

Chapter 6 – Project Development and Screening Programs

Introduction

Previous chapters have described the available data, financial resources, public input and analytical tools used to identify future transportation needs for the Volusia TPO planning area. This section describes how the TPO used that information to develop transportation alternatives and how the TPO combined and evaluated the projects to determine the final, cost feasible transportation plan. This section will review:

- Transportation System Alternative Modeling
- Congestion Management Plan Assessment
- Efficient Transportation Decision Making
- Environmental Justice Review
- Additional Screening and Ranking Criteria Considered

Transportation System Alternatives

Two alternative transportation systems were developed and evaluated for the Long Range Transportation Plan (LRTP). Testing of these alternatives involved the Central Florida Regional Planning Model, Version 5.0 (CFRPM5.0) to predict the impact the transportation improvements would have on the efficiency of the system (in terms congestion as measured by the ratio of roadway trip volume to carrying capacity).

Prior to the alternatives testing, the Existing plus Committed (E+C) network was evaluated to understand how much congestion would exist if no new capacity improvements were made beyond those already programmed for funding through 2013. The E+C transportation system included the existing roadway network, plus all other projects funded for construction within the next five years. The E+C transportation system typically serves as the starting point to analyze the need for future transportation improvements.

Existing Plus Committed Transportation Alternative

The Existing Plus Committed (E+C) Alternative represents the highway and transit network that currently exists along with the projects and programs that have a funding commitment. The focus for developing the existing project list is to include those projects that have been constructed between the model base year (2005) and the current year (2010). Committed projects are those that are programmed for construction within the next several years. In this case the project team used the adopted 2009-2013 Transportation Improvement Program (TIP), local area Capital Improvement Programs, the FDOT work program, and the Transit Development Plan. The E+C model assumes the 2035 land use and socio-economic data discussed in previous sections of this chapter. Since this alternative assumes 25 years of employment and population growth but only those transportation improvements that are in place or have been committed to be funded through construction in the next few years, it highlights areas where the greatest need for future transportation improvements will exist based on the projected growth patterns. Table 6.1 lists the projects included in the E+C alternative.

Table 6.1 – Existing Plus Committed Alternative

E+C Road Projects		
Name	Limits (From - To)	Improvement
Airport Rd.	Pioneer Trail to SR 44	New 2 Lane Road
Beresford Ave	Blue Lake Ave to Kepler Rd	New 2 Lane Road
Clyde Morris Blvd.	Aberdeen to LPGA Blvd.	Widen to 4 Lanes
CR 92	SR 15A to US 17/92	Widen to 4 Lanes
DeBary Ave.	I-4 to Providence Blvd.	Realign/Widen to 4 Lanes
Dunn Ave Ext.	Williamson Blvd.to Bill France Blvd.	New 2 Lane Road
I-4	@ SR 472	Interchange (add EB on-ramp)
I-4	Saxon Blvd. to Seminole County Line	Widen to 6 Lanes
I-4	SR 44 to SR 472	Widen to 6 Lanes
I-4	SR 472 to Saxon Blvd.	Widen to 6 Lanes
I-95	Flagler County Line to SR 40	Widen to 6 Lanes
I-95	SR 40 to US 92	Widen to 6 Lanes
I-95	US 92 to I-4	Widen to 6 Lanes
Normandy Blvd	Firwood Dr to Saxon Blvd	Add Lanes
Plantation Oaks Blvd.	US 1 to Old Dixie Highway	New 2 Lane Road
Saxon Blvd.	Urbana Blvd. to Tivoli Blvd.	Widen to 4 Lanes
SR 15A (Spring Garden Rd.)	Beresford Ave. to US 17/92	Widen to 4 Lanes
SR 15A (Spring Garden Rd.)	US 17 to US 92	Widen to 4 Lanes
SR 15A (Spring Garden Rd.)	Plymouth Rd. to CR 92	Widen to 4 Lanes
SR 40	Cone Rd. to I-95	Widen to 4 Lanes
SR 44	@ I-4	Interchange - Modified Interchange
SR 44	Summit Ave. to Pioneer Trail	Widen to 4 Lanes
SR 44	Pioneer Trail to SR 415	Widen to 4 Lanes
SR 472	Howland Blvd. to I-4	Widen to 4 Lanes
Tomoka Farms Rd.	LPGA Blvd. to US 92	New 2 Lane Road
Town West Blvd.	Tomoka Farms Rd.to Williamson Blvd.	New 2 Lane Road
US 17/92	SR 15A/Taylor to SR 472	Widen to 6 Lanes
Williamson Blvd.	Spruce Creek Blvd. to Sable Creek Blvd.	Widen to 4 Lanes
Williamson Blvd.	Dunn Ave. to US 92	Widen to 4 Lanes
10th Street (SE Volusia)	Myrtle Ave to US 1	Widen to 4 Lanes
Dunn Ave	Tomoka Farms Rd.to Williamson Blvd.	New 2 Lane Road
Howland Blvd.	Courtland Blvd. to SR 415	Widen to 4 Lanes
LPGA Blvd.	Old Kings Rd. to Nova Rd.	Widen to 4 Lanes
Rhode Island Ext.	Westside Pkwy. to US 17/92	New 2 Lane Road
SR 415	Reed Ellis Rd. to Acorn Lake Rd.	Widen to 4 Lanes
Tymber Creek Rd.	Peruvian Lane to SR 40	Widen to 4 Lanes
Yorktown Blvd Ext.	Dunlawton Ave to Taylor Rd	New 2 Lane Road

Table 6.1 – Existing Plus Committed Alternative (continued)

E+C Public Transportation Projects		
Name	Limits (From - To)	Improvement
SunRail	Seminole County Line to DeLand	New Commuter Rail Service
Bus - added service for SunRail	DeBary and DeLand	New Transit Service

Figure 6.1 provides a graphic presentation of the congestion predicted by the CFRPM5.0 in the year 2035 with only the E+C projects completed (using a ratio of volume to capacity). This information served as a base to begin developing solutions to meet future demand.

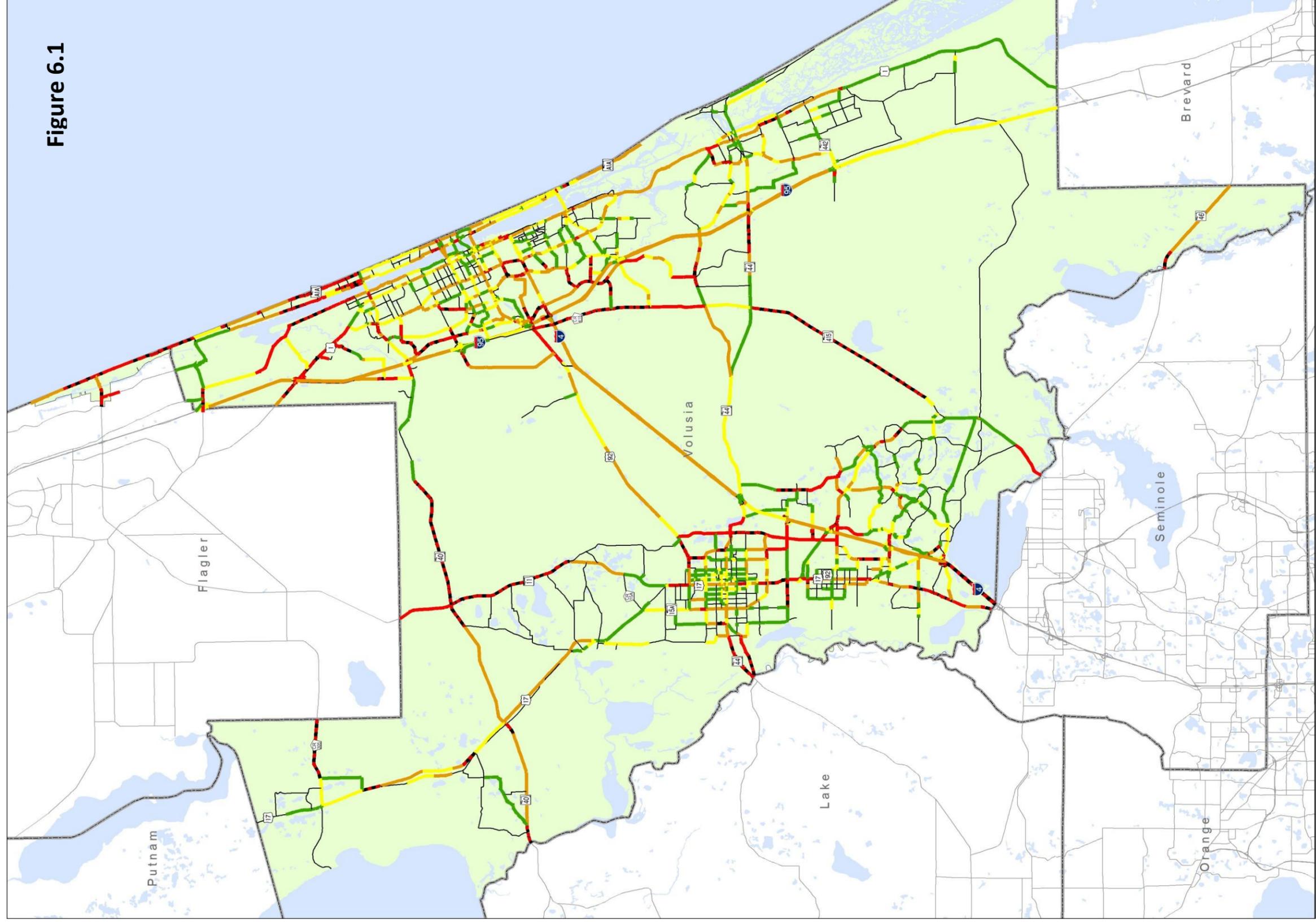
Further analysis using data estimates produced by the CFRPMv5.0 reveals that overall Vehicle Miles of Travel (VMT) is estimated to increase approximately 65% between the 2005 Base Year and 2035. This will occur on a roadway network that is only funded to include an additional 5.5% in lane miles to accommodate the additional travel. The increasing congestion is evidenced by a reduction in the congested speed from 35 to 30 m.p.h., almost a 15% drop. The total volume of traffic on the roadway as compared to the base year counts of the system is expected to increase from .93 to 1.46. Table 6.2 provides a more complete look at some of the traffic model estimates.

Table 6.2 – Performance Measures for Base Year and Existing Plus Committed in 2035

Category	2005 Base	2035 E+C	% Change
Total Number of Links	3,331.00	3,367.00	1.08%
Total System Miles	1,124.00	1,144.00	1.78%
Total Lane Miles	2,683.00	2,831.00	5.52%
Total VMT Using Volumes	5,411.00	8,955.00	65.50%
Total VMT Using Base Years Counts	5,150.00	5,150.00	0.00%
Total VMT V/C	1.05	1.74	65.71%
Total VHT Using Volumes	124.00	379.00	205.65%
Total VHT Using Counts	121.00	222.00	83.47%
Total VHT V/C	1.03	1.71	66.02%
Total Original Speed (MPH)	37.17	37.21	0.11%
Total Congested Speed (MPH)	35.44	30.31	-14.48%
Total Volume/Count Ratio	0.93	1.46	56.99%
Transit Ridership	8,475	9,096	32%

These estimates are not very surprising given the E+C assumption of no additional funding beyond the current commitments through 2013. The data does, however, provide a base of information by which to compare other transportation scenarios as explored in the two alternatives developed as part of this planning effort.

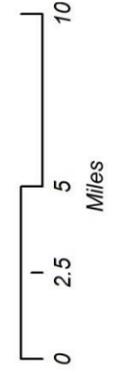
Figure 6.1



**2035 LRTP
2035 Traffic on
Existing plus Committed
Roadway Network**

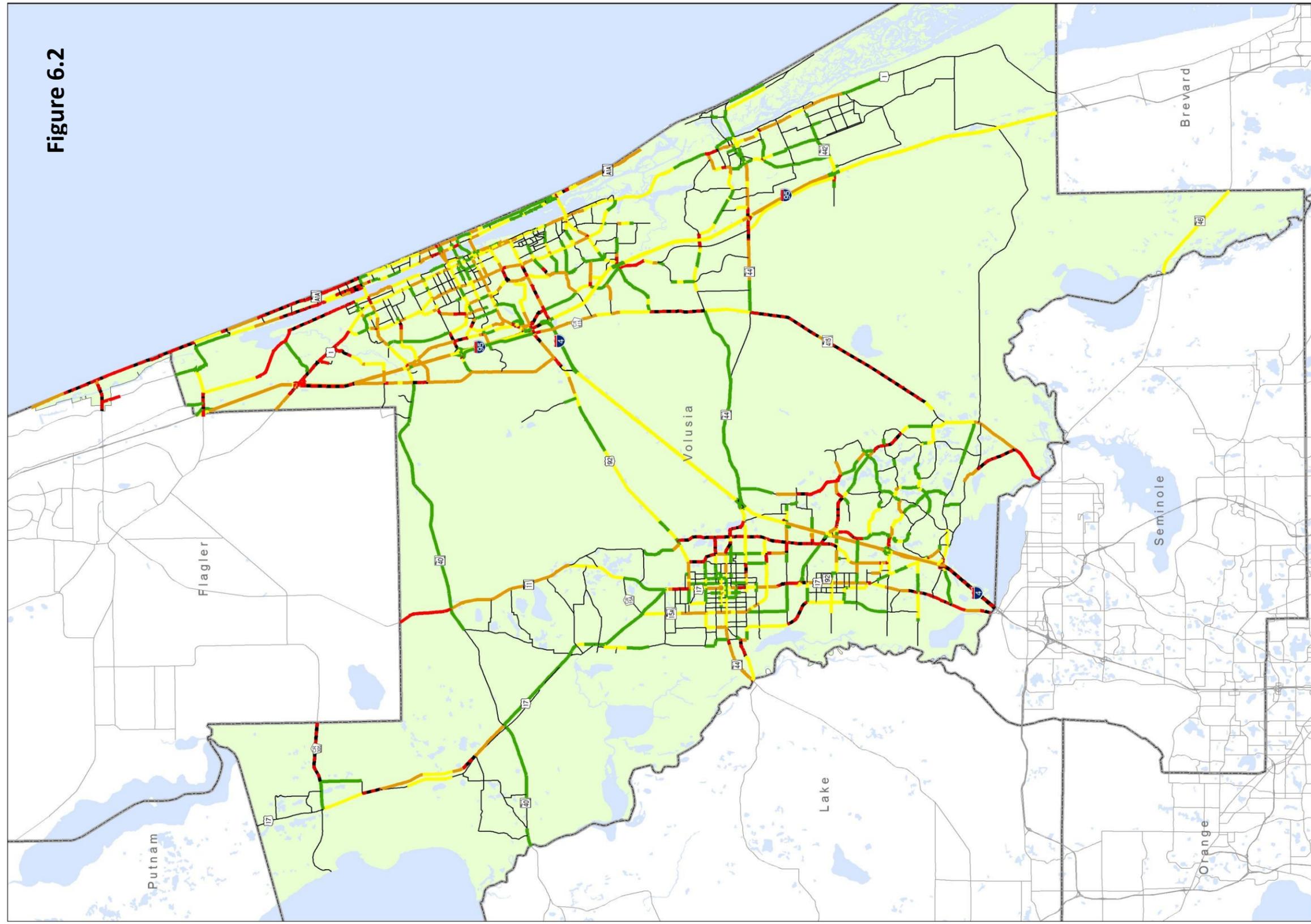
Volume to Capacity Ratio

- < 150%
- 121% to 150%
- 101% to 120%
- 81% to 100%
- 51% to 80%
- 0 to 50%



Name: Volusia 2035 E plus C Model Run (tabloid)

Figure 6.2



2035 LRTP

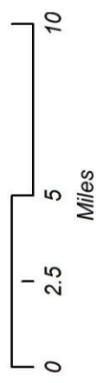
2035 Traffic on

Technical Alternative #1

Roadway Network

Volume to Capacity Ratio

- < 150%
- 121% to 150%
- 101% to 120%
- 81% to 100%
- 51% to 80%
- 0 to 50%



Name: Volusia 2035 Technical Alternative Model Run (tabloid)

Transportation Alternative #1 - Technical Alternative

The LRTP Subcommittee used the results of the E+C network analysis and of the Make Your Mark in 2035 planning session conducted with members of the Volusia TPO advisory committees as a starting point to develop Transportation Alternative #1, the Technical Alternative. Additionally, committee members used the 2025 LRTP project listing, the results of transportation studies that have been completed in recent years and professional knowledge to refine the list of projects to be included in an evaluation using the CFRPM5.0 traffic model. The project list was constrained by the amount of funding estimated to be available. Table 6.3 lists the projects included for Transportation Alternative #1, the Technical Alternative. Figure 6.2 illustrates the levels of traffic congestion projected to occur by the year 2035 considering the transportation system improvements included in Alternative #1 - the Technical Alternative.

Table 6.3 – Transportation Alternative #1 – Technical Alternative

Alternative #1 Road Projects		
Name	Limits (From - To)	Improvement
I-95 Interchange	@ SR 421	Upgrade interchange
I-4	SR 44 to I-95	Widen to 6 lanes
I-95/I-4	@ I-95 & US 92	Systems Interchange
I-95	SR 400 (Beville Road) to SR 44	Widen to 6 lanes
SR 483 Clyde Morris Blvd.	Beville Road to US 92	Widen to 6 lanes
SR 40	Cone Road (Airport Road) to SR 11	
SR 40	SR 11 to SR 17	
SR 40	SR 17 to County Line	Widen to 4 lanes w/ bridge
SR 415	Reed Ellis Road to Seminole Co.	Widen to 4 Lanes w/ bridge
SR 44	SR 15A to SunRail Station	Miscellaneous improvements
SR 44	Voorhis Ave. to Kepler Road	Widen to 4 Lanes
US 17	SR 40 to Ponce DeLeon Blvd.	Widen to 4 Lanes
US 92	I-4 to CR 415/Tomoka Farms Road	Widen to 6 lanes
SR 472	Graves Ave. to Kentucky/MLK Blvd.	Widen to 6 lanes
I-95 Interchange	@ US-1	Upgrade interchange
Intracoastal Bridge(Orange Ave.)	Peninsula Drive to Beach Street	Bridge Replacement
US-1 Intersections		Intersection Improvements
Intersection-Port Orange	Reed Canal - Nova Road	Intersection Improvements
Intersection-Orange City	Orange Camp - US 17/92	Intersection Improvements
Intersection-DeLand	Plymouth - US 17/92	Intersection Improvements
Intersection-DeLand	SR 44 (SR 15A, Amelia, Garfield, Blue Lake)	Intersection Improvements
Intersection-Orange City	Highbanks - US 17/92	Intersection Improvements
Intersection-Orange City	Saxon - US 17/92	Intersection Improvements
Intersection-Deltona	SR 415 - Ft. Smith Blvd.	Intersection Improvements

Park and Ride	SR 44 & I-95	
Park and Ride	DBIA	
Park and Ride	I-95 & US-1	
Park and Ride	I-95/I-4/US-92	
Park and Ride	DeLand Airport	
Park and Ride	SR 472 & I-4 (Activity Center)	
Park and Ride	Southwest Volusia (TDB)	
Park and Ride	SR 44 & I-4	
Public Transportation		
Name	Limits (From - To)	Improvement
Commuter Rail	DeBary to DeLand	Extend Commuter Rail Service
US 92 - East West Corridor System	DeLand (US 17/92) to SR A1A	New Premium Bus Service
Bus - added service – US 92	Daytona Beach to DeLand	Improved Headways Route 60
Bus - added service – Daytona	Daytona Beach International	Improved Headways to and from
Daytona Area Circulator	Core Daytona Beach (US 92)	New Bus Service
DeLand Circulator (Trolley)	Downtown DeLand to SunRail Station	New Bus Service with connections to rail station
Commuter Rail Expansion	DeLand Station to Daytona Beach	Extend Commuter Rail Service
Commuter Rail Station	Near US 92 and Seagrave	New Commuter Rail Facility
Bus - added service - US-1	Ormond Beach to Port Orange	Improved Headways Route 3/4
Bus - added service - SR A1A	Ormond Beach to Port Orange	Improved Headways Route 1/17
Bus - added service - Rural Northwest	Pierson to Crescent City	Improve Headways & extend Route 24
Bus - added service – SR 44	New Smyrna Beach to DeLand	New ross county Bus Service
Bus - added service - East Volusia	Ormond Beach and Port Orange	Improved headways on routes serving these areas

Alternative #1, the Technical Alternative was submitted to the Florida DOT for evaluation using the CFRPM5.0 traffic model in February 2010. Table 6.4 provides additional data estimated by the CFRPM5.0 model in the year 2035 considering the transportation system improvements included in Alternative #1 - the Technical Alternative. Further analysis using this data reveals that overall Vehicle Miles of Travel (VMT) is estimated to increase approximately 74% between the 2005 Base Year and 2035. This will occur on a roadway network that includes an additional 16.6% in lane miles to accommodate the additional travel. The increasing congestion is evidenced by a reduction in the congested speed from 35 to 32 mph. Although this represents almost a 10% drop, it is more favorable than the E+C scenario. The total volume of traffic on the roadway as compared to the base year counts is expected to increase from .93 to 1.45.

Table 6.4 – Performance Measures for Existing Plus Committed and Alternative #1 in 2035

Category	2005 Base	2035 E+C	Alt. #1 Technical	% Change Over Base	% Change Over E+C
Total Number of Links	3,331.00	3,367.00	3,416.00	2.55%	1.46%
Total System Miles	1,124.00	1,144.00	1,176.00	4.63%	2.80%
Total Lane Miles	2,683.00	2,831.00	3,129.00	16.62%	10.53%
Total VMT Using Volumes	5,411.00	8,955.00	9,409.00	73.89%	5.07%
Total VMT Using Counts	5,150.00	5,150.00	5,192.00	0.82%	0.82%
Total VMT Volume/Count	1.05	1.74	1.81	72.38%	4.02%
Total VHT Using Volumes	124.00	379.00	326.00	162.90%	-13.98%
Total VHT Using Counts	121.00	222.00	187.00	54.55%	-15.77%
Total VHT V/C	1.03	1.71	1.74	68.93%	1.75%
Total Original Speed (MPH)	37.17	37.21	37.17	0.00%	-0.11%
Total Congested Speed (MPH)	35.44	30.31	32.01	-9.68%	5.61%
Total Volume/Count Ratio	0.93	1.46	1.45	55.91%	-0.68%
Transit Ridership	8,475	9,096	12,823	51.30%	40.97%

Transportation Alternative #2 - Public Alternative

Concurrently, Transportation Alternative #2, the Public Alternative, was developed using input from a series of Make Your Mark in 2035 planning sessions held throughout the planning area. The Make Your Mark activities consisted of 13 events held over a three-month period involving 201 participants. These events represented over 600 citizen hours of participation and included lively discussions regarding the future of our communities and the transportation systems that would be needed to accommodate growth. A more detailed explanation of the Make Your Mark in 2035 public outreach activities is included in Chapter 4, Public Involvement.

Once the planning sessions were complete, the transportation projects were combined into a single master table and ranked in order of frequency. The list was then constrained by the amount of funding available and submitted to FDOT to be included in an evaluation using the CFRPM5.0 traffic model. Table 6.5 below includes the projects included for Transportation Alternative #2, the Public Alternative.

Table 6.5 – Transportation Alternative #2 – Public Alternative

Road Projects		
Name	Limits (From - To)	Improvement
SR 415	Reed Ellis Road to Seminole Co.	Widen to 4 Lanes w/ bridge
SR 415	SR 44 to Acorn Lake Road	Widen to 4 Lanes
North-South Connector	SR 44 (Old Mission Road) to SR 442	New 4-lane road
Hand Avenue	Williamson Blvd to Tymber Creek	New 2-lane road w/ overpass
North-South Connector	SR 442 to Maytown Road	New 4-lane road

Westside Parkway	Saxon Boulevard to SR 15A	New 2-lane road
Tymer Creek	SR 40 to LPGA Boulevard	New 2-lane road
Rhode Island	Veterans Memorial Pkwy to Normandy Blvd.	New 2-lane road w/ overpass
Intracoastal Bridge (Orange Ave.)	Peninsula Drive to Beach Street	Bridge Replacement
SR 40	Cone Road to US 17	Widen to 4 Lanes
Howland Boulevard	Providence Blvd. to Lake-Helen-Osteen Road	Widen to 4 Lanes
Kepler Road	SR 44 to US 92	Widen to 4 Lanes
Doyle Road	SR 415 to Providence Blvd.	Widen to 4 Lanes
Dirksen/DeBary Road	I-4 to US 17/92	Widen to 4 Lanes
Intracoastal Bridge (Main St.)	Halifax Drive to Beach Street	Bridge Replacement
SR 442	I-95 to SR 415	New 2 Lane Road
SR 442	US 1 to SR A1A	New Intracoastal Bridge
Airport Road	Current termini to SR 44	Widen to 4 Lanes
Rhode Island	SunRail Station to Westside Parkway	New 2 Lane Road
Public Transportation		
Name	Limits (From - To)	Improvement
Commuter Rail	DeBary to DeLand	Extend Commuter Rail Service
US 92 -East West Corridor System	DeLand (US 17/92) to SR A1A	New Premium Bus Service
Bus - added service – US 92	Daytona Beach to DeLand	Improved Headways Route 60
Bus - added service – Daytona Beach	Daytona Beach International Airport	Improved Headways to and from airport in urban core
Daytona Area Circulator	Core Daytona Beach (US 92)	New Bus Service
DeLand Circulator (Trolley)	Downtown DeLand to SunRail Station	New Bus Service with connections to rail station
Commuter Rail Expansion	DeLand Station to Daytona Beach	Extend Commuter Rail Service
Commuter Rail Station	Near US 92 and Seagrave	New Commuter Rail Facility
Bus - added service - US-1	Ormond Beach to Port Orange	Improved Headways Route 3/4
Bus - added service - SR A1A	Ormond Beach to Port Orange	Improved Headways Route 1/17
Bus - added service - East Volusia	Core Daytona Area	Improved Headways to major destinations
Bus -added service – US 17/92	Saxon Blvd. to US 92	Improved Headways Route 20
Bus - added service - Rural Northwest	Pierson to Crescent City	Improve Headways and extend Route 24
Bus - added service – SR 44	New Smyrna Beach to DeLand	New ross county Bus Service
Bus - added service - East Volusia	Ormond Beach to Port Orange	New Bus Service

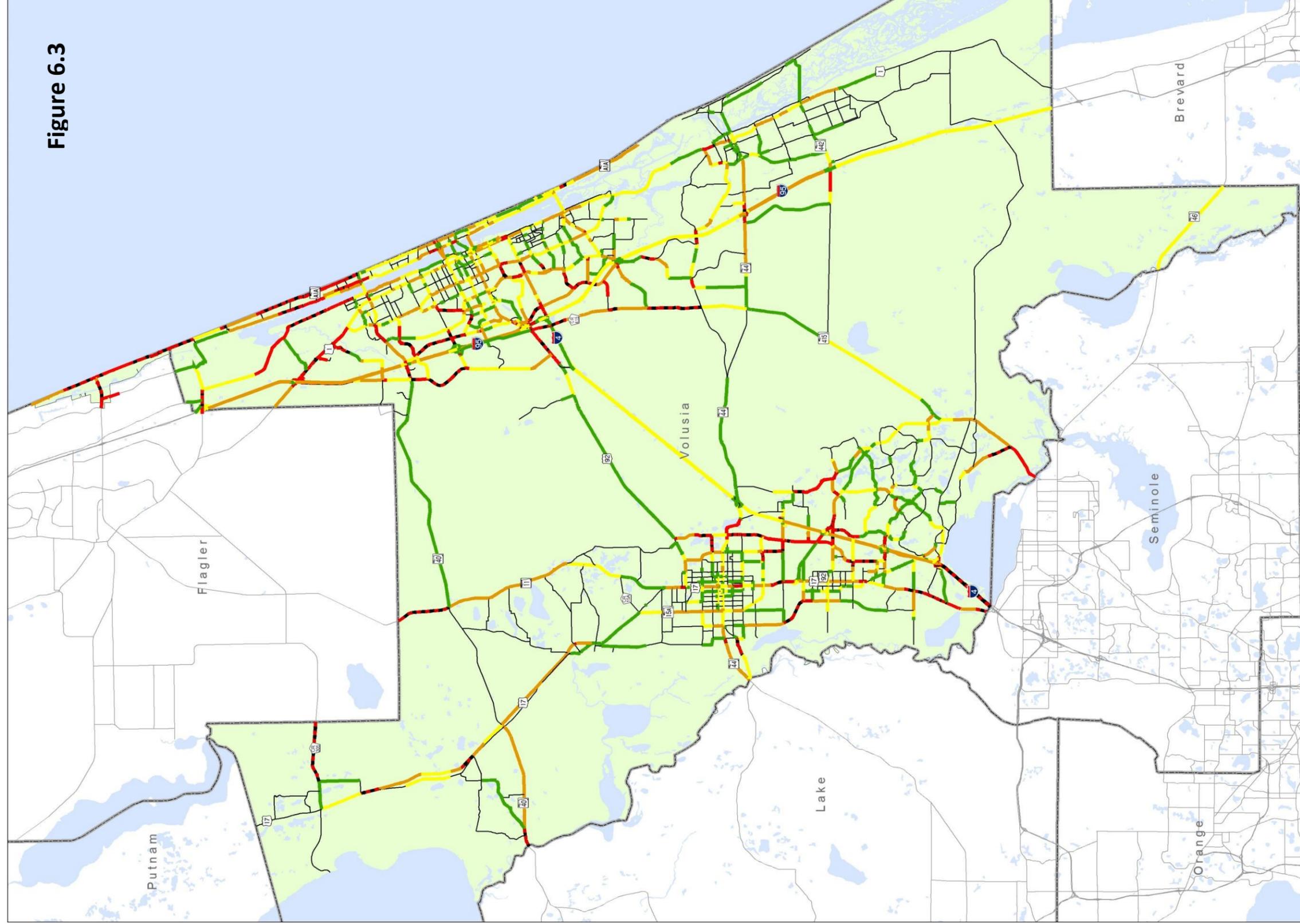
Alternative #2, the Public Alternative was submitted to the Florida DOT for evaluation using the CFRPM5.0 traffic model in April 2010. Figure 6-3 illustrates the levels of traffic congestion projected to occur by the year 2035 considering the transportation system improvements included in the Public Alternative.

Further analysis using model output data reveals that overall Vehicle Miles of Travel (VMT) is estimated to increase approximately 71.5% between the 2005 Base Year and 2035. This will occur on a roadway network that includes an additional 14% in lane miles to accommodate the additional travel. Increasing congestion is evidenced by a reduction in the congested speed from 35 to 31 m.p.h. Although this represents an 11% drop, it is more favorable than the E+C scenario. The total volume of traffic on the roadway as compared to the base year counts on the system is expected to increase from .93 to 1.43. Transit ridership showed the most significant increase with estimates more than doubling over time. This occurred as the walk files were adjusted in the model to reflect that more people could access transit with the additional service provided by this alternative. Table 6.6 provides a more complete look at some of the traffic model estimates.

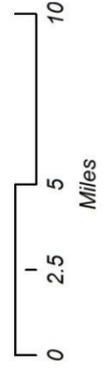
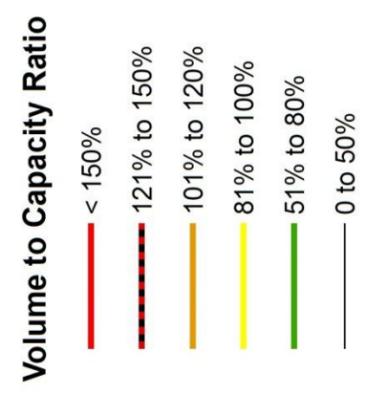
Table 6.6 – Performance Measures for Existing Plus Committed and Alternative #2 in 2035

Category	2005 Base	2035 E+C	Alt. #2 Public	% Change Over Base	% Change Over E+C
Total Number of Links	3,331.00	3,367.00	3,412.00	2.43%	1.34%
Total System Miles	1,124.00	1,144.00	1,177.00	4.72%	2.88%
Total Lane Miles	2,683.00	2,831.00	3,067.00	14.31%	8.34%
Total VMT Using Volumes	5,411.00	8,955.00	9,280.00	71.50%	3.63%
Total VMT Using Counts	5,150.00	5,150.00	5,150.00	0.00%	0.00%
Total VMT V/C	1.05	1.74	1.80	71.43%	3.45%
Total VHT Using Volumes	124.00	379.00	321.00	158.87%	-15.30%
Total VHT Using Counts	121.00	222.00	184.00	52.07%	-17.12%
Total VHT V/C	1.03	1.71	1.74	68.93%	1.75%
Total Original Speed (MPH)	37.17	37.21	37.17	0.00%	-0.11%
Total Congested Speed (MPH)	35.44	30.31	31.46	-11.23%	3.79%
Total Volume/Count Ratio	0.93	1.46	1.43	53.76%	-2.05%
Transit Ridership	8,475	9,096	20,585	142.89%	126.31%

Figure 6.3



**2035 LRTP
2035 Traffic on
Public Alternative #2
Roadway Network**



Name: Volusia 2035 Public Alternative Model Run (tabloid)

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Congestion Management Plan Assessment

Congestion is relatively easy to recognize—roads filled with cars, trucks, and buses, sidewalks filled with pedestrians. The definitions of the term congestion mention such words as "clog," "impede," and "excessive fullness." For anyone who has ever sat in congested traffic, those words should sound familiar. In the transportation realm, congestion usually relates to an excess of vehicles on a portion of roadway at a particular time resulting in speeds that are slower—sometimes much slower—than normal or "free flow" speeds. Congestion often means stopped or stop-and-go traffic.

The FHWA "Traffic Congestion Reliability" reports define congestion as "an excess of vehicles on a roadway at a particular time resulting in speeds that are slower - sometimes much slower - than normal or free flow speeds. [Congestion is] stop-and-go traffic."

Congestion negatively affects safety, physical condition, environmental quality, economic development, quality of life, and "customer" satisfaction. As the level of congestion increases, all elements of society, including the local, state and national economies, the environment and an individual's quality of life, bear an increasing cost. Recognizing these heavy costs that congestion imposes, Congress determined that MPOs should "address congestion management through a process that provides for effective management and operation, based on a cooperatively developed and implemented metropolitan wide strategy, of new and existing transportation facilities... through the use of travel demand reduction and operational management strategies." The Final Rule on Statewide and Metropolitan Transportation Planning, published on February 14, 2007, states that "The 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)."

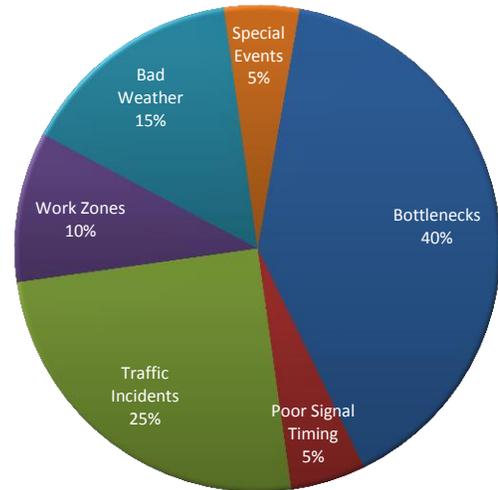


Figure 6.4 – Sources of traffic congestion

Understanding the Congestion Problem

The process of congestion relief begins by understanding the problem. Simply stated, congestion occurs when demand (travel) exceeds supply (transportation system capacity). The FHWA site, "Focus on Congestion Relief", lists the six contributing factors as:

- limited physical capacity (i.e., bottlenecks) - points where the roadway narrows or regular traffic demands cause traffic to backup—are the largest contributors to congestion;
- poorly functioning traffic signals - 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—contributes to congestion on major and minor streets;
- traffic incidents - crashes, stalled vehicles, debris on the road—cause about 1/4 of congestion problems;
- work zones - for new road building and maintenance activities like filling potholes—are caused by necessary activities, but the amount of congestion caused by these actions can be reduced by a variety of strategies;
- bad weather - cannot be controlled, but travelers can be notified of the potential for increased congestion; and

- special events - cause "spikes" in traffic volumes and changes in traffic patterns. These irregularities either cause delay on days, times or locations where there usually is none, or add to regular congestion problems.

Of these six factors, the first five can be characterized as limitations on transportation system capacity, while the sixth factor is essentially a spike in transportation demand.

Figure 6.4 depicts the relative contribution to congestion resulting from each of these factors. Only the first and second factors contribute to persistent and/or recurring congestion. They result from design or operational deficiencies, and therefore, may be candidates for remediation. The remaining factors of congestion are nonrecurring and random. Nonrecurring congestion is unexpected or unusual congestion caused by an event that was unexpected and transient relative to other similar days." Common causes of nonrecurring congestion include:

- lane blocking accidents, disabled vehicles and debris on the roadway;
- construction lane closures;
- roadside accidents and other distractions;
- inclement weather; and
- special event traffic (e.g., race traffic, bike week traffic, rain-induced mass exodus from the beach).

While nonrecurring congestion usually cannot be effectively remediated, its severity and duration can often be minimized through the use of incident response strategies.

Overview of the Congestion Management Process

Congestion management requires a systematic approach to identifying locations in the transportation system that are not operating efficiently, then developing and implementing solutions to alleviate the contributing factors.

A well-designed CMP should help the TPO to:

- Identify congested locations;
- Determine the causes of congestion;
- Develop alternative strategies to mitigate congestion;
- Evaluate the potential of different strategies;
- Propose alternative strategies that best address the causes and impacts of congestion; and
- Track and evaluate the impact of previously implemented congestion management strategies.

Once congestion management strategies have been identified and selected as part of the TPO's Long Range Plan (LRTP), the CMP can also be used to:

- Set priorities among projects for incorporation into the Transportation Improvement Program;
- Provide information for environmental analysis of proposed projects;
- Develop more detailed assessments of the potential for congestion, reduction at the corridor or activity center level; and
- Assist in the ongoing monitoring and evaluation of projects and programs implemented throughout the region.

The Safe Accountable Flexible Efficient Transportation Equity Act – A Legacy for Users (SAFETEA-LU), the most recent reauthorization of the nation's surface transportation program, made several changes to metropolitan and statewide transportation planning provisions. One of the most significant changes was the updated requirement for a "congestion management process" (CMP) in Transportation Management Areas (TMAs – urban areas over 200,000 in population), as opposed to "congestion management systems" (CMS). The change in name (and acronym) is intended to be a substantive change in perspective and practice, to address congestion management through a process that provides for effective management and operations, an enhanced linkage to the planning process, and to the environmental review process, based on cooperatively developed travel demand reduction and operational management strategies as well as capacity increases.

FHWA's report, *"An Interim Guidebook on Congestion Management Process in Metropolitan Planning"* describes the Congestion Management Process as an "8 step" process, as follows:

1. Develop Congestion Management Objectives;
2. Identify Area of Application;
3. Define System or Network of Interest;
4. Develop Performance Measures;
5. Institute System Performance Monitoring Plan;
6. Identify and Evaluate Strategies;
7. Implement Selected Strategies and Manage Transportation System; and
8. Monitor Strategy Effectiveness.

Volusia TPO's Previous Congestion Management Activities

The Volusia TPO developed its first congestion management systems plan in 1995 in conjunction with the development of the 2020 Long Range Transportation Plan (LRTP). It was reviewed and updated in 2005 in conjunction with the development of the 2025 LRTP. These early efforts put into place a monitoring process that has been utilized throughout the TPO's planning area. Roadways included in this CMS monitoring process are those on the State System and County Thoroughfare Roadway System for which traffic count data is available on an annual basis. Travel conditions (level of service) on these roadways have been reviewed annually.

As the 2020 LRTP was being developed, the TPO assessed a range of transportation demand management (TDM) strategies to address congestion issues. Managing transportation demand can be a cost-effective alternative to increasing transportation system capacity. The TPO's conclusion then, and again with the development of the 2025 LRTP, was that congestion during the traditional peak hour periods was not severe on a widespread basis. Moreover, there seemed to be very few opportunities for employing TDM strategies to limit or shift "normal" demand to off-peak periods or to transportation facilities with available capacity. However, opportunities to reduce traffic congestion associated with special events and beach-related traffic do exist. Volusia County experiences approximately 25 special events each year, including some major events that attract tens of thousands of visitors.

In order to minimize congestion resulting from these events, Volusia County formed the Volusia County Freeway Incident Management Team (VCFIMT). The VCFIMT was formed with the goal of reducing non-recurring (special events) congestion and improving safety and efficiency of the area's major roadways. The VCFIMT includes members in the area of law enforcement, fire, emergency medical services, emergency management, transportation planning, traffic operations, and roadway construction and maintenance agencies. Strategies employed to handle past events included providing remote parking and shuttle bus service, creating auto-free zones, or time restrictions on travel across key bridges have been implemented to alleviate some of the congestion experienced during these periods of peak traffic congestion.

Current Congestion Management Activities

The effort to manage congestion has continued through the development of the VTPO's 2035 Long Range Transportation Plan. The following goals and objectives from that plan directly pertain to congestion management:

Congestion Management Objectives

Objective 2.1 – Consideration shall be given to transportation improvements that support the economic aspirations of the TPO planning area.

It is implicit in this objective that congestion must be minimized to provide for the efficient operation and growth of the local economy.

Objective 2.4 – The transportation network will consider improvements that support the safe, appropriate and efficient movement of freight via highway, airport and rail systems.

This objective recognizes the need to minimize congestion and other delays affecting the movement of freight over the area's highway system as well as over air and rails systems. Maintaining efficient intermodal freight movement is implicit in this objective.

Objective 3.4 – The LRTP shall include projects that complement future development activity that minimizes travel times and trip distances.

Goal 4: *Develop an efficient transportation system that promotes a wide range of transportation options and integrates these options cohesively with the surrounding community.*

Objective 4.1 – Priority shall be given to intermodal facilities and transportation projects that provide improved connectivity between modes, serve more than one mode of transportation or that facilitate the transfer from one mode to another.

Goal 5: *Develop a transportation system that most effectively utilizes the financial resources available and improves the quality of life for residents.*

Objective 5.1 – Congestion management strategies such as Transportation System Management (TSM) and Transportation Demand Management (TDM) and Intelligent Transportation System (ITS) improvements will be used to create efficiencies in the existing infrastructure.

This is a key objective relating to congestion management. It clearly and directly expresses the Volusia TPO's commitment to mitigating congestion and maximizing the safety and effective use of the transportation system through the use of low cost operational management and travel demand reduction strategies.

Area of Application

The Congestion Management Process is applied throughout the Volusia TPO's Planning Area which includes Volusia County and Flagler Beach and Beverly Beach in Flagler County. The CMP area of application is shown in Figure 6-5.

System or Network of Interest

The CMP is multi-modal. It considers public transit and non-motorized (bicycle and pedestrian) travel as well as personal motor vehicle travel on the area's roadways. Roadways monitored for the process are those on the State System and County Thoroughfare Roadway System for which traffic count data is available on an annual basis. A review of the roadways included in the CMP will be conducted annually. The efficiency and effectiveness of the connections between modes is critical to the efficiency and effectiveness of the multi-modal transportation system as a whole.

Performance Measures

In order to identify congestion in the transportation systems, we had to define congestion in measurable terms. These terms vary depending on the transportation system or network being considered and the data that is available. For roadways, we initially look to the common practice of measuring level of service using methods in the FDOT's Quality/Level of Service Handbook. Level of service is a quantitative assessment of road users' perceptions of roadway quality of flow calculated as a ratio of volume to capacity. Volume is measured by counting the number of vehicles crossing a point on the roadway during a given time. This result may then be adjusted to account for known directional and temporal variations in traffic flow. The quantitative measure is often represented by the letters "A" through "F", with "A" generally representing the most favorable condition and "F" representing the worst.

Public transit performance is evaluated periodically by Votran, the service provider, through the transit development plans and other studies.

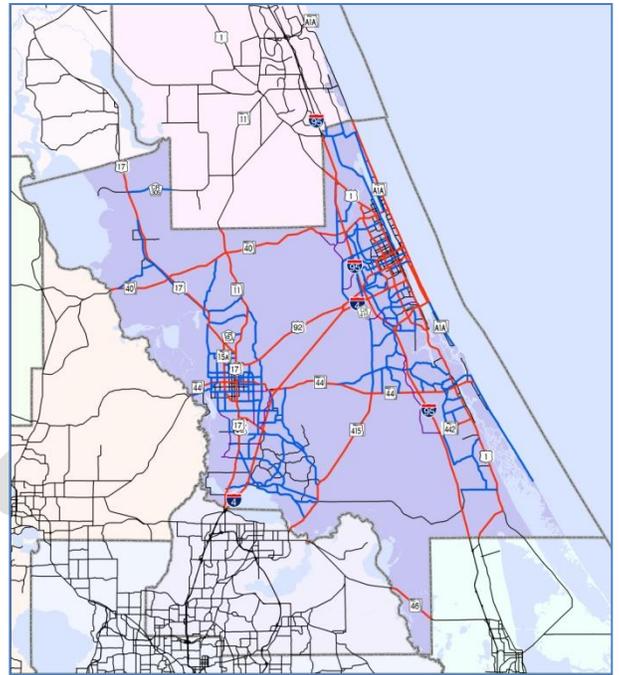


Figure 6-5 – Congestion Management Process Area of Application

System Performance Monitoring Process: Identifying Congested Areas

The monitoring process of the CMP identifies locations where congestion now occurs or will occur in the future. As an initial screening tool, the VTPO looks to Volusia County's LOS Spreadsheet. This spreadsheet, prepared by Volusia County Traffic Engineering Department staff with support from the VTPO, uses traffic counts, roadway characteristics and adopted level of service (LOS) standards to calculate link capacity (based on FDOT Generalized LOS Tables), volume to capacity ratios and level LOS. Traffic counts and roadway characteristics inputs are updated annually, reflecting the latest available traffic counts provided by FDOT (State Highway System) and Volusia County (County Thoroughfare System), roadway widening, new signals, etc. Additionally, with the update of the VTPO's Long-Range Transportation Plan approximately every five years, forecasted traffic volumes and planned roadway capacity improvements are plugged into the spreadsheet to provide a mid- to long-term look at where congestion will likely occur in the future.

This process evaluates the level of service for individual roadway segments, and uses a tiered approach to establish priorities for addressing deficiencies. Five tiers are used to express varying levels of concern. These tiers are defined as follows:

Tier One – Identifies those locations that exhibit severe congestion (v/c ratio equal to or greater than 1.20) in the current year. These locations would be the most dependent upon transportation system management (TSM), transportation demand management (TDM), or other operational strategies to reduce congestion.

Tier Two – Identifies those locations that exhibit moderate congestion (v/c ratio between 1.00 and 1.19 in the current year. Similar to Tier One, these locations could be amenable to transportation system management (TSM), Transportation Demand Management (TDM), or other operational strategies to reduce congestion.

Tier Three – Identifies those locations that exhibit near-term congestion (v/c ratio between 0.90 and 0.99) in the current year. Like Tiers One and Two, TSM and TDM measures should be considered as viable improvement alternatives prior to constructing additional through lanes.

Tier Four – Identifies those locations that are forecasted to have severe congestion (v/c ratio equal to or greater than 1.20) by 2035 as identified in the Existing plus Committed (E+C) model network of the TPO’s 2035 Long-Range Transportation Plan.

Tier Five – Identifies those locations that are forecasted to have moderate congestion (v/c ratio between 1.00 and 1.19) by 2035 as identified in the Existing plus Committed (E+C) model network of the TPO’s 2035 Long-Range Transportation Plan.

These locations can be studied further through a variety of means for the purpose of identifying and implementing corrective actions consistent with the VTPO’s Long Range Transportation Plan.

In addition to the annual review of the Level of Service Spreadsheet, the VTPO relies on transportation system modeling to identify current and future congestion. With this update of the LRTP, the transportation system for FDOT’s District 5 was modeled using the district-wide Central Florida Regional Planning Model version 5.0 (CFRPM v5.0). As part of the development of the Cost Feasible Plan, four future year alternative networks were developed to assist with identification of our transportation needs and the projects that will address those needs. The four future year alternatives, each reflecting a different mix of roadway and transit improvements, were:

- Existing plus Committed Alternative (E+C)
- Technical Alternative
- Public Alternative
- Cost Feasible Alternative

For each alternative, the model was run with the same future year 2035 socioeconomic data (based on the County’s and cities’ adopted land use plans) to simulate future traffic flows.

The first alternative was essentially a “no build” alternative comprised of existing roadways and fully funded (“committed”) improvements. As expected, when projected 2035 traffic was loaded onto this network, the most congested roadways were those that had been identified for improvement in the previous (2025) LRTP.

The performance results from this first model run were reviewed to refine the roadway and transit networks for the technical and public alternatives. In turn, the performance results from these two model runs were reviewed to refine the network for the final model run. This Cost Feasible Alternative yielded the best performance results (least congested roadway network).

Identifying and Evaluating Congestion Mitigation Strategies

Based on the initial identification of congestion using Volusia County’s LOS Spreadsheet and the CFRPM model performance measures, the TCC and CAC can make recommendations to undertake more detailed analyses on selected congested roadways to determine specific causes and the most cost-effective mitigation strategies. Where the initial identification of a congested roadway link may suggest the need to add additional lanes, a detailed analysis may conclude that operational measures, such as installing an adaptive signal control system that senses varying conditions, would resolve the congestion problem. The aim is to pursue the least costly alternative that yields the desired result.

Another means by which cost-effective congestion mitigation strategies are identified is through the VTPO’s annual “call for projects”. Each year VTPO member cities and the County are invited to submit project proposals. Candidate projects are selected and prioritized with consideration of a range of criteria including safety, mobility and efficiency benefits. These candidate projects are then added to the VTPO’s Priority Projects Lists. For most project proposals, the VTPO will conduct a feasibility study before specific improvements will be programmed

for construction. One purpose of these feasibility studies is to identify and evaluate alternative strategies to ensure that the most appropriate strategy will be selected.

Implementing Selected Strategies and Managing the Transportation System

To advance the VTPO's congestion management strategies, the VTPO updates its Priority Projects Lists annually, and forwards them to FDOT. FDOT selects projects from these lists, in order of priority, for programming with state and federal transportation funds in the Department's Work Program. The VTPO, in turn, amends its Transportation Improvement Program (TIP) to include the projects.

Recognizing that correcting minor design and operational deficiencies in the existing roadway network can yield significant performance and safety benefits, the VTPO sets aside 40% of its annual allocation of federal urban attributable (XU) funds to be used just for traffic operations, intelligent transportation systems (ITS) and safety projects. The remaining XU funds are set aside for bicycle and pedestrian projects (30%) and public transit projects (30%).

Monitoring and Evaluating Effectiveness of Strategies

Monitoring the effectiveness of congestion mitigation strategies and evaluating their benefits can improve the likelihood that subsequent choices will yield more cost-effective results. However, evaluating the effectiveness of a congestion mitigation strategy can be very challenging. Congestion results from many factors, including available capacity and the demand for travel, which interplay in complex ways. Rarely can the effects of any particular strategy on congestion be isolated with reasonable certainty. Nevertheless, with routine collection of traffic counts, accident data, time/speed data, and other performance measures, we do consider "before" and "after" data to give us a general sense of how much benefit may have resulted from the addition of a turn-lane, signal coordination or other congestion mitigation measure.

The Congestion Management "Tool Box"

The success of any Congestion Management Process depends on selection of appropriate strategies from among the many available to remediate congestion. Here, below, is a list of strategies that will be considered for use by the Volusia TPO. Preference should be given to the most cost-effective that achieves the desired result.

Congestion Management “Tool Box”

Travel Demand Management Strategies

1. Mode Shift:
 - a. Improve transit service (add express service and increase route coverage, frequency and duration)
 - b. Improve intermodal connections
 - c. Provide “guaranteed ride home” programs
 - d. Provide park-and-ride facilities
 - e. Promote transit oriented development
 - f. Improve bicycle and pedestrian facilities
2. Temporal Shift:
 - a. Promote flex time programs
3. Demand Reduction:
 - a. Promote rideshare programs
 - b. Promote compressed work scheduling (longer work day – shorter work week)
 - c. Promote telecommuting

Traffic Operations Strategies

1. Intersection Improvements:
 - a. Add or reconfigure turn lanes
 - b. Improve intersection geometry
 - c. Improve channelization
 - d. Replace controlled intersections with roundabouts and grade-separated intersections
2. Traffic Signal Improvements:
 - a. Optimize signal timing and phasing
 - b. improve signal coordination and synchronization
 - c. Install advanced signal controls
3. Intelligent Transportation Systems (ITS):
 - a. Install congestion detection and real-time traveler alert systems
 - b. Provide advanced traveler information systems
4. Access Management:
 - a. Add or extend acceleration/deceleration lanes
 - b. Promote shared driveways and service roads for access to properties adjacent to roadways
 - c. Promote minimum driveway spacing
 - d. Impose vehicle restrictions (e.g., weight restrictions, size restrictions, axle restrictions, etc.)
5. Traffic Incident Management:
 - a. Install incident detection systems
6. Special Events Management:
 - a. Schedule events for off-peak/off-season periods
 - b. Manage event traffic flows
 - c. Provide dedicated transit service for special events
7. Work Zone Management:
 - a. Schedule work for off-peak/off season periods
 - b. Improve alternative (detour) route
 - c. Provide temporary mobility/flow improvements

Efficient Transportation Decision Making (ETDM)

The Efficient Transportation Decision Making (ETDM) process allows resource and regulatory agencies and the public an opportunity to review and comment on potential impacts of proposed major transportation projects during the development of the LRTP. Based on the feedback from the planning screen, transportation planners may adjust project concepts to avoid or minimize adverse impacts, consider mitigation alternatives, and improve project cost estimates.

As part of the long range transportation plan development process, VTPO staff worked with FDOT District Five to conduct planning environmental screening associated with the ETDM process. This analysis was conducted for major projects identified in the Cost Feasible plan list of projects that had not already undergone a Project Development and Environmental (PD&E) Study.

Examples of major transportation improvement projects include widening existing roadways to include additional through lanes; addition of High Occupancy Vehicle lanes; Bus Rapid Transit lanes; new roadways; new interchanges and major interchange modifications; new bridges and bridge replacements; and major public transportation projects such as Intermodal Passenger Centers and new fixed guideway service.

The coordinated review and screening process in ETDM provides the mechanism for required consultation with over 20 agencies at both the State and Federal levels. These agencies comprise the Environmental Technical Advisory Teams (ETAT) for each FDOT district. The ETATs include representatives from agencies charged with managing or regulating environmental resources, land use, historical and cultural resources, as well as tribal government representatives. As part of this process, the TPO and FDOT District staffs evaluate and provide commentary about potential social and cultural effects (SCE) of projects included in the LRTP based on available information. There are six issues that are addressed in the SCE evaluation: social, economic, land use, mobility, aesthetics, and relocation.

Table 6.7 is included to document the level of agency consultation that has occurred through development of this LRTP. All major projects included in the Cost Feasible Plan are listed, and noted as having been reviewed through the ETDM planning screen process and/or having been subject of a PD&E study.

ETDM PARTICIPANTS

- *Advisory Council on Historic Preservation*
- *Federal Highway Administration*
- *Federal Transit Administration*
- *Florida Department of Agriculture and Consumer Services*
- *Florida Department of Community Affairs*
- *Florida Department of Environmental Protection*
- *Florida Department of State*
- *Florida Department of Transportation*
- *Florida Fish and Wildlife Conservation Commission*
- *Florida Metropolitan Planning Organization Advisory Council*
- *The Miccosukee Tribe of Indians of Florida*
- *National Marine Fisheries Service*
- *National Park Service*
- *Natural Resources Conservation Service*
- *Northwest Florida Water Management District*
- *The Seminole Tribe of Florida*
- *Water Management Districts*
- *U.S. Army Corps of Engineers*
- *U.S. Coast Guard*
- *U.S. Environmental Protection Agency*
- *U.S. Fish and Wildlife Service*
- *U.S. Forest Service*

Table 6.7 Projects Screened through the ETDM Screening Process

Project	From	To	Project Type	Comment
Strategic Intermodal System (SIS) Road Projects				
I-95 Interchange @ SR 421			Minor Interchange Improvements	Final plans completed in 2009
I-4 widening to 6 lanes	SR 44	I-95	Widening (6 lanes)	PD&E initiated prior to ETDM process; completed in 2000
I-95 widening to 6 lanes	SR 400 (Beville Rd)	SR 44	Widening (6 lanes)	Sent to ETAT 6/7/04; PD&E completed in 2008
I-95/I-4 Systems Interchange	SR 600 (US 92)	SR 400/I-4	Ultimate Interchange	Sent to ETAT 8/24/06; PE completed in 2011
I-95 widening to 6 lanes	SR 44	Brevard County Line	Widening (6 lanes)	Sent to ETAT 6/7/04; PD&E completed in 2008
State & Federal Road Projects				
SR 415 - widening to 4 lanes w/ bridge	Reed Ellis Rd	Seminole County Line	Widening (4 lanes)	PD&E initiated prior to ETDM process; completed in 2004
US 1 Intersection Improvements	Canal St, SR 421, Herbert St, Reed Canal Rd, Big Tree Rd, LPGA Blvd & Park Avenue		Intersection Improvements	ETAT process review not required; need was identified in 1999 US 1 Arterial Investment Study
US 17	SR 40	Ponce DeLeon Blvd	Widening (4 lanes)	PD&E initiated prior to ETDM process; completed in 2006
SR 483 (Clyde Morris Blvd)	SR 400 (Beville Rd)	US 92/SR 600 (ISB)	Widening (6 lanes)	PD&E initiated prior to ETDM process; completed in 2006
I-95 Interchange @ US 1 (Ormond Crossings)			Minor Interchange Improvements	ETAT process review not required
SR 44 Miscellaneous Improvements	SR 15A	Proposed SunRail Station	Traffic Operations and Safety Improvements	PD&E initiated prior to ETDM process; completed in 2002
US 92/SR 600 (ISB)	I-4 Ramps	CR 415 (Tomoka Farms Rd)	Widening (6 lanes)	Sent to ETAT 12/22/06; PD&E underway
SR 472	Graves Av	Kentucky/MLK Blvd	Widening (6 lanes)	Sent to ETAT 8/3/10; Planning Screen review completed with no disputes and no substantial adverse effects

Project	From	To	Project Type	Comment
Strategic Intermodal System (SIS) Road Projects				
Intracoastal Bridge Replacement (Orange Av)	Peninsula Av	Beach St	Bridge	Sent to ETAT 4/24/09; PD&E completed in 2011
SR 44	Voorhis Av	Kepler Rd	Widening (4 lanes)	PD&E initiated prior to ETDM process; completed in 2002
SR 40	I-95 (Williamson Blvd)	Breakaway Trails	Widening (6 lanes)	Sent to ETAT 11/17/10; PD&E underway
SR 40	Cone Rd	SR 11	Widening (4 lanes)	PD&E initiated prior to ETDM process; completed in 1990, but periodically updated; latest update now underway
SR 40	SR 11	SR 17	Widening (4 lanes)	PD&E initiated prior to ETDM process; completed in 1990, but periodically updated; latest update now underway
SR 40	SR 17	Lake County Line	Widening (4 lanes); does not include bridge over St. Johns River	Sent to ETAT 6/2/06; PD&E underway (from 1 mile west of SR 326 in Marion County to SR 15/US 17)
Major Public Transportation Projects				
Commuter Rail (SunRail) Expansion	DeBary Rail Station	DeLand Rail Station	Passenger rail service on existing rail line	Environmental Assessment prepared under the lead of the Federal Transit Administration was completed in 2007. Service planned to start in 2020

Environmental Justice Review

“Environmental Justice” is the fair treatment of all groups within the community. In 1994, Presidential Executive Order 12898 directed every Federal agency to make environmental justice part of its mission by identifying and addressing the effects of all programs, policies, and activities on "minority populations and low-income populations." This Order was consistent with Title VI of the Civil Rights Act of 1964 which prohibits discrimination on the basis of race, color, or national origin.

An analysis was undertaken by the Volusia TPO during the development of the 2025 LRTP that supported the principles and requirements of environmental justice. Given the significant changes in the economy an update of supporting data is essential to complete a current community assessment. However, current census info was not available during the development of the 2035 LRTP. In an effort to comply with the spirit and intent of the program, the environmental justice assessment performed for the 2035 LRTP included a review of previous information along with the addition of current, broad based, data to draw conclusions and evaluate the transportation projects considered. A more detailed examination will occur next year when accurate census information is available.

Overview

The U.S. DOT is responsible to ensure nondiscrimination under Title VI of the Civil Rights Act of 1964. Environmental Justice provides a framework for conducting assessments pertaining to matters of equity and nondiscrimination. To ensure Environmental Justice is achieved, it's important to consider the comparative impact of an action on different population groups, rather than simply identifying a specific population by size, geographic grouping or concentration. A proposed action could cause a disproportionately high and adverse effect on a population even in cases where there are no clearly delineated neighborhoods or communities.

Within the framework provided by the Executive Order, the U.S. DOT Order (5610.2) addresses only minority populations and low-income populations, and does not provide for separate consideration of elderly, children, disabled, and other populations. However, concentrations of the elderly, children, disabled, and other populations protected by Title VI and related nondiscrimination statutes should be considered. Of course, sound planning principles also dictate that the impacts of transportation decisions should consider **all** affected populations, neighborhoods and communities, whether there are minority or low-income populations or not. Most importantly, the public should be involved in the planning process and in defining "neighborhood" and "community."

The 2035 LRTP was developed with strong consideration to the three fundamental environmental justice principles:

- 1) To avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations.
- 2) To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.
- 3) To prevent the denial, reduction, or delay in the receipt of benefits by minority and low-income populations.

Review and Comparison of Available Data

The Volusia TPO Planning Area is comprised of Volusia County and the cities of Flagler Beach and Beverly Beach in southeast Flagler County. The built environment in Volusia County is geographically dispersed with development concentrated in the east and west, separated by rural areas and wetlands. The city of Deltona, on the west, is the largest in population and Daytona Beach, on the east, ranks second.

The County is awaiting release of the 2010 Census data related to urbanized area designations to determine the status of the west side of the county. Designation as an urbanized area is important because it impacts the overall administration of the surface transportation program. Due to the growth on the west side of Volusia County, the area may have a population of 200,000, tripping the threshold to be classified as an urbanized area.

Table 6.8 – Population by city and county:

County and City	April 1, 2010	April 1, 2000	Total Change	Percent Change
Volusia	494,593	443,343	51,250	11.6%
Daytona Beach	61,005	64,112	-3,107	-4.8%
Daytona Beach Shores	4,247	4,299	-52	-1.2%
DeBary	19,320	15,559	3,761	24.2%
DeLand	27,031	20,904	6,127	29.3%
Deltona	85,182	69,543	15,639	22.5%
Edgewater	20,750	18,668	2,082	11.2%
Flagler Beach (part)	60	76	-16	-21.1%
Holly Hill	11,659	12,119	-460	-3.8%
Lake Helen	2,624	2,743	-119	-4.3%
New Smyrna Beach	22,464	20,048	2,416	12.1%
Oak Hill	1,792	1,378	414	30.0%
Orange City	10,599	6,604	3,995	60.5%
Ormond Beach	38,137	36,301	1,836	5.1%
Pierson	1,736	2,596	-860	-33.1%
Ponce Inlet	3,032	2,513	519	20.7%
Port Orange	56,048	45,823	10,225	22.3%
South Daytona	12,252	13,177	-925	-7.0%
UNINCORPORATED	116,655	106,880	9,775	9.1%

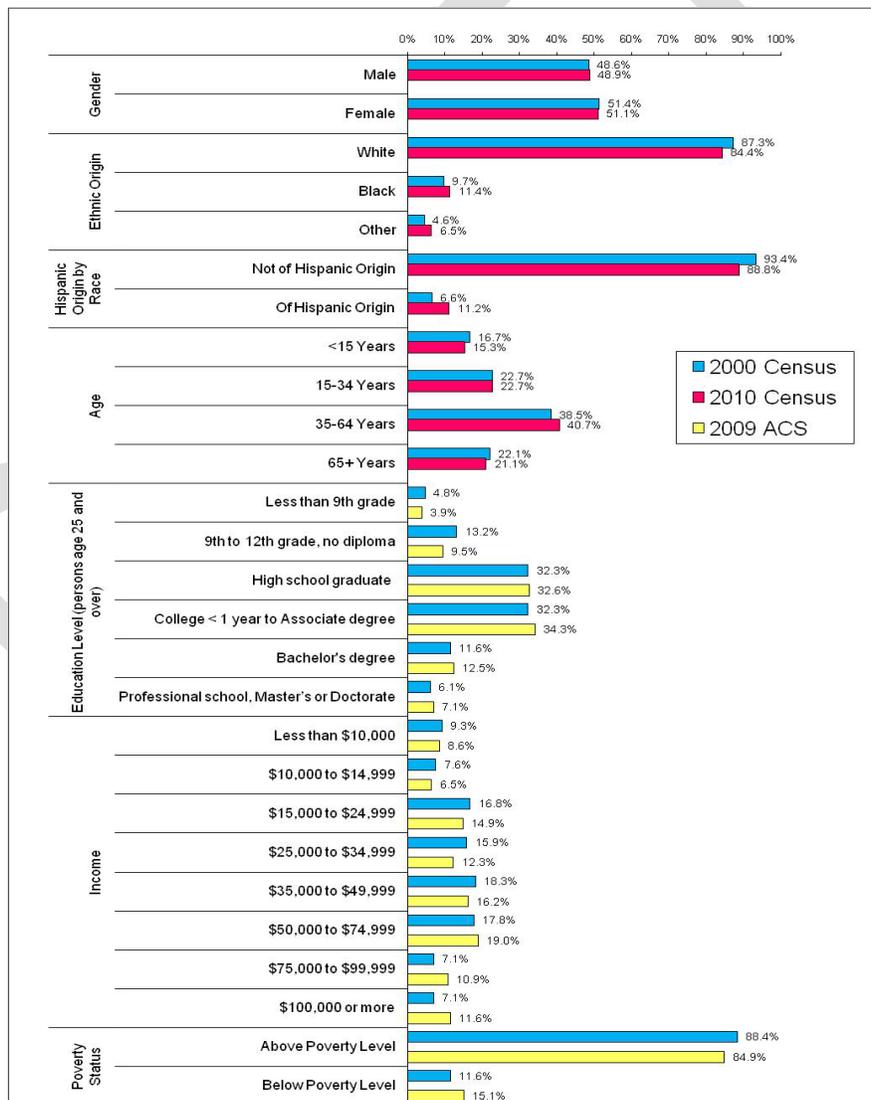
Source: 2000 and 2010 Census

Existing population densities are highest in the block groups located within Daytona Beach, Port Orange, Ponce Inlet, Edgewater, Deltona, DeBary, and DeLand. Based on the 2021 population projections, densities are expected to increase in South Daytona, Deltona, DeBary, and Orange City. Existing employment densities are highest in Daytona Beach, South Daytona, Port Orange, Edgewater, DeLand, and DeBary. The highest growth in employment density between 2012 and 2021 is expected to occur in the areas of Daytona Beach, Orange City, and DeBary. Existing dwelling unit densities are highest in the block groups located in Volusia County's east coast municipalities (Ormond Beach, Holly Hill,

Daytona Beach, Daytona Beach Shores, Port Orange, Ponce Inlet, New Smyrna Beach, and Edgewater) as well as the municipalities located in the west portion of the county that border I-4, including DeBary, Deltona, Orange City, and DeLand. Over the 10-year planning period, dwelling unit densities are expected to increase in South Daytona and Oak Hill. Block groups located in north Volusia County at the Putnam County line and south of DeLand and DeBary are also expected to experience slight increases in dwelling units.

Figure 6-6 shows that Volusia County’s demographics have generally remained unchanged during the past decade in terms of gender, education, and age. Noteworthy observations of the broad data include an increase in minority races (black, Hispanic, other) as a percentage of the overall population from roughly 21% in 2000 to almost 30% in 2010. Volusia also appears to have had an increase in top wage earners with those earning more than \$50,000 per year increasing from 32% in 2000 to just over 41% in 2010.

Figure 6-6 – Demographic Data for Volusia County



Source: 2000 Census, 2009 ACS, and 2010 Census.

Population Projections through 2035

The Volusia TPO worked in cooperation with the Florida Department of Transportation (FDOT) and other Central Florida participants in the development of a regional transportation model. The regional model, called the Central Florida Regional Planning Model, version 5.0 (CFRPM5.0) was calibrated using data from the year 2005 to ensure it replicated the existing conditions recorded for that year. Once the 2005 model was calibrated and validated, it served as the base for the transportation planning activity. Trip production variables consist of population and employment information. The growth in total population for Volusia County was approximately 11.5 percent between 2000 and 2005. Important to note is that growth was very strong in the single family measures while Volusia County actually saw decreases in multi-family measures. This trend is not consistent with desires to limit sprawl and increase population densities. Employment grew approximately 11.75 percent between 2000 and 2005. This growth rate was roughly at pace with the growth in population. Most of this growth occurred in the service sector which is consistent with the tourist based economy that has been a key segment of the local economy.

Future year (2035) population and employment data was also developed and distributed throughout the planning area. Forecasted population control totals were developed using the medium population projection data from the Bureau of Economic and Business Research (BEBR). Employment data was determined using forecasts by Woods & Poole. A second estimate was developed using the REMI Policy Insight tool and a comparison was reviewed. The Volusia TPO agreed to use an accommodated model that was primarily based upon the FLUAM trend based assignments with land uses and associated data adjusted for a few areas based on the vision. A more detailed description of this forecasting is explained in Chapter 2, Data Analysis. Table 6.9 shows the changes in socio-economic data between the 2005 base year and the 2035 planning horizon year.

Table 6.9 – Socioeconomic ZData Summary for Volusia County

Category	2005	2035	% Difference
Population	494,631	692,763	40.1%
Employment & School Enrollment			
Industrial Employees	30,772	43,338	40.8%
Commercial Employees	47,268	66,288	40.2%
Service Employees	118,746	156,443	31.7%
Total Employees	196,786	266,069	35.2%
School Enrollment	95,702		
Ratio Statistics			
Industrial Employment / Total Employment	0.17	0.16	-6.7%
Commercial Employment / Total Employment	0.25	0.24	-5.1%
Service Employment / Total Employment	0.58	0.60	4.3%

The growth in total population for Volusia County is estimated to be approximately 40 percent between 2005 and 2035. This is at pace with the expected growth in employment as indicated by the ratios, which generally remain unchanged.

According to the *Investigation of Potential Local Area Transportation Alternatives for an Aging Population* report completed for the Volusia TPO in 2005, the population projections for the study area between 2010 and 2035 show an average growth rate of seven percent (see Table 6.10). If the growth rate among persons 65 years of age and over remains at three percent, a conservative estimate, by 2035, this age cohort could equal 249,266 or 27.9 percent. When giving consideration to the segment of this population that may cease to drive, consideration also must be given to an additional factor, those persons who may experience temporary disabilities.

Table 6.10 – Total Population Projections

Year	Volusia County	Beverly Beach	Flagler Beach	Palm Coast	Tot6.al	% Change from previous 5 years	Population 60 years and over
2010	537,787	667	6,842	61,038	606,334	n/a	221,496
2015	578,307	795	8,152	72,727	659,981	8.8	254,509
2020	618,620	924	9,477	84,546	713,567	8.1	274,392
2025	657,376	1,050	10,773	96,107	765,306	7.3	287,720
2030	705,700	1,170	11,997	107,028	825,894	7.9	224,305
2035	755,099	1,333	13,677	122,011	892,120	8.0	198,344

(Sources: Volusia County MPO and Florida Legislature, Office of Economic & Demographic Research)

There are several socioeconomic characteristics or conditions that may directly or indirectly influence travel behavior, particularly the ability to own or operate an automobile. These characteristics also may influence a person’s ability to “age in place.” These characteristics include, but are not limited to, physical or mental impairment, educational attainment, household income, poverty status, and vehicle availability. Other characteristics, such as household tenure, household type, and marital status, have a less direct influence on travel behavior, but do have bearing on income security, the desire to age in place, and whether there is a friend or family member to provide transportation.

The median age for the four sub-areas within the study’s boundaries were greater than the State and national estimates of 38.7 years and 35.5 years, respectively. Volusia County had the youngest median age of 42.4; Beverly Beach had the greatest, 62.6. These differences suggest that the study area is experiencing the anticipated impacts of the Baby Boom cohort roughly five years sooner than the State and the nation. (This may be a factor of immigration rather than aging-in-place, as suggested by the rapid growth.)

Public Involvement

The Volusia TPO adheres to a Public Participation Plan through which all citizens, regardless of race, color, gender, age, physical ability, or national origin are guaranteed full opportunity to participate in programs, plans and processes, including transportation planning and the 2035 LRTP. The TPO conducted an extensive public outreach effort that reached out to all populations of the community when developing the 2035 LRTP. This included: 1) creating a project web site; 2) conducting a series of interactive planning sessions and meetings; 3) conducting surveys both in print and on-line; and 4) utilizing the Volusia TPO Advisory Committees. Details of the public outreach effort are included in

Chapter 4 of this report titled Public Outreach. With regards to Environmental Justice, specific efforts of the public involvement effort include:

- Varied delivery formats (face to face meetings, electronic media, print);
- Survey 1 provided in Spanish;
- Make Your Mark Activities including the TDLCB and at the Division of Blind Services and Council On Aging;
- News Media exposure (traditional print formats, radio interview); and
- Promotion of planning activities on public transit vehicles and through specific organizations.

Project Review and Selection Process

The Volusia TPO developed two project alternatives as part of the 2035 LRTP planning activities. These projects were initially combined into a single set of potential improvements to be considered for the long range plan. The projects included roadways, bridges and public transit projects. Table 6.10 below provides an assessment of the road and bridge projects considered. A discussion of transit projects follows.

Table 6.11 – Road and Bridge Projects

Transportation Projects (Project Limits)	Comments and Observations
SR 483 - Clyde Morris Blvd. Widen to 6 lanes Beville Road to US 92	There is residential development in the southern portion of the project with commercial, institutional and educational destinations throughout. A PD&E is complete and project design is underway. There has been significant public input including students and disabled representatives. Input has been documented and a variety of multimodal accommodations are being made.
SR 40 – Granada Blvd. Widen to 4 lanes Cone Road to SR 11	There is residential development throughout the corridor (primarily new development). A PD&E was completed and will be updated prior to project design. The TPO has not identified any disadvantaged populations that would be negatively impacted.
SR 40 - Granada Blvd. Widen to 4 lanes SR 11 to SR 17	There is rural residential development along this section of the corridor. A PD&E was completed and will be updated prior to project design. The TPO has not identified any disadvantaged populations that would be negatively impacted.
SR 40 - Granada Blvd. Widen to 4 lanes SR 17 to County Line	There is rural residential development along this section of the corridor. A PD&E was completed and will be updated prior to project design. The TPO has not identified any disadvantaged populations that would be negatively impacted.
SR 40 - Granada Blvd. Widen to 6 lanes I-95 to Tymber Creek Road	There is primarily commercial development throughout the corridor. A PD&E is underway including ample opportunity for public input. The TPO has not identified any disadvantaged populations that would be negatively impacted.
SR 415 – Tomoka Farms Road widen to 4 lanes with bridge Reed Ellis Rd to Seminole County	There is rural residential and some commercial development along this section of the corridor. PD&E and project design has been completed.

SR 415 – Tomoka Farms Road widen to 4 lanes SR 44 to Acorn Lake Road	There is rural residential and some commercial development along this section of the corridor. PD&E and project design has been completed.
SR 44 – New York Ave. miscellaneous road improvements SR 15A to SunRail Station	There is primarily rural residential development along this section of the corridor. Road improvements such as curve alignments and paved shoulders are intended to improve operations and safety as well as capacity to the SunRail station. The TPO has not identified any negative impacts to the local population.
SR 44 - New York Ave. widen to 4 lanes Voorhis Avenue to Kepler Road	There is rural residential and some commercial development along this section of the corridor. There is currently significant freight and vehicle activity in the area. A PD&E has been completed.
US 17 widen to 4 lanes SR 40 Ponce DeLeon Blvd.	There is rural residential, agriculture and some commercial development along this corridor. A PD&E has been completed.
US 92 – International Speedway Blvd. widen to 6 lanes I-4 to CR 415 (Tomoka Farms Rd)	There is residential and commercial activity on this section of the corridor. A PD&E has been completed and design is underway.
SR 472 widen to 6 lanes (with I-4 overpass) Graves Ave. to Kentucky/MLK Blvd	There is limited residential development just beyond the western terminus of this project, but no residential proximate to the corridor. This project will primarily serve commercial and industrial development such as the Activity Center near the Interstate. The TPO has not identified any disadvantaged populations that would be negatively impacted.
I-95 Interchange @ US-1 (Ormond Crossings)	This is primarily a commercial activity area with a mixed-use DRI proximate to the interchange. Improvements are expected to be minimal. The TPO has not identified any disadvantaged populations that would be negatively impacted.
Intracoastal Bridge Replace (Orange Ave.) TBD	This project replaces an existing bridge span. A PD&E has been completed and significant public input was provided.
Intracoastal Bridge Replace (Main Street) Halifax Avenue to Beach Street	This project replaces an existing bridge span. There is residential and commercial activity on each end of the span.
US-1 Intersections Improvements at Canal St., SR 421, Herbert St., Reed Canal Rd., Big Tree Rd., LPGA Blvd., Park Ave.,	There is residential and commercial activity as well as many redevelopment plans and CRA's proximate to these intersections. Improvements are intended to improve capacity, operations and safety for all modes. The TPO has not identified any disadvantaged populations that would be negatively impacted.
SR 442 - extend as 2 lane current termini to SR 415	This is primarily located in a rural and undeveloped area, however the eastern end of the project is a gateway to the City of Edgewater and has significant residential development throughout. A more significant review of impacted populations will be required if this project is pursued.
SR 442 - extend with Intracoastal Bridge US1 to SR A1A	This is primarily located in a rural and undeveloped area, however the western end of the project connects to the City of Edgewater and has significant residential development throughout. A more significant review of impacted populations will be required if this project is pursued.

Transit Projects

Throughout the development of the 2035 LRTP, it was clear that the provision of expanded and enhanced public transit services were desired. As discussed previously, the public alternative included more transit than the technical alternative. It is also apparent that most of the transit projects recommended are within the urban core and will directly benefit populations identified under Environmental Justice. These projects support populations identified in the previous review as well as many redevelopment activities initiated by local governments. The transit improvements considered for the 2035 LRTP are consistent with the desires of Votran and with the Title VI activities and analysis conducted for the TDP. The TDP is updated once every five years and an update is currently underway. The results of this activity will lay a foundation for the next update to the LRTP. Finally, it is also worth noting that the approved plan places funding for public transit improvements on par with road projects.

Additional Activities and Considerations

The TPO also sets-aside 30% of XU for bicycle and pedestrian projects to support mobility options. Many of these directly improve conditions for the populations identified under Environmental Justice. The TPO visions, plans, funds and implements improvements to walking and bicycling networks, including linkages to transit, within the service area. Pedestrian and bicycle facilities expand the travel opportunities for residents who, either by choice or by circumstance, do not use an automobile. These groups often include, but are not limited to, disabled individuals, children, the elderly, and the financially disadvantaged.

The TPO also involves the aging, disabled and disadvantaged populations in the process including the Transportation Disadvantaged Local Coordinating Board (TDLCB), the Center for Visually Impaired (CVI) and the Counsel on the Aged (COA). The primary purpose of the TDLCB is to assist the designated Official Planning Agency in identifying local service needs and providing information, advice, and direction to the Community Transportation Coordinator on the coordination of services to be provided to the transportation disadvantaged. The TPO has also completed studies to ensure we understand the impacts to certain populations including the Elder Mobility Study.

Safety Review

The Volusia TPO worked with Volusia County traffic engineering and the FDOT to develop a safety screening tool to be used in transportation planning. The safety screening was developed by Tindale-Oliver and Associates with joint funding from the three organizations. The program utilizes historic crash data along with traffic volumes and other characteristics of the corridor to determine a crash rating potential. We are awaiting final input to complete this section of the report.

Other Project Assessment Tools

In addition to the evaluation tools described above, The LRTP Subcommittee also identified and applied a series of qualitative criteria to the projects under consideration for the 2035 LRTP. These included:

1. Preserve the TPO List of Prioritized Regionally Significant Non-FIHS Roadway projects as the top ranked projects based on previous board policy direction.
2. Rank projects that provide access or support commuter rail.
3. Consider projects funded in partnership with private developers (at least 50% of project cost).
4. Include projects that support developments of regional impact (DRI).
5. Rank bridges that provide Hurricane evacuation.
6. Consider projects with committed PD&E studies.
7. Include unfunded SIS facilities that are local priority.

By applying these attributes, the Volusia TPO maintains consistency and stability in the transportation system and supports the planning factors and goals identified for the long range transportation plan.