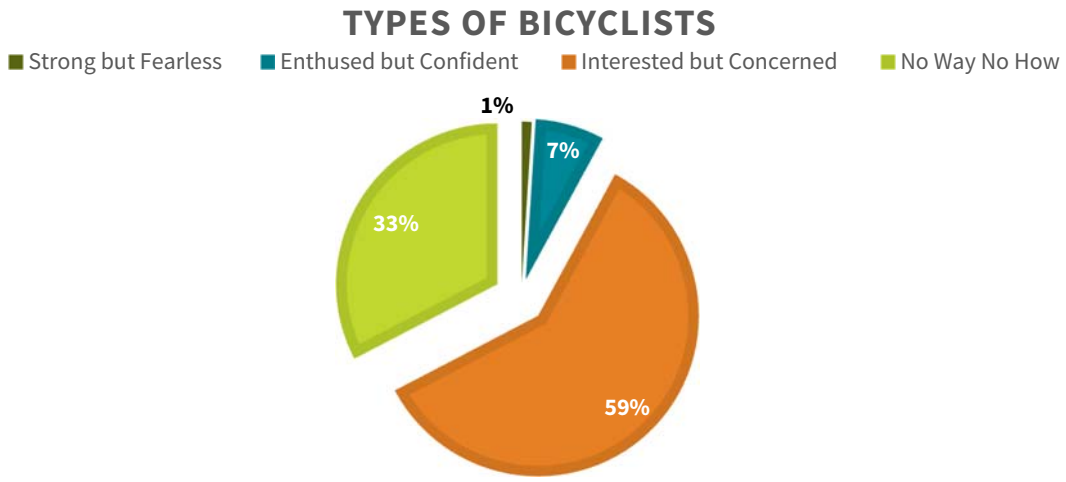
To ensure the integration of bicycle and pedestrian infrastructure into the County and local roadway systems in both counties, Land Development Codes, Facility Design guidelines, and Comprehensive Plans were reviewed to identify opportunities to update the plans and guidelines. Whereas this Master Plan is consistent with and builds upon the plans and guidelines, suggestions for edits have been included in the Appendix. It is recommended that plans and guidelines be reviewed periodically to ensure they are helping to create the environment envisioned.

Chapter 4 – Bikeways and Trails Toolbox

Bicycle and pedestrian facility design is evolving and, for many departments, including FDOT and Public Works, bicycle lanes have been included in the design of roadways for more than two decades. In the last 10 years, however, an increasing number of people have begun riding, and research indicates that most people need more than standard 4-ft bike lanes to feel comfortable riding.

In 2004, a paper by Roger Geller of the Portland Office (now Bureau) of Transportation suggested general categories and percentages of the types of bicycle users, as shown in Figure 13. The "no way no how" contingent of potential users is strong at 33%, but the "interested but concerned" group (59%) has shown that, with the construction of more protected, safer-feeling facilities, they are willing to ride a bicycle. In an increasing number of cities in which investments have been made in separated facilities such as side paths and in-road separated bike lanes, the percentages of bicyclists has increased.[13]

Figure 13: Bicyclist Rider Types



Source: Geller, Portland Office of Transportation, 2004

Level of Comfort and Facility Type

Because of the strong correlation between comfort and facility type, communities around the U.S. are developing bicycle networks that support more casual cyclists who may be interested in riding but are intimidated by sharing the road with vehicles. The City of Vancouver, for example, has developed an "All Ages and Abilities" (AAA) approach to some of its bicycling facilities to develop a network that targets the "interested but concerned" user group and begins to target the "no way no how" group. This approach is

[13] https://nacto.org/2016/07/20/high-quality-bike-facilities-increase-ridership-make-biking-safer/.

being applied to cities across North America. Figure 14 illustrates facility types and places them on the level-of-comfort spectrum. Whether or not an "all ages and abilities" approach is adopted, building facilities that are less protected (and, therefore, less comfortable) will limit users to those who are more comfortable on less-protected bicycle facilities.

Figure 14: All Ages and Abilities Facility Types by Comfort Level



Sources: City of Vancouver, Transportation Design Guidelines, All Ages and Abilities Cycling Routes

Much like the general trend seen around the country, the online survey developed to capture input for this Master Plan found that although many people ride and walk, the impediment for those who do not ride often is feeling unsafe; in total, 83% of survey respondents said there are places they want to ride in Hernando and Citrus counties but do not because they feel unsafe. As noted, comfort and safety are the primary motivators for people who ride by choice. Although those who are bicycle-dependent rarely attend meetings or sit on committees related to bicycle safety, it is important to remember that the routes they take should also be the safest and most comfortable available.

> **83%**
>
> *of survey respondents said there are places they want to ride in Hernando and Citrus Counties but do not because they feel unsafe.*

There are a variety of facility types and features that can be implemented to create bicycle networks. The following sections discuss potential on-road and separated facilities as well as supporting elements that should be considered, as appropriate, for both. Additional resources such as the American Association of State Highway and Transportation Officials (AASHTO) *Guide*

for the Development of Bicycle Facilities (2012), the National Association of City Transportation Officials *(NACTO) Urban Bikeway Design Guide,* and the Federal Highway Administration (FHWA) *Small Town and Rural Multimodal Networks Guide* (2016) should be consulted for the latest design guidance.

On-Road Facilities

Several different on-road bicycle facility types make use of the current roadway network by working between existing curbs; they can enhance the trail network by connecting parks and trails and creating transportation opportunities and accommodating different categories of users. They also tend to be less expensive to build and may be able to be implemented with a resurfacing project. Increasingly, as noted, research is showing that the more protection bicyclists have from vehicles, the more comfortable they feel and the more people ride. Following are facility types, from least to most protected, and a discussion of where they should be considered for construction.

Paved Shoulders

Shoulders are commonly used on rural roads that provide a separated space for bicyclists but are not marked as a bicycle facility. The minimum shoulder width is 4 ft., but on high-speed roadways or roadways with many bicycle users, wider shoulders are recommended (Figure 15).

Figure 15: Paved Shoulder



Rumble-Buffer Bike Lane[14]

This is an enhanced paved shoulder, primarily used along rural roads. Many cyclists report feeling unsafe on a standard paved shoulder, especially when adjacent to high-speed traffic or high volumes of trucks. Maryland DOT has been working to develop a rumble-buffer option for high-speed rural roads; by adding rumble strips and additional paint, the rumble-buffer bike lane adds additional separation between

[14] Safe Accommodation of Bicyclists on High Speed Roadways in Maryland, http://www.roads.maryland.gov/OPR_Research/ MD-16-SHA-UM-4-06_Bicycles-on-High-Speed-Roadways_report.pdf.

vehicles, continues to function as an emergency travel or stopping space, actively discourages either mode from entering the travel lane, and requires only a modest increase in shoulder width (Figure 16).

Bike Lanes

Bike lanes are spaces dedicated to bicycle travel on roadways. Typically, they are a minimum of 4-ft-wide if no curb and gutter, and 5-ft wide if included. Users are those who are comfortable riding with traffic; they represent a fairly small segment of the bicycle-riding community. This facility type should be considered during roadway resurfacing projects and can be used to make connections between trails. Bike lanes are not considered a preferred facility type for developing a community-friendly trail system (Figure 17).

Figure 16: Rumble-Buffer Bike Lane

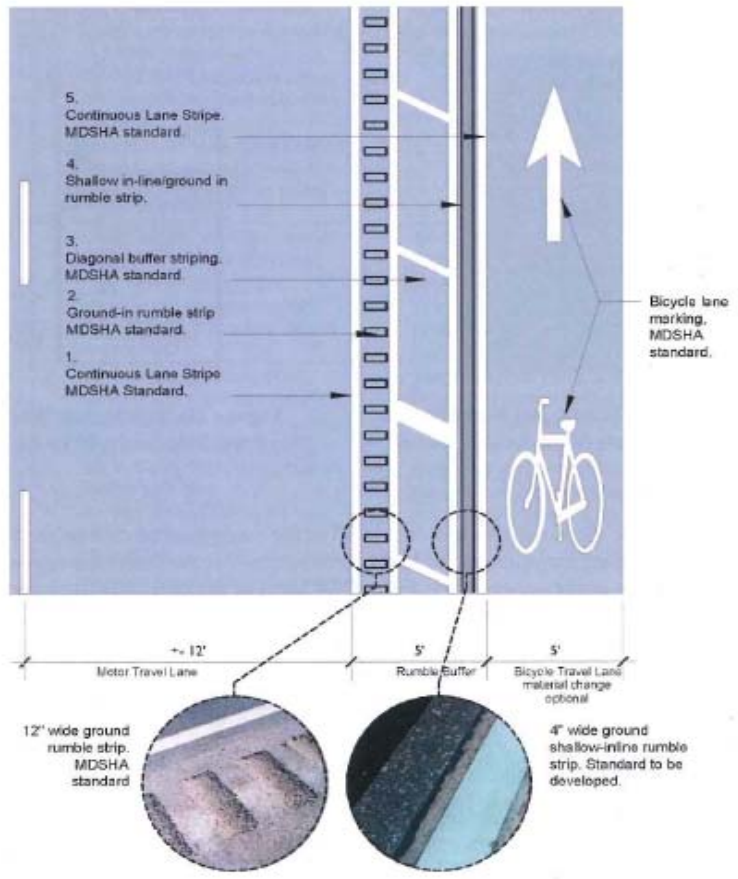


Figure 17: Marked Bike Lane



Buffered Bike Lanes

Buffered bike lanes are areas dedicated to bicycle travel on roadways that are 7-ft wide and include a painted buffer to provide extra space between bicyclists and adjacent vehicles. These facilities provide an additional degree of comfort for bicyclists and if bike lanes are being provided, should be considered for all new roads where higher volumes of bicycle traffic are anticipated (Figure 18). FDOT's policy is to install buffered bike lanes unless there isn't room to do so.

Figure 18: Buffered Bicycle Lane



Separated Bicycle Lanes

Separated bicycle lanes are on-road facilities that include a traffic separator and dedicated space for bicyclists. They can be one- or two-way depending on the need or the roadway condition and often can be constructed between existing curbs if the roadway has excess capacity. In urban areas, this type of facility can provide a high level of comfort for bicyclists, similar to that of a shared-use path. Design care must be taken at intersections and driveways. Adding this type of facility has been associated with an increase in bicycle usage (Figure 19).

Figure 19: Separated Bicycle Lane



Green Bike Lanes

Green paint can be applied to bike lanes in areas of potential conflict where motorists must cross the bike lane to turn or to exit a parking area. Green paint is considered a traffic control device and is subject to guidance in the *Manual on Uniform Traffic Control Devices* (MUTCD), subject to Interim Approval 14 (Figure 20).

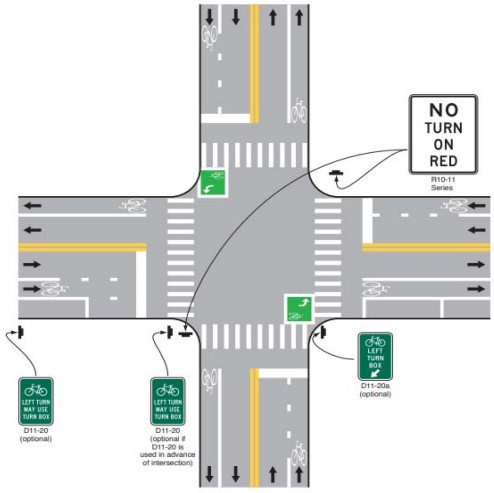
Figure 20: Green Bike Lane



Two-Stage Queue Box

A two-stage queue box allows bicyclists to more easily make a left turn. Rather than having to move into a turn lane to make a left turn, the turn box allows bicyclists to proceed across the intersection and position themselves to cross the intersection with the signal. It received FHWA Interim Approval IA-20 in 2017 (Figure 21).

Figure 21: Two-stage Queue Box



Advisory Bike Lane

An advisory bike lane is used on low-speed roadways where there is not enough room for both bike lanes and travel lanes. These markings communicate to both bicyclists and motorists where to ride while also communicating to motorists that they can pass when there is room (Figure 22).

Figure 22: Advisory Bike Lane



Advisory Shoulder

Advisory shoulders may be used on roads where it is not possible to construct a traditional shoulder. Using paint, space is designated for pedestrians within the travel lane; a dashed line is used to delineate the space may be crossed by motorists if the way is clear. Considered an innovative facility type by FHWA, an approved Request to Experiment is required to implement this facility on federally-funded projects. Additional information can be found it the FHWA's *Small Town and Rural Multimodal Networks.*

Bicycle Boulevard

A bicycle boulevard is a low-volume, low-speed street designed to give bicycles priority, typically achieved by a combination of signage and infrastructure. Also called neighborhood greenways, bicycle boulevards generally provide convenient access to local destinations and often connect or go through neighborhoods (Figure 23).

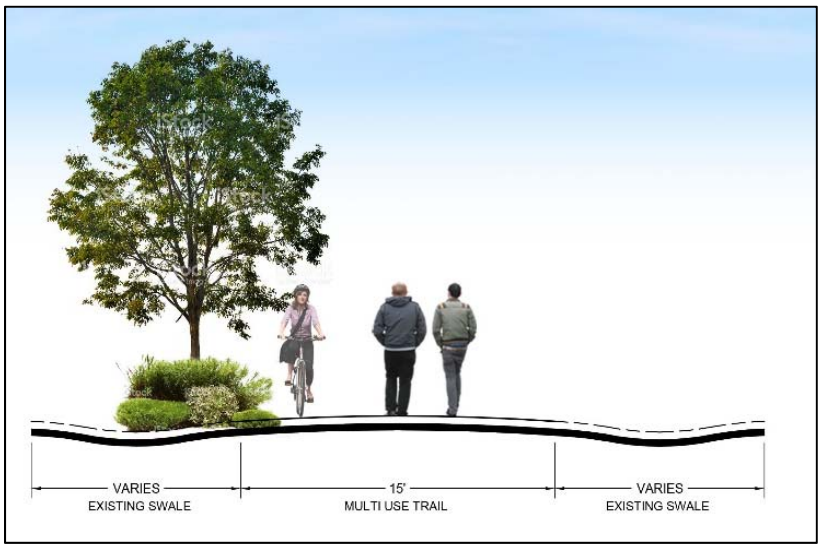
Figure 23: Bike Boulevard



Multi-use Trails

AASHTO defines a multi-use trail as a bikeway that is typically in an independent right-of-way and separated from motorized traffic by open space or a buffer. It may be used for recreation or transportation purposes and falls under the accessibility requirements of the Americans with Disabilities Act (ADA) (Figure 24).

Figure 22: Multi-use Trail Section



Trailheads and Rest Areas

Rest areas and trailheads can take many forms, from the most basic parking lot with trail access to a major trailhead that includes parking, restrooms, water fountains, trail signage, and bike racks (Figure 25). Although the elements of each trailhead may be unique to its location and subject to available space and projected demand, generally, they can be separated into three categories. The provision of areas and elements, even if they do not fully conform to the category, is encouraged.

Figure 23: Shelter on Suncoast Trail



- **Major trailheads** include parking, restrooms, water fountains, bike racks, and a bike repair station. Parking at a major trailhead should be designed to accommodate trailers for recumbent bikes (for example, Suncoast Trail at SR 50)
- **Minor trailheads** include parking, seating, and bike racks.
- **Rest areas** may be a shelter adjacent to the trail; there may or may not be trail information and a trash can.

911 Emergency Response System Markers (ERSM)

Feeling safe on a trail is critical to its use. Installing location decals on trails such as that shown in Figure 26 is an increasingly common practice to both enhance the feeling of safety and allow emergency responders to locate trail users. Exercise distance monitors could also be considered so users can track distance according to the markers. In Hernando County, a process has been developed between the Parks & Recreation Trails Division and fire, EMS, and law enforcement agencies in which 911 operators use GPS to mark coordinates. It is increasingly common to install and maintain these markers for the life of a trail. Maintenance must include replacement of decals.

Figure 24: Embedded Pavement Decal



Trail Counters

Understanding trail usage is critical to properly staff and maintain trails. Information on usage can help make the case to expand the system or improve facilities. Cities across the US such as Boulder, San Francisco, and Seattle are installing trail counters (Figure 27). According to the Portland Bureau of Transportation, "… counting bicycles informs [us] about progress toward making bicycling a fundamental part of life in Portland and gives feedback about the usefulness of investments in bicycle infrastructure and city streets" (Brooks, 2014). It is recommended that trail counters be installed at major trailheads and at County lines, with a focus on the Coast-to-Coast Trail and the Suncoast Trail. Other possible locations along the Withlacoochee Trail should be considered.

Figure 25: Bicycle Barometer in Boulder, CO
(Source: PeopleForBikes)



Crossings

Trail/roadway intersections are essential components of a trails system because they are the most prone to conflict and crashes. Designing intersections that give bicyclists and vehicle operators enough time to react to each other is crucial to minimizing the opportunities for crashes. Several design tools are available to help all users navigate intersections, as described below.

Because each crossing is unique, the specific geometry and location will factor into the design of each intersection. It is important to note that circumstances of use may change over time; this should trigger a review and modification as needed of certain intersections. If, for example, a trail has a higher volume of users than might have been anticipated, it is recommended that the trail crossings be reviewed. It is also important to consider changes to surrounding land use. A crash trend or higher- than-projected volumes for either vehicles or bicyclists may require the need to redesign the crossing to address the challenges.

Stopping Sight Distance

Safety at trail intersections (trail and roadway, trail and driveway, etc.) relies on enough time for users of all modes to see any oncoming conflict. This "stopping sight distance" will vary depending on trail conditions, including slope and design speed. Additional information on calculating these distances can be found in the *AASHTO Guide for the Development of Bicycle Facilities* (2012).

Intersection Design

Trail crossings typically take one of three forms—mid-block, intersection, or grade-separated (over/underpass). Each has its own design and usage challenges. These crossing types are discussed below; refer to the AASHTO *Bike Guide*, section 5.3, and AASHTO's *Guide for Planning, Design and Operation of Pedestrian Facilities* for more details. Determining assignment of right-of-way at an intersection is of critical importance and, typically, the approach taken should be to apply the least traffic control that will be effective.

Unsignalized Crossings

Unsignalized crossings occur where a trail intersects with a roadway. Assignment of right-of-way is key to identifying the appropriate traffic control devices for the circumstance. Factors such as traffic and trail volume, sight distance, and grade should be taken into account. High-visibility crosswalks with appropriate signage and markings for both modes should be the minimum. Per AASHTO, the amount of restriction placed at an intersection should be appropriate for the intersection. Unnecessary risk and disregard of signage can result if more restriction than necessary is included at intersections.

Enhanced At-Grade Crossing or Signalized Crossing

A Pedestrian Hybrid Beacon is a pedestrian-activated traffic control device that is dark to motorists until activated by a pedestrian, at which time a flashing yellow light followed by a solid red light is provided to motorists to direct them to stop (Figure 28). The solid red advances to a flashing red that allows motorists to proceed with caution once the pedestrian has cleared the crossing).

Figure 26: Pedestrian Hybrid Beacon



A Rectangular Rapid Flashing Beacon (RRFB) (Figure 29) is a traffic control device consisting of two rapidly and alternately flashing rectangular yellow indications with an LED array that functions as a warning beacon. This device has Interim Approval through FHWA for use at unmarked crosswalks.

Figure 27: RRFB, St. Petersburg, FL



Trail/Subdivision Intersections

Trail/subdivision entrances often are challenging because of design and volume of users. It is important to treat these like an unsignalized intersection, with adequate sight distance and assignment of priority. “Yield” signs should be considered unless residential volume is high. High-visibility crosswalks or a variation that uses green paint should be considered to bring attention to the crossing.

Overpasses and Underpasses

Overpasses and underpasses could be considered in locations where traffic volumes are too high to manage with an at-grade crossing, such as multi-lane highway crossings. In some instances, based on usage volume, it may be appropriate to consider the construction of an overpass as part of a long-term plan for the trail.

Crosswalks

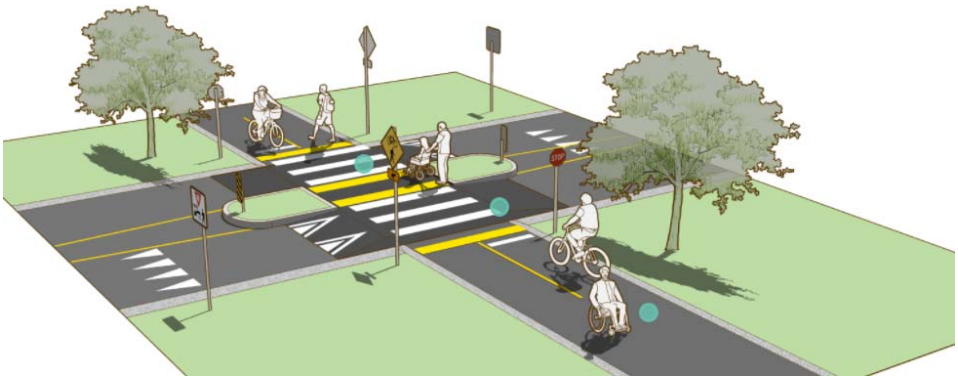
Crosswalks provide critical clarification at intersections, identifying a safe space for bicyclists and pedestrians to cross and heightening the visibility of users of the crossing. The design of a crosswalk should depend on the facility type, adjacent street function, surrounding land use, and level of potential conflict.

The Small Town and Rural Design Guide has identified several factors that can be included to make a crossing safer, including median islands, raised crossings, and crosswalk markings (see Figure 30). NACTO's *Bikeway Design Guide* has also identified a number of crosswalk designs that can be implemented depending on context. Features highlighted in the guide include green paint in the intersection and "elephant tracks" or wider white striping along the outside of the intersection.

It is recommended that each intersection or crossing be designed for the context, including the features that would provide the most clarity for all users of the crossing.

Figure 28: Shared-use Path Crossing

(Source: FHWA Small Town and Rural Design Guide)



Geometric Trail Design Criteria

Basic trail design criteria are provided below. More detail can be found in the *AASHTO Guide for the Development of Bicycle Facilities* and the *AASHTO Guide for the Development of Bicycle Facilities*.

- **Lateral Clearance** – The minimum lateral clearance distance is 2 ft. MUTCD requires 3 ft. clearance between trail and signage.
- **Overhead Clearance** – The recommended overhead clearance for structures is 1 ft., with a minimum of 8 ft. Trees should be limbed up 13 ft. above the trail surface.

- **Striping** – Striping may be installed where passing is inadvisable, including at the approach and departure of intersections. Striping may also be advisable where trail user volume is high, sight distance is restricted, or design speed is low.
- **Cross Slope –** Shared-use paths adjacent to roadways function as sidewalks according to Public Rights-of-Way (PROWAG) and, therefore, cannot have a cross slope greater than 2%. A 1% cross-slope is recommended for ease of use by people with disabilities.
- **Grade** – The maximum grade of a shared-use path adjacent to a roadway is 5%. Grades for paths in an independent right-of-way should not exceed 5%. Switchbacks and pull-outs can be provided to mitigate excessive grade changes. Signage also should be provided to warn users of grade changes.

Wayfinding

Wayfinding is an important component of a bicycle network and can be defined as:

> … a system [that consists] of comprehensive signing and/or pavement markings to guide bicyclists to their destinations along preferred bicycle routes. Signs are typically placed at decision points along bicycle routes – typically at the intersection of two or more bikeways and at other key locations leading to and along bicycle routes. (*NACTO Urban Bikeway Design Guide*)

Both Hernando and Citrus counties have areas that would benefit from signage that informs bicycle riders in the same way roadway signage informs motorists. Although cell phones have put maps and information at rider fingertips, signage creates confidence in the route being traveled and can quickly and conveniently convey directions and distance. Locally, Inverness and Brooksville have established signage plans, and signage also exists along US 41 to guide users to the Withlacoochee State Trail. A signage plan also is being developed for the Coast-to-Coast Trail and will facilitate co-branding with Brooksville. Beyond big projects such as regional trails, there is the need to provide information about the best routes to travel through neighborhoods or to make connections to destinations. It is recommended that a wayfinding plan be developed for the Citrus Hills and Citrus Springs neighborhoods in Citrus County.

National Guidance

Signage used on roadways is regulated by MUTCD, and NACTO has developed a reference guide that can be used to help develop a wayfinding signage plan.

MUTCD

MUTCD addresses aspects of bicycle signage and placement. Section 9B.20, Bicycle Guide Signs, identifies standard sign color, but there is no specification for bike boulevard or bikeway signage. Chicago, Berkeley, and Tucson have developed their own bicycle wayfinding signage designs.

MUTCD Section 2D.50, Community Wayfinding Signs, outlines guidance for this type of signage and allows for color variation, as long as the colors used are not those used in regulatory or warning signage (i.e., Stop, Yield, Work Zone).

NACTO

NACTO's *Urban Bikeway Design Guide* has been endorsed by FHWA for reference in designing urban bicycle infrastructure. The goal of the guide is to provide cities with state-of-the-art-practice solutions that can help create complete streets that are safe and enjoyable for cyclists. The guide's chapter on "Bike Route Wayfinding Signage and Markings System" describes a wayfinding system as comprehensive signing and/or pavement markings and identifies three types of signs that should be used when developing a bicycle wayfinding signage system:

- **Confirmation signs** help bicyclists know they are on a bike route and also let motorists know they are on a road that may have higher bicycle traffic. Placement should be every 2–3 blocks and used in conjunction with turn or decision signs. Pavement markings also can be used as confirmation.
- **Turn signs** indicate when the bikeway/bike boulevard is shifting to another street. It is recommended that destination and distance be listed on the sign. Pavement signage can be used.
- **Decision signs** mark the intersection of routes and access to destinations and typically include arrows, named destinations, and distances. Pavement signage can be used.

Figure 29: Wayfinding Signage Example, Gresham, OR



While the details might not be known until a signage program was developed, the approach to laying out signage is to post signs at decision points and providing information about destinations. It is increasingly common for communities to develop wayfinding signage strategies that market their brand. Figure 31 is an example of a wayfinding sign from Gresham, OR that identifies destinations and distances and also includes local marketing information.

Trends

The CV Link is a mixed motorized trail designed to cover an 80-mile portion of a larger multimodal pathway connecting nine cities to accommodate low-speed electric vehicles in addition to bicycles and pedestrians.



When planning for the future of the bikeways and trails system in Hernando and Citrus counties, it is important to understand how current trends might impact future needs and to allow enough flexibility to respond as things change. Currently, in addition to the trend in increasing ridership, one of the most important trends in bicycling is bike-sharing. Bicycle sharing systems allow users to check-out a bike for a small rental fee. They can use fixed docking stations or be "dockless", allowing bike to be locked to anything. Each system has its own challenges that need to be planned for. Fixed docking stations need a permanent location and dockless bikes may need appropriate locations for locking up bikes. Bike-sharing has expanded to include e-bikes which have expanded the reach of bike share letting users comfortably ride longer distances. Both innovations have had a tremendous influence on a relatively new phenomenon; bike-sharing was already changing commute patterns in high-density areas and offering an answer to the first/last mile challenge presented by transit. E-bikes—bicycles with a battery-powered pedal assist or throttle—with their longer range and ease-of-use make them an option for an even broader group of users.[15] Sales of e-bikes have grown (by 25% from 2016 to 2107[16]), and cities are grappling with how to incorporate them into their transportation systems. Issues range from parking, often seen with dockless bike share, to their place on the road and how these bikes interact with motorists and other bicyclists.

E-bikes typically have a maximum speed of 20–28 mph, which, although low speed, conflicts with the cruising speed of an average bicyclist. Additionally, use of other low-speed vehicles such as cargo bikes, scooters, and driverless shuttles are on the rise and may require the reallocation of roadway space and the re-imagining of trails and roadways to encompass a wider range of vehicles and speeds.

The advent of different kinds of bicycles also means different demands for bicycle parking. Docks for bike share systems take up space, often on sidewalks and dockless bike parking needs to be convenient yet out of the way of pedestrians. Trailheads have always needed to accommodate recumbent bicycle parking and the trailers that are used to haul them, and bicycle parking is considered key to getting people to use bicycles for short trips, so it needs to be incorporated into destinations such as shopping areas and downtowns. Convenient parking in shopping areas and destinations that are also within close

[15] https://www.bicycling.com/skills-tips/a20044021/13-things-about-e-bikes/.
[16] https://cyclingindustry.news/u-s-electric-bike-market-up-at-least-50-says-market-analysts-ecycleelectric/.

proximity to residential areas can increase the likelihood that people will choose to ride instead of drive. The increasing use of Uber and Lyft means that bike parking should be considered in tandem with loading zones.

A related concept, one that brings multiple modes together, is the mobility hub, the aggregation of various modes to increase efficiency. An example of this is a bike-share dock or parking at a bus stop to help users move seamlessly between bike and bus. Access to these hubs should be supported by the best possible versions of infrastructure such as separated bike lanes and enhanced intersection and would make sense at high use transit stops or destinations.

Because the sidewalk tends to be the nexus for all of this activity, this increased pressure highlights the increasing need for sidewalk demand management. Although walkable places are a focus of any downtown, with bustling sidewalks and amenities, consideration will need to be given to the special needs for bicycles.

Chapter 5 – Recommendations and Implementation Plan

This Master Plan was developed in two parts to reflect short-term needs and a long-term vision. Achieving the Vision will require collaboration and a commitment to creating a bicycle-friendly community and is assumed to be achieved primarily as roadways are expanded.

As described in Chapter 3, there are a variety of facilities appropriate for bicyclists ranging from buffered bike and marked bike lanes to completely separate trails. Sidewalks are not included in this list and are not recommended as appropriate for bicyclist travel. While bicyclists often ride on sidewalks if they are uncomfortable or feel unsafe on the roadway, riding on sidewalks has been shown to be dangerous and in some communities in Florida is illegal.[17]

Public Engagement

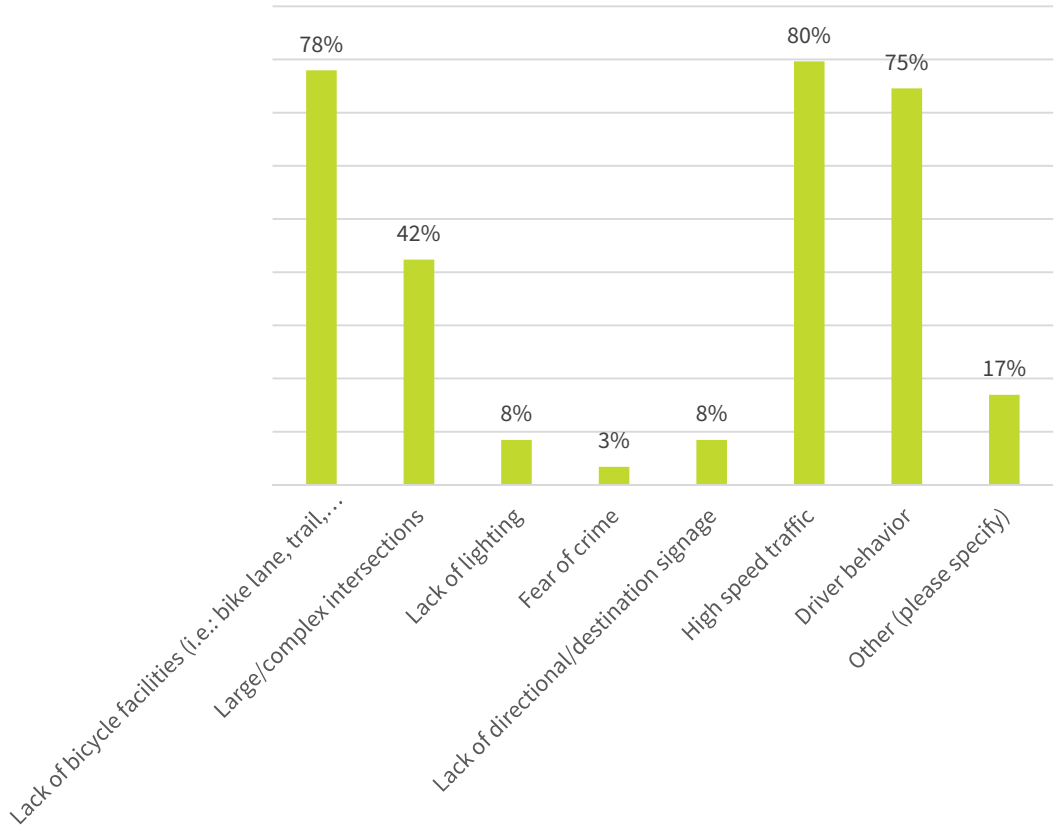
The public engagement effort for this project was multi-faceted. In addition to staff and committee feedback, on-line survey and mapping tools were used to compliment workshops held in each County. A Project Advisory Team, made up of committee members, was also convened several times during plan development to review workshop and on-line feedback. Input from the different groups influenced the development of the goals as well as the prioritization criteria and the final spot project or needs list.

The Public Engagement Memo as well as the raw feedback received from the survey and the web-mapping tool can be found in the Appendix. In the on-line survey, respondents were given a series of questions about bicycling conditions to gauge their concerns as well as what they considered important. The responses to the question about safety and desired facility types are included below. These responses helped form the basis of the policy to include separated facilities in roadway widening projects.

Respondents were asked **If biking, what makes you feel unsafe?** They could note more than one. As shown in the chart below, 80% identified high speed traffic as the factor that makes them feel unsafe. This was closely followed by the lack of bicycle infrastructure (78%), and driver behavior (75%). Things noted in the "Other" category included high volume traffic, narrowness of certain roads, the lack of a bike lane or shoulder and debris in the bike lanes.

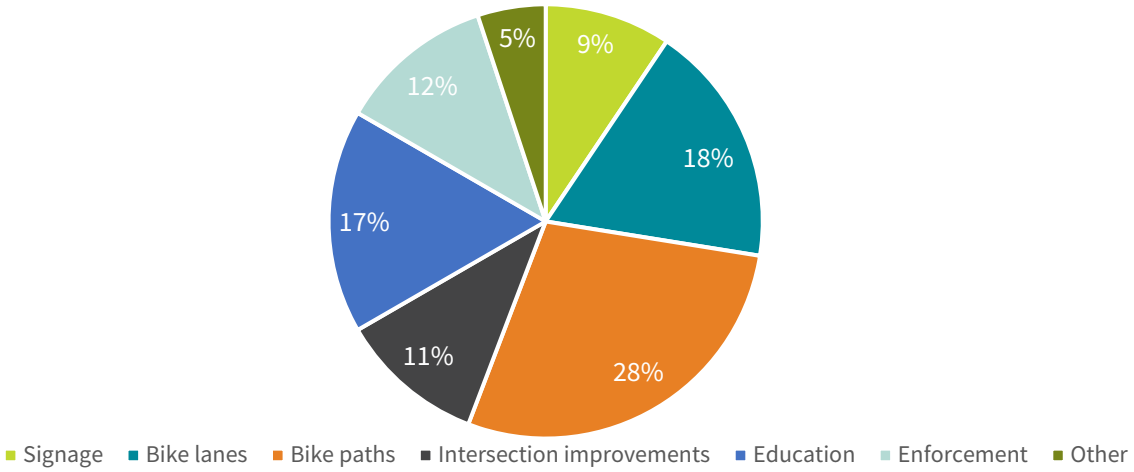
[17] Alan Wachtel, Diana Lewiston, "Risk Factors for Bicycle-Motor Vehicle Collisions at Intersections," http://www.bicyclinglife.com/Library/Accident-Study.pdf

Figure 30: What Makes You Feel Unsafe When You Ride?



Respondents were also asked **What bike support would you like to see more of in Hernando/Citrus counties? (i.e., signage, bike lanes, bike paths, intersection priority, bicyclist and driver education, enforcement).** As seen in Figure 33, Bike lanes, paths (trails) and education were the top three items selected. Other items listed include lighting, restrooms, and resurfacing. Things noted in the "Other" category included maintenance, lighting and weather protection.

Figure 31: Facilities Respondents Would Like to Have



Vision Maps

Vision Maps were developed to illustrate an ultimate bicycle and pedestrian network for each county. These maps offer the possibility of more comfortable bicycle facilities on a variety of roads, acknowledging the trends in facility design and the impact on ridership. The Vision acknowledges individual city plans and incorporates them. Many who attended the Master Plan workshops expressed interest in being able to travel between cities and towns, and it is most often the State and County roads that make this possible.

Noteworthy on the maps is the addition of multi-use trails adjacent to County and State roads. This aligns with the Citrus County commitment to add trails adjacent to roadways whenever they are widened and also aligns with the 2017 MPO resolution to request that FDOT include separated multi-use paths or widewalks in the design of their collectors and arterials. The feasibility of separated facilities was not analyzed other than by spot review, so the actual implementation of such facilities would need to be determined during design, subject to drainage and right-of-way constraints. The approach should be to attempt to include separated facilities; if these are determined to not be feasible or to be feasible only in sections, then plans should include the next-safest facility, which on rural roads would be wider, buffered shoulders. In more-developed areas, a buffered bike lane or a separated bike lane may be more appropriate. The Vision Maps for each county are provided in Figures 34 and 35.

Figure 32: Bikeways and Trails Vision Map for Citrus County

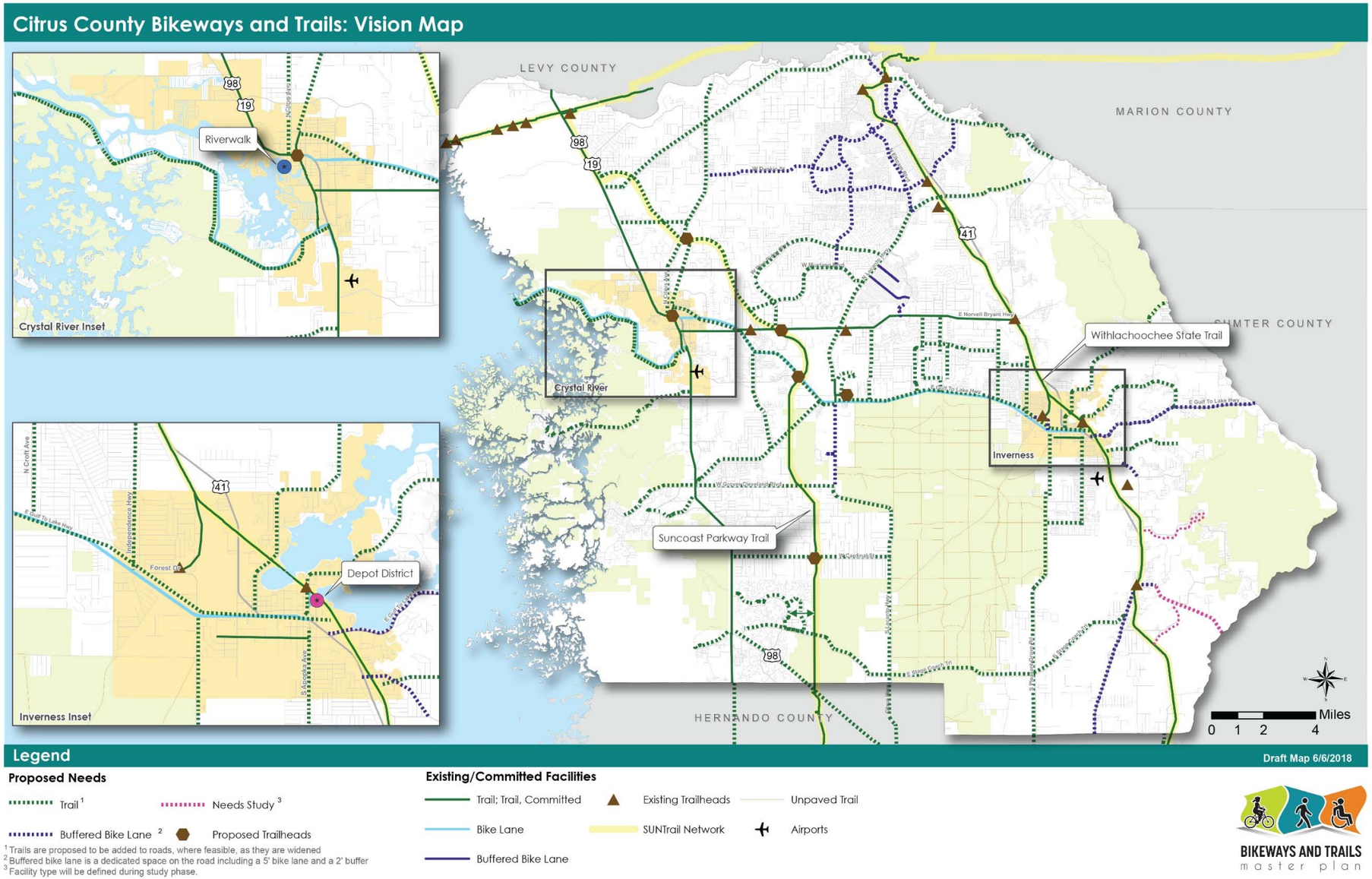
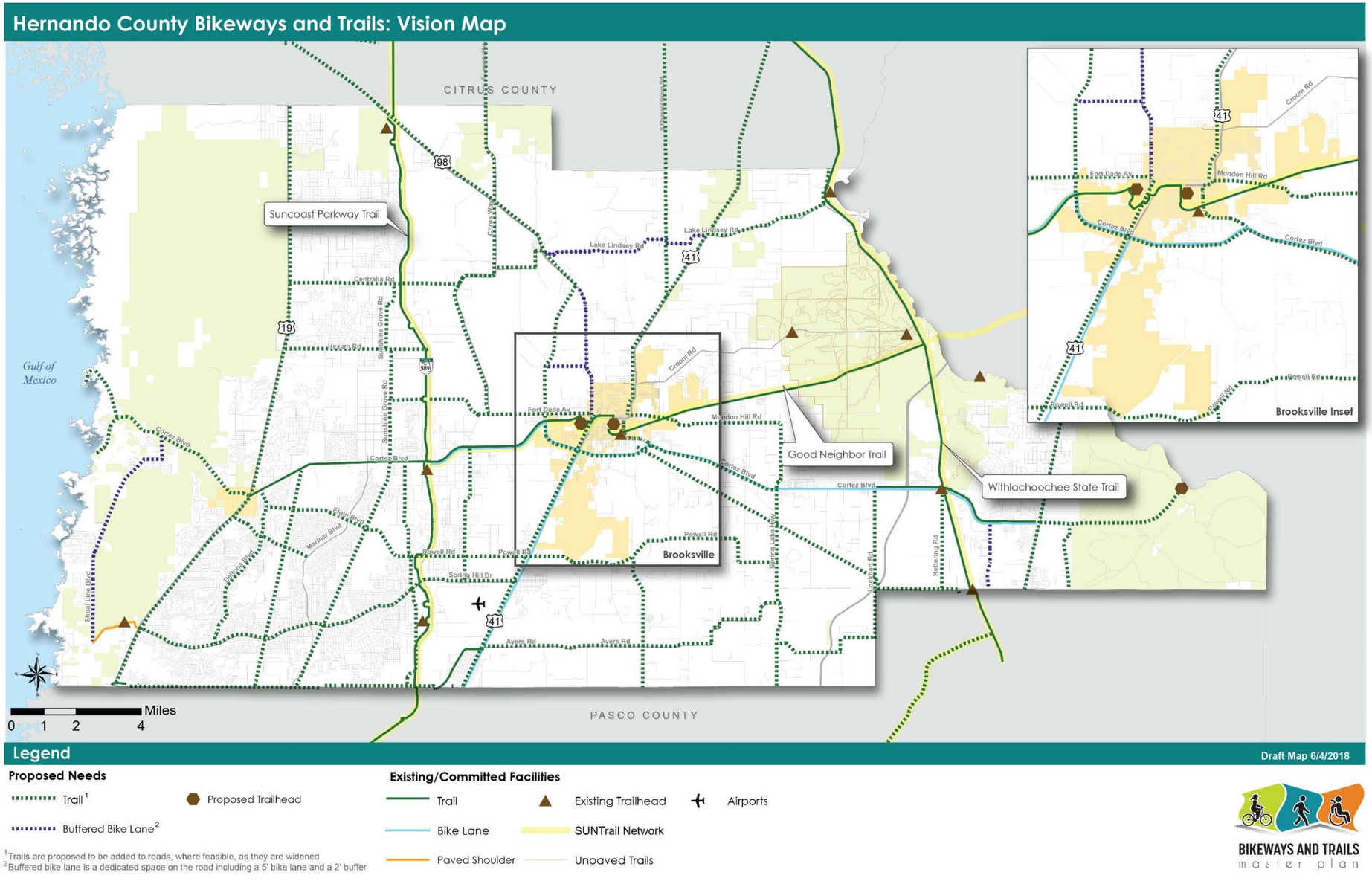


Figure 33: Bikeways and Trails Vision Map for Hernando County



Needs

Throughout the planning process, it became apparent that there are myriad perspectives on what makes a good bicycle network. Early discussions covered everything from fixing the existing trails to planning for new trails. To capture this input, several strategies were used—an online mapping tool was used to capture location-specific input, an online survey tool was used to obtain facility and needs input and opinions, and two workshops were held for in-person discussions. All feedback was compiled, categorized, and reviewed with MPO staff. More detail about these efforts can be found in the Public Engagement Memo in the Appendix.

Many comments received dealt with existing facilities, which were assigned to an "Existing Facility Issues" category and routed accordingly. Comments related to the Withlacoochee State Trail will be addressed in future studies that address it specifically. Another group of comments was related to concerns about existing trail construction and were provided to the responsible County agency. All feedback was reviewed by the Project Advisory Team (PAT).

Other comments addressed the desire to add amenities such as camping and other trip support. Because of the economic development possibility offered by the trails system, OGT was identified as a valuable partner in this process and was engaged as a stakeholder to partner in future opportunities for plan development. Finally, a number of comments will be addressed by the upcoming construction of the Brooksville segment of the Coast-to-Coast Trail, scheduled for completion in 2022 or by the Citrus County policy to add multi-use paths and bike lanes as part of capacity projects.[18] Projects included in the Long Range Transportation Plan (LRTP) also are candidates for bicycle facilities as envisioned in the Master Plan. The breadth of these comments illustrates the needs and opportunities important to many in each community.

In addition to trail connections, specific locations and destinations within areas were identified as part the mapping and workshop exercises. Being able to ride to a variety of destinations is in line with the Master Plan Vision of creating a comfortable bicycling environment. Some of those will be addressed by trail plans that are under construction, including the multi-use trail along US 19 being constructed as part of an FDOT widening project. Other destinations, such as riding around Crystal River, will benefit from a scheduled resurfacing project that will add buffered bicycle lanes and several mid-block crossings.

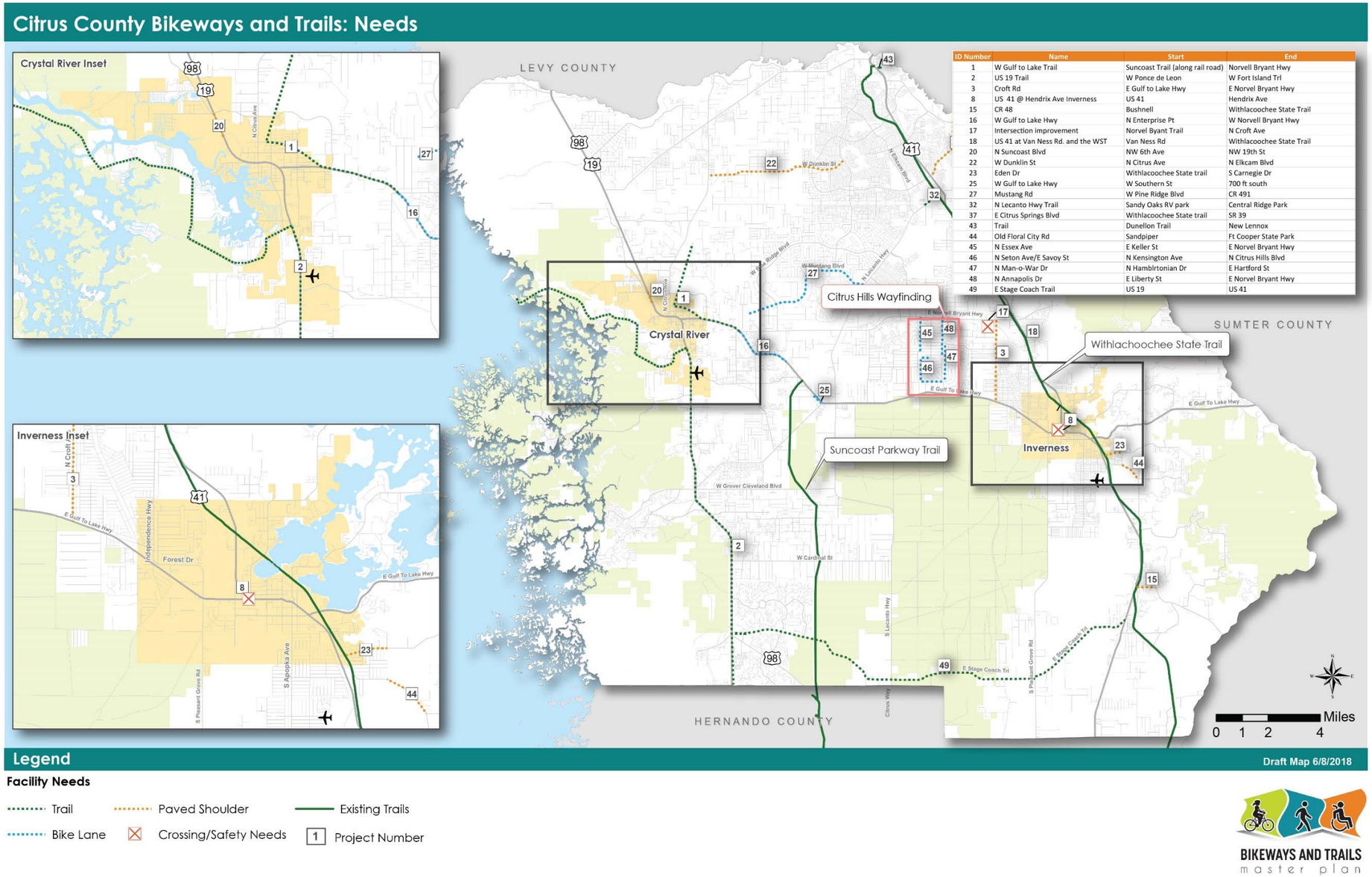
The draft list of needs was analyzed according to the evaluation criteria and ordered by points, with the most points indicating the highest-priority projects. A map of the project needs for each county was developed, and the list was evaluated by MPO staff and reviewed at the second PAT meeting. The PAT discussed the list and the needs maps, and the needs were further refined.

[18] Citrus County facility width criteria are included in the Appendix.

Limited funds necessitate that projects must be prioritized, but this does not preclude incorporating projects that may be lower on the list into planned infrastructure improvements to take advantage of funding sources or infrastructure projects. Based on feedback from the MPO committees, projects from this process will be reviewed for feasibility and added to the Hernando and Citrus County Complete Streets Lists for submission to FDOT for discussion and funding options, including Surface Transportation Block Grant Program and Highway Safety Improvement Program (HSIP) Funds.

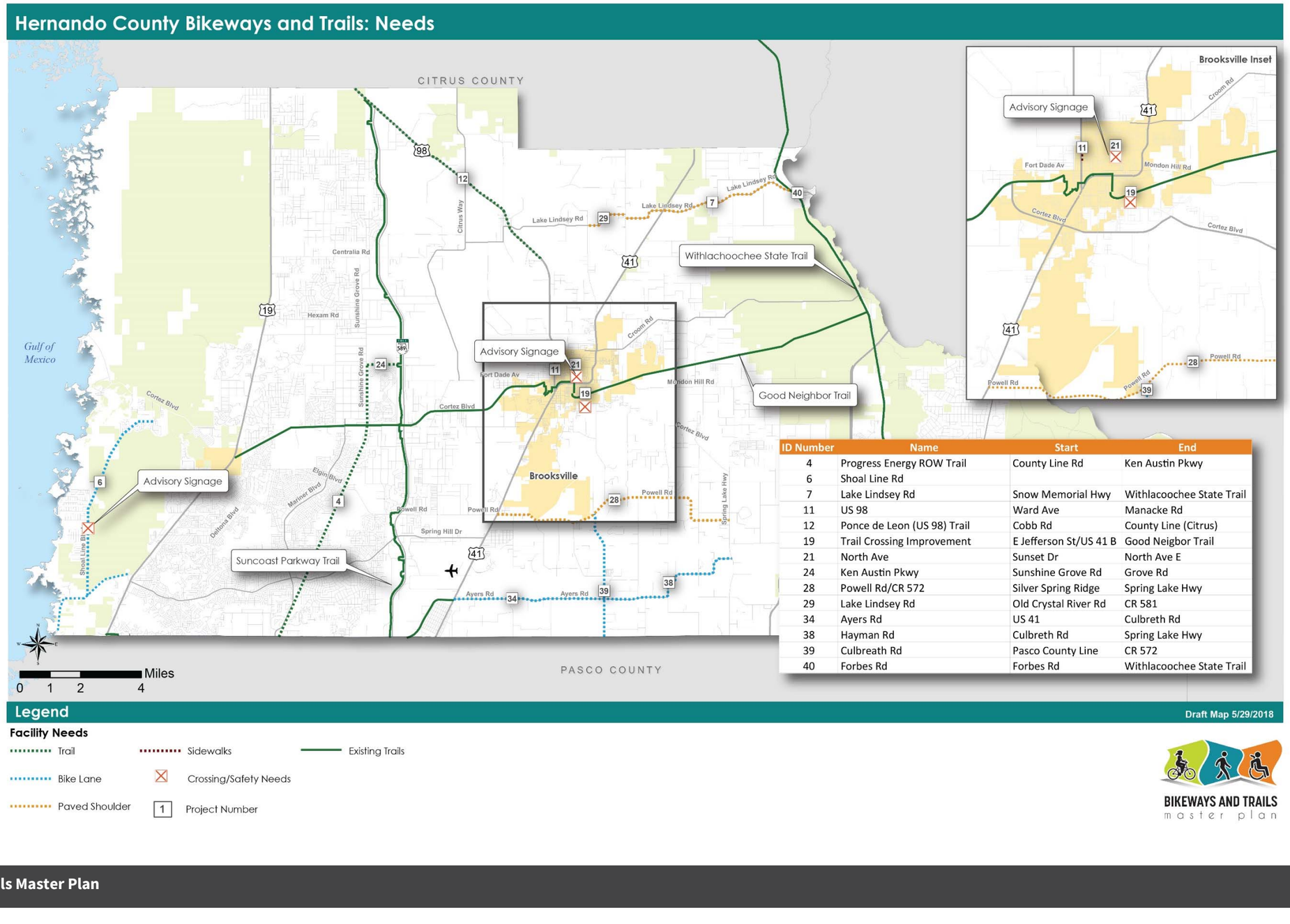
Maps of the needs projects for each county are provided in Figures 36 and 37.

Figure 34: Bicycle Needs, Citrus County



ID Number	Name	Start	End
1	W Gulf to Lake Trail	Suncoast Trail (along rail road)	Norvell Bryant Hwy
2	US 19 Trail	W Ponce de Leon	W Fort Island Trl
3	Croft Rd	E Gulf to Lake Hwy	E Norvel Bryant Hwy
8	US 41 @ Hendrix Ave Inverness	US 41	Hendrix Ave
15	CR 48	Bushnell	Withlacoochee State Trail
16	W Gulf to Lake Hwy	N Enterprise Pt	W Norvell Bryant Hwy
17	Intersection improvement	Norvel Byant Trail	N Croft Ave
18	US 41 at Van Ness Rd. and the WST	Van Ness Rd	Withlacoochee State Trail
20	N Suncoast Blvd	NW 6th Ave	NW 19th St
22	W Dunklin St	N Citrus Ave	N Elkcam Blvd
23	Eden Dr	Withlacoochee State trail	S Carnegie Dr
25	W Gulf to Lake Hwy	W Southern St	700 ft south
27	Mustang Rd	W Pine Ridge Blvd	CR 491
32	N Lecanto Hwy Trail	Sandy Oaks RV park	Central Ridge Park
37	E Citrus Springs Blvd	Withlacoochee State trail	SR 39
43	Trail	Dunellon Trail	New Lennox
44	Old Floral City Rd	Sandpiper	Ft Cooper State Park
45	N Essex Ave	E Keller St	E Norvel Bryant Hwy
46	N Seton Ave/E Savoy St	N Kensington Ave	N Citrus Hills Blvd
47	N Man-o-War Dr	N Hamblrtonian Dr	E Hartford St
48	N Annapolis Dr	E Liberty St	E Norvel Bryant Hwy
49	E Stage Coach Trail	US 19	US 41

Figure 35: Bicycle Needs, Hernando County



ID Number	Name	Start	End
4	Progress Energy ROW Trail	County Line Rd	Ken Austin Pkwy
6	Shoal Line Rd		
7	Lake Lindsey Rd	Snow Memorial Hwy	Withlacoochee State Trail
11	US 98	Ward Ave	Manacke Rd
12	Ponce de Leon (US 98) Trail	Cobb Rd	County Line (Citrus)
19	Trail Crossing Improvement	E Jefferson St/US 41 B	Good Neigbor Trail
21	North Ave	Sunset Dr	North Ave E
24	Ken Austin Pkwy	Sunshine Grove Rd	Grove Rd
28	Powell Rd/CR 572	Silver Spring Ridge	Spring Lake Hwy
29	Lake Lindsey Rd	Old Crystal River Rd	CR 581
34	Ayers Rd	US 41	Culbreth Rd
38	Hayman Rd	Culbreth Rd	Spring Lake Hwy
39	Culbreath Rd	Pasco County Line	CR 572
40	Forbes Rd	Forbes Rd	Withlacoochee State Trail

BIKEWAYS AND TRAILS
master plan

Evaluation and Prioritization

Project Evaluation Criteria

There are no dedicated funding sources for bicycle facility construction projects in either county, so projects are generally either submitted for Surface Transportation Block Grant Program (formally TA funds) funding through FDOT or are funded as part of roadway reconstruction or resurfacing projects. Given this constraint, projects that were identified during Plan development were evaluated by prioritization criteria to identify relative need and may be considered for inclusion on future versions of the MPO Compete Streets project lists or as part of local projects. As in previous funding cycles, MPO staff and committee input were used in conjunction with the evaluation and prioritization to determine ranking and are subject to review and modification annually, as has been the MPO process.

To better reflect the project goals, the criteria used for prior evaluation were modified to reflect the emphasis on safety, connectivity, and equity. The ranked project list developed for the Master Plan, including criteria and scoring, is provided in the Appendix. These projects may be considered by the MPO committees for addition to the Priority Lists for future funding. Any future projects will be evaluated according to the criteria and reviewed by the committees before adding them to the annually-adopted list.

Whereas an initial identification of needs and opportunities illustrates the scope of the Master Plan, the review and prioritization of the lists according to goals of the counties and the overall Plan helps create direction and focus. Adding separated trails to satisfy the Vision is considered a separate endeavor that would not compete with the short term or gap projects.

Table 5 shows needs or project opportunities by county and by type. The feasibility of the improvements identified below will be determined during design.

Table 5: Needs Identified During the Public Engagement Process

County	Roadway/Project	To	From	Type
Citrus	N Essex Ave.	E Keller St.	E Norvell Bryant Hwy	Bike Lane
Citrus	N Seton Ave/E Savoy St.	N Kensington Ave.	N Citrus Hills Blvd	Bike Lane
Citrus	N Man-o-War Dr.	N Hambletonian Dr.	E Hartford St.	Bike Lane
Citrus	N Annapolis Dr.	E Liberty St	E Norvell Bryant Hwy	Bike Lane
Citrus	Mustang Rd.	W Pine Ridge Blvd	CR 491	Bike Lane
Citrus	W Gulf to Lake Hwy	N Enterprise Pt	W Norvell Bryant Hwy	Bike Lane
Citrus	W Gulf to Lake Hwy	W Southern St.	700 ft. south	Bike Lane
Citrus	US 41 @ Hendrix Ave Inverness	US 41	Hendrix Ave	Crossing
Citrus	Intersection improvement	Norvell Bryant Trail	N Croft Ave	Crossing
Citrus	Croft Rd.	E Gulf to Lake Hwy	E Norvell Bryant Hwy	Paved shoulder
Citrus	E. Citrus Springs Blvd	Withlacoochee State trail	SR 39	Paved shoulder
Citrus	CR 48	Bushnell	Withlacoochee State Trail	Paved shoulder
Citrus	N Suncoast Blvd	NW 6th Ave.	NW 19th St.	Paved shoulder
Citrus	W Dunklin St.	N Citrus Ave.	N Elkcam Blvd	Paved shoulder
Citrus	Old Floral City Rd.	Sandpiper	Ft Cooper State Park	Paved shoulder
Citrus	Eden Dr.	Withlacoochee State trail	S Carnegie Dr.	Shared Lane Marking
Citrus	Trail	Whispering Pines Park	Withlacoochee State Trail	Trail
Citrus	Trail	Sandy Oaks RV park	Central Ridge Park	Trail
Citrus	US 41 at Van Ness Rd and the WST	Van Ness Rd	Withlacoochee State Trail	Trail
Citrus	Trail	Dunellon Trail	New Lennox	Trail
Citrus	Trail	Suncoast Trail (along rail road)	Norvell Bryant Hwy via W Gulf to Lake	Trail
Citrus	Trail	W Ponce de Leon	W Fort Island Trl.	Trail
Hernando	North Ave.	Sunset Dr.	North Ave E	Advisory sidewalk
Hernando	Shoal Line Blvd.	Osowaw Rd.	Cortez Blvd	Advisory signage
Hernando	Ayers Rd.	US 41	Culbreth Rd.	Bike Lane
Hernando	Hayman Rd	Culbreth Rd	Spring Lake Hwy	Bike Lane
Hernando	Culbreath Rd.	Pasco County Line	CR 572	Bike Lane
Hernando	E Jefferson @ GNT	E Jefferson St/US 41 B	Good Neighbor Trail	Crossing
Hernando	Powell Rd/CR 572	Silver Spring Ridge	Spring Lake Hwy	Paved shoulder
Hernando	CR 476	Old Crystal River Rd	CR 581	Paved shoulder
Hernando	CR 476	Snow Memorial Hwy	Withlacoochee State Trail	Paved shoulder
Hernando	US 98	Ward Ave.	Manacke Rd.	Sidewalk
Hernando	Progress Energy ROW	County Line Rd	Ken Austin Pkwy	Trail
Hernando	Ken Austin Pkwy	Sunshine Grove Rd	Grove Rd.	Trail
Hernando	Ponce de Leon (US 98)	Cobb Rd.	County Line (Citrus)	Trail
Hernando	Forbes Rd to WST	Forbes Rd.	Withlacoochee State Trail	Trail

Multi-use Trail Typical Sections

Multi-use trail or separated facility design is critical to user enjoyment and safe operation. Chapter 3 described different elements of a bikeway and trail network, and the Figures 38-41 present general illustrations of trail and sidewalk facilities. Location needs and community feedback may identify other options that might better serve the needs of the area. These context-specific needs, as well as any drainage or right-of-way issues that might have an impact, would be determined at the time of design.

Figure 36: Local Road with Sidewalk

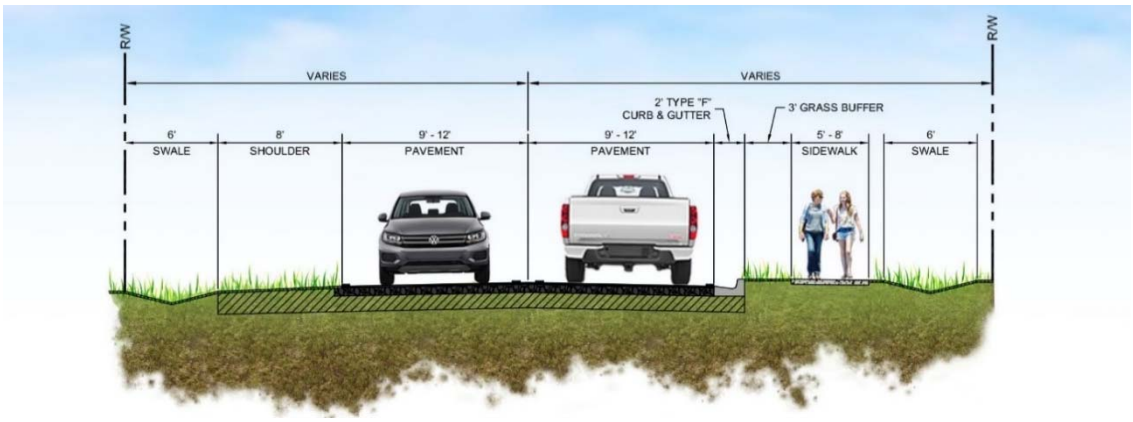


Figure 37: Two Lane Collector with Multi-use Trail

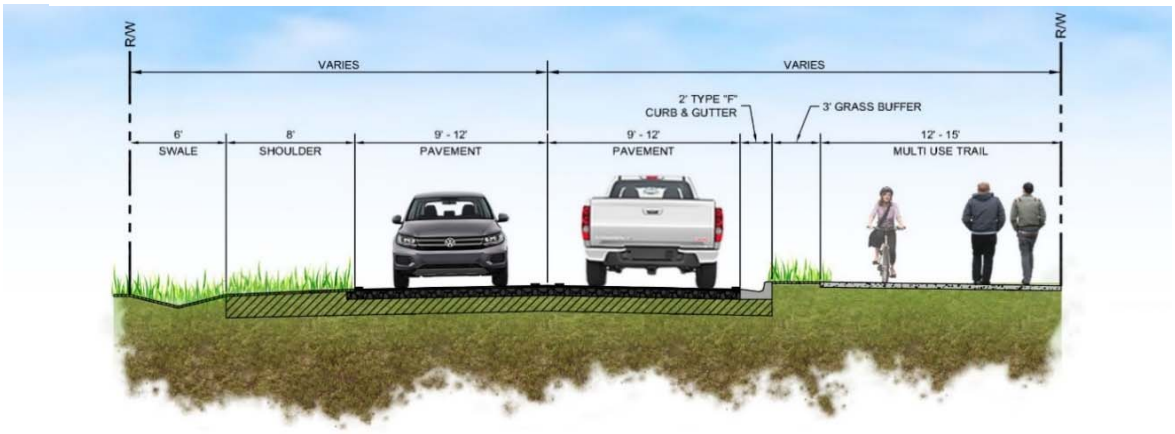


Figure 39: Four-lane Collector or Arterial Road with Trail and Sidewalk

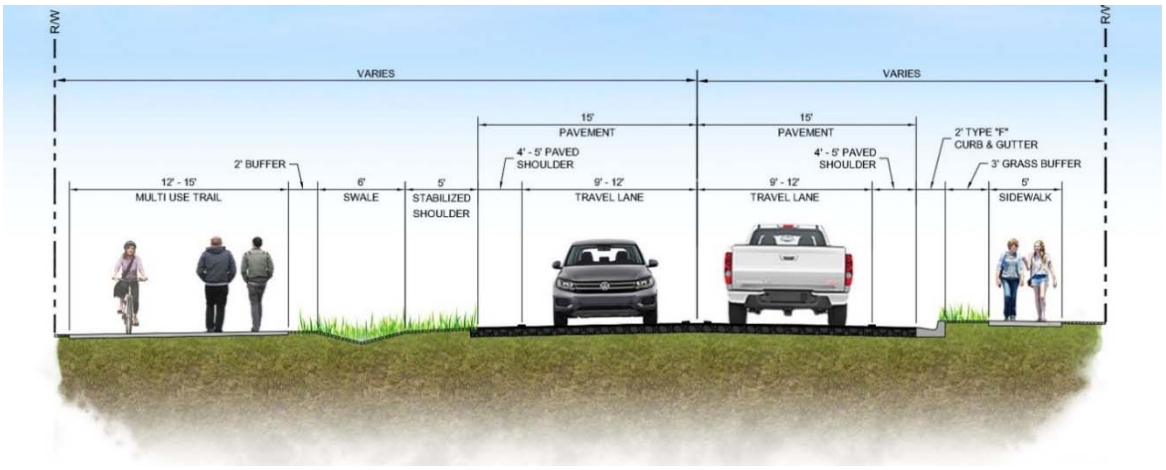
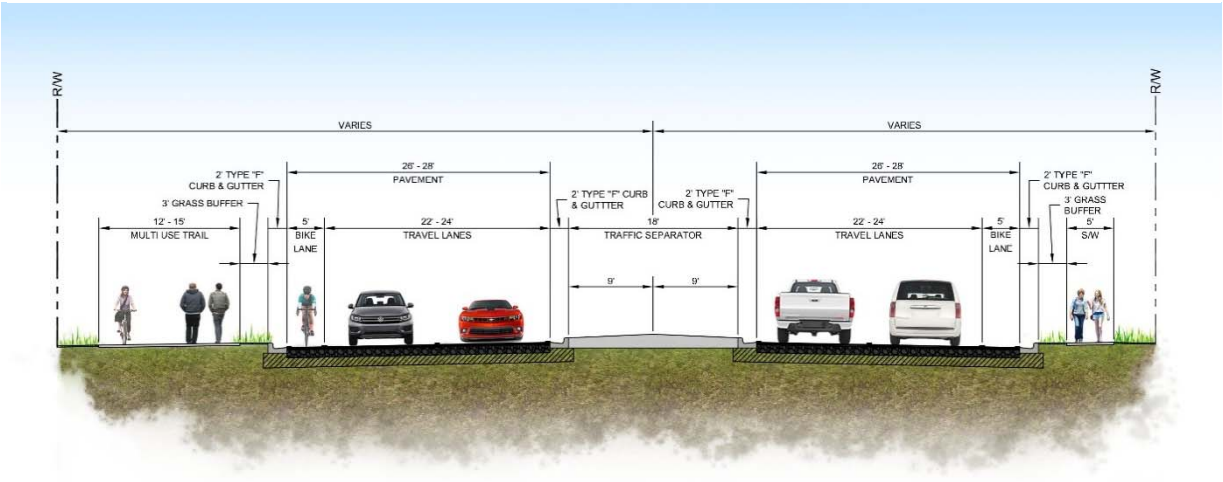


Figure 38: Four Lane Collector with Multi-use Trail and Sidewalk



Bicycle Facilities for Comfort and Safety

Generally, the preferred roadway combination is a trail on one side and a sidewalk on the other. In urban locations, low-speed, low-volume roadways with signage may be appropriate bicycle facilities, or a separated bike lane may be considered. In rural areas, if a separated multi-use trail cannot be achieved, a rumble shoulder or buffered shoulder may be an appropriate facility.

Cost is often the primary determinant in the selection of bicycle facility type. This can lead to the construction of a facility that does not truly meet the needs of bicycle riders. An example of this is a bike lane on a high-speed, high-volume road; a primary reason for this is cost, as building within the curbs is much less expensive than reconstructing a curb. Another reason for adding a bicycle lane might be to

help manage speed on the roadway, but this approach, although providing a facility, does not provide one that is comfortable for a majority of bicycle riders.

This Master Plan proposes that during all roadway reconstruction projects, a separated trail facility be included during design. This resolves the discomfort and danger people feel when sharing the roadway with trucks or fast-moving cars and also helps to build a bicycle network that serves everyone. Excess pavement should still be set aside for bicycle lanes for riders who prefer them. The table shown in Figure 42 was developed by NACTO to provide guidance on the circumstances for including particular facility types; importantly, it offers options that allow designers to include the facility that fits the space based on cost and engineering judgment.

Figure 40: NACTO Guidance for Selecting Appropriate Bicycle Facilities

Contextual Guidance for Selecting All Ages & Abilities Bikeways

Roadway Context				All Ages & Abilities Bicycle Facility
Target Motor Vehicle Speed*	Target Max. Motor Vehicle Volume (ADT)	Motor Vehicle Lanes	Key Operational Considerations	
Any		*Any*	*Any of the following:* high curbside activity, frequent buses, motor vehicle congestion, or turning conflicts‡	**Protected Bicycle Lane**
< 10 mph	Less relevant	No centerline, or single lane one-way	Pedestrians share the roadway	**Shared Street**
≤ 20 mph	≤ 1,000 – 2,000		< 50 motor vehicles per hour in the peak direction at peak hour	**Bicycle Boulevard**
≤ 25 mph	≤ 500 – 1,500			
	≤ 1,500 – 3,000	Single lane each direction, or single lane one-way	Low curbside activity, or low congestion pressure	**Conventional or Buffered Bicycle Lane, or Protected Bicycle Lane**
	≤ 3,000 – 6,000			**Buffered or Protected Bicycle Lane**
	Greater than 6,000			**Protected Bicycle Lane**
	Any	Multiple lanes per direction		
Greater than 26 mph†	≤ 6,000	Single lane each direction	Low curbside activity, or low congestion pressure	**Protected Bicycle Lane, or Reduce Speed**
		Multiple lanes per direction		**Protected Bicycle Lane, or Reduce to Single Lane & Reduce Speed**
	Greater than 6,000	*Any*	*Any*	**Protected Bicycle Lane, or Bicycle Path**
High-speed limited access roadways, natural corridors, or geographic edge conditions with limited conflicts		*Any*	High pedestrian volume	**Bike Path with Separate Walkway or Protected Bicycle Lane**
			Low pedestrian volume	**Shared-Use Path or Protected Bicycle Lane**

* While posted or 85th percentile motor vehicle speed are commonly used design speed targets, 95th percentile speed captures high-end speeding, which causes greater stress to bicyclists and more frequent passing events. Setting target speed based on this threshold results in a higher level of bicycling comfort for the full range of riders.

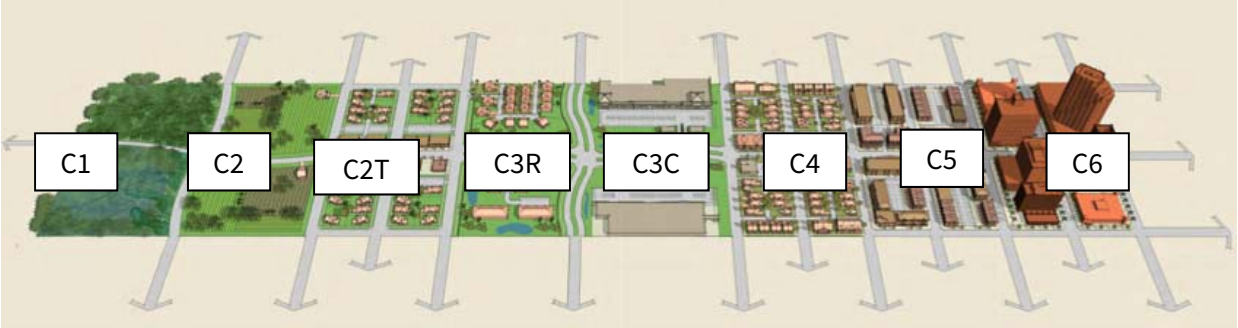
† Setting 25 mph as a motor vehicle speed threshold for providing protected bikeways is consistent with many cities' traffic safety and Vision Zero policies. However, some cities use a 30 mph posted speed as a threshold for protected bikeways, consistent with providing Level of Traffic Stress level 2 (LTS 2) that can effectively reduce stress and accommodate more types of riders.[18]

‡ Operational factors that lead to bikeway conflicts are reasons to provide protected bike lanes regardless of motor vehicle speed and volume.

Facilities on State Roads[19]

FDOT adopted a Complete Streets Policy in 2014 that accommodates all users along the State roadway system. Although counties typically follow the *Manual of Uniform Minimum Standards for Design, Construction, and Maintenance for Streets and Highways* or the "Florida Green Book," State roads are designed according to the *Florida Design Manual*. The two resources, while separate are coordinated in their approach to developing a transportation system that serves all users. To better serve the different users of the system, FDOT developed a Context Classification methodology that, according to infrastructure and land use, assigns a context that reflects where the road way is in the land development continuum, as shown in Figure 43.

Figure 41: Illustration of FDOT Context Classification System



This continuum ranges from undeveloped conservation land to the most urban downtowns. By analyzing land use, FDOT determined the facilities that are most appropriate for where they are located. It is FDOT policy that roadways in all counties be classified before or when work is anticipated to assist in the determination of what facilities to include. Table 6 identifies sidewalk facilities by FDOT Context Classification. The highlighted rows and contexts are most relevant to Hernando and Citrus counties.

Table 6: FDOT Context Classification Guidance for Sidewalks

Context	Allowable Range (mph)	SIS Minimum (mph)	Sidewalk
C1 Natural	55-70	65	5' Sidewalk if demand warrants
C2 Rural	55-70	65	5' Sidewalk if demand warrants
C2T Rural Town	25-45	40 (35 with design elements)	6' Sidewalk
C3R Suburban Residential	35-55	50 (45 with curb)	6' Sidewalk
C3C Suburban Commercial			6' Sidewalk if demand warrants
C4 Urban General	30-45	45	6' Sidewalk
C5 Urban Center	25-35	35	10' Sidewalk
C6 Urban Core	25-30	30	12' Sidewalk

[19] Additional information may be found at http://flcompletestreets.com or at http://fdot.gov/roadway/fdm/.

Notes: 1) C2T, C3, C4 sidewalk may be increased to 8' with demand; 2) C5 and C6 should be maximum width possible, not less than 6'; 3) For RRR projects, 4' sidewalk may be retained.

Table 7 identifies bicycle facilities by FDOT Context classification. Shared use paths are typically considered in contexts C1-C3 where there may be more right-of-way availability. If trails are included in local plans, coordination with FDOT may facilitate construction.

Table 7: FDOT Context Classification Design Guidance for Bicycle Facilities

Context	Allowable Range (mph)	SIS Minimum (mph)	Bicycle Facility
C1 Natural	55-70	65	Unmarked paved shoulder or shared use path
C2 Rural	55-70	65	Unmarked paved shoulder or shared use path
C2T Rural Town	25-45	40 (35 with design elements)	Marked bicycle lane
C3R Suburban Residential	35-55	50 (45 with curb)	Marked bicycle lane when speed is ≤ 45pmh and shared use path is not present or shared use path
C3C Suburban Commercial	35-55	50 (45 with curb)	Marked bicycle lane hen speed is ≤ 45pmh and shared use path is not present or shared use path
C4 Urban General	30-45	45	When speed is ≤ 45pmh and shared use path is not present
C5 Urban Center	25-35	35	When speed is ≤ 45pmh and shared use path is not present
C6 Urban Core	25-30	30	When speed is ≤ 45pmh and shared use path is not present

Cost Estimates

Cost estimates for bicycle and pedestrian projects are most often used when making requests for funding and like most things, the level of detail available impacts the specificity of the estimate. Applications for funding for projects typically need an estimate that involves a higher level of specificity than is done at this planning level. Right-of-way and additional costs due to project complexity are not accounted for and will be identified during development of the long range estimate and refined during design. Table 8 shows the current FDOT District 7 cost per mile or generic cost per mile for the construction of shared-use paths, sidewalks, and mid-block crossings. Additional information can be found in the Appendix.

Table 8: FDOT Cost per Mile

Type	Notes	Cost ($)
Shared Use Path	12', two-directional	$337,726
Sidewalk	5'-6', 4" depth	$198,086-237,704
Mid-block crossing		$120,052

The costs of facilities vary widely and are impacted by location, existing conditions, right-of-way availability, cost of materials, and whether they are standalone or incorporated into a construction project. When estimating, separating the costs of bicycle facilities from overall roadway construction

costs has been identified as one of the challenges to estimating costs but a number of organizations have reviewed projects nationwide to develop cost ranges; the costs included in Table 9 are from a number of sources including the Pedestrian and Bicycle Information Center and the Institute for Bicycle and Pedestrian Innovation at Portland State University and should be used to understand the base construction costs for projects.[20, 21]

Table 9: Additional Costs Related to Plan Improvements

Type		Cost ($)
Buffered bike lane (conversion of bike lane)	Add striping	$10,560 – $49,262
Protected bike lane	Add striping and traffic separation	$500,000 – $2,000,000/mi
Bike lane with roadway widening	Widen 4-lane road, curb and gutter, add bike lane	$2, 607,630/mile
Bike lane	Add striping – add asphalt	$133,170 – $536-680
Signed bike route	Signage	$25,070 – $64,330

Tables 10 and 11 show the system-wide mileage of proposed project needs and the Vision. In most cases the cost of developing an independent alignment or facility will be higher if constructed independently of a roadway construction project. For that reason, it is the assumption of this plan that adjacent trails envisioned in this Plan will typically be constructed with road expansion projects, thus reducing the construction costs.

Table 10: Needs Plan, Spot Improvement Mileage

	Citrus County	Hernando County
Facility	***Proposed Mileage or Number***	***Proposed Mileage or Number***
Multi-use trail	18	19
Advisory Signage ($250/sign)		7.5
Trail crossings	2	1
Bike lanes	14	13
Paved Shoulders	13	16

Table 11: Vision Plan Mileage

	Citrus County	Hernando County
Facility	***Proposed Mileage***	***Proposed Mileage***
Multi-use trail	220	254
Buffered Bicycle Lane	50	35

[20] https://activelivingresearch.org/sites/default/files/Dill_Bicycle_Facility_Cost_June2013.pdf.
[21] http://www.pedbikeinfo.org/data/library/details.cfm?id=4876.

Funding

The following describes a variety of funding sources available for the construction of trails and trail-related amenities. Additional information about possible funding sources is included in the Appendix.

Local and County Projects

Local community plans are a critical component of county networks, providing the nodes or hubs to which County and State projects can connect and support. Although local and county projects may be implemented by the jurisdiction in which they are located, coordination with the MPO for federal funds may result in significant cost savings by the municipality.

New Development

Review and coordination with plans for new development in both counties is an important way to make connections to the planned networks. In every case, plans are subject to review by County staff, and every effort should be made to require connections be made and facilities built to standards identified in this plan.

Shared-Use Nonmotorized (SUN) Trail Network

Managed by FDOT, the SUN Trail program funds non-motorized, paved shared-use trails that are part of the Florida Greenways and Trails System Priority Trail Map coordinated by the OGT.

Doppelt Family Trail Development Fund[22]

The Rails to Trails Conservancy awards about $85,000 per year to support organizations and local governments that implement projects to build and improve multi-use trails. Applications for funding typically open in December.

Non-Profit Grants

- **Robert Wood Johnson Foundation, Built Environment and Health** – At the national and local levels, the Robert Wood Johnson Foundation is working with a wide array of partners to help ensure that investments in housing, transportation, parks and open space, and other critical aspects of the built environment in communities foster equity and create healthy opportunities for everyone

RWJ Foundation Grant Funds Plainsboro Preserve Trail Improvements

The Robert Wood Johnson Foundation awarded a $94,000 grant to pay for the improvement of nature trails at the Plainsboro Preserve in Plainsboro Township, NJ. Additional funds by the town will allow the Preserve to be more pedestrian-friendly, provide ample seating, and give better access to individuals with disabilities.

[22] https://www.railstotrails.org/our-work/doppelt-family-trail-development-fund/.

(https://www.rwjf.org/en/how-we-work/grants-explorer/featured-programs/build-healthy-places-network.html).

- **Kodak American Greenways Program** – A partnership project of the Eastman Kodak Company, the Conservation Fund, and the National Geographic Society, this program provides small grants to stimulate the planning and design of greenways in communities throughout America (http://www.rlch.org/funding/kodak-american-greenways-grants).

National Highway Performance Program (NHPP)

NHPP funds may be obligated only for a project on an "eligible facility"—a project, part of a program of projects, or an eligible activity supporting progress toward the achievement of national performance goals for improving infrastructure condition, safety, congestion reduction, system reliability, or freight movement on the National Highway System (NHS). Projects must be identified in the Statewide Transportation Improvement Program (STIP)/Transportation Improvement Program (TIP) and be consistent with the Long-Range Statewide Transportation Plan and Metropolitan Transportation Plan(s). Bicycle transportation and pedestrian walkways associated with an NHS facility such as improvements to facilities or new design features at overpasses and onramps are eligible. Shared-use paths along interstate corridors, but outside the main travel way, are eligible for the use of NHPP funds, as are bicycle lanes, shoulder and sidewalk improvements on major arterial roads that are part of the NHS, and bicycle and/or pedestrian bridges and tunnels that cross NHS facilities.

Surface Transportation Block Grant Program (STBG)

The FAST Act replaced the TA Program with set-aside funds under the Surface Transportation Block Grant Program. Eligible activities include on- and off-road pedestrian and bicycle facilities, infrastructure projects for improving non-driver access to public transportation and enhanced mobility, community improvement activities such as historic preservation and vegetation management, environmental mitigation related to storm water and habitat connectivity, recreational trail projects, and Safe Routes to School projects. A 20% local match is required. Typically, right-of-way issues and environmental concerns must have been addressed prior to the submission of the application.

Highway Safety Improvement Pram (HSIP)

HSIP funds can be used for pedestrian and bicycle safety improvements. States may obligate funds under HSIP to carry out any highway safety improvement project on any public road or publicly-owned bicycle or pedestrian pathway or trail, or as provided under Flexible Funding for States with a Strategic Highway Safety Plan, and other safety projects.

Recreational Trails Program (RTP)[23]

The RTP is a federally-funded competitive grant program that provides financial assistance to agencies of city, county, state, or federal governments and organizations approved by the State, or State- and federally-recognized Indian tribal governments, for the development of recreational trails, trailheads, and trailside facilities. For more information on Florida's RTP, see Chapter 62S-2, F.A.C., the rule governing the program in Florida.

FTA Funds

A variety of FTA funding is available that may be used to fund the design, construction, and maintenance of pedestrian and bicycle projects that enhance or are related to public transportation facilities. Improvements made expressly eligible by statute include capital projects such as pedestrian and bicycle access to a public transportation facility and transit enhancements such as pedestrian access, walkways, and bicycle access, including bicycle storage facilities and equipment for transporting bicycles on public transportation vehicles.

Evaluation

Performance measures are used to evaluate progress and level of success. The following performance measures are recommended for current and proposed planned projects and are meant to track baseline progress toward developing a network. The following should be assessed bi-annually, and the measures themselves should be assessed for appropriateness each time the Plan is updated. Additional measures can be found in the *FHWA Guidebook for Developing Pedestrian & Bicycle Performance Measures* and should be considered as the needs of the counties evolve:

- Miles of trail built
- Miles of sidewalk built
- Miles of trails built in equity areas

Plan Evaluation Criteria

In addition to evaluation criteria applied to each project to be added to the MPO Complete Streets Project list, Master Plan performance measures were identified to evaluate the efficacy of the Plan. These measures are not meant to be onerous or bureaucratic; rather, they have been included to allow the plan to be reviewed from the standpoint of "Is what was meant to be done with this Plan getting done?"

The recommended plan evaluation criteria are as follows:

- Crash reduction in high-crash areas if projects have been constructed.
- Number of sidewalk and path miles planned for construction.

[23] https://floridadep.gov/ooo/land-and-recreation-grants/content/recreational-trails-program.

- Number of sidewalk and path miles planned for construction in underserved areas.
- Number of community/agency partnerships (events, programs) related to bicycling and walking.

Maintenance and Operations

Maintenance of trails and on-road bike facilities is critical to their safe use. Much like roadways, asphalt trails need repair and eventually need resurfacing, and bike lanes and shoulders need monitoring and sweeping to function as designed. Throughout Plan development, it was noted that bike lanes and shoulders often were full of debris that create unsafe conditions. Whereas roadways may be cleared by storm events, the debris is often left in the bike lanes. It is recommended that bike lanes be swept on at least a quarterly basis and monitored for debris pick-up as needed. A mobile phone-based app such as SeeClickFix[24] can be used to let citizens notify agencies of specific needs.

The following section is a discussion of the specific county approaches to maintenance and recommendations for supporting the growing bikeway and trails network.

Hernando County

Trails in Hernando County are managed by Hernando County Public Works, the local agency, or FDOT. A three-person crew is dedicated to routine trail maintenance such as mowing, litter collection, and edging, covering the 35 miles of existing trail once a month. Maintenance of the soon-to-be constructed Coast-to-Coast Trail to Brooksville will be included in the schedule. Generally, it is assumed that maintenance of one mile of trail costs $333 per month or $4,000 per year. Additional trail maintenance needs will be reviewed as needed. The City of Brooksville is currently responsible for the care and maintenance of the Good Neighbor Trail in the City limits. Staffing plans account for care of the trails as they exist today and are anticipated to be able to handle the extra mile. It is recommended that staffing levels be reviewed and adjusted as needed in response to the additional miles of trail that will be added over time.

Citrus County

Trails along County roads in Citrus County are managed and maintained by the Road Maintenance Division under the Department of Public Works. The Citrus County Road Maintenance Division will be responsible for trail maintenance for new trails constructed along County roads.

The Withlacoochee State Trail is supported by Rails to Trails of the Withlacoochee, Inc. RTW is a friends group under the Florida DEP Division of Recreation and Parks that helps to develop, maintain, and promote the Withlacoochee State Trail. Members volunteer their time and labor on projects such as trail maintenance, fundraising, public education about trail-related issues, and building trail amenities.[25]

[24] https://seeclickfix.com/.
[25] https://www.rttwst.org/about-rails-to-trails.php.

Local jurisdictions typically are responsible for trails within their boundaries.

Maintenance and Frequency

Table 12 lists the activities and maintenance needed to keep the trail operating safely. There may be additional activities that Hernando or Citrus or the municipalities will need to undertake as the trails become cross-jurisdictional. Maintenance frequencies may change according to funding and staffing availabilities, but they need to be consistent to keep up with demand and the expected increased trail usage.

Table 12: Trail Maintenance Activities and Frequency

Activity	Frequency
Mowing	Weekly
Tree pruning/removal	Annually
Weed control	Monthly
Vegetation irrigation	Daily/weekly
Drain cleaning	Monthly
Pavement sealing/repave	2–7 years, depending on sealant
Trash pickup/disposal	Twice weekly
Graffiti cleanup	As needed
Lighting repair/replacement	Yearly/as needed
Furniture repair/replacement	Yearly/as needed
Signage repair/replacement	Yearly/as needed
Fence repair/replacement	Yearly/as needed

Rules and Regulations

Prior to the completion of the Hernando County portions of the Coast-to-Coast Trail, it is recommended that rules and regulations such as hours of operation be reviewed and, if needed, revised to best suit trail users and the agencies responsible for the safety and security of trail users. Currently, the trails are open dawn to dusk, but as usage changes and demand grows, hours of operation might need to change to accommodate longer- haul riders or visitors using the trail as their primary way to travel.

Bicycle / Pedestrian Coordination

Given the increasing importance of safe bicycling in both counties, the establishment of a responsible position or addition onto a previous position within the MPO that coordinates between jurisdictions and is the point of contact for citizens and government departments should be considered. The coordinator would be responsible for overseeing the implementation of this plan and ensuring its success.

Responsibilities could include:

- Coordination between governmental jurisdictions
- Serve as the point of contact for governments and citizens
- Implement plan and seek additional funding
- Coordinate long term maintenance
- Works to ensure safety and security of the trails in both counties

Safety

As much as possible, and in compliance with the *Florida Design Manual* and the "Florida Greenbook," trails are designed with adequate right-of-way to buffer the trail from the roadway and create connectivity between open spaces. Trails also should be designed such that crime, fire, flooding, and other hazards are reduced. In some cases, using fencing and other barriers can be used to reduce traffic in unwarranted areas.

Personal safety is always a concern along trails, especially in areas that are secluded or not heavily traveled. To address this and ensure that the user experience is safe, trail communities have created or facilitate patrols on trails by either law enforcement agents or volunteers. For example, the Rails to Trails of the Withlacoochee Trail citizen support organization patrols the trail, providing information and light maintenance services and an extra level of safety and security. A similar group in Hernando County is recommended and could also play an ambassador role.

Safety is also a concern along on-road facilities and at crossings, as noted during the development of this Plan; therefore, it is imperative that design decisions be made with as wide a range of users in mind and that areas of concern be reviewed as needed.

Lighting

Although lighting is not a standard trail provision, it should be considered in areas of concern or high use or around amenities such as shelters, restrooms, and trailheads. As noted earlier, hours of trail operation are generally dawn to dusk, but providing adequate lighting will allow users peace of mind when using the trail during hours of limited daylight. It can be assumed that as the trails grow in popularity and used for more long-haul trips, trail lighting will become a concern.

Cost Savings

Jurisdictional Sharing

Generally, trails and facilities within jurisdictional boundaries are maintained by that jurisdiction. Collaboration among groups or other cost-sharing mechanisms could be considered as facility mileage grows.

Volunteer Opportunities

Volunteers are key to a successful trail maintenance strategy. Many trails in the region have long-standing volunteer programs that supplement Parks & Recreation support. For example, Pinellas Trails, Inc. "exists to support and enhance the Pinellas Trail now and for future generations." Providing such opportunities for volunteer groups to patrol, maintain, and repair segments of the trail helps build community and also helps share the cost of supporting the trails. Patrol benefits include:

- Security
- Conflict resolution
- Trail inspection
- Emergency aid
- Debris cleanup

Adopt-a-Trail Initiative

Many communities have created programs in which individuals or groups "adopt" segments of a trail and provide maintenance services along the adopted segment of trail. This program exists in Brooksville, and it is recommended that the program be expanded as trail segments are added.

Community Partners

Opportunities to foster community partnerships abound and ways to engage the community as the trail grows should be considered, Other options including create and fostering partnerships with community groups such as Boy and Girl Scouts, Rotary International, and local schools.

Liability

Liability issues for trails are covered under section 375.251. F.S., as adopted by the Florida Legislature. This statute limits the liability of owners or lessees who make their land available to the public for recreational use.

Plan Implementation Actions

Developing a plan is only the first step in the process to creating a robust and successful active transportation network. After plan adoption, collaboration and action are what make it successful. The following implementation actions have been developed to ensure the success of this Master Plan and should be reviewed on an annual basis:

- On January 30, 2018, the Hernando/Citrus MPO Board voted to support the Florida Department of Transportation's (FDOT) goal of zero serious auto-related injuries and deaths (Vision Zero). It also established a short-term target of 5% per year in reduction in traffic fatalities and serious injuries, based on a five-year rolling average. In support of the MPO Plan is reducing the number of bicycle and pedestrian injuries and fatalities by funding projects that will support this goal.
- Recognizing that it takes more than engineering solutions to resolve safety issues in Hernando and Citrus counties, the MPO will collaborate with the county governments, FDOT, and other agencies to identify and fund enforcement and education programs throughout both counties.
- Work should continue with FDOT to add bicycle and pedestrian facilities to State roads as they are resurfaced or expanded. Wherever possible, separated trails should be included in Project Development & Environment (PD&E) and design phases.
- This Master Plan is a living document and reflects the vision of the MPO and stakeholders as well as analysis done at the time of its revision. The priority projects identified according to the evaluation process will not preclude the addition or upgrade of bicycle and/or pedestrian facilities on County roads.
- The MPO will collaborate with County staff to ensure that the best possible bicycle and pedestrian facilities are incorporated into all upcoming county resurfacing and reconstruction projects.
- Coordination will continue with the Hernando and Citrus County Public Works departments to include trails and wider sidewalks on new roadways and roadway expansion plans.
- Coordination will continue with the cities of Inverness, Crystal River, and Brooksville, local agencies, and Hernando and Citrus counties on submission of projects to a list of projects to be considered for prioritization for funding.
- Coordination will continue with local governments for adoption of the Hernando/Citrus MPO Bikeways and Trail Master Plan into Local Comprehensive Plans, the Land Development Code, and City Master Plans and identification and protection of trail corridors.
- Coordination will continue with other government and non-government entities on regional planning issues related to the trail system including the Florida Department of Environmental Protection (FDEP), the Office of Greenways and Trails (OGT), the Florida Department of Affairs, and

others to pursue grant opportunities to develop the regional trail network in Hernando and Citrus counties.

- Coordination will continue with staff in adjacent counties, MPOs, OGT, and FDOT to plan for and construct trails and other bicycle infrastructure across county lines to help create a seamless and connected regional trail network.
- This Master Plan will be reviewed and revised as needed at least every five years. Interim updates to the map or Plan may be required to take advantage of opportunities with developers or local and county agencies.

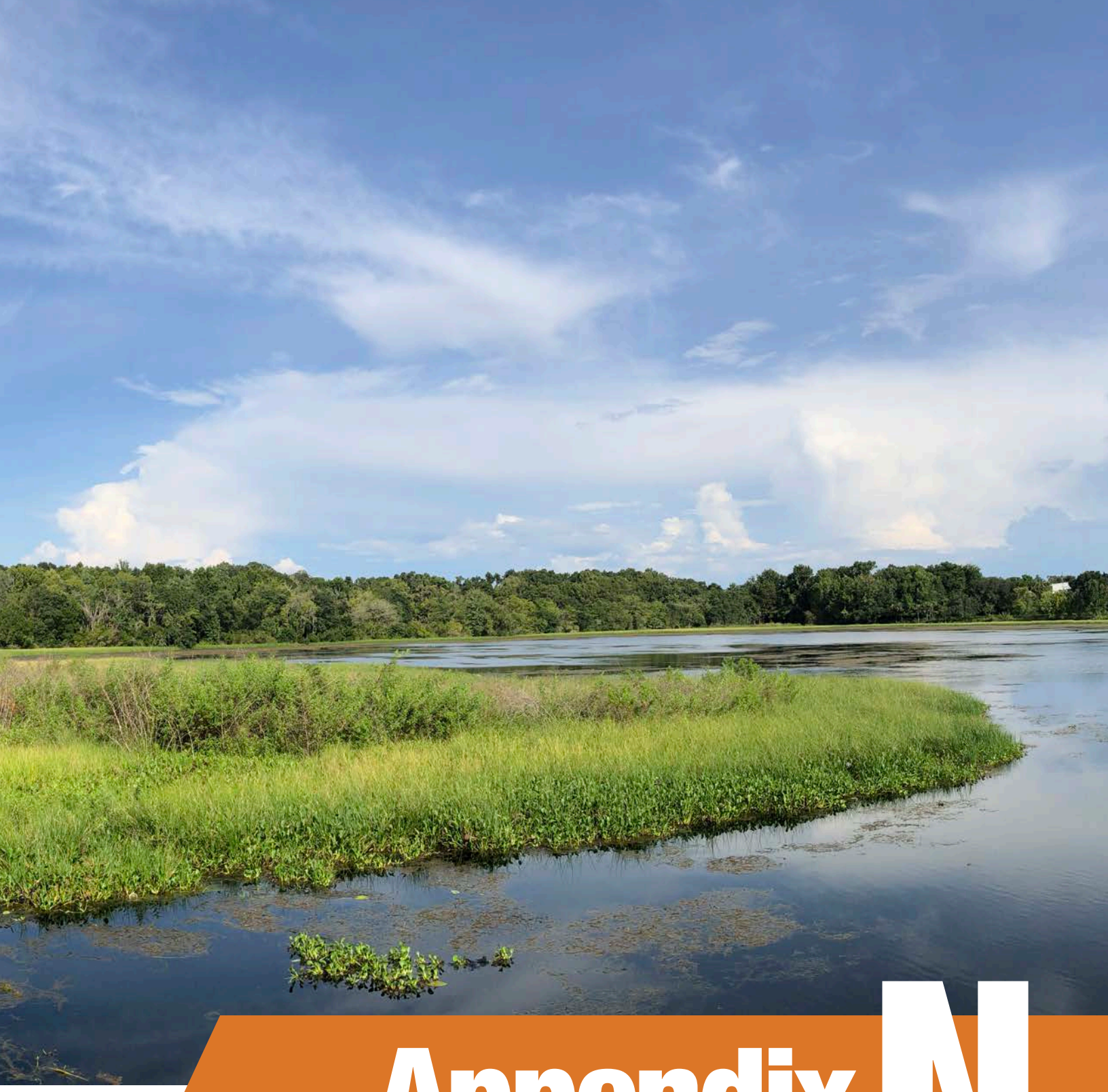
Resources

AASHTO Guide for the Development of Bicycle Facilities, 2002.

FDOT, *Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways* ("Florida Greenbook"), 2016.

FHWA*, Small Town and Rural Multimodal Networks*, December 2016.

NACTO, *Urban Bikeways Design Guide,* 2nd Edition (2016)



Appendix N

FDOT STATE HIGHWAY SAFETY PLAN


FLORIDA STRATEGIC HIGHWAY
SAFETY PLAN
STOP
SHERIFF
DRIVING
DOWN
FATALITIES
0
OCTOBER 2016



Florida Transportation Plan Policy Element

December 2015

The Florida Transportation Plan (FTP) is the single overarching statewide plan guiding Florida's transportation future. It is a plan for all of Florida, created by, and providing direction to, the Florida Department of Transportation (FDOT) and all organizations that are involved in planning and managing Florida's transportation system, including statewide, regional, and local partners. The FTP includes a 50-year Vision Element, a 25-year Policy Element, and a five-year Implementation Element.

www.floridatransportationplan.com



Florida Strategic Highway Safety Plan

August 2016

The Strategic Highway Safety Plan (SHSP) was developed as a part of the FTP Implementation Element to address highway safety and aligns with the FTP Vision Element and FTP Policy Element. The SHSP is a statewide, data-driven safety plan for all of Florida's road users. The plan is the state's five-year comprehensive roadway safety plan for achieving Florida's vision of zero traffic-related fatalities. The SHSP includes 13 Emphasis Areas that guide Florida's safety efforts.

www.fdot.gov/safety/

FDOT

For more information regarding the Strategic Highway Safety Plan please contact:

FDOT Safety Office
(850) 414-3100

For more information on the Florida Transportation Plan please contact:

FDOT Office of Policy Planning
(850) 414-4800

www.fdot.gov

Letter From the FDOT Secretary

Dear Traffic Safety Partner:

Thank you for being a part of Florida's transportation and traffic safety team and making the Florida Strategic Highway Safety Plan (SHSP) a reality. Safety is our top priority.

Florida's safety belt usage rate continues to move toward nearly 90 percent, almost three percent higher than the national average. In recent years we have strengthened our traffic safety laws by requiring booster seats for children up to six years old and by prohibiting texting while driving. We have increased awareness about traffic safety, especially in the area of bicycle and pedestrian safety. The condition of our state roads and bridges is among the best in the nation. However, our collective vision of a fatality-free transportation system will continue to require a united emphasis on traffic safety, using all the tools we each have in our toolboxes.

The four Es of traffic safety – engineering, education, enforcement, and emergency services, working together – is the vehicle that will ultimately get us to a fatality-free transportation system. ***Driving Down Fatalities,*** a Toward Zero Deaths initiative, is our traffic safety vision. One life lost is too many. Continuous collaboration with federal, state, regional, and local governments, advocacy groups, law enforcement, and emergency responders across the state makes us all more effective in reducing fatalities.

Florida continues to rank among the top travel destinations in the world and our beautiful climate and strong economy make us a sought-after place to live. We recognize, however, that being a great place to live, learn, work, and play also requires a safe and reliable transportation system. As technology moves forward with new and exciting ways to travel, Florida will remain a leader in embracing innovations while also ensuring the safety and security of the people who use our roadways. To that end, we thank each and every one of our traffic safety partners for your tireless work.

Whether you drive, walk, or ride: Look for Motorcycles, Buckle Up, Drive Sober, and Put it Down.

Sincerely,

Jim Boxold, Secretary

Traffic Safety Partner Pledge

Vision:

A Fatality Free Transportation System

We support the national vision of ***"Toward Zero Deaths"***

We share the vision of a ***fatality-free roadway system***

We serve as ***ambassadors of traffic safety,*** including the promotion of the Strategic Highway Safety Plan and its goals

Jim Boxold, Secretary
Florida Department of Transportation

Terry L. Rhodes, Executive Director
Florida Department of Highway Safety and Motor Vehicles

Colonel Gene Spaulding, Director
Florida Highway Patrol

Sheriff Bobby Schultz, Chairman
Florida Sheriffs Association

Chief Brett Railey, President 2015-2016
Florida Police Chiefs Association

Mayor Susan Haynie, Chair
Metropolitan Planning Organization Advisory Council

Tom Byron, P.E., Executive Director
Florida Rail Enterprise

Ramon D. Gavarrete, P.E., Past-President
Florida Association of County Engineers and Road Superintendents

James Christian, Division Administrator
Federal Highway Administration

Carmen Hayes, Regional Administrator
National Highway Traffic Safety Administration

Jeff Sanderson, Division Administrator
Federal Motor Carrier Safety Administration

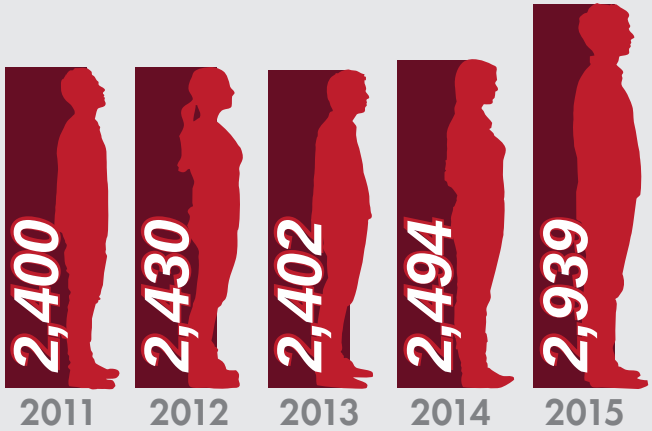
Introduction

Florida shares the national traffic safety vision, "Toward Zero Deaths," and formally adopted our own version of the national vision, "Driving Down Fatalities," in 2012. Between 2011 and 2015, 12,665 people died on Florida's roadways and an additional 102,759 were seriously injured. The Florida Department of Transportation (FDOT) and its partners are committed to eliminating fatalities and reducing serious injuries with the understanding that the death of any person is unacceptable.

The Strategic Highway Safety Plan (SHSP) is the statewide plan focusing on how to accomplish the vision of eliminating fatalities and reducing serious injuries on all public roads. The SHSP is updated at least every five years by FDOT in coordination with statewide, regional, and local safety partners. The SHSP is focused on the roadway component of transportation safety. Safety on other modes of transportation is covered by other plans. The SHSP and safety plans for other modes align not only with the Florida Transportation Plan (FTP) but also with national programs funded by the Federal Highway Administration (FHWA), the Federal Motor Carrier Safety Administration (FMCSA), and the National Highway Traffic Safety Administration (NHTSA).

The data-driven SHSP focuses on 13 Emphasis Areas, which reflect ongoing and emerging highway safety issues in Florida. Key strategies related to each Emphasis Area are identified, as well as overarching strategies that apply across Emphasis Areas. These strategies align with the "4 Es" – engineering, education, enforcement, and emergency response. The SHSP also defines a framework for implementation activities to be carried out through strategic safety coalitions and specific activities by FDOT, other state agencies, metropolitan planning organizations, local governments, and other partners.

Number of People Killed on Florida's Roadways (2011-2015)



Vision: ZERO DEATHS

Source: Department of Highway Safety and Motor Vehicles (2016).

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What Key Trends Are Shaping Florida's Transportation System? 4
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How Was the Strategic Highway Safety Plan Developed?

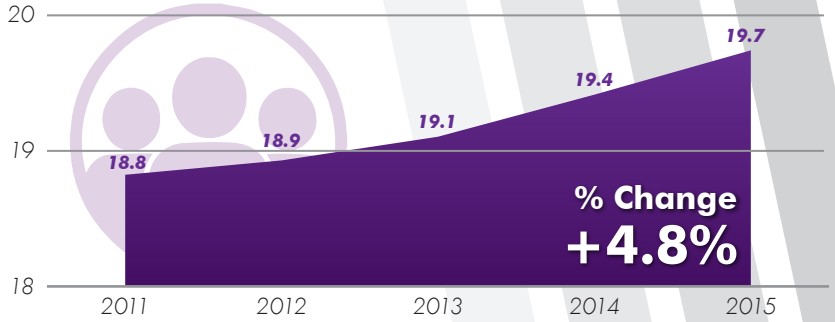
The 2016 SHSP was updated through collaboration with Florida's safety partners. It is aligned with and builds on the recently adopted FTP, the state's long-range transportation plan. Both the FTP and the SHSP share the vision of a fatality-free roadway system to protect Florida's 20 million residents and more than 105 million annual visitors.

The SHSP update process included:

- Analysis of safety data collected by FDOT, the Florida Department of Highway Safety and Motor Vehicles (DHSMV), and other sources to identify trends in the number of traffic fatalities and serious injuries and factors often associated with these events. All data presented in the SHSP are from DHSMV for 2011 to 2015 unless otherwise noted. This plan was developed using the most recent data available at the time of plan approval.
- Consideration of extensive partner and public input gathered through the FTP update process in 2015. This process engaged more than 15,000 participants through a 35-member Steering Committee, four advisory groups, three statewide events, 13 regional forums and workshops, and more than 350 partner briefings. This input reaffirmed the state's commitment to maintaining a safe and secure transportation system for residents, visitors, and businesses. The process also highlighted several safety issues of concern to the public, including bicycle and pedestrian safety, commercial vehicles, the impacts of changing technologies, and the role of design and operational decisions in creating a safe environment.
- Coordination with eight strategic safety coalitions representing statewide, regional, and local partners from both the public and private sectors. These coalitions provided targeted input on the emphasis areas specifically related to their current strategic plans, and defined key strategies for the next five years.
- Coordination with Florida's 27 metropolitan planning organizations (MPOs), including review of safety-related goals, objectives, and strategies in MPO plans and targeted outreach sessions through Florida's Metropolitan Planning Organization Advisory Council.
- Review and approval by:

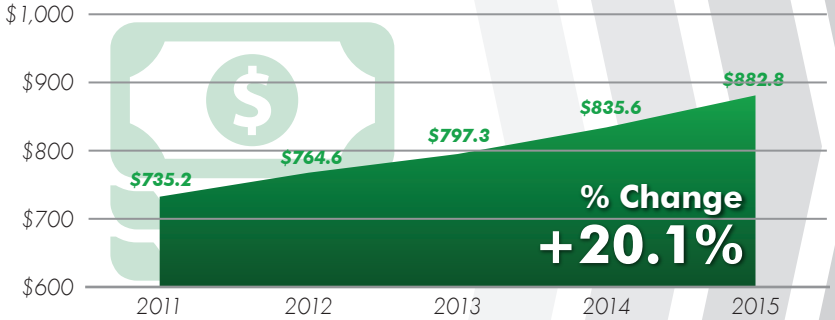
What Factors Influence Fatalities?

Florida Population (in millions)



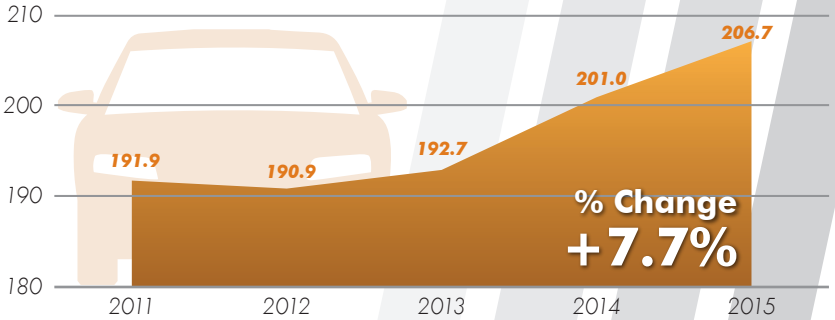
Source: University of Florida, Bureau of Economic and Business Research (2016).

Florida Gross Domestic Product (in billions of dollars)



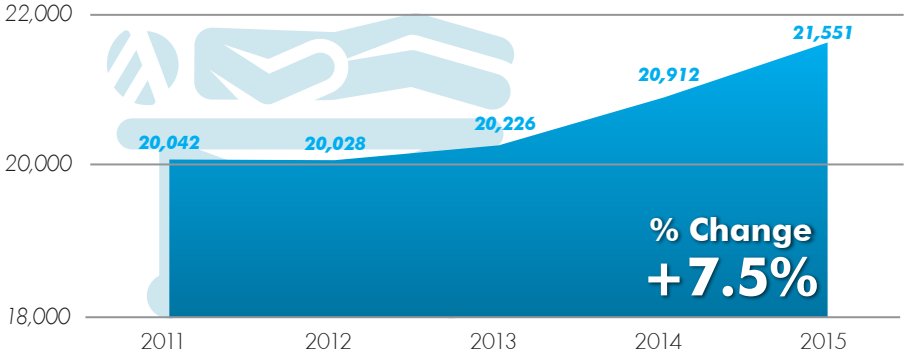
Source: U.S. Bureau of Economic Analysis (2016).

Florida Vehicle Miles Traveled (in billions)



Source: Florida Department of Transportation (2016).

Florida Serious Injuries



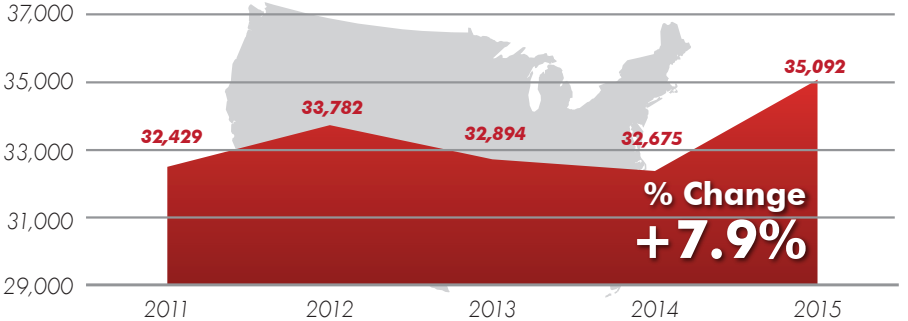
Source: Florida's Integrated Report Exchange System (FIRES) (2016).

Florida Fatality Rate

1.42 per **100 Million** **Vehicle Miles Traveled**

Source: Florida Department of Transportation;
Department of Highway Safety and Motor Vehicles (2016).

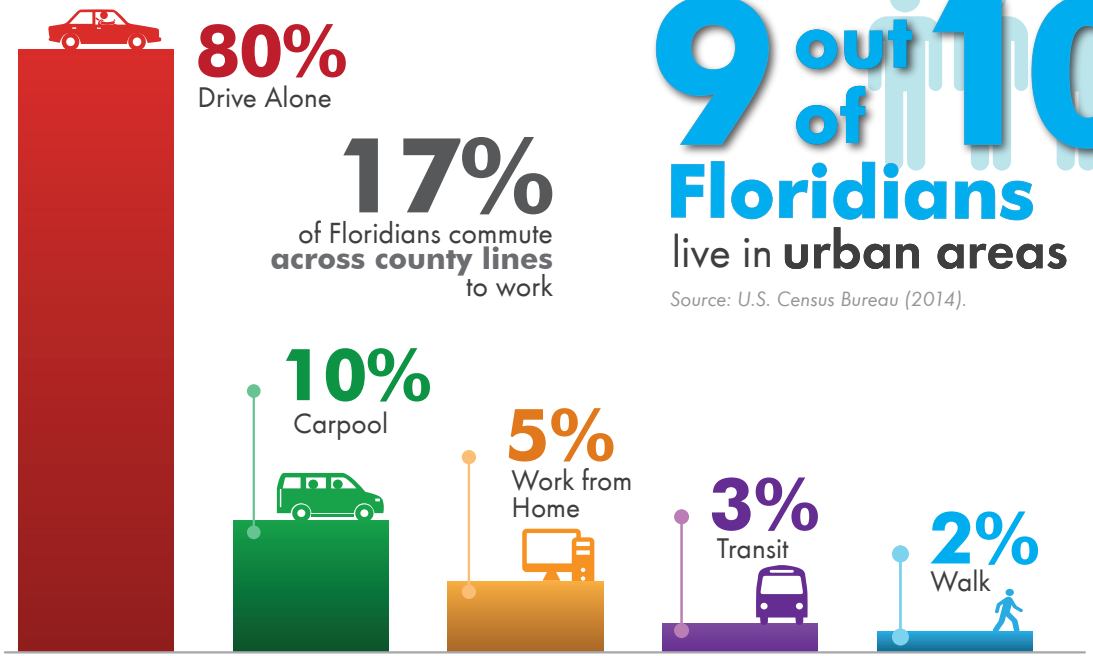
Total Fatalities Nationwide



Source: National Highway Traffic Safety Administration (2016).

What Key Trends Are Shaping Florida's Transportation System?

Floridians' driving habits



Source: U.S. Census Bureau (2013).

9 out of 10 Floridians live in **urban areas**

Source: U.S. Census Bureau (2014).

Licensed Drivers 65+



increased by **12.0%** (2011-2015)

Licensed Teen Drivers



decreased by **4.6%** (2011-2015)

Source: Florida Department of Highway Safety and Motor Vehicles, (2016).

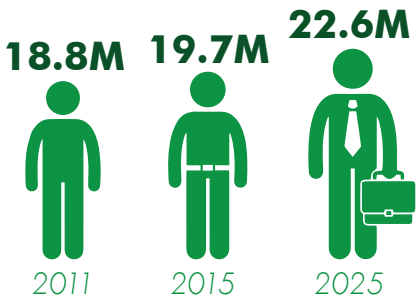
More aging road users on Florida's roads

25% of Florida's population will be **65+** by **2040**

These users tend to have a harder time seeing, reacting to, and recovering from events that cause crashes.

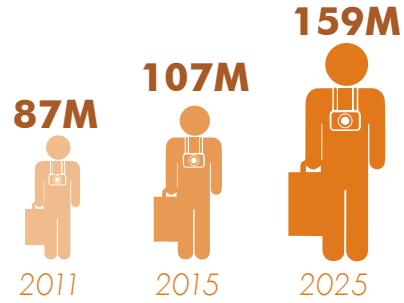
Source: Bureau of Economic and Business Research (2016).

Growth in population



Source: Bureau of Economic and Business Research (2016).

Growth in visitors



Source: Florida Office of Economic and Demographic Research (2015).

Technology is changing how we move

28% of Americans age **18-29** have used on-demand ride sharing services

Frequent users are **less likely** to **own a car and more likely** to take **transit, walk, or ride a bike**

Source: Pew Research Center (2015).



Google Self-Driving Car has autonomously driven more than

1.5 Million Miles Nationally

Source: Google Self-Driving Car Project (2016).

Floridians are choosing non-automobile modes more often

Transit Boardings

6% between 2011 and 2014

Source: FDOT (2015).

Walking to Work

2% between 2011 and 2014

Source: Bureau of Economic and Business Research (2016).

Motorcycle Endorsements

13% between 2011 and 2015

Source: Department of Highway Safety and Motor Vehicles (2016).

Bicycling to Work

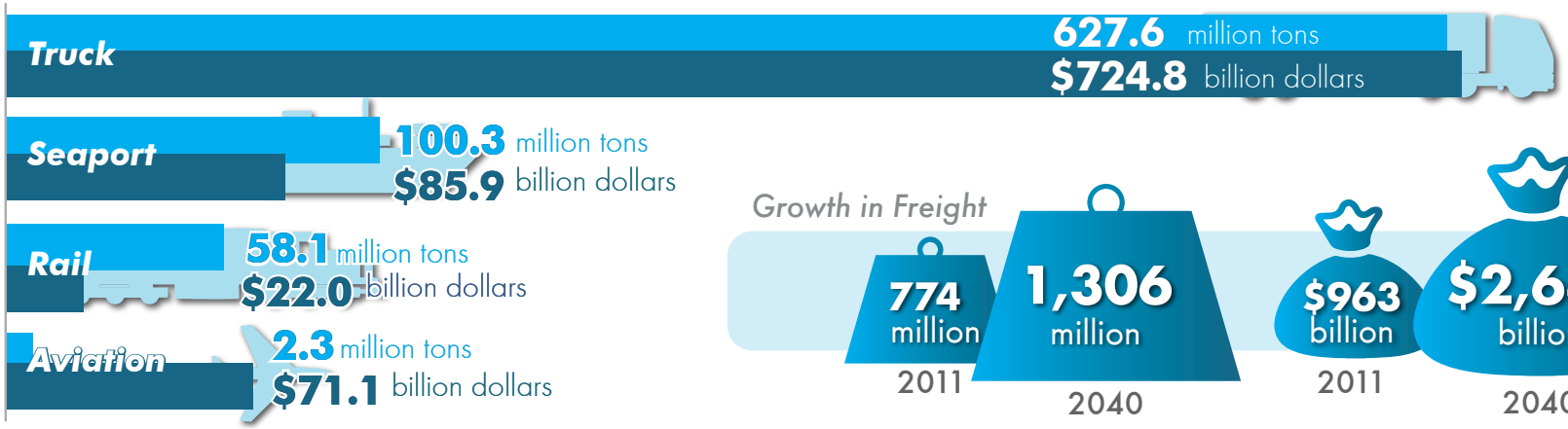
39% between 2011 and 2014

Source: Bureau of Economic and Business Research (2016).

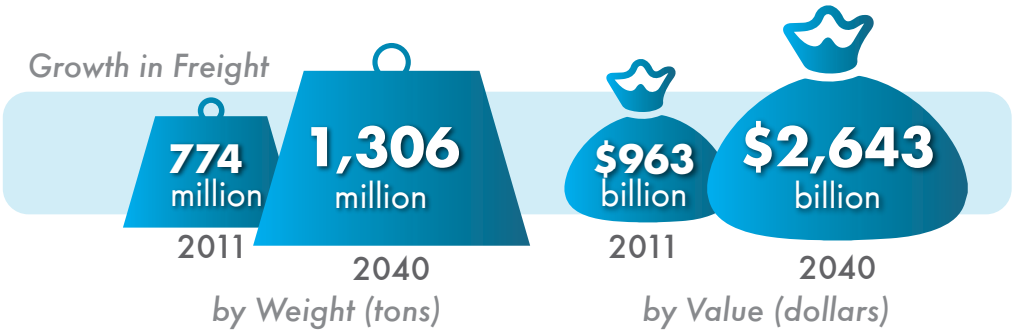
90% of the U.S. population owns a cellphone and **20%** use their phone for real time traffic or transit information

Source: Gartner, Inc., "Predicts 2015: The Internet of Things" (2014).

Freight growth is putting more trucks on Florida's roadways



Sources: Truck and Rail – FHWA Freight Analysis Framework 3.4 (2011); Aviation – FAA Air Carrier Activity Information System (2011); Seaport – Florida Ports Council Five Year Seaport Mission Plan (2011).



Source: Federal Highway Administration, Freight Analysis Framework 3.4 (2011).

How Can We Improve Safety On Both State and Local Roads?

Florida's transportation system is large, multimodal, and owned by a number of entities including the state government, local governments (cities and counties), the federal government, and the private sector. When someone travels on a roadway, they rarely think about who owns it. Roadway ownership, however, matters because improvements and maintenance are the responsibility of the owner.

Florida's SHSP is aimed at all public roads. Federal Highway Administration safety funding can be used for state and local safety projects. In developing the SHSP, efforts were made to reach out to local engineers and planners and the state's 27 MPOs to provide information on ways to improve safety. Local roads account for 39 percent of roadway fatalities. That is why coordination and collaboration through the SHSP is important as it helps achieve a shared vision for safety.

Florida has some of the largest urbanized areas in the country as well as many rural areas. Strategies for improving safety on urban roadways are different than the strategies used for improving safety on rural roads and each have their own set of challenges. Rural areas, for instance, often have more narrow, two-lane roadways and can lack shoulders alongside the roadway. Florida is focused on reducing crashes on all roads including high risk rural road segments. The state implements safety countermeasures based on funding availability and works closely with local governments and agencies to support efforts for local road system enhancements.

Arrive Alive Initiative

Florida's safety partners and stakeholders have come together to revitalize the Arrive Alive initiative. Arrive Alive is an education campaign Florida has used in the past that will be improved by including data analytics, data-driven concepts, and consistent statewide messaging and best practices. The new Arrive Alive initiative will include an identification of corridor segments with a high number of fatalities, roadway safety assessments (RSAs) to identify the major safety issues with those corridor segments, and targeted education and enforcement efforts to reduce fatalities and serious injuries.

Florida's Transportation System

State Highways

12,116 Centerline Miles
10% of All Intersections
60% of Total Fatalities

Local Roads

108,264 Centerline Miles
88% of All Intersections
39% of Total Fatalities

Rail-Highway Crossings

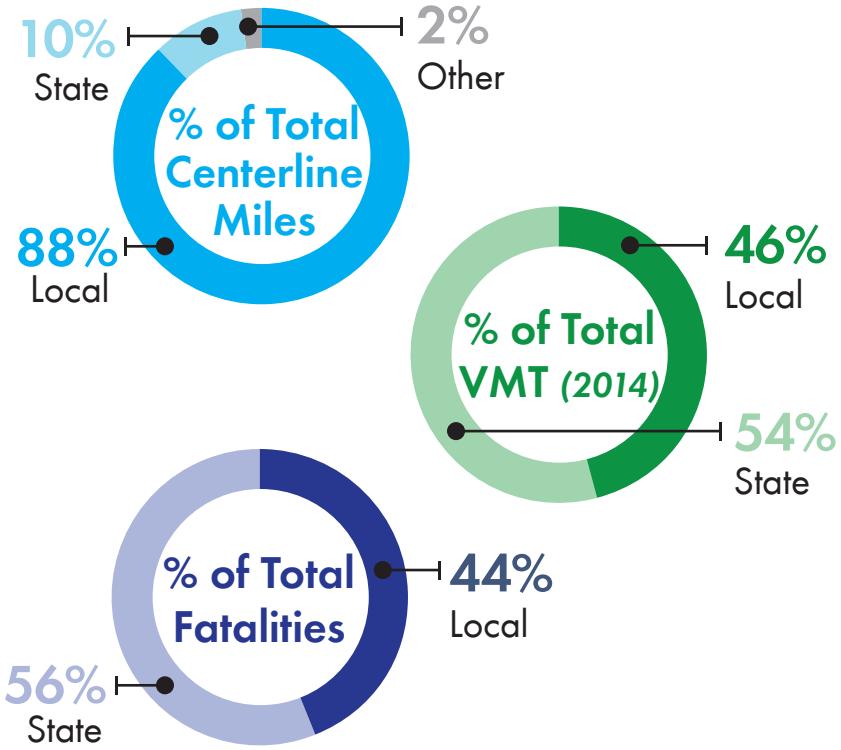
3,731 Public At-Grade Crossings
1,245 Private At-Grade Crossings

Bicycle/Pedestrian

7,418 Miles of Bicycle Facilities on State Highway System
3,627 Miles of Pedestrian Facilities on State Highway System

Source: Florida Department of Transportation (2016).

Comparing State and Local Roads



Source: Florida Department of Transportation (2015).

67 counties

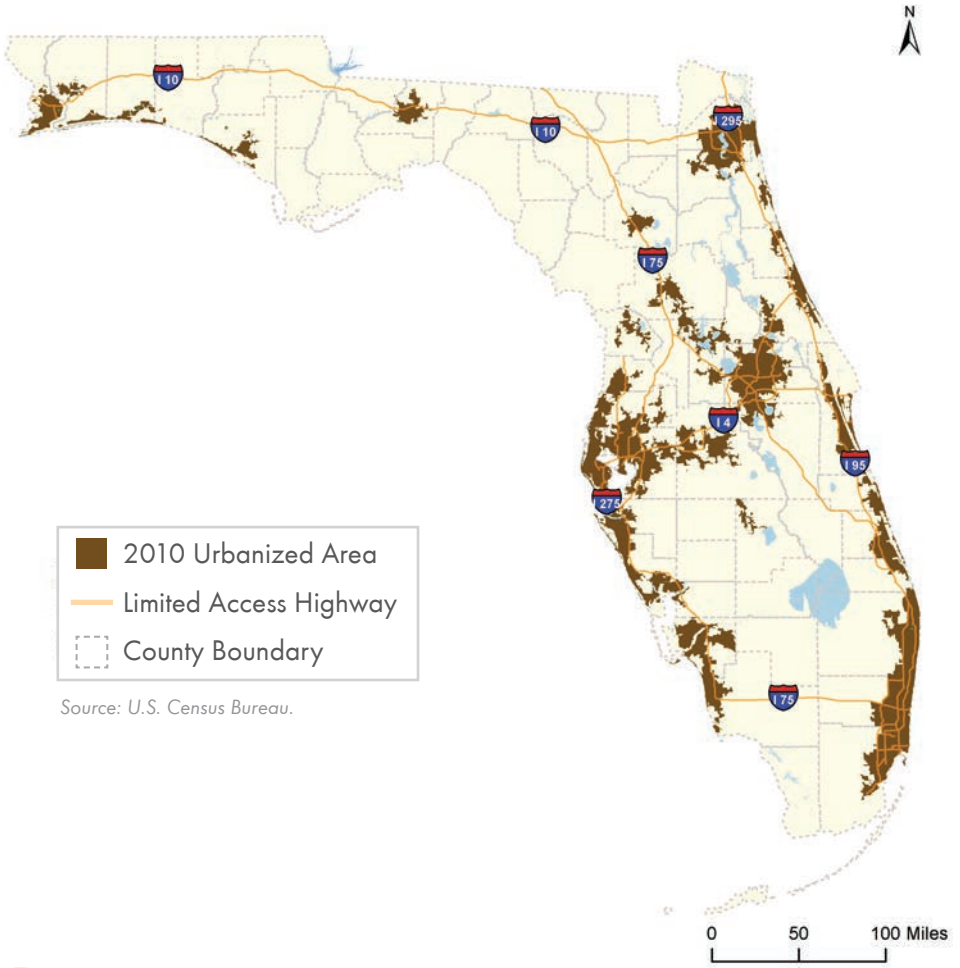
411 cities

&27 MPOs in Florida



The SHSP guides state and local governments in addressing safety, helps them coordinate the safety performance measures required for states and MPOs, and addresses federal funding through the Highway Safety Improvement Program (HSIP). To qualify for HSIP funding, a project must be reflected in the SHSP.

Involvement and coordination with the SHSP serves local constituencies by improving the transportation system and the quality of life for residents and visitors. Most importantly, it saves lives.



Source: U.S. Census Bureau.

What Are the SHSP Emphasis Areas?

Thirteen Emphasis Areas are the primary focus for Florida's traffic safety improvement efforts. The Emphasis Areas were identified through a collaborative process that included:

- Review of fatality and serious injury data from 2011 to 2015 to identify and set priorities among Florida's most serious crash problems;
- Input from the existing strategic safety coalitions, MPOs, and other partners; and
- Consideration of public input from the FTP update process.

Safety coalitions oversee many emphasis areas and develop detailed strategic plans that identify targeted strategies and actions to reduce fatalities and serious injuries for each Emphasis Area. Florida relies on the "4 Es" – engineering, education, enforcement, and emergency response – as a tool to guide decision-making for improving roadway safety. The "4 Es" are used to help identify and organize overarching strategies that help guide the safety coalitions and other partners.

A Leading E is identified for each Emphasis Area to help focus implementation activities. The Leading E reflects the most common and most effective safety solutions related to each Emphasis Area. Identification of the Leading E does not limit the types of actions that can be undertaken to improve safety for that Emphasis Area.



Serious Injuries (5-Year Period of 2011-2015)		Fatalities
34,276	Lane Departure Crashes	5,940
7,252	Impaired Driving Crashes	4,030
12,499	Pedestrians and Bicyclists	3,365
34,183	Intersection Crashes	3,053
9,456	Unrestrained Occupants	2,932
12,093	Motorcyclists	2,402
12,228	Aging Drivers	2,320
7,190	Speeding and Aggressive Driving Crashes	1,873
7,247	Commercial Motor Vehicle Crashes	1,411
12,741	Teen Driver Crashes	1,148
15,236	Distracted Driving Crashes	994
2,099	Work Zone Crashes	340

Note: Multiple factors are involved in almost every crash.

Source: Department of Highway Safety and Motor Vehicles (2016).

For example, while Enforcement is identified as the Leading E for Speeding and Aggressive Driving, many Education and Engineering actions also can be taken to reduce fatalities and serious injuries caused by these types of crashes.

Emergency Response is a unique "E" because it is not directly related to preventing crashes, but rather supports the other "Es" by helping reduce fatalities or serious injuries through improving the response to crashes after they occur. For this reason Emergency Response is not identified as a Leading E for any of the Emphasis Areas.

Like the SHSP, each coalition's strategic plan is data driven, increasing the importance of high quality traffic records and information systems. Overarching strategies are identified for traffic records and information systems even though it is not considered one of the "4 Es."



What Are the Overarching SHSP Strategies?

Engineering

Identify, develop, and deploy engineering solutions and best practices that encourage safe driving behavior and reduce roadway fatalities and serious injuries.

Incorporate policies and practices into **roadway design, construction, operation, and maintenance** that make Florida's transportation system safer for all users.

Ensure infrastructure design allows for **safe and efficient access for first responders**.

Enforcement

Increase **targeted enforcement activities** in high-crash locations and at relevant times.

Increase enforcement of **high-risk driving behaviors**.

Coordinate with prosecutors and the courts to **improve prosecution and adjudication** of traffic safety-related cases.

Education

Educate all road users on **sharing the road**.

Develop and implement communication strategies for all road users and **improve public awareness** of highway safety.

Increase training and educational opportunities for first responders and other traffic safety partners focused on reducing roadway-related fatalities and serious injuries.

Increase motorists' **understanding of engineering solutions and best practices,** and vehicle technologies that can reduce the number and injury severity of crashes.

Emergency Response

Improve emergency response time.

Provide training to first responders to **improve trauma management**.

Facilitate the **quick clearance of traffic crashes**.

Traffic Records and Information Systems

Develop, maintain, and enhance **quality traffic records** by ensuring data are timely, accurate, complete, uniform, integrated, and accessible.

Develop a systematic approach for identifying locations and behaviors related to fatal and serious injury crashes.

Promote the **collection, analysis, and distribution** of quality crash data so state, regional, and local stakeholders can make appropriate and timely decisions on reducing and responding to crashes.

How Is Each Emphasis Area Organized?

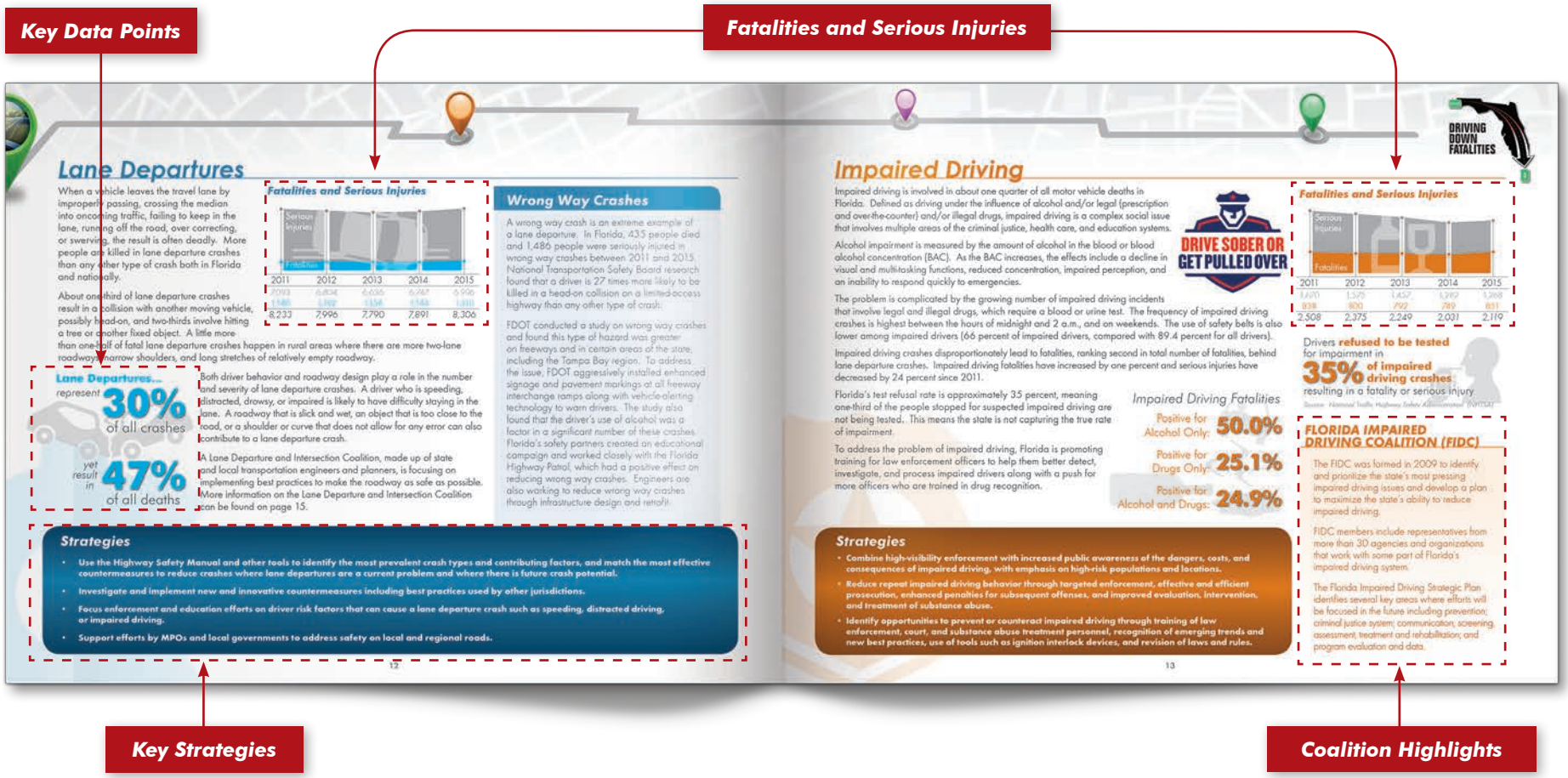
The main body of the SHSP presents the 13 Emphasis Areas ordered from the highest number of 2011 to 2015 fatalities to the lowest. The Emphasis Area sections focus on serious injury and fatality data from 2011 to 2015 provided by DHSMV, unless otherwise noted. Each Emphasis Area narrative addresses:

Fatalities and Serious Injuries related to each Emphasis Area.

Key Data Points supporting the focus of each Emphasis Area.

Coalition Highlights that report on the work being done by Florida's strategic safety coalitions.

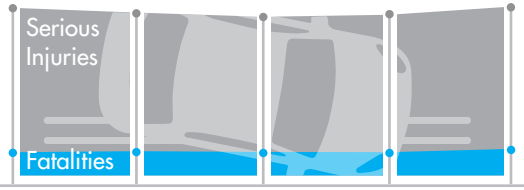
Key Strategies that will guide Florida's efforts to reduce fatalities and serious injuries related to each Emphasis Area over the next five years.



Lane Departures

When a vehicle leaves the travel lane by improperly passing, crossing the median into oncoming traffic, failing to keep in the lane, running off the road, over correcting, or swerving, the result is often deadly. More people are killed in lane departure crashes than any other type of crash both in Florida and nationally.

Fatalities and Serious Injuries



2011	2012	2013	2014	2015
7,093	6,804	6,636	6,747	6,996
1,140	1,192	1,154	1,144	1,310
8,233	7,996	7,790	7,891	8,306

About one-third of lane departure crashes result in a collision with another moving vehicle, possibly head-on, and two-thirds involve hitting a tree or another fixed object. A little more than one-half of fatal lane departure crashes happen in rural areas where there are more two-lane roadways, narrow shoulders, and long stretches of relatively empty roadway.

Lane Departures...

represent **30%** of all crashes

yet result in **47%** of all deaths

Both driver behavior and roadway design play a role in the number and severity of lane departure crashes. A driver who is speeding, distracted, drowsy, or impaired is likely to have difficulty staying in the lane. A roadway that is slick and wet, an object that is too close to the road, or a shoulder or curve that does not allow for any error can also contribute to a lane departure crash.

A Lane Departure and Intersection Coalition, made up of state and local transportation engineers and planners, is focusing on implementing best practices to make the roadway as safe as possible. More information on the Lane Departure and Intersection Coalition can be found on page 15.

Wrong Way Crashes

A wrong way crash is an extreme example of a lane departure. In Florida, 435 people died and 1,486 people were seriously injured in wrong way crashes between 2011 and 2015. National Transportation Safety Board research found that a driver is 27 times more likely to be killed in a head-on collision on a limited-access highway than any other type of crash.

FDOT conducted a study on wrong way crashes and found this type of hazard was greater on freeways and in certain areas of the state, including the Tampa Bay region. To address the issue, FDOT aggressively installed enhanced signage and pavement markings at all freeway interchange ramps along with vehicle-alerting technology to warn drivers. The study also found that the driver's use of alcohol was a factor in a significant number of these crashes. Florida's safety partners created an educational campaign and worked closely with the Florida Highway Patrol, which had a positive effect on reducing wrong way crashes. Engineers are also working to reduce wrong way crashes through infrastructure design and retrofit.

Strategies

- **Use the Highway Safety Manual and other tools to identify the most prevalent crash types and contributing factors, and match the most effective countermeasures to reduce crashes where lane departures are a current problem and where there is future crash potential.**
- **Investigate and implement new and innovative countermeasures including best practices used by other jurisdictions.**
- **Focus enforcement and education efforts on driver risk factors that can cause a lane departure crash such as speeding, distracted driving, or impaired driving.**
- **Support efforts by MPOs and local governments to address safety on local and regional roads.**

Impaired Driving

Impaired driving is involved in about one quarter of all motor vehicle deaths in Florida. Defined as driving under the influence of alcohol and/or legal (prescription and over-the-counter) and/or illegal drugs, impaired driving is a complex social issue that involves multiple areas of the criminal justice, health care, and education systems.



Alcohol impairment is measured by the amount of alcohol in the blood or blood alcohol concentration (BAC). As the BAC increases, the effects include a decline in visual and multi-tasking functions, reduced concentration, impaired perception, and an inability to respond quickly to emergencies.

The problem is complicated by the growing number of impaired driving incidents that involve legal and illegal drugs, which require a blood or urine test. The frequency of impaired driving crashes is highest between the hours of midnight and 2 a.m., and on weekends. The use of safety belts is also lower among impaired drivers (66 percent of impaired drivers, compared with 89.4 percent for all drivers).

Impaired driving crashes disproportionately lead to fatalities, ranking second in total number of fatalities, behind lane departure crashes. Impaired driving fatalities have increased by one percent and serious injuries have decreased by 24 percent since 2011.

Florida's test refusal rate is approximately 35 percent, meaning one-third of the people stopped for suspected impaired driving are not being tested. This means the state is not capturing the true rate of impairment.

To address the problem of impaired driving, Florida is promoting training for law enforcement officers to help them better detect, investigate, and process impaired drivers along with a push for more officers who are trained in drug recognition.

Impaired Driving Fatalities

Positive for Alcohol Only: **50.0%**

Positive for Drugs Only: **25.1%**

Positive for Alcohol and Drugs: **24.9%**

Fatalities and Serious Injuries



2011	2012	2013	2014	2015
1,670	1,575	1,457	1,282	1,268
838	800	792	749	851
2,508	2,375	2,249	2,031	2,119

Drivers **refused to be tested** for impairment in **35%** **of impaired driving crashes** resulting in a fatality or serious injury

Source: National Traffic Highway Safety Administration (NHTSA).

FLORIDA IMPAIRED DRIVING COALITION (FIDC)

The FIDC was formed in 2009 to identify and prioritize the state's most pressing impaired driving issues and develop a plan to maximize the state's ability to reduce impaired driving.

FIDC members include representatives from more than 30 agencies and organizations that work with some part of Florida's impaired driving system.

The Florida Impaired Driving Strategic Plan identifies several key areas where efforts will be focused in the future including prevention; criminal justice system; communication; screening, assessment, treatment and rehabilitation; and program evaluation and data.

Strategies

- **Combine high-visibility enforcement with increased public awareness of the dangers, costs, and consequences of impaired driving, with emphasis on high-risk populations and locations.**
- **Reduce repeat impaired driving behavior through targeted enforcement, effective and efficient prosecution, enhanced penalties for subsequent offenses, and improved evaluation, intervention, and treatment of substance abuse.**
- **Identify opportunities to prevent or counteract impaired driving through training of law enforcement, court, and substance abuse treatment personnel, recognition of emerging trends and new best practices, use of tools such as ignition interlock devices, and revision of laws and rules.**

Pedestrians and Bicyclists

Walking and biking are popular in Florida due to the year-round moderate climate. Given the vulnerability of a pedestrian or bicyclist, however, these activities can result in death and serious injury when they come into conflict with a motor vehicle. Since 2011, pedestrian and bicyclist fatalities increased 27 percent and serious injuries increased 18 percent. Florida conducted a pedestrian assessment in January 2012 and began specifically addressing key bicycle concerns in 2014.

Several factors are involved in these crashes. Approximately two-thirds of pedestrian and bicyclist-related fatal crashes occur outside of a marked crosswalk or bicycle lane. A major factor in these crashes is failure to yield the right-of-way on the part of motorists, pedestrians, and bicyclists. More than 40 percent of bicyclist fatalities are related to traumatic brain injury involving a cyclist who was not wearing a helmet, or who wore a helmet improperly.

Florida represents

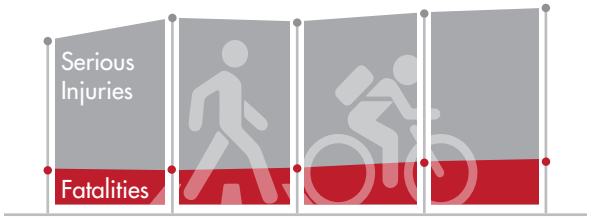
6% of the U.S. population

but accounts for

17% of bicyclist fatalities **&** **11%** of pedestrian fatalities

Source: National Highway Traffic Safety Administration (NHTSA).

Fatalities and Serious Injuries



2011	2012	2013	2014	2015
2,206	2,620	2,514	2,563	2,596
617	589	633	741	785
2,823	3,209	3,147	3,305	3,381

Florida seeks to be a quality place for people to live, learn, work, and play, and is working to ensure everyone has convenient and safe choices for transportation, including walking, biking, and transit. Florida's focused initiative to improve pedestrian and bicyclist safety has resulted in a statewide Complete Streets Policy and Implementation Plan, an intersection lighting plan, updated design guidance, a comprehensive communication plan, high-visibility enforcement efforts, a strong emphasis on pedestrian and bicyclist safety in driver education, revisions of Florida's Driver Handbook and driver license exam, and improved emergency response to victims of traffic crashes.

Engineering solutions such as pedestrian hybrid beacon traffic signals at marked mid-block crosswalks and protected bike lanes have been added to support pedestrian and bicyclist safety. Florida has improved traffic data to allow a more accurate assessment of pedestrian and bicycle related issues and developed a GIS tool that allows users to map crashes, identify areas with an over representation of crashes, and conduct a comprehensive analysis of the context of each priority area to ensure the appropriate countermeasures are selected to resolve specific challenges.

Strategies

- **Increase awareness and understanding of safety issues and compliance with traffic laws and regulations related to pedestrians and bicyclists.**
- **Develop and use a systematic approach to identify locations and behaviors prone to pedestrian and bicycle crashes and implement multi-disciplinary countermeasures.**
- **Create urban and rural built environments to support and encourage safe bicycling and walking.**
- **Support national, state, and local initiatives and policies that promote bicycle and pedestrian safety.**

FLORIDA PEDESTRIAN AND BICYCLE SAFETY COALITION

Florida's Pedestrian and Bicycle Safety Coalition is a diverse group of national, state, and local partners and safety advocates that prioritizes and implements the strategies identified in the statewide Pedestrian and Bicycle Strategic Safety Plan (PBSSP) to reduce pedestrian and bicycle related fatalities and serious injuries as a result of traffic crash involvement on Florida's roadways.

The PBSSP was finalized in 2013 in response to a pedestrian fatality rate that was nearly double the national average and a bicyclist rate that was nearly triple. The Coalition meets regularly to discuss and update the progress of the PBSSP implementation.

Intersections

No other location in the transportation system poses greater risks than an intersection. An intersection is the one place where all road users and vehicle types may come together.

An intersection is a potential point of conflict that relies on signage, traffic control devices, roadway design, lighting, the good behavior of users, and other factors to ensure everyone navigates through safely.

Pedestrians and bicyclists are involved in less than five percent of all intersection crashes, yet account for more than 17 percent of the fatalities.

Intersections create risks for aging road users because as people age, there are declines in visual, cognitive, and physical abilities. This creates difficulties for aging road users in some situations such as making left turns, changing lanes, and navigating through intersections.[1] Sixty percent of aging road user

[1] National Institute of Health, Senior Health.

LANE DEPARTURE AND INTERSECTION COALITION

The mission of the Lane Departure and Intersection Coalition is to analyze data, develop strategies, and implement improvements to eliminate fatal and serious injury crashes for both intersections and lane departures. With assistance from the Federal Highway Administration, the Coalition has developed a Lane Departure Implementation Plan and is working on developing a similar plan for Intersections. In putting the plan together, the Coalition also relied on the progress made by other statewide coalitions such as the Safe Mobility for Life Coalition and the Florida Impaired Driving Coalition.

Fatalities and Serious Injuries



2011	2012	2013	2014	2015
6,736	6,615	6,795	7,004	7,033
600	581	578	592	702
7,336	7,196	7,373	7,596	7,735

fatal crashes involved a failure to yield the right of way. The traffic safety challenge at intersections is evidenced by the 17 percent increase in fatalities and the four percent increase in serious injuries.

One intersection where there are special circumstances are railway-highway crossings. Florida has over 3,500 public railroad crossings and the majority (80 percent) are equipped with active warning devices such as flashing lights and gates. This is higher than the national percentage of 50 percent. In the last five years, 22 people died and 81 were seriously injured in railway-highway crossing crashes in Florida. The good news is Florida's rail crossing fatalities have decreased 44 percent over the past decade, which is noteworthy given increased highway traffic and changes in the railroad industry that have resulted in more trains on fewer rail lines.

Florida uses Complete Streets and context sensitive design strategies that consider the needs of all users and the context of local communities when planning roadway improvements. Improvements such as signal upgrades, turning restrictions at multi-lane intersections, traffic detection control systems, and roadway lighting at intersections are being implemented. Roundabouts have been proven to reduce the number of fatal and severe injury crashes by 82 percent over a stop-controlled intersection and 78 percent over a signalized intersection. Because such new design features can sometimes be confusing, education and information on how to safely navigate through them is necessary. These solutions can be integrated into almost any intersection to help reduce crashes that result in fatalities and serious injuries.

Strategies

- **Reduce the frequency and severity of crashes at intersections by limiting conflicts through geometric, traffic control, and lighting improvements.**
- **Institute and promote Highway Safety Manual analyses and road safety audits/assessments using multi-disciplinary teams to review the operations and safety for all intersection users.**
- **Use traditional and alternative designs and technologies to reduce conflict risks such as innovative interchange designs, access management, and roundabouts.**
- **Improve the awareness and visibility of traffic control devices so all users can safety navigate an intersection.**

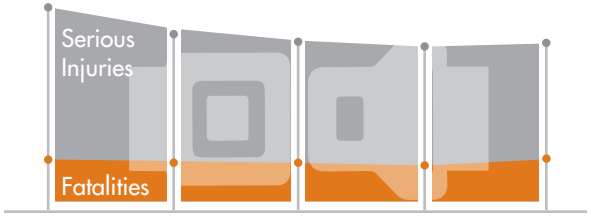
Occupant Protection

NHTSA estimates that safety belts saved nearly 13,000 lives in the United States in 2014. Safety belts and age-appropriate child safety seats, when used properly, keep vehicle occupants in their seats during a crash and spread the crash forces across the stronger parts of the upper body, which helps to prevent deaths and serious injuries.

In Florida, unrestrained occupants represent 23 percent of all fatalities and nearly 10 percent of serious injuries. Almost 20 percent of lane departure and 7 percent of intersection fatalities and serious injuries involved a person who was unrestrained. Often, the individuals who were killed or seriously injured in unrestrained crashes exhibited other risk taking behaviors such as driving impaired (17 percent), speeding (14 percent), and being distracted (6 percent).

Successful occupant protection involves education, communication, and enforcement necessary to achieve significant, lasting increases in safety belt and child safety seat usage. In Florida, efforts focus on regulation, policy, and education, including safety belt and child safety seat awareness and enforcement. These efforts include programs targeting specific demographic groups with low compliance rates, such as teen and minority populations, and other activities aimed at child passenger safety, such as expansion of inspection stations, awareness training, school bus safety, and special needs training.

Fatalities and Serious Injuries



	2011	2012	2013	2014	2015
Serious Injuries	2,246	1,952	1,802	1,751	1,705
Fatalities	619	594	567	529	623
	2,865	2,546	2,369	2,.280	2,328

Each spring around Memorial Day, Florida, along with all 50 states and the District of Columbia, participates in NHTSA's nationwide *Click It or Ticket* high visibility enforcement campaign. These efforts have helped Florida reduce unrestrained occupant serious injuries by 24 percent.

Safety belts **reduce the risk of fatal injury** to front seat occupants by

45%

and the **risk of moderate-to-critical injury** by

50%

Source: Centers for Disease Control.

Florida's safety belt use rate is

89.4%

National average is

87.0%

Source: National Highway Traffic Safety Administration (NHTSA).

Strategies

- **Enforce occupant protection use laws, regulations, and policies to provide clear guidance to the public concerning motor vehicle occupant protection systems including those aimed at children.**
- **Determine which population groups are at highest risk for not wearing safety belts, and develop culturally relevant public education and outreach to increase awareness of the benefits of safety belt use among these groups.**
- **Develop and implement programs that use the media, including social media, to improve public awareness of the importance of safety belts.**

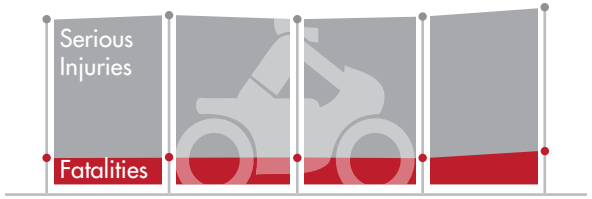
Motorcyclists

More Floridians ride motorcycles than ever before, with riders coming from every age and demographic group. Florida's sunny weather, beautiful beaches, and scenic highways make it a popular place for motorcycle enthusiasts. The downturn in the economy and higher gas prices earlier in this decade made motorcycles and scooters a more attractive transportation choice.

Motorcyclists, including motor scooter riders, represent seven percent of licensed drivers, three percent of registered motor vehicles, and less than one percent of traffic on Florida's roadways, yet represent 19 percent of Florida's traffic fatalities and 12 percent of serious injuries. During the past five years, motorcycle-related fatalities increased by 29 percent, perhaps reflecting the increase in motorcycle endorsements and the increase in motorcycle registrations. Whatever the reason, this dramatic increase has prompted Florida to continue to explore the causes of increasing fatalities and focus on developing solutions to prevent them.

Florida's efforts to improve motorcyclist safety involve educating riders about riding skills and how to be seen by other vehicles, protective equipment, impaired riding, and proper licensure. Florida also educates other motor vehicle drivers about sharing the roadway and educates engineers and highway maintenance personnel about roadway hazards specific to motorcyclists.

Fatalities and Serious Injuries



2011	2012	2013	2014	2015
2,375	2,453	2,375	2,434	2,456
451	457	462	449	583
2,826	2,910	2,837	2,883	3,039

In 2008, Florida adopted a law requiring motorcyclists who want to obtain a motorcycle endorsement or motorcycle-only license to complete a mandatory 15-hour basic training course provided by the Florida Rider Training Program.

Florida law also requires that all riders younger than 21 years wear a helmet. Motorcyclists 21 years and older may ride without helmets only if they show proof of coverage by a medical insurance policy. In 2015, 48 percent of motorcyclist fatalities involved a rider not wearing a helmet. The state is focused on educating all riders about the value of wearing protective gear including helmets, eye protection, jackets, gloves, long-legged pants, and sturdy footwear.

Strategies

- **Improve the skill levels of motorcyclists through increased participation in rider education programs and proper license endorsements.**
- **Promote the safe operation of motorcycles, including sharing the road, responsible riding, and the use of personal safety gear.**
- **Consider the unique vulnerabilities and characteristics of motorcyclists when designing and improving transportation infrastructure.**

FLORIDA MOTORCYCLE SAFETY COALITION

The Florida Motorcycle Safety Coalition was formed in 2008, and includes representatives from more than 25 public and private agencies and organizations who developed and now implement the Motorcycle Safety Strategic Plan.

It is focused on promoting "Ride S.M.A.R.T," which stands for: **S**ay no to drinking and riding, **M**ake yourself visible to motorists, **A**lways wear a helmet, **R**ide in control, and **T**rain regularly. The coalition, a winner of a 2011 National Roadway Safety Award, collects and analyzes data, conducts surveys, and implements and evaluates the state's motorcycle safety program.

RIDE SMART FLORIDA

Aging Road Users

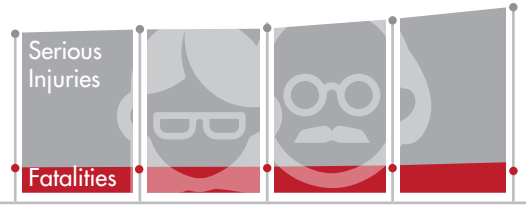
Florida has the largest number of aging road users in the nation. Since today's older adults are expected to live longer and continue to drive longer than any previous generation, their impact on traffic safety can be substantial.

As drivers age, their traffic risks increase. An 80-year-old woman driver is seven times more likely to be killed as a 45-year-old woman in trips that are the same distance.[2] Aging impacts vision, memory, physical strength, reaction time, and flexibility – all necessary for safe driving. Fortunately, the majority of aging drivers voluntarily limit their driving when their skills begin to decrease. They make choices to not drive at night, stay on familiar roadways, and drive more during the mid-day hours when traffic is not as heavy (10 a.m. to 2 p.m.).

Whether it is an increase in the overall number of individuals age 65 or older, an increase in the number of vehicle miles they are traveling, or other causes, fatalities involving aging drivers have increased by 22 percent and serious injuries by 15 percent. To address the needs of aging road users, Florida's Safe Mobility for Life program provides a one-stop web site for safety and mobility resources; the *Florida Guide for Aging Drivers;* the nation's largest CarFit program helping drivers be safe

[2] The Pepper Institute on Aging and Public Policy, Florida State University.

Fatalities and Serious Injuries



2011	2012	2013	2014	2015
2,313	2,363	2,372	2,514	2,666
434	442	445	468	531
2,747	*2,805*	*2,817*	*2,982*	*3,197*

and comfortable by improving the "fit" between drivers and their vehicles; a Find-a-Ride database that provides direct access to over 800 local transportation options; and roadway improvements such as larger lettering on signs and advance warning signs.

Additional activities include helping people transition more easily from driving to other modes of transportation; developing and distributing resources and tools to support safe driving skills; educating and promoting driving evaluation strategies to prevent crashes; and supporting implementation of community design features that meet the mobility needs of an aging population. Pedestrian and bicyclist safety for aging road users also will be addressed as more seniors decide to walk or ride rather than drive.

Safety is Golden
Safe Mobility for Life Coalition

SAFE MOBILITY FOR LIFE COALITION

The mission of the Safe Mobility for Life Coalition is to improve the safety, access, and mobility of Florida's aging road users by implementing an Aging Road User Strategic Safety Plan to eliminate fatalities and reduce serious injuries. The Coalition consists of almost 30 member organizations who work together to develop, distribute, and evaluate transportation safety and mobility resources to benefit not only older adults but families and caregivers, engineers and planners, communities, law enforcement, aging service providers, and health care professionals.

The Coalition takes a positive and innovative approach to help aging Floridians improve their safety, mobility, independence, and connection to the community. The Safe Mobility for Life Coalition works with road users age 50 and up with a focus on users age 65 and up. This is to ensure we are working with road users early so they are prepared to transition from driving when that time comes.

Strategies

- **Promote and educate drivers on comprehensive driving evaluations and safety strategies to prevent crashes.**
- **Expand transportation choices and promote community design features to meet the mobility needs of an aging population.**
- **Develop and distribute resources and tools to support safe driving skills and encourage early planning to safely transition from driving.**

Commercial Motor Vehicles

"If you bought it, a truck brought it," is as true today as it was several years ago when it was first introduced as an advertising campaign. Projections suggest that truck tonnage will increase by 74 percent, nationally, by 2040 due to continued globalization in trade and significant changes in the nation's shopping patterns, increasing the demand for trucks on Florida's roadways.[3] As one of the top tourist destinations in the world, Florida also has a high number of buses on the road, a trend that is expected to continue.

Nearly 600,000 Floridians hold a commercial driver license and almost 10 percent of commercial driver licenses held nationwide are issued in Florida. Out of the 350,000 commercial motor vehicles registered in Florida, 72,000 are Class A Commercial Drivers Licenses for truck trailer combinations (semi-trucks). Growth in commercial vehicle traffic has resulted in a 31 percent increase in commercial vehicle-related fatalities and a four percent increase in serious injuries.

[3] Federal Highway Administration, Freight Analysis Framework 3.4.

Fatalities and Serious Injuries



2011	2012	2013	2014	2015
1,507	1,382	1,521	1,395	1,442
248	275	281	280	327
1,755	*1,657*	*1,802*	*1,675*	*1,769*

The Florida Highway Patrol's Office of Commercial Vehicle Enforcement (CVE) conducts safety inspections of commercial trucks and buses and enforces safety and size/weight requirements. CVE has a comprehensive commercial motor vehicle safety enforcement program that includes traffic enforcement focused on moving infractions, distracted driving, fatigued driving, and impaired driving. CVE concentrates enforcement efforts on these violations in high crash locations to prevent crashes.

Florida's shortage of available truck parking often results in trucks parking along the shoulders of interstates, which creates a safety hazard for motorists. Expanded parking areas at rest stops helps reduce driver fatigue. Roadside pull-off areas along interstates in highly urbanized areas increase safety during traffic stops. Public awareness programs are conducted throughout the state. Outreach efforts include public speaking, media interviews, public service ads, billboards, dynamic message boards, and electronic social networking to educate the public about the value of the trucking industry and motorist safety in relation to commercial motor vehicle operations. Other efforts under consideration include truck-only lanes, more truck lane restrictions, and separate entrances at busy port locations.

Nationally in 2014,

73% of the **fatalities** in commercial vehicle crashes were **occupants of other vehicles**

10% were **pedestrians, bicyclists, or motorcyclists**

Source: National Highway Traffic Safety Administration (NHTSA).

Strategies

- **Conduct targeted enforcement for violations in high crash locations associated with commercial vehicles.**
- **Use public awareness program, outreach efforts, and social media to increase motorist awareness of safe driving around commercial vehicles.**
- **Collaborate with the trucking and bus industry on programs and initiatives to improve safety and reduce crashes.**

Speeding and Aggressive Driving

Chances of dying in a crash doubles for every 10 miles per hour (mph) a car travels above 50 mph. Speeding reduces the time a driver has to react to a dangerous situation, and increases the impact energy and risk of death in the event of a crash. According to the National Safety Council, if a car is traveling at 30 mph and accelerates to 60 mph, the amount of energy upon impact is four times greater. That impact ripples across the three types of collisions that are part of a crash: the vehicle collision when the car hits another car or object; the human collision when the people in the car hit the interior of the vehicle or another occupant; and the internal collision when organs in the body collide with the body's skeleton or other organs.

A crash is considered to be speed-related when a driver is driving too fast for conditions or exceeding the posted speed limit. Speeding is part of the overall problem of aggressive driving, which can also involve following too closely, refusing to yield the right-of-way, running red lights, weaving in and out of traffic, and passing improperly. In addition to the effects on reaction time and impact, speeding reduces a driver's ability to steer safely around other vehicles, curves, or objects in the roadway; extends the distance necessary to stop a vehicle; and increases the distance a vehicle travels before a hazard is noticed. While quieter, better designed cars and smoother and wider roadways can contribute to the speed problem, driver attitudes and cultural norms are ultimately the major factor in decisions to speed.

Fatalities and Serious Injuries



2011	2012	2013	2014	2015
1,533	1,422	1,476	1,409	1,350
367	402	367	324	413
1,900	1,824	1,843	1,733	1,763

Lane departures are involved in 54 percent of all speeding and aggressive driving fatalities and serious injuries, and intersection crashes make up another 25 percent. Individuals involved in speeding and aggressive driving crashes often exhibit other risk-taking behavior such as not wearing a safety belt (17 percent) or driving impaired (12 percent). Speeding and aggressive driving serious injuries have declined by 12 percent since 2011 while fatalities have increased by 12 percent.

Speeding and aggressive driving are complex issues that can be addressed through engineering, enforcement, and education solutions. Engineering solutions include managing speed by setting appropriate speed limits; using variable speed limits that change based on road, traffic, and weather conditions; and implementing traffic calming measures that slow drivers down. Local law enforcement agencies can also target problems with high visibility speeding and aggressive driving initiatives that educate the public about the problem and cite individuals who violate the law.

8 out of 10

drivers exhibit **aggressive driving behavior**

Source: AAA Foundation for Traffic Safety.

Strategies

- **Enforce speeding and aggressive driving laws by focusing on high-risk locations.**
- **Incorporate technology and other innovations at high risk locations.**
- **Evaluate crash hot spots and implement appropriate engineering countermeasures to control speed and reduce aggressive driving behavior.**
- **Conduct community-based public awareness and education regarding speeding and aggressive driving.**

Teen Drivers

As any parent knows, handing the car keys to a new driver is a proud yet terrifying experience. Florida has over 400,000 registered teen drivers, age 15 to 19. Teen drivers are involved in approximately 40,000 crashes resulting in 200 fatalities and 2,500 serious injuries each year. Nationally, drivers aged 16 and 17 have the highest crash rates of any age group.

Teen drivers do not have years of experience in recognizing and avoiding dangerous situations. The Centers for Disease Control and Prevention (CDC) finds that teens often engage in risky behaviors. In one-third of the deaths and serious injuries involving teen drivers, safety belts were not worn. Teens are more likely to underestimate dangerous situations, speed, and allow shorter distances between vehicles.

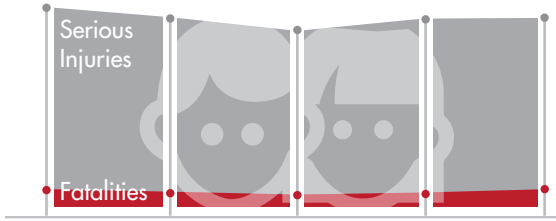
Motor vehicle crashes are the

LEADING CAUSE OF DEATH

for U.S. teens

Source: Centers for Disease Control and Prevention (CDC).

Fatalities and Serious Injuries



2011	2012	2013	2014	2015
2,682	2,569	2,411	2,562	2,517
264	225	183	213	263
2,946	2,794	2,594	2,775	2,780

For most adults, driving is almost automatic; in reality, it is a complex task requiring the driver to pay attention to a multitude of factors simultaneously, including other cars, pedestrians, obstructions, signs, and signals. Almost one-half of all Florida teen fatalities and serious injuries happen at intersections where the mix of traffic, pedestrians, signs, and signals can be overwhelming, especially for someone who is inexperienced.

The Graduated Driver Licensing (GDL) laws allow new drivers to gain necessary experience and skills before being allowed full driving privileges. GDL has been very effective in reducing fatalities and serious injuries among this age group, according to NHTSA. In Florida, teen driver serious injuries have decreased by six percent.

TEEN SAFE DRIVING COALITION

Leading the charge in Florida to improve traffic safety among teens is the Teen Safe Driving Coalition, which is focusing on reducing the number of teen drivers being killed or seriously injured in traffic crashes.

The Coalition is working to expand the network of individuals and partners who are involved in the teen safe driving effort and is conducting extensive outreach and education.

Each year, the Coalition works with Students Against Destructive Decisions (SADD) on a Leadership Academy, which helps Florida teens plan and conduct peer-to-peer safety campaigns in their schools and communities.

Strategies

- **Educate stakeholders about the potential safety benefits of improving Florida's Graduated Driver Licensing law to include passenger and cell phone restrictions.**
- **Educate parents, caregivers, and role models on the dangers of impaired driving for teen drivers including the prohibition on providing alcohol or drugs to anyone under the age of 21.**
- **Work with law enforcement agencies to increase enforcement of GDL and other traffic safety laws including safety belt use and impaired driving.**

Distracted Driving

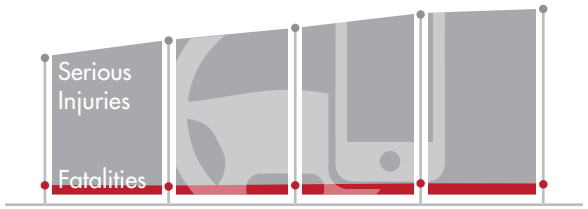
At 55 mph, a driver can travel the distance of a football field (with his or her eyes off the road) in the amount of time it takes to send a text.[4] Distracted driving includes anything that takes the driver's attention away from the vital task of driving.

There are three types of distraction: manual, which is taking hands off the wheel; visual, or taking eyes off the road; and cognitive, which involves taking one's mind off driving. Discussions about distracted driving often center on cell phone use and texting but other activities such as eating, talking to passengers, reading, adjusting the radio or climate controls, dealing with children, and being fatigued or drowsy can be equally as distracting.

Fatalities involving distracted driving increased 17 percent while serious injuries increased 36 percent. The relatively low numbers of fatalities and serious injuries, given what people suspect is the extent of the problem, may be due to the difficulty in obtaining distracted driving data.

[4] Centers for Disease Control and Prevention (CDC).

Fatalities and Serious Injuries



	2011	2012	2013	2014	2015
Serious Injuries	2,525	2,861	3,073	3,344	3,433
Fatalities	185	176	198	219	216
	2,710	3,037	3,271	3,563	3,649

Law enforcement officers often have trouble determining if a person was distracted and cannot confiscate a cell phone to verify if a driver was texting without a warrant.

Activities to address distracted driving include a "Just Put It Down" campaign with a sample proclamation and a pledge for people to sign and a partnership with GEICO Insurance to offer "Safe Phone Zones" at 64 Florida rest areas, welcome centers, and turnpike service plazas.

PUT IT DOWN

At any given daylight moment across America,

660,000 DRIVERS are USING CELL PHONES

or manipulating electronic devices while driving

Source: NHTSA, One Text or Call Could Wreck It All, Traffic Safety Marketing.

Strategies

- **Implement effective roadway design and operation practices such as rumble strips and stripes and flashing beacons with warning signs to mitigate lane departures, speeding, and other symptoms of distracted driving and to reduce congestion and improve mobility.**
- **Change societal attitudes about distracted driving through intensive public education activities.**
- **Collaborate with other public and private organizations to offer innovative solutions such as policies that prohibit distracted driving when using company or organization vehicles.**

Work Zones

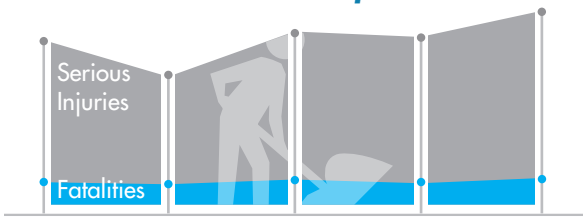
While work zones may be frustrating to many drivers, they are essential to ensure Florida's roadways, bridges, medians, and shoulders are properly constructed and maintained. A work zone is an area set up by state and local departments of transportation or utility companies to allow highway construction, maintenance, or utility-work activities. Work zones are usually marked by signs, channeling devices, barriers, pavement markings, and/or work vehicles, and may be monitored by state or local law enforcement.

The length of time a work zone is in operation depends on the type of construction or maintenance project as well as the type of roadway, weather conditions, and traffic volume. A work zone involves workers, vehicles, trucks, and equipment that can necessitate lane closures, detours, and moving equipment, and can last from a few days to years. While work zone fatalities make up only three percent of overall fatalities and two percent of serious injuries, the safe and efficient flow of traffic through work zones is an ongoing priority for Florida's transportation and safety partners. A focus on work zone safety is critical because plans for investment in maintaining existing roads and bridges and building or expanding roadways to meet the growing capacity needs of the state's transportation system will result in more work zones across the state.

In 2014, Florida had the **3rd** highest number of **Fatal Traffic Crashes** in Work Zones in the Nation

Source: National Work Zone Information Clearinghouse.

Fatalities and Serious Injuries



	2011	2012	2013	2014	2015
Serious Injuries	420	317	436	431	495
Fatalities	66	60	74	63	77
	486	377	510	494	572

Workers were present in the work zone in 35 percent of the fatal crashes and 44 percent of crashes resulting in serious injuries. The majority of the fatalities and serious injuries happened in work zones located on shoulders or in the median area of the roadway, and for most, law enforcement officers were not present. A major cause of these crashes is distraction, with 16 percent of work zone related fatalities and serious injuries involving distracted driving.

Efforts to improve safety in and around work zones include traffic training for workers and contractors, rumble strips to alert drivers that the work zone is near, and law enforcement presence to ensure traffic slows down.

FLORIDA WORK ZONE SAFETY COALITION

The Florida Work Zone Safety Coalition is an industry initiated coalition that was established in 2016. This coalition is new and does not currently have a strategic safety plan. FDOT participates as a member of this coalition and will encourage the coalition to adopt the strategies identified in the SHSP.

Strategies

- **Apply advanced technology to improve work zone safety such as automated work zone information systems, simplified dynamic lane merge systems, portable changeable message signs, and queue warning systems.**
- **Educate road users about work zone safety and provide timely and accurate information regarding active work zones.**
- **Determine the feasibility and effectiveness of other improvements including installing reflectors on barrier walls, spacing on curves, changes in the penalties and fines to contractors for getting out of the roadway late, using of crash cushions, and correcting pavement marking errors.**
- **Work with law enforcement, contractors, and FDOT personnel to reduce speeding in and around work zones through a comprehensive approach of increased fines and increased law enforcement contacts.**

Traffic Records and Information Systems

Data are the foundation of any effort to improve traffic safety and are critical for the development and implementation of the SHSP. Using data to identify safety problems creates an evidence-based safety planning process, and results in better decision-making.

A traffic records system consists of data about a state's roadway network and the people and vehicles that use it. The six traffic records systems are: crash, vehicle, driver, roadway, citation/adjudication, and emergency medical services/injury surveillance. The data from these systems are used to understand driver demographics, licensure, behavior, and sanctions; vehicle types, configurations, and usage; engineering, education, and enforcement measures; crash-related medical issues and actions; and how all of these factors affect highway safety. Decision makers and safety stakeholders at the state, regional, and local level analyze the various data to understand their highway safety challenges, set priorities, and develop and evaluate projects and programs that save lives.

Connecting quality data from all of the traffic records systems can provide a detailed and clear picture of traffic safety issues. The analysis of a single crash or aggregated crashes statewide, in a region, or a specific corridor, can help inform the type of engineering, education, or enforcement strategy to implement by targeting specific safety problems, road user populations, or training needs. Additionally, quality data allow for performance monitoring so that resources and investments are used most effectively and efficiently.

90% *of Florida's* **Crash Reports** *were submitted* **electronically** *in 2015*

FLORIDA TRAFFIC RECORDS COORDINATING COMMITTEE

Florida's Traffic Records Coordinating Committee (TRCC) was created to bring together agencies interested in reducing traffic fatalities and serious injuries by improving the timeliness, accuracy, completeness, uniformity, integration, and accessibility of traffic records data. The TRCC facilitates planning, coordinating, and implementing projects to accomplish common goals and improve the quality of the state's traffic records information systems.

Currently the TRCC is working on integrating with the national emergency medical services information system; expanding a crash geo-location system; and providing grants to local law enforcement agencies and courts to improve their traffic records systems.

TRCC

DATA WHEN, WHERE, AND HOW YOU NEED IT

Strategies

- **Develop and maintain complete, accurate, uniform, and timely traffic records data.**
- **Promote the use of traffic records data for decision-making purposes and ensure its accessibility.**
- **Facilitate collaboration of multi-agency initiatives and projects that improve traffic records information systems.**
- **Create the same key data fields and definitions among Florida's six data systems to allow end users to link traffic records data.**

Transition to Implementation

The Strategic Highway Safety Plan focuses on persistent problems and new or trending areas that most significantly affect Florida's highway fatalities and serious injuries. The state's network of highway safety professionals and advocates are working to drive down fatalities and serious injuries with an ultimate vision of zero. The SHSP identifies proven strategies, programs, and initiatives, as well as new approaches that will be used to accomplish this vision.

The SHSP is an overarching plan that provides direction to state, regional, and local transportation, law enforcement, education, emergency management, and other entities. The SHSP will be implemented through multiple activities. The SHSP will:

- Provide a framework for updates of three plans that identify specific projects as priorities for use of dedicated safety improvement funding available through federal agencies: the Highway Safety Improvement Program (FHWA), the Highway Safety Plan (NHTSA) and the Commercial Vehicle Safety Plan (FMCSA).
- Inform the updates of strategic or action plans developed and maintained by established or new coalitions of safety professionals focused on specific emphasis areas. Florida's Community Traffic Safety Teams (CTSTs) are an excellent conduit to working on emphasis areas and targeting community-specific traffic safety issues.
- Guide FDOT in incorporating safety improvement strategies as appropriate into the full range of maintenance, operations, and capacity projects in its work program and future plans, recognizing that every transportation investment also represents an opportunity to improve the safety of travelers. A key focus will be on improving the safety of travel on Florida's Strategic Intermodal System, the state's high priority network of facilities important for statewide and interregional travel.
- Guide Florida's 27 MPOs, 67 counties, and 411 cities in updating safety action plans and safety elements of their long-range transportation plans, as well as implementing specific projects.

Emphasis area coalitions are charged with implementing the strategies of the SHSP. These coalitions represent a variety of federal, state, regional, local, and advocacy organizations whose expertise and interests include multiple modes of transportation, as well as engineering, education, enforcement, and emergency response. The coalitions meet regularly, and develop and track progress on detailed data-driven strategic plans that focus on proven strategies and activities to drive down fatalities and serious injuries.

Florida's Highway Safety Coalitions

Lane Departure and Intersection Coalition

Florida Impaired Driving Coalition

Florida Pedestrian and Bicycle Safety Coalition

Safe Mobility for Life Coalition

Florida Motorcycle Safety Coalition

Teen Safe Driving Coalition

Florida Traffic Records Coordinating Committee

Work Zone Safety Coalition

(review plans at http://www.fdot.gov/safety)



The Florida Transportation Plan identifies implementation guiding principles related to collaboration, innovation, customer service, and data and performance. The transition of the SHSP from planning to implementation will require a focus on these same areas.

How do we collaborate across jurisdictions modes, and disciplines?

- Continue to support Florida's existing safety coalitions to **coordinate with stakeholders to drive down fatalities** in specific emphasis areas.
- **Establish ad hoc working groups or additional coalitions** for the commercial motor vehicle, distracted driving, occupant protection, and speeding/aggressive driving emphasis areas that do not presently have established coalitions.
- **Coordinate with Florida's MPOs and local governments** on SHSP emphasis area implementation and future updates of their safety plans and programs.
- Continue to encourage **multi-disciplinary approaches to safety improvements** that consider engineering, education, enforcement, and emergency response solutions.
- **Coordinate with land use, public health, and other partners** to ensure safety considerations are a top priority in planning decisions related to transportation.

How do we embrace innovation in all aspects of highway safety?

- **Invest in research and evaluation of new technologies and practices** that can reduce highway fatalities and serious injuries.
- Plan to use technology to **improve communication** across modes and design "smart streets" that provide information to all travelers to reduce conflicts.
- **Monitor and evaluate innovations** that may change travel behavior and demand for potential impact to safety.
- Update state and local safety plans and regulations to **consider technologies and innovation** that may reduce fatalities and serious injuries.

How do we better serve our customers?

- Communicate **clear and consistent safety messages** using a variety of mediums and venues that engage roadway users in their role in Driving Down Fatalities.
- Create transportation environments that are **accommodating and safe for all roadway users.**
- Educate roadway users on **how to use new infrastructure and technologies,** such as roundabouts and signalized crosswalks.
- **Understand how changes in travel demand, preferences, and options impact highway safety.**

How do we improve data and performance?

- Commit to ongoing **improvements in the quality, integration, and analysis** of various traffic records data, including innovative uses of new and emerging data sources.
- Create a **long-term strategy for managing traffic records data** as a critical resource for highway safety agencies' and partners' decision-making and research, including data storage, sharing, privacy, and quality issues.
- Commit to ongoing highway safety research to **identify proven strategies, programs, and initiatives** that can be replicated across the state to realize further reductions in highway fatalities and serious injuries.
- Implement innovative techniques to **measure progress and guide investment decisions** to continuously improve traffic safety.
- Work with MPOs to **coordinate target setting and performance measures** between the state and local plans, consistent with federal requirements.

Call to Action

Improving safety on our roadways involves all of us working together to reduce fatalities and serious injuries. Implementing the SHSP strategies, through the efforts of engineering, education, enforcement, and emergency response, while increasing roadway users' awareness and understanding of their role in improving safety on our roadways, is our best opportunity to Drive Down Fatalities.

To successfully implement the SHSP, all stakeholders should commit to:

- Update their safety plans, including other state, coalition, MPO, and local government plans, to align with the FTP and SHSP zero fatality vision.
- Demonstrate support and promote the SHSP vision of zero fatalities by implementing SHSP strategies and links to the SHSP document on state, regional, and local transportation safety agency and organization websites.
- Promote initiatives that increase roadway users' understanding of the state's most significant traffic safety problems and their role in reducing fatalities and serious injuries.
- Document and report progress in each Emphasis Area toward achieving Florida's vision of zero roadway fatalities.
- Support national, state, and local initiatives, policies, and safety projects that promote highway safety.

Safety for Florida's residents and visitors is a top priority for the state that can only be achieved with the help of safety partners. Florida's traffic safety community must continue to work together to identify and implement innovative solutions that help to reduce fatalities and serious injuries on Florida's roadway system. As we continue to work together, engage new partners, and follow through with the strategies outlined in the SHSP, we are confident that we can drive down roadway fatalities and serious injuries.

For more information please visit:

www.fdot.gov/safety/



Glossary

Aging Road User – A driver, passenger, pedestrian, bicyclist, transit-rider, motorcyclist, or operator of a non-motorized vehicle who is 65 years of age or older for crash data purposes, and 50 years of age and older for the proactive purposes of the Aging Road Users Coalition.

Autonomous Vehicle Technology – Technology installed on a motor vehicle that has the capability to drive the vehicle on which the technology is installed without the active control or monitoring by a human operator.

Blood Alcohol Concentration (BAC) – The amount of alcohol that is present in a person's blood when tested by a law enforcement authority.

Bicyclist – Users who are riding a bicycle or other type of non-motorized cycle.

Centers for Disease Control and Prevention (CDC) – The CDC, which is part of the U.S. Department of Health and Human Services, is responsible for protecting America from health, safety, and security threats.

Commercial Motor Vehicle – Medium or heavy trucks more than 10,000 pounds, trucks carrying hazardous material and marked with a hazardous materials placard, or those operated by a driver with an interstate carrier or an intrastate carrier commercial driver's license. Commercial vehicles include buses that carry nine or more passengers or are designed and used for the transportation of persons for compensation.

Commercial Vehicle Enforcement (CVE) – The unit within the Florida Highway Patrol that is charged with conducting safety inspections of these vehicles and enforcing safety requirements.

Commercial Vehicle Safety Plan (CVSP) – Plan required by the Federal Motor Carrier Safety Administration that outlines strategies and countermeasures specifically targeting commercial vehicle safety.

Community Traffic Safety Team (CTST) – Locally based groups of highway safety advocates who are committed to solving traffic safety problems through a comprehensive, multi-jurisdictional, multi-disciplinary approach.

Complete Streets – Streets that are planned, designed, and operated consistent with surrounding community characteristics and roadway functions so that multiple modes of transportation and customers, regardless of age or ability, easily, comfortably, and safely can access and use the street.

Context Sensitive Solutions (CSS) – A collaborative, interdisciplinary approach that involves all stakeholders to develop a transportation facility that fits its physical setting and preserves scenic, aesthetic, historic, and environmental resources, while maintaining safety and mobility. CSS is an approach that considers the total context within which a transportation improvement project will exist.

Coordination – The comparison of plans, programs and schedules of one agency with related plans, programs, and schedules of other agencies or entities with legal standing, and adjustment of plans, programs, and schedules to achieve general consistency.

Distracted Driving Crash – Includes any crash where the driver is distracted by an electronic communication device, such as a cell phone; other electronic devices, such as navigation or a DVD player, or other external distractions; passengers in the vehicle; texting; or where the driver is inattentive.

Engineering – One of the "4 Es" of traffic safety which includes highway design, traffic, maintenance, operations, and planning professionals.

Enforcement – One of the "4 Es" of traffic safety which supports efforts by state and local law enforcement agencies.

Education – One of the "4 Es" of traffic safety which includes safety solutions that support prevention specialists, communication professionals, educators, and citizen advocacy groups.

Emergency Response – One of the "4 Es" of traffic safety which includes improving the response to crashes after they occur and safety solutions that support first responders, paramedics, fire, and rescue.

Emphasis Area – One of 13 areas of focus identified in the SHSP.

Facility – The infrastructure (such as a roadway, railway, or waterway) that supports the transportation of people and goods.

Fatality Rate – The number of fatalities per 100 million vehicle miles traveled.

Federal Highway Administration (FHWA) – The Federal agency within the U.S. Department of Transportation that supports state and local governments in the design, construction, and maintenance of the nation's highway system.

Federal Motor Carrier Safety Administration (FMCSA) – Federal government agency responsible for regulating and providing safety oversight of commercial motor vehicles.

Florida Impaired Driving Coalition (FIDC) – Florida's strategic safety coalition primarily focused on reducing fatalities caused by impaired driving crashes.

Florida Lane Departure and Intersection Coalition – Florida's strategic safety coalition primarily focused improving safety at intersections and reducing lane departures.

Florida Motorcycle Safety Coalition – Florida's strategic safety coalition primarily focused on motorcyclist safety.

Florida Pedestrian and Bicycle Safety Coalition – Florida's strategic safety coalition primarily focused on pedestrian and bicyclist safety.

Florida Teen Safe Driving Coalition (FTSDC) – Florida's strategic safety coalition primarily focused on teen drivers safety.

Florida Transportation Plan (FTP) – A statewide plan that defines Florida's long range transportation goals and objectives for at least the next 20-50 years.

Florida Work Zone Safety Coalition – Florida's strategic safety coalition primarily focused on work zone safety. This is an industry established and led coalition.

Freight – Any commodity being transported.

Geographic Information System (GIS) – System designed to capture, store, manipulate, analyze, manage, and present all types of spatial or geographical data. GIS includes tools that allow users to create interactive queries, analyze spatial information, edit data in maps, and present all of these operations.

Graduated Driver's License (GDL) – A multi-staged process for issuing driver's licenses to young, novice drivers to ensure that they gain valuable driving experience under controlled circumstances and demonstrate responsible driving behavior and proficiency.

High-Risk Rural Roads – Rural roads with average crash rates that are higher than the district's average crash rate for the same roadway type on which there are a statistically significant number of fatal and serious injury crashes. Minimum crash criteria include eight or more crashes over a three-year period for a rural major or minor collector and three or more crashes over a three-year period for a rural local road.

Highway – A general term for denoting a public way for purposes of vehicular and people travel, including the entire area with the right-of-way.

Highway Fatalities – All deaths in which a motor vehicle was the cause of the fatality. This includes pedestrians and bicyclists killed by motor vehicles as well as vehicle occupants.

Highway Safety Improvement Program (HSIP) – This is a core Federal-aid program designed to achieve a significant reduction in traffic fatalities and serious injuries on all public roads, including non-State-owned public roads and roads on tribal lands. The HSIP requires a data-driven, strategic approach to improving highway safety on all public roads that focuses on performance.

Highway Safety Plan (HSP) – Plan required by NHTSA outlining the highway safety programs and projects that will be undertaken by a state's highway safety office to reduce traffic crashes and the resulting deaths, injuries, and property damage.

Impaired Driver – A person driving or in physical control of a vehicle when under the influence of alcoholic beverages or legal or illegal drugs.

Incident – An event that causes a temporary, significant disruption in transportation services.

Intelligent Transportation Systems – A wide range of advanced technologies and ideas, which, in combination, can improve mobility and transportation productivity, enhance safety, maximize the use of existing transportation facilities, conserve energy resources, and reduce adverse environmental effects.

Intersection Crash – Crashes that occur at an intersection or are influenced by an intersection. These include interchanges, railway-highway crossings, and trail crossings.

Lane Departure Crash – Result from a vehicle running off the road or crossing the center median into an oncoming lane of traffic, and include sideswipe crashes. A lane departure crash can not be at or influenced by an intersection.

Maintenance – Activities undertaken to keep the state's transportation infrastructure and equipment operating as intended, to eliminate deficiencies, and to extend or achieve the expected life of facilities before reconstruction is needed.

Metropolitan Planning Organization (MPO) – Transportation policy-making organization at a regional level that is made up of representatives from local government and governmental transportation authorities. These organizations may also be referred to as Transportation Planning Organizations or TPOs.

Motorcycle – A motor vehicle powered by a motor with a displacement of more than 50 cubic centimeters, having a seat or saddle for the use of the rider, and designed to travel on not more than three wheels in contact with the ground, but excluding a tractor or moped.

Motorcycle Rider or Motorcyclist – Operator or passenger on a motorcycle.

Multimodal – More than one travel mode potentially including auto, bicycle, bus, pedestrian, aviation, rail, seaports, and transit.

National Highway Traffic Safety Administration (NHTSA) – Federal agency responsible for reducing deaths, injuries and economic losses resulting from motor vehicle crashes. This is accomplished by setting and enforcing safety performance standards for motor vehicles and motor vehicle equipment, and through grants to state and local governments to enable them to conduct effective local highway safety programs.

Partners, Transportation – Those parties with interests in transportation facilities and services including the public, local governments, metropolitan planning organizations, public and private sector users and providers, Native American Nations, the Florida Department of Transportation, and other federal and state agencies.

Pedestrian – Non-motorists who are walking, in a wheelchair, skating, inside a building, using a pedestrian conveyance, etc.

Quality of Life – All of the characteristics of an area's living conditions, including such things as housing, education, transportation infrastructure, leisure time offerings, climate, employment opportunities, medical and health care infrastructure, and environmental resources.

Quality Place – An area where people experience quality of life.

Railway-Highway Crossing Crash – A crash that occurs at, or is influenced by, a railway-highway crossing.

Region – An area of distinctive communities, cities, and counties where residents share: a geographic identity and are socially, economically, and culturally interdependent; a capacity for planning and function; and a capacity to create competitive advantage.

Retroreflectivity – The phenomenon of light rays striking a surface and being redirected back to the source of light.

Routine Maintenance – Operations that may be predicted and planned in advance. These operations (e.g., cleaning and debris removals, regular inspections, mowing, preventive maintenance, etc.), may be preventive or corrective in nature. Proper scheduling of these operations should be utilized to provide minimum disruptions and hazards to the driving public.

Safe Mobility For Life Coalition (SMFLC) – Florida's strategic safety coalition primarily focused on aging road user safety.

Safety Management System – A systematic process that has the goal of reducing the number and severity of traffic crashes by ensuring that all opportunities to improve highway safety are identified, considered, implemented as appropriate, and evaluated in all phases of highway planning, design, construction, maintenance, and operation; and by providing information for selecting and implementing effective highway safety strategies and projects.

Safety Program – Projects designed to improve vehicle and pedestrian safety on the city, county, and state highway systems. The program is divided into three subprograms - rail/highway crossings, highway safety, and traffic safety grants.

Serious Injury – Injury to a person, including the driver, which consists of a physical condition that creates a substantial risk of death, serious personal disfigurement, or protracted loss or impairment of the function of a bodily member or organ.

Speed and Aggressive Driving – Includes driving too fast for conditions and exceeding the posted speed limit (speeding); while aggressive driving requires at least two of the following contributing causes: speeding, unsafe, or improper lane change, following too closely, failure to yield the right-of way, improper passing, and failure to obey traffic control devices.

Stakeholders – Individuals and groups with an interest in the outcomes of policy decisions and actions.

State Highway System – A network of approximately 12,000 miles of highways owned and maintained by the State of Florida or state-created authorities. Major elements include Interstate highways, Florida's Turnpike, and other toll facilities operated by transportation authorities and arterial highways.

Strategic – Important or essential to Florida's statewide economic competitiveness.

Strategy – A specific activity that is designed to help achieve an objective.

System – A combination of facilities or services forming a network or being selected for analysis.

Teen Driver – Drivers between the ages of 15 and 19.

Traffic Records Coordination Committee (TRCC) – This is a multidisciplinary group that works to improve the collection, management, and analysis of traffic safety data.

Traffic Records and Information Systems – A foundational emphasis area that addresses the quality of the state's crash data, in addition to roadway, citation/adjudication, injury/emergency medical services, driver licensing, and vehicle registration data.

Truck – A heavy vehicle engaged primarily in the transport of goods and materials.

Unrestrained Occupant – Any person who has not used a safety belt, child safety seat, or booster seat.

Vehicle Miles Traveled (VMT) – The total number of miles traveled by vehicles using a roadway system.

Vehicle Occupancy – The number of persons, including driver and passenger(s) in a vehicle; also includes persons who did not complete a whole trip.

Vulnerable Road Users – Road users who have the potential for a disproportionately high fatality rate, including pedestrians, bicyclists, and motorcyclists.

Work Zone – Marked section of roadway for construction, maintenance or utility work.

Work Zone Crash – Crashes that occur in a marked section of roadway for construction, maintenance or utility work.

Wrong Way Crash – A crash where the driver of any vehicle is on the wrong side or traveling the wrong direction on the roadway.

SHSP Partners

AAA Auto Club South

AARP

ABATE of Florida

Alachua County Sheriff's Office

All Children's Hospital

Allstate Foundation

American Automobile Association (AAA)

American Public Works Association – Florida Chapter

American Traffic Safety Services Association Florida Chapter

Anthony Telesca Foundation

Area Agency on Aging for North Florida, Inc.

Auto Club Group

Baskerville-Donovan, Inc.

Bayfront Medical Center

Brandon Harley Davidson

Broward County Sheriff's Office

Brunet-Garcia

Car Control

Carlin Rogers Consulting, LLC

Cities That Work

City of Daytona Beach

City of St. Petersburg

Commission for the Transportation Disadvantaged

Conference of County Court Judges of Florida

Crown Technology, LLC

Department of Education School Transportation

Department of Health

Department of Highway Safety and Motor Vehicles

Driving Coach Chris, Inc.

DUI Counterattack, Hillsborough, Inc.

Executive Office of the Governor

Favorite Studios, Inc.

FDOT District 5 Community Traffic Safety Team

Federal Highway Administration

Federal Highway Administration - Florida Division

Florida Agency for Health Care Administration

Florida Agriculture and Mechanical University, Construction/Civil Engineering Technology

Florida Association of Area Agencies on Aging

Florida Association of County Engineers and Roadway Superintendents (FACERS)

Florida Association of Court Clerks

Florida Association of Senior Centers

Florida Bureau of Emergency Medical Services

Florida Community Traffic Safety Teams

Florida Department of Business and Professional Regulation

Florida Department of Economic Opportunity

Florida Department of Education

Florida Department of Elder Affairs

Florida Department of Health

Florida Department of Health Bureau of Emergency Medical Oversight

Florida Department of Highway Safety and Motor Vehicles

Florida Department of Law Enforcement

Florida Department of Law Enforcement Alcohol Testing Program

Florida Department of Transportation

Florida Greenbook Committee

Florida Highway Patrol

Florida International University

Florida Law Enforcement Liaison Program

Florida Occupational Therapy Association

Florida Police Chiefs Association

Florida Prosecuting Attorneys Association

Florida Public Safety Institute

Florida Public Transportation Association

Florida Regional Councils Association

Florida Rider Training Program

Florida S.A.F.E., Inc.

Florida Sheriffs Association

Florida State University

Florida State University Police Department

Florida Students Against Destructive Decisions (SADD)

Florida Traffic Safety Resource Prosecutor Program

Florida Transportation Builders Association

Florida Trucking Association

Foley & Lardner

Ford Motor Company – Driving Skills for Life

Fort Myers Police Department

Gainesville Police Department

George Group
Gold Wing Road Riders Association
Heartland Education Consortium
Hillsborough County Public Works
Hillsborough County Sheriff's Office
Indian River Fire and Rescue
Institute of Police Technology and Management
Jacksonville Motorcycle Safety Training
Jacksonville Sheriff's Office
Judicial Outreach Liaisons
Lee County Metropolitan Planning Organization
Lee County Risk Management
Lee County Sheriff's Office
Leon County Probation Division
Madison Police Department
Meagan Napier Foundation
Metroplan Orlando
Metropolitan Planning Organization Advisory Council (MPOAC)
Miami Dade Metropolitan Planning Organization
Mothers Against Drunk Driving (MADD)
National Highway Traffic Safety Administration
National Safety Council
Nova Southeastern University
Offices of the Public Defender
Orange County Sheriff's Office
Orlando Health
Orlando Royal Plaza Hotel
Parsons Brinkerhoff
Pepper Institute on Aging and Public Policy
Pinellas County Judge
Plastic Safety Systems
Preusser Research Group
Renaissance Planning Group
Responsible Decision Making Coalition
Reynolds' Right Hands
Ryder Trauma Center – Miami
Safe Kids Florida
Safe Kids Lee/Collier
Safe Kids Palm Beach Coalition
Safe Kids USA
Safe Kids Worldwide
Safe Mobility for Life Program
Senior Trial Court Judge State of Florida
Southern Florida National Safety Council
St. Johns & Partners
St. Joseph's Children's Hospital, Child Advocacy Center
StarMetro
State Attorney's Office, Second Judicial Circuit
State Attorney's Office, Fourth Judicial Circuit
State Attorney's Office, Sixth Judicial Circuit
State Attorney's Office, 16th Judicial Circuit
Stay Alive...Just Drive!, Inc.
Tallahassee Community College
Tallahassee Police Department
Tallahassee Senior Center
Teen Driver Challenge
Teen Driver Safety Foundation
Teens Learn to Drive Foundation, Inc.
The Children's Hospital of South Florida, Child Advocacy Program
The Dori Slosberg Foundation
The Self Movement
The University of Florida Institute for Mobility, Activity, and Participation
Tindale-Oliver & Associates, Inc.
Traffic Records Coordinating Committee
Twin Visions, Boca
U.S. Insurance Services, Inc.
United States Navy – NAS Jacksonville
University of Florida
University of Florida Local Technical Assistance Program
University of Florida, Florida Transportation Technology Transfer Center
University of Miami, WalkSafe Program
University of North Florida, Institute of Police Technology and Management
University of North Florida, Public Opinion Research Laboratory
University of South Florida, Center for Urban Transportation Research (CUTR)
We Save Lives

FDOT

DRIVING DOWN FATALITIES

