



# Solutions and Recommendations

*Central Florida Regional Freight and Goods Movement*

# technical report



*prepared for*

**Metroplan Orlando, FDOT District 5**

*prepared by*

**Cambridge Systematics, Inc.**

*with*

HDR Engineering  
Canin Associates



September 2013



**CAMBRIDGE**  
SYSTEMATICS



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# 1.0 Introduction

A region's freight transportation system is comprised of highways, railroads, airports, water ports, pipelines and freight terminals including truck, rail, port and pipeline terminals. The Central Florida region is a freight hub of statewide importance. The region's system, which moves over 200 million tons of freight annually, consists of more than 17,900 centerline miles of roadways, a Class I railroad and two significant regional railroads, one deep-water port, an international air cargo facility and a spaceport complex.

Identifying and implementing improvements to accommodate increasing demand for freight and goods movement in the Central Florida region are critical to the region's economic vitality and quality of life. Maintaining the competitive edge in terms of its freight transportation system requires the region to integrate freight concerns into its planning process. The purpose of the study is to identify and prioritize improvements and strategies that accommodate and enhance mobility of both people and goods while mitigating negative impacts on congestion, safety, environment, and quality of life.

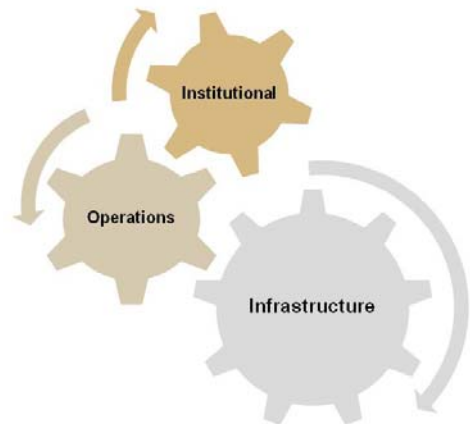
## 1.1 OVERVIEW OF RECOMMENDATIONS

The Recommendations report is one in a series of reports to be developed as part of the study. The purpose of the Recommendations report is to document the process for identifying and screening potential solutions and to present recommendations for facilitating current and future freight mobility that enhances economic competitiveness throughout the study region.

The assessment of the current and future situation revealed three primary categories of needs and deficiencies: 1) capacity and congestion; 2) community impacts including air quality and safety; and 3) institutional and regulatory bottlenecks. This report presents solutions to address the needs. Addressing the needs and deficiencies will require packages of solutions that include physical infrastructure, operational and institutional recommendations.

Physical infrastructure refers to investment in improving and/or expanding the transportation system such as roadways, rail and ports. The improvements may include new facilities, capacity enhancements or reconstruction to existing facilities, reconstruction and maintenance activities such as repaving.

Operational solutions focus on improving the efficiency and velocity or throughput



of the existing system. Examples include improving signage and wayfinding programs, synchronizing traffic signals to maximize traffic flows, altering the time of day traffic is on the roadways to make better use of the infrastructure throughout the day by moving operations to night time and providing real time traffic data and information to dispatchers and drivers.

Institutional solutions focus on policies, regulations and governance issues that give rise to unintended impacts on goods movement and the communities impacted by those movements. Institutional bottlenecks arise from industry regulations such as truck size and weight and drivers' hours of service rules; local, regional and state governance over publicly-owned assets such as roadways leads to local officials having total responsibility (including funding requirements) for local roads that may have a regional, state or even national role in terms of the freight movement; and public policies such as how projects are selected and prioritized in the regional, state and federal planning processes. This chapter provides an overview of the approach for developing and evaluating solutions and recommendations and a description of the final recommended solutions to enhance regional goods movement. The goal of the current study is not to complete individual project level analysis for each recommendation but rather to evaluate the effectiveness of strategies or "packages of projects" in addressing the region's freight mobility needs.

## 1.2 ORGANIZATION OF THE REPORT

The report summarizes the data, information, and findings from the various elements in the recommendation development process used to identify solutions to addressing existing and future goods movement needs at the regional level. The remainder of the report is organized as follows:

- **Chapter 2 - Recommendations Development Process.** This chapter presents a summary overview of process used to identify, screen and develop recommendations.
- **Chapter 3 - Infrastructure Solutions and Recommendations.** This chapter presents needs and potential solutions to address those needs on the regional freight subsystem. The focus of this chapter is on solutions addressing physical bottlenecks and needs.
- **Chapter 4 - Non-infrastructure Solutions and Recommendations.** This chapter presents specific and systemic operational and institutional recommendations to improve freight mobility throughout Central Florida, and includes both existing and future freight mobility needs.

## 2.0 Recommendation Development Process

### 2.1 PROCESS OVERVIEW

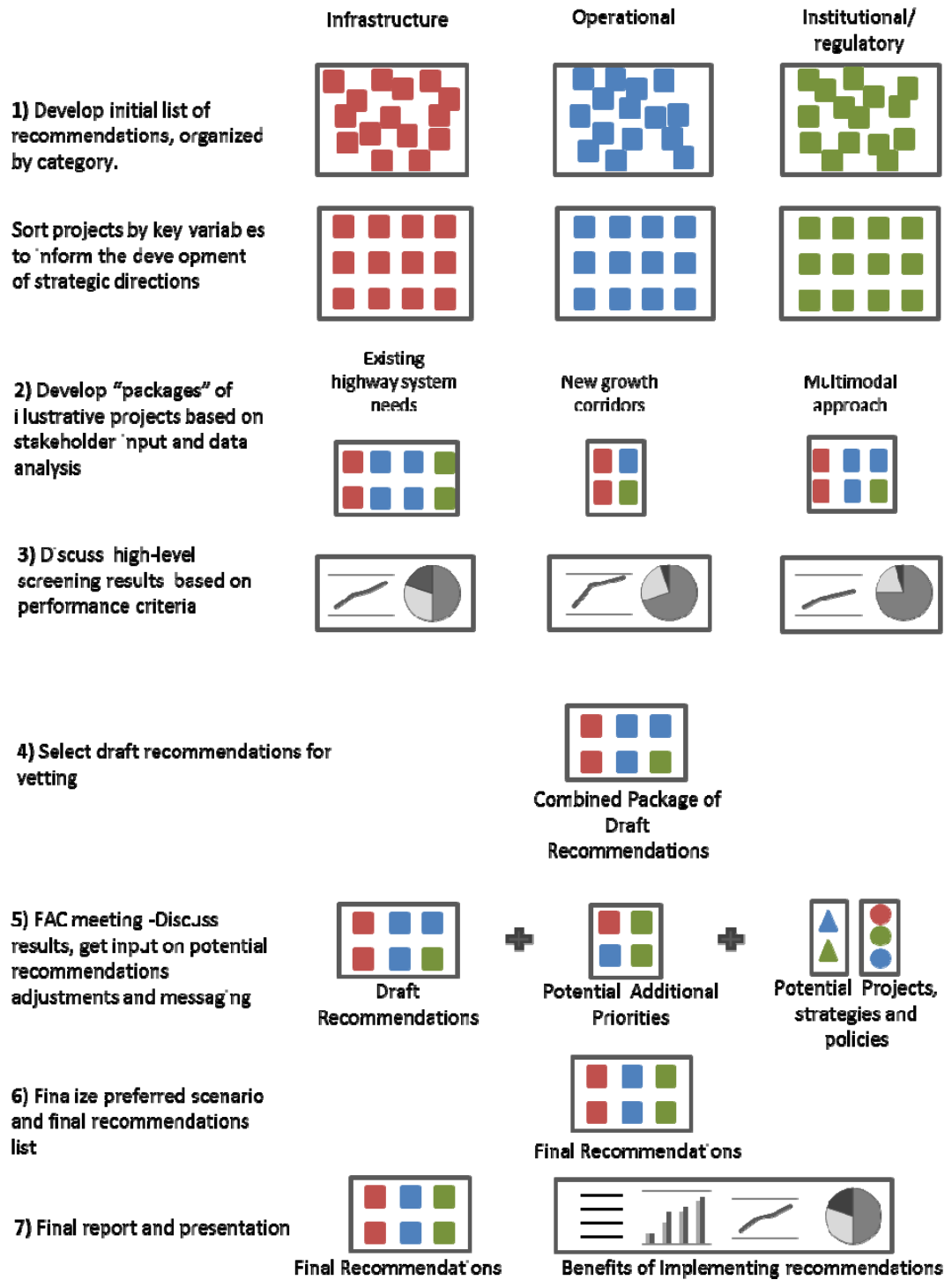
The development of recommendations has been an on-going process starting with the early stakeholder interviews. A systematic process for identifying, organizing and screening recommendations was employed. Figure 2.1 displays the framework for developing recommendations.

The first step combines input on needs and potential solutions from public and private sector stakeholders, public meetings, and previous and on-going studies. This includes specific projects, actions and programs which in many cases represent illustrative examples of more systemic deficiencies. This input was organized based on the type of deficiency (infrastructure, operational or institutional) and the specific need being addressed. Individual projects and actions that addressed the same needs were grouped together and potential strategies for addressing the broad needs were developed.

A variety of potential recommendations and strategies were compiled, some of which can be evaluated using existing tools and data and some that rely on a more qualitative assessment and justification. The study conducted a working session to evaluate each of the identified hotspots, bottlenecks and needs. For the physical bottlenecks, this evaluation included a field review using aerial photos, GIS data layers and ground knowledge to assess the cause of the bottleneck and to develop potential short and long term solutions. The results of this exercise is discussed in Chapter 3.

The next step in the process is screening of recommendations. The criteria used for screening were developed in conjunction with input from stakeholders and the Freight Advisory Council (FAC). An initial list of potential criteria were compiled based on stakeholder interviews, literature review of best practices and consultant input. This list was then presented to the FAC and an exercise allowing members of the FAC to add and rate importance of criteria was conducted.

Figure 2.1 Recommendation Development Process



Source: Cambridge Systematics

## 2.2 SCREENING CRITERIA

The screening criteria identification exercise consisted of members rating the importance of criteria on a scale of 1 to 5 with 1 being not important and 5 being very important. The results are displayed in Table 2.1 and Figure 2.2. As can be seen, all of the proposed criteria were thought to be at least somewhat important with the lowest average score being 3.3. The top rated criteria included safety measures, cost effectiveness and measures of mobility such as congestion relief and reliability. Among the economic development variables, the number of jobs scored the highest average rating followed by gross regional product and income.

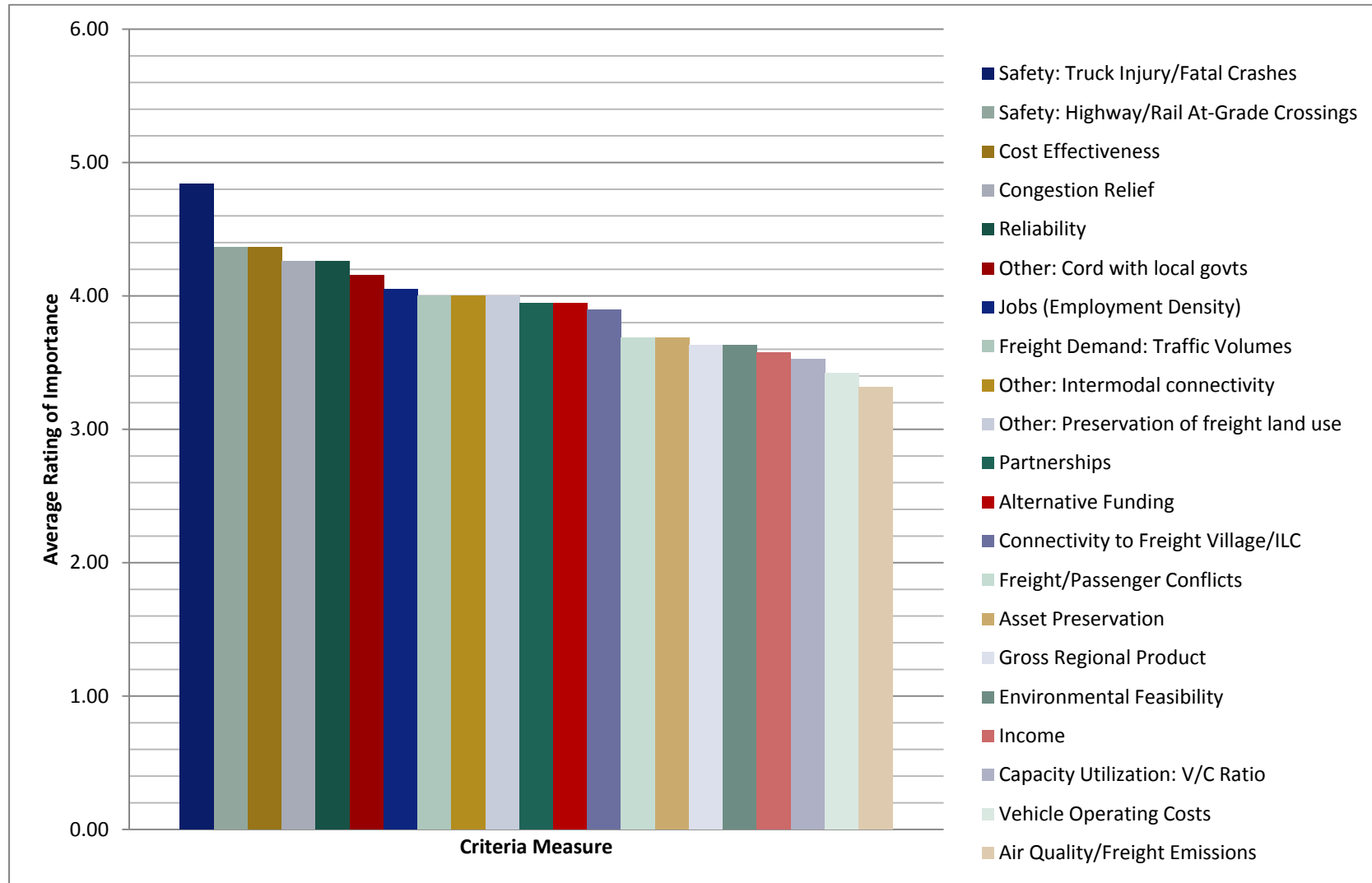
Once the screening criteria are identified, they are applied to both projects and policy recommendations. A summary of the evaluation findings is included in Chapter 3.

**Table 2.1 Evaluation of Criteria to be Used to Identify and Screen Freight Mobility Recommendations**

<b>Criteria</b>	<b>Average Score Based on 1 to 5 scale</b>
Safety: Truck Injury/Fatal Crashes	4.84
Safety: Highway/Rail At-Grade Crossings	4.37
Cost Effectiveness	4.37
Congestion Relief	4.26
Reliability	4.26
Other: Cord with Local Governments	4.16
Jobs (Employment Density)	4.05
Freight Demand: Traffic Volumes	4.00
Intermodal Connectivity	4.00
Preservation of Freight Land Use	4.00
Partnerships	3.95
Alternative Funding	3.95
Connectivity to Freight Village/ILC	3.89
Freight/Passenger Conflicts	3.68
Asset Preservation	3.68
Gross Regional Product	3.63
Environmental Feasibility	3.63
Income	3.58
Capacity Utilization: V/C Ratio	3.53
Vehicle Operating Costs	3.42
Air Quality/Freight Emissions	3.32

Source: Cambridge Systematics analysis of stakeholder input

Figure 2.2 Results of Freight Project Screening Criteria Exercise



Source: Cambridge Systematics analysis of stakeholder input



## 3.0 Infrastructure Solutions and Recommendations

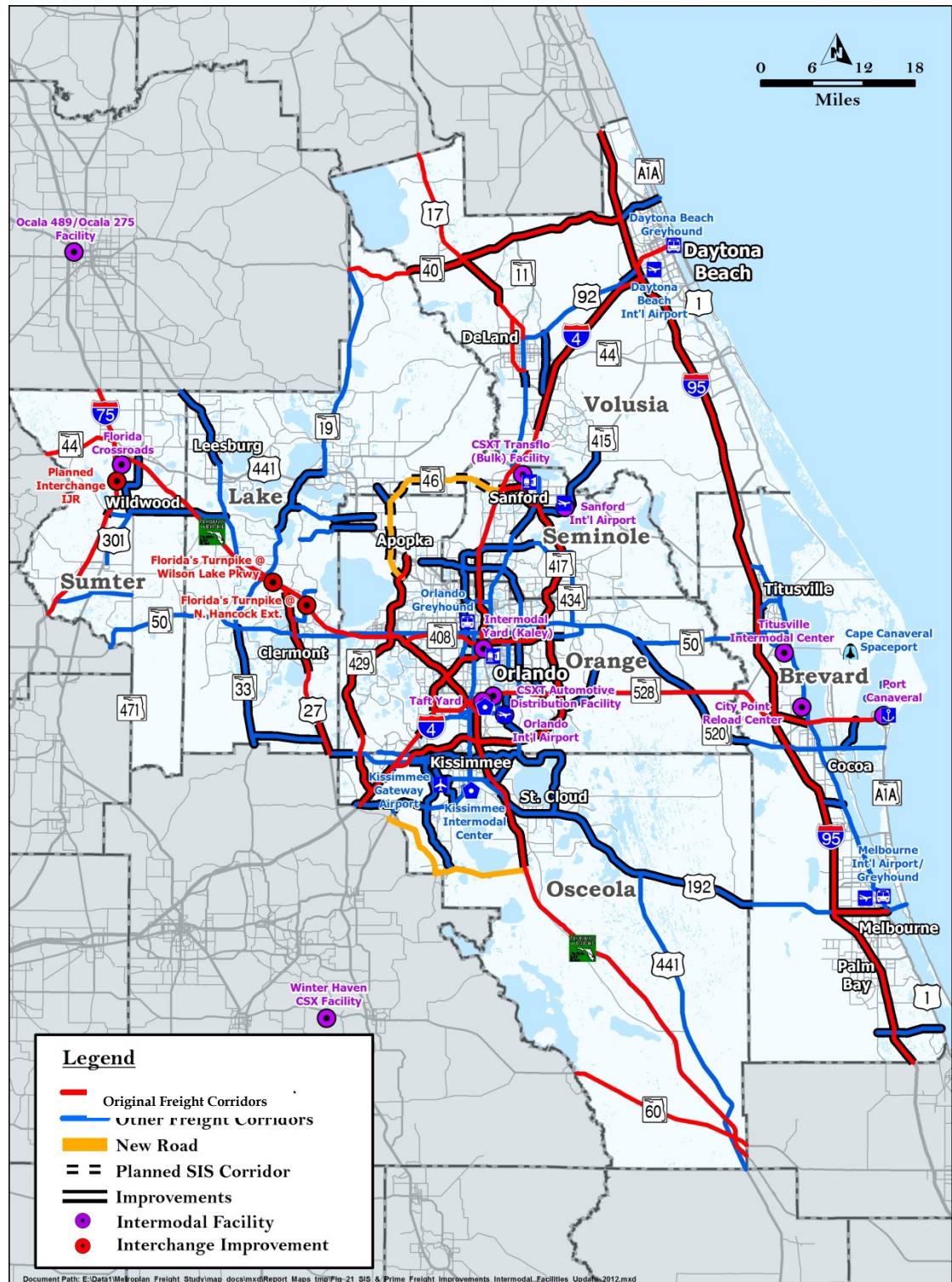
### 3.1 THE REGIONAL FREIGHT SUBSYSTEM

A freight subsystem is the portions of the existing regional road network that are important to freight and logistics activities. The region's road system was designed to carry passenger vehicles and trucks, but it was not designed for the express needs of freight transportation. Passengers and freight together use a single network, yet they use it very differently. Identifying the roadways significant to freight allows its different needs to be considered, and is a step toward recommendations for design improvements and management that better meet those needs.

Over the course of the project, several tasks have aided in the identification of the Central Florida primary freight highway subsystem. The Central Florida primary freight highway subsystem consists of the portion of the region's highway network that is most critical to the safe and efficient movement of freight. It consists of highways that belong to the state's Strategic Intermodal System (SIS). In addition, the Central Florida primary freight highway subsystem includes roadways that carry proportionately high volumes of daily truck traffic or serve as a strategic connection to the region's freight users. These were identified through highway truck volume counts and interviews with system users and agency stakeholders. Through a series of stakeholder interviews, these additional freight corridors were added to the regional freight subsystem based on freight access to sites and popular unofficial routes. The stakeholder interviews were conducted with study area airports, seaports, the spaceport, rail stations, and other freight generators/receivers such as hospitals and bulk material sites.

Figure 3.1 displays the resulting Regional Freight Subsystem. For the purpose of the current study, the identification and evaluation of solutions and recommendations addressing physical infrastructure needs were focused on the specific needs identified on these facilities. By focusing the analysis and eventually the regional resources on the freight subsystem, the region will be able to maximize the benefit of improvements and investments to the greatest number of users, thus having the greatest overall impact.

Figure 3.1 The Central Florida Regional Freight Subsystem



Source: Consultant analysis and stakeholder interviews

## 3.2 IDENTIFICATION OF PHYSICAL INFRASTRUCTURE SOLUTIONS

This needs assessment process identified more than 50 locations important to the movement of freight and goods throughout the region. To ensure the most critical locations were assessed in detail, the development of recommendations work session was conducted to look at the freight bottlenecks identified via truck GPS data first, then the intermodal connectors to freight hubs, then any other freight corridor identified during the process that is not part of the SIS or interstate system. Nearly 150 projects were identified through this process. A complete list of identified improvements is provided in Table 3.1.

Following identification of the regional freight highway subsystem, the review process for each location included examining GIS data for both existing and future conditions, level of service analysis for existing and future conditions, and GPS truck delay data. Stakeholder interview responses were also considered as part of the recommendations discussion.

It was noted during the discussion that the GIS data provided valuable information as to why the bottlenecks identified by the GPS truck data were occurring. Once the issues and causes for the issues were identified, mitigation strategies were identified for operational, capacity, and policy improvements. Improvements were further broken down by improvement timeframe - near term, mid-range, and long range.

A series of ten (10) locations with figures are provided to illustrate the process used to determine the recommendations. The locations selected were the top 8 freight bottlenecks based on GPS truck delay data and two CSX facilities not part of the SIS network. These are presented in Figure 3.2 through Figure 3.11.

**Table 3.1 Initial Project Needs and Recommendations for the Central Florida Regional Freight Highway Subsystem**

Location/Roadway	County	Improvement Type	Improvement Details	Timing	Notes
Kennedy Space Center and Cape Canaveral Air Force Station	Brevard	Capacity	Add second NB left turn at SR 405 and Grissom Pkwy	Near term	2010 SIS Connectors Study
Kennedy Space Center and Cape Canaveral Air Force Station	Brevard	Operational	Provide DMS/VMS signs at SR 405 @ SR 407 and SR 50 @ I-95 ramps to provide information on traffic during space shuttle launch	Near term	2010 SIS Connectors Study
Melbourne International Airport	Brevard	Capacity	Add an exclusive SB left turn lane at John Rhodes @ US 192	Near term	2010 SIS Connectors Study
Melbourne International Airport	Brevard	Capacity	Add second NB left turn lane at Wickham Rd. @ US 192	Near term	2010 SIS Connectors Study
Melbourne International Airport	Brevard	Capacity	Add second SB right turn at Evans Rd. @ US 192	Near term	2010 SIS Connectors Study
Titusville Intermodal Center	Brevard	Institutional-	Add Golden Knight and Teko Rd to freight sub-network	Near term	
Banana River Drive	Brevard	Policy	Enforce truck routes	Near term	
Banana River Drive	Brevard	Operational	Traffic calming improvements	Near term	
Viera Blvd	Brevard	Operational	Conduct detailed study to analyze options for Viera Blvd/US 1 intersection	Near term	
Ellis Road	Brevard	Institutional	Request by local planner	Near term	Add to freight sub-network
SR 405 (NASA Causeway)	Brevard	Institutional	Request by local planner	Near term	Add to freight sub-network

Kennedy Space Center and Cape Canaveral Air Force Station	Brevard	Capacity	Add second WB left turn at SR 405 and Grissom Pkwy	Mid range	2010 SIS Connectors Study
Kennedy Space Center and Cape Canaveral Air Force Station	Brevard	Capacity	Add second NB (SR 405) right turn lane at SR 405 and Barna Ave	Mid range	2010 SIS Connectors Study
Kennedy Space Center and Cape Canaveral Air Force Station	Brevard	Capacity	Add second EB right turn lane at SR 405 and Grissom Pkwy	Mid range	2010 SIS Connectors Study
Melbourne International Airport	Brevard	Capacity	Add second EB left turn lane, second SB left turn lane and an exclusive WB right turn lane at John Rhodes @ US 192	Mid range	2010 SIS Connectors Study
Melbourne International Airport	Brevard	Capacity	Add two EB right turn lane, second SB left turn lane, an exclusive SB right turn lane, third EB through lane and third WB through lane at Wickham Rd. @ US 192	Mid range	2010 SIS Connectors Study
Melbourne International Airport	Brevard	Capacity	Add third EB through lane and third WB through lane at Meadowlane Rd. @ US 192	Mid range	2010 SIS Connectors Study
Melbourne International Airport	Brevard	Capacity	Add second SB left turn lane, second WB left turn lane, third EB through lane and third WB through lane at Dayton Rd. @ US 192	Mid range	2010 SIS Connectors Study
Melbourne International Airport	Brevard	Operational	Modify EB right turn lane to shared through and right turn lane, add third WB through lane and second NB left turn lane at US 192 @ Laila Ct.	Mid range	2010 SIS Connectors Study

Melbourne International Airport	Brevard	Capacity	Add second SB left turn lane, second WB left turn lane, second NB left turn lane, third EB through lane and third WB through lane at Evans Rd. @ US 192	Mid range	2010 SIS Connectors Study
Melbourne International Airport	Brevard	Operational	Modify EB and WB right turn lane to shared through and right turn lane at US 192 @ Melbourne Sq. Mall	Mid range	2010 SIS Connectors Study
Melbourne International Airport	Brevard	Capacity	Add second EB left turn lane, third EB through lane and third WB through lane at Dairy Rd. @ US 192 Add second EB left turn lane and second SB right turn lane at Airport Blvd. @ US 192	Mid range	2010 SIS Connectors Study
Melbourne International Airport	Brevard	Capacity	Add an exclusive EB right turn lane, an exclusive SB right turn lane and an exclusive WB right turn lane at Airport Blvd. @ Hibiscus Blvd.	Mid range	2010 SIS Connectors Study
Melbourne International Airport	Brevard	Capacity	Add an exclusive NB right turn lane and an exclusive WB right turn lane and modify the SB right turn lane to shared through and right turn lane at Airport Blvd. @ Nasa Blvd.	Mid range	2010 SIS Connectors Study
Port Canaveral	Brevard	Capacity	PLANNED Additional WB dedicated through lane on SR 401 for spaceport departing traffic	Long range	
Port Canaveral	Brevard	Operational	PLANNED median improvements to clearly delineate truck merging and acceleration lanes for entering WB heavy trucks	Long range	
Port Canaveral	Brevard	Capacity	PLANNED relocation of Grouper Rd	Long range	

Port Canaveral	Brevard	Capacity	PLANNED deceleration lanes for stacking of trucks at the main entrance	Long range	
Kennedy Space Center and Cape Canaveral Air Force Station	Brevard	Capacity	Add second EB left turn lane at SR 405 and SR 50	Long range	2010 SIS Connectors Study
Kennedy Space Center and Cape Canaveral Air Force Station	Brevard	Capacity	Modify exclusive right turn lane to shared right and through lane at SR 405 and Grissom Pkwy	Long range	2010 SIS Connectors Study
Kennedy Space Center and Cape Canaveral Air Force Station	Brevard	Capacity	Add second WB left turn lane at SR 405 and Grissom Pkwy	Long range	2010 SIS Connectors Study
Kennedy Space Center and Cape Canaveral Air Force Station	Brevard	Capacity	Add second EB left turn lane at SR 405 & Sission Rd	Long range	2010 SIS Connectors Study
Kennedy Space Center and Cape Canaveral Air Force Station	Brevard	Operational	Drainage; Reinforce Pavement for Heavy Trucks	Long range	2010 SIS Connectors Study
Melbourne International Airport	Brevard	Capacity	Add second WB right turn lane and third SB through lane at Wickham Rd. @ US 192	Long range	2010 SIS Connectors Study
Melbourne International Airport	Brevard	Operational	Modify NB right turn lane to shared through and right turn lane and add an exclusive EB right turn lane at Evans Rd.	Long range	2010 SIS Connectors Study
Melbourne International Airport	Brevard	Capacity	Add second SB right turn lane and second WB left turn lane at US 192 and Dairy Blvd.	Long range	2010 SIS Connectors Study
Melbourne International Airport	Brevard	Capacity	Add third EB through lane and third WB through lane at Airport Rd. @ US 192	Long range	2010 SIS Connectors Study

Melbourne International Airport	Brevard	Capacity	Add an exclusive SB right turn lane at Airport Blvd @ Nasa Blvd	Long range	2010 SIS Connectors Study
Melbourne International Airport	Brevard	Capacity	PLANNED widening from 4 lanes to 6 lanes in 2020 on US 192 from Airport Blvd to I-95	Long range	
Melbourne International Airport	Brevard	Capacity	PLANNED improvements along new alignment (St. Johns Heritage Pkwy) west of I-95 broken into 3 segments (City funded, County funded, FDOT funded)	Long range	
Melbourne International Airport	Brevard	Capacity	PLANNED interchange at Ellis Rd	Long range	
City Point Reload Center	Brevard	Operational	Maintain good serviceability along Industrial Rd	Long range	Connector is Industrial Rd; Roadways connecting to and near site are in good condition
Viera Blvd	Brevard	Capacity	Left and right turn fly-overs from Viera Blvd to US 1	Long range	
SR 520	Brevard	Capacity	---	Long range	Since buildout, SR 520 may become more attractive to freight movement
Leesburg Municipal Airport	Lake	Operational	SR 44 -TSM / operational strategies (i.e. signal coordination)	Near term	
Leesburg Municipal Airport	Lake	Operational	US 27 - TSM / operational strategies (i.e. signal coordination)	Near term	
Hancock Extension/Turkey Farm Road	Lake	Policy	Potential conflicts with the projected model truck trips with existing LU	Near term	Planned interchange and extension improvements will potentially address conflicts



Duda Rd, CR 48, CR 448	Lake	Policy	Identify preferred freight route and generate list of improvements for that specific route	Near term	
New Turnpike Interchange/Hancock Extension (Mannelo Interchange)	Lake	Capacity	Interchange and connecting roadway are funded	Near term	
CR 474	Lake	Institutional	Request by local planners	Near term	Add to freight sub-network
Wekiva Pkwy (Section 2c)	Lake	Institutional	Request by local planners	Near term	Add to freight sub-network; design/construction underway
Leesburg Municipal Airport	Lake	---	Asset preservation. Maintain good service conditions for freight and non-freight uses.	Long range	Facilities in good condition both operationally and physically.
Hancock Extension/Turkey Farm Road	Lake	Capacity	PLANNED new interchange at Turnpike anticipated to pull a lot of truck traffic off SR 50	Long range	
Hancock Extension/Turkey Farm Road	Lake	Capacity	PLANNED Hancock realignment at SR 50 (Existing Turkey Lake will be cul-de-sac-ed) Realignment planned to be 4L	Long range	
US 17/92 near Florida's Turnpike	Orange	Operational	Signal timing improvements	Near term	
US 17/92 near Florida's Turnpike	Orange	Operational	Access management	Near term	
SR 50 at US 17/92	Orange	Policy	Local and regional planners coordinate with local business owners to designate off-peak freight movement	Near term	

SR 50 at US 17/92	Orange	Operational	Signal timing improvements	Near term	
SR 50 at SR 408	Orange	Operational	Signal timing improvements	Near term	
Orlando International Airport	Orange	Operational	TSM / operational strategies (i.e. signal coordination) along Tradeport Dr.	Near term	
Orlando Amtrak / Intermodal Yard	Orange	Operational	Improve directional signage to and from Orlando Amtrak station	Near term	
Orlando Amtrak / Intermodal Yard	Orange	Operational	Preservation of freight land uses.	Near term	Station to be used for SunRail. Area currently designated for industrial land uses. Location has potential for I-4 Ultimate material shipping and receiving.
Orlando Amtrak / Intermodal Yard	Orange	Capacity	PLANNED realignment and improvements to accommodate future BRT along Sligh Boulevard	Near term	
Orlando Amtrak / Intermodal Yard	Orange	Operational	TSM / operational strategies (i.e. signal coordination) along Tradeport Dr.	Near term	
Taft Center	Orange	Institutional	Add facilities to freight sub-network	Near term	Connector is Atlantic Ave to Landstreet Rd and Orange Ave, Landstreet Rd, Boggy Creek

Tradeport Drive	Orange	Institutional	Request by local planner	Near term	Add to freight sub-network
Taft-Vineland Road	Orange	Institutional	Request by local planner	Near term	Add to freight network; widening to four lanes from US 441 to SR 527
Landstreet Road	Orange	Institutional	Request by local planner	Near term	Add to freight sub-network
Central Florida Pkwy	Orange	Policy	Enforce weight restrictions	Near term	Google screen capture shows truck violations; Only weight-restricted roadway in Orange County.
Central Florida Pkwy	Orange	Operational	Move weight restriction signage to before bridge allowing heavy trucks the opportunity to turn off the road	Near term	
SR 15 (Narcoossee Rd, Hoffner Ave, Conway Rd)	Orange	Institutional	Request by local planner	Near term	Add to freight sub-network
Taft Vineland Road	Orange	Institutional	Request by local planner	Near term	Add to freight sub-network
US 17/92 near Florida's Turnpike	Orange	Capacity	Develop alternative routes to OBT including new roadway connections to west of Turnpike (i.e. Landstreet)	Mid range	
SR 50 at US 17/92	Orange	Operational	Reconstruct intersection plateau	Mid range	
Orlando International Airport	Orange	Capacity	Add an exclusive NB right-turn lane on Tradeport Dr at Boggy Creek Rd and	Mid range	2010 SIS Connectors Study

			Tradeport Dr.		
Orlando Amtrak / Intermodal Yard	Orange	Capacity	Add an exclusive NB right-turn at Division and Columbia St.	Mid range	2010 SIS Connectors Study
Orlando Amtrak / Intermodal Yard	Orange	Capacity	Add an exclusive WB right-turn at Division and Columbia St.	Mid range	2010 SIS Connectors Study
US 17/92 near Florida's Turnpike	Orange	Capacity	PLANNED improvements/roadway widening's throughout interchange area	Long range	
Interstate 4 at SR 408	Orange	Capacity	Design-build project underway for I-4 Ultimate improvements	Long range	
Edgewater Drive	Orange	Capacity	Widening and turn lanes	Long range	Serves Silver Star freight village
John Young Parkway (SR 423)	Orange	Capacity	Widening from SR 50 to Shader Road	Long range	On priority list for County but Construction not funded
SR 50 at SR 408	Orange	Capacity	PLANNED improvements/widening (western widening near Dean Rd currently underway)	Long range	Recent interchange improvements have also address the issue
Orlando International Airport	Orange	---	PLANNED development of east airfield.	Long range	
Orlando International Airport	Orange	Capacity	PLANNED Passenger Rail service from SR 528 to Terminal (All Aboard Florida Proposal) along Jeff Fuqua Blvd from airport to SR 528	Long range	
Orlando International Airport	Orange	Capacity	PLANNED widening from 4 lanes to 6 lanes in 2020 on Tradeport Dr from airport to SR 528	Long range	2010 SIS Connectors Study

Orlando International Airport	Orange	Capacity	Add second EB through lane on Boggy Creek Rd at Tradeport Dr. and Boggy Creek Rd.	Long range	2010 SIS Connectors Study
Orlando International Airport	Orange	Capacity	Add second WB through lane on Boggy Creek Rd at Tradeport Dr. and Boggy Creek Rd.	Long range	2010 SIS Connectors Study
Orlando Amtrak / Intermodal Yard	Orange	Capacity	Add an exclusive NB right-turn lane for EB off-ramp.	Long range	2010 SIS Connectors Study
Orlando Amtrak / Intermodal Yard	Orange	Operational	Signalize Division Ave. and Columbia St. (if warranted)	Long range	
Orlando Amtrak / Intermodal Yard	Orange	Capacity	Kaley Ave from Division Ave to I-4 - Widen from 4 lanes to 6 lanes	Long range	
Orlando Amtrak / Intermodal Yard	Orange	Capacity	PLANNED widening from 2 lanes to 4 lanes in 2020 on Division Ave from Columbia St to Kaley Ave	Long range	
Taft Center	Orange	Operational	Preserve service to the freight yard (service will be shifting to S Line)	Long range	
Taft Center	Orange	Capacity	PLANNED area improvements anticipated to pull non-freight traffic thereby preserving the good service of the facility	Long range	
Innovation Way Corridor	Orange	Capacity	Model shows significant truck volumes	Long range	Emerging area for development
Innovation Way Corridor	Orange	Policy	Freight use may be incompatible with existing residential LU on existing western portion of roadway	Long range	Emerging area for development

Boggy Creek Rd	Orange	Capacity	PLANNED improvement identified by County: Widening segments from South Access Road to Weatherbee Road and Osceola County Line to GreeneWay to four lanes	Long range	No funding available/identified; Analysis from this report plus stakeholder input pushes a need for the improvement. Funding continues to be an issue.
US 192 at US 17/92	Osceola	Operational	Traffic management strategies	Near term	
Kissimmee Gateway Airport	Osceola	Operational	Add a signal at Hoagland Blvd. and 5th St. intersection (if warranted)	Near term	2010 SIS Connectors Study
Kissimmee Gateway Airport	Osceola	Operational	Modify EB shared through and right turn lane to exclusive through and right turn lanes at US 192 and Thacker Rd	Near term	2010 SIS Connectors Study
Kissimmee Gateway Airport	Osceola	Capacity	Add second NB left turn lane at Thacker Avenue and US 192	Near term	2010 SIS Connectors Study
CR 531/CR 471	Osceola	Institutional	Request by local planners	Near term	Add to freight sub-network
Kissimmee Gateway Airport	Osceola	Capacity	Add second EB left turn lane and second WB left-turn lane at Thacker Avenue and US 192	Mid range	2010 SIS Connectors Study
Kissimmee Gateway Airport	Osceola	Capacity	Add third WB left turn lane at Osceola Pkwy and Michigan Ave	Mid range	2010 SIS Connectors Study

Kissimmee Gateway Airport	Osceola	Capacity	Add second NB through lane at Osceola Pkwy. and Michigan Ave	Mid range	2010 SIS Connectors Study
US 17/92 at Poinciana Blvd	Osceola	Capacity	PLANNED 17/92 widening to 6L	Long range	
US 192 at US 17/92	Osceola	Capacity	Address capacity constraints by focusing on mass tourist transportation options (i.e. streetcar/trolley)	Long range	
US 192 near Florida's Turnpike	Osceola	Capacity	PLANNED roadway widening	Long range	
Kissimmee Gateway Airport	Osceola	Capacity	PLANNED areawide improvements	Long range	
Kissimmee Gateway Airport	Osceola	Capacity	Add second WB left-turn at US 192 and Hoagland Blvd Modify SB right turn lane at US 192 and Thacker Rd. to shared right and through lane	Long range	2010 SIS Connectors Study
Kissimmee Gateway Airport	Osceola	Capacity	Add third NB left turn lane at Osceola Pkwy. and Michigan Ave	Long range	2010 SIS Connectors Study
Kissimmee Gateway Airport	Osceola	Capacity	Widen Hoagland Blvd from airport to US 17/92 from 2/4 lanes to 6 lanes	Long range	
Kissimmee Gateway Airport	Osceola	Capacity	Realign Hoagland Blvd	Long range	
Winter Haven CSX Integrated Logistics Center (NEW FACILITY)	Polk	Capacity	Construction of site is underway	Near term	
CSX Transflow Bulk Facility	Seminole	Institutional	Add Airport Blvd, Jewitt, MLK to freight sub-system	Near term	

CSX Transflow Bulk Facility	Seminole	Operational	Pavement resurfacing on Persimmon Ave. from SR 46 to Amtrak Tracks	Near term	2010 SIS Connectors Study
Orlando Sanford International Airport and Surrounding Industrial Areas	Seminole	Policy	Develop freight policies to guide development of future industrial LU	Near term	
Orlando Sanford International Airport and Surrounding Industrial Areas	Seminole	Policy	Preserve industrial lands along Lake Mary Blvd for future industrial economic opportunities	Near term	
Orlando Sanford International Airport and Surrounding Industrial Areas	Seminole	---	Be mindful of incompatible LUs (i.e. residential located against future industrial LU	Near term	
Orlando Sanford International Airport and Surrounding Industrial Areas	Seminole	Operational	Modify shared SB right-turn to exclusive lanes ( i.e. add one SB right-turn lane) at Lake Mary Blvd. @ CR 427/Sanford Ave	Near term	2010 SIS Connectors Study
Orlando Sanford International Airport and Surrounding Industrial Areas	Seminole	Policy	Limited designated routes for truck access due to residential development surrounding airport support areas. Identify route for truck access.	Near term	
CSX Transflow Bulk Facility	Seminole	Operational	Add a new signal at Persimmon Ave. ( if warranted)	Mid range	2010 SIS Connectors Study
CSX Transflow Bulk Facility	Seminole	Operational	Improve directional signage for Amtrak station along the connector	Mid range	2010 SIS Connectors Study
CSX Transflow Bulk Facility	Seminole	Operational	TSM /Operational strategies (i.e. signal coordination)	Mid range	2010 SIS Connectors Study
Orlando Sanford International Airport and Surrounding Industrial Areas	Seminole	Capacity	Add third EB Left-turn lane, third WB left-turn lane and second NB left-turn lane at Lake Mary blvd. @ CR 427/Sanford Ave	Mid range	2010 SIS Connectors Study

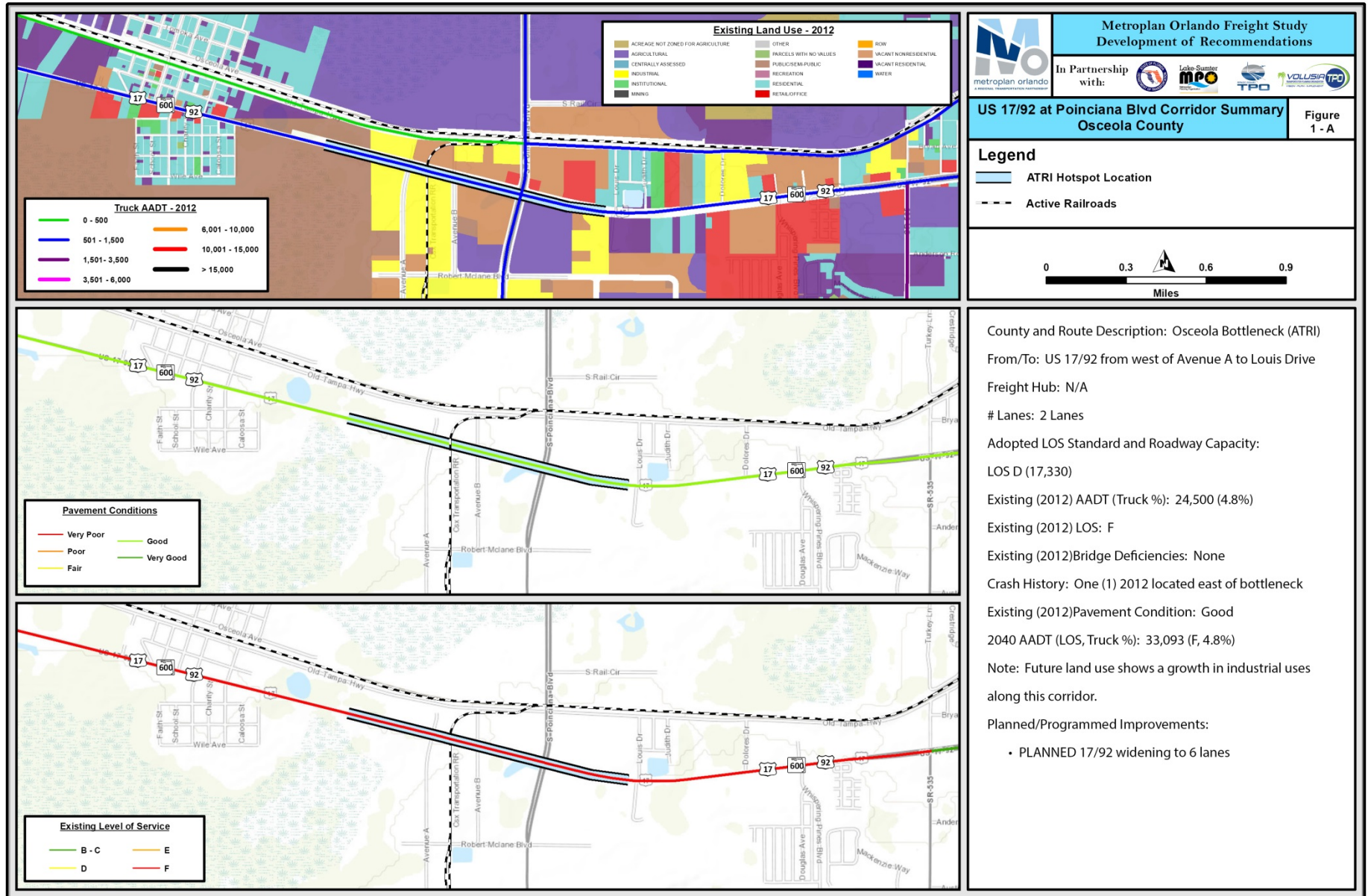


Orlando Sanford International Airport and Surrounding Industrial Areas	Seminole	Operational	Improve directional signage to/from the airport	Mid range	
Interstate 4 at SR 436	Seminole	Capacity	PLANNED single point interchange as part of I-4 Ultimate improvements	Long range	
CSX Transflow Bulk Facility	Seminole	Capacity	PLANNED widening of Persimmons Ave	Long range	
CSX Transflow Bulk Facility	Seminole	Capacity	Widen Jewitt Lane and improvement pavement/turning radii	Long range	
CSX Transflow Bulk Facility	Seminole	Capacity	Add second NB left-turn at I-4 NB off-ramp to WB SR 46	Long range	2010 SIS Connectors Study
CSX Transflow Bulk Facility	Seminole	Capacity	Add second WB right-turn at I-4 NB off-ramp	Long range	2010 SIS Connectors Study
CSX Transflow Bulk Facility	Seminole	Capacity	Add third NB left-turn at Town Center Blvd	Long range	2010 SIS Connectors Study
CSX Transflow Bulk Facility	Seminole	Capacity	Add third NB left-turn at Rinehart Rd	Long range	2010 SIS Connectors Study
CSX Transflow Bulk Facility	Seminole	Capacity	Widen SR 46 from Amtrak to I-4 from 4 lanes to 6 lanes	Long range	
Orlando Sanford International Airport and Surrounding Industrial Areas	Seminole	Capacity	Look for opportunities for alternative access to separate freight and non-freight activities	Long range	
Orlando Sanford International Airport and Surrounding Industrial Areas	Seminole	Capacity	PLANNED widening from 4 lanes to 6 lanes in 2020 along Lake Mary Blvd	Long range	
Orlando Sanford International Airport and Surrounding Industrial Areas	Seminole	Capacity	Add second SB RT at Lake Mary Blvd. @ CR 427/Sanford Ave	Long range	2010 SIS Connectors Study

Orlando Sanford International Airport and Surrounding Industrial Areas	Seminole	Capacity	Add EB through at Lake Mary Blvd. @ CR 427/Sanford Ave	Long range	2010 SIS Connectors Study
US 301	Sumter	Capacity	PD&E planned for added capacity and safety improvements	Near term	
CR 673	Sumter	Institutional	Request by local planners	Near term	Add to freight sub-network
CR 476	Sumter	Institutional	Request by local planners	Near term	Add to freight sub-network
CR 470	Sumter	Capacity	Forecast of future truck traffic indicates a need for capacity improvements	Long range	Widening not needed until 3 DRIs come online
US 301	Sumter	Capacity	Overall traffic projections indicate a need for capacity improvements	Long range	
Kepler Road/Martin Luther King Jr. Blvd (DeLand)	Volusia	Institutional	Request by local planners	Near term	Add to freight sub-network

Source: Stakeholder interviews, 2010 SIS Connector Study and consultant analysis

Figure 3.2 Analysis of Freight Bottleneck at US 17/92 at Poinciana Boulevard



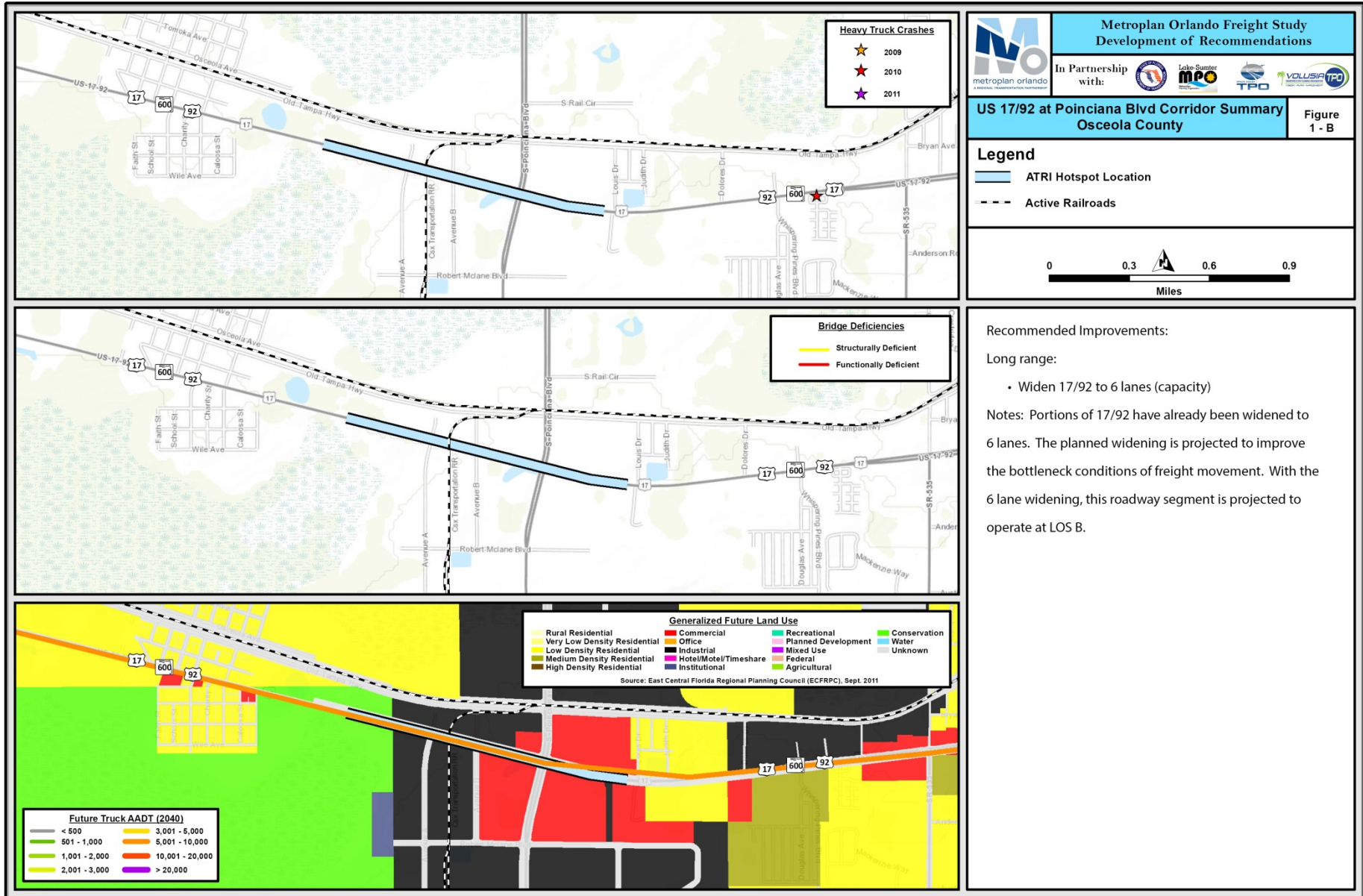
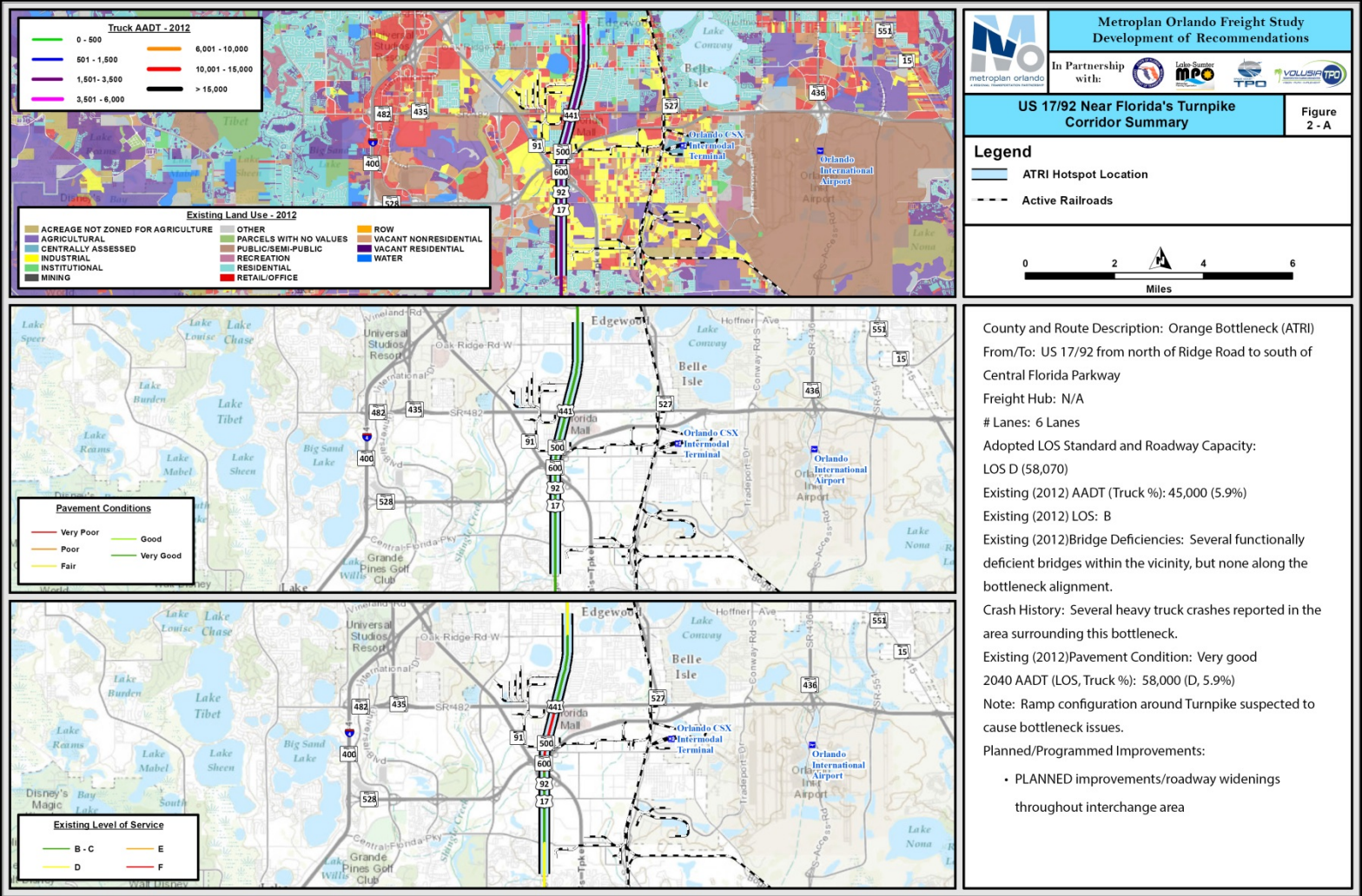


Figure 3.3 Analysis of Freight Bottleneck at US 17/92 at Florida's Turnpike



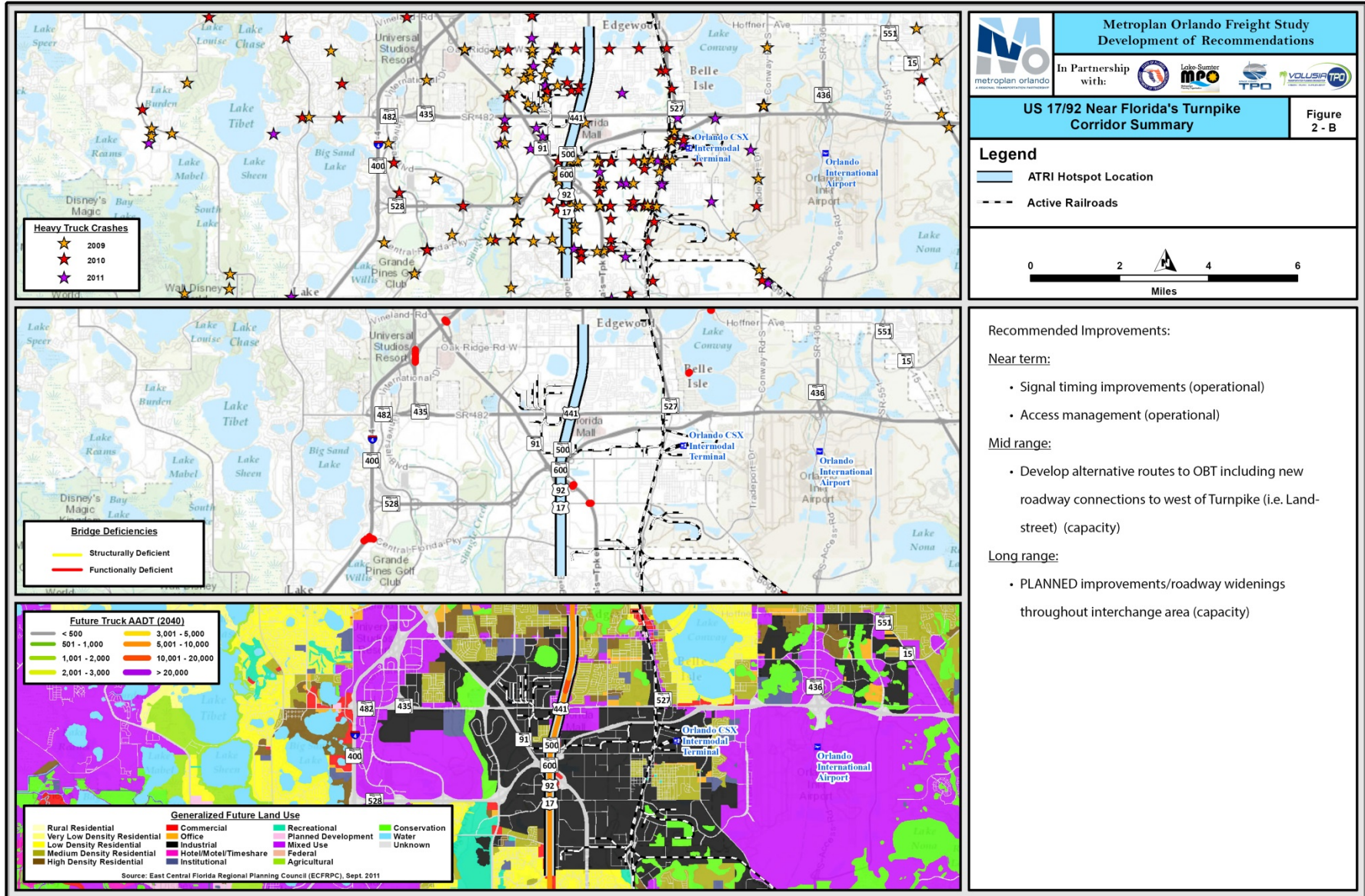
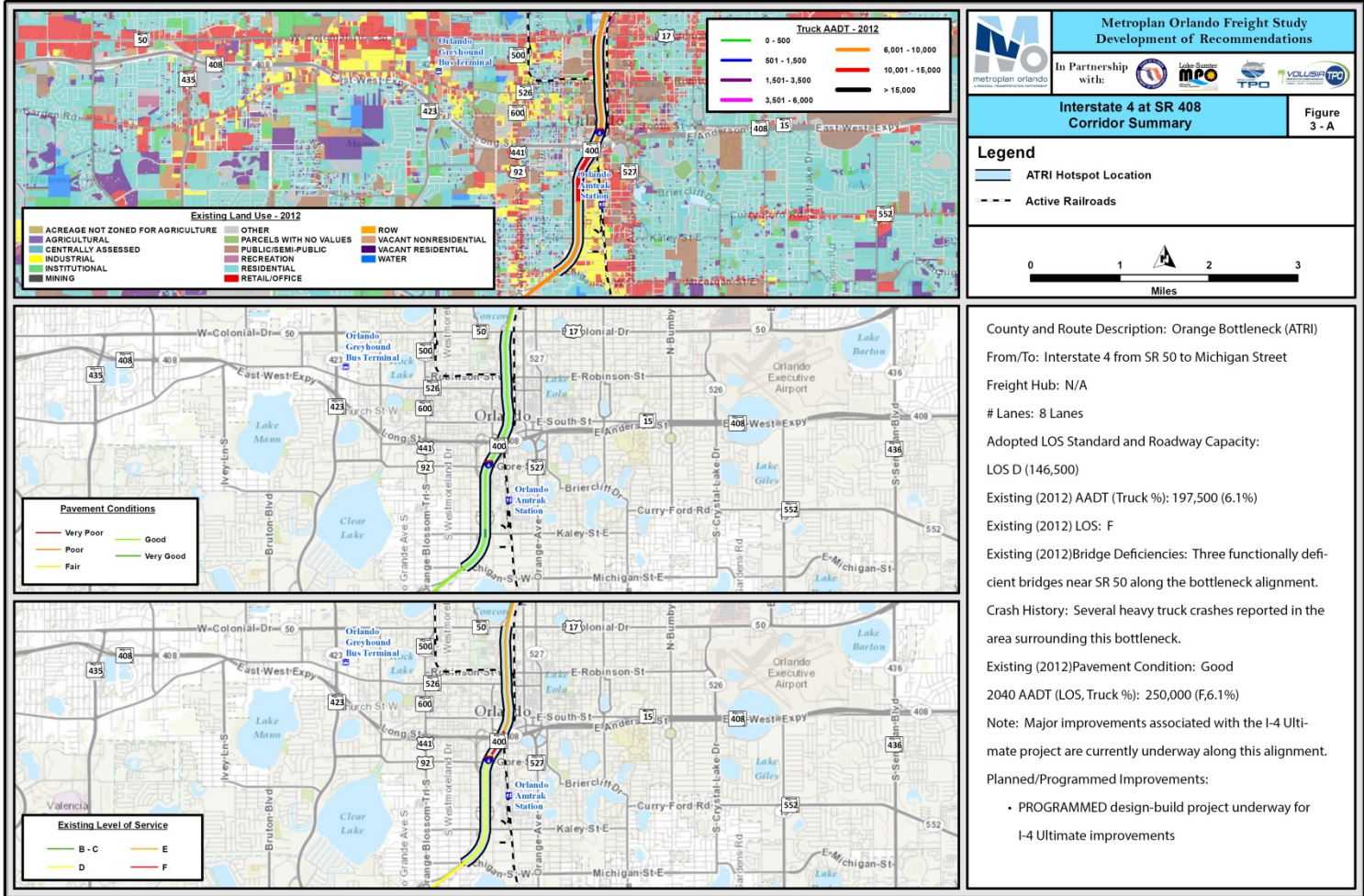
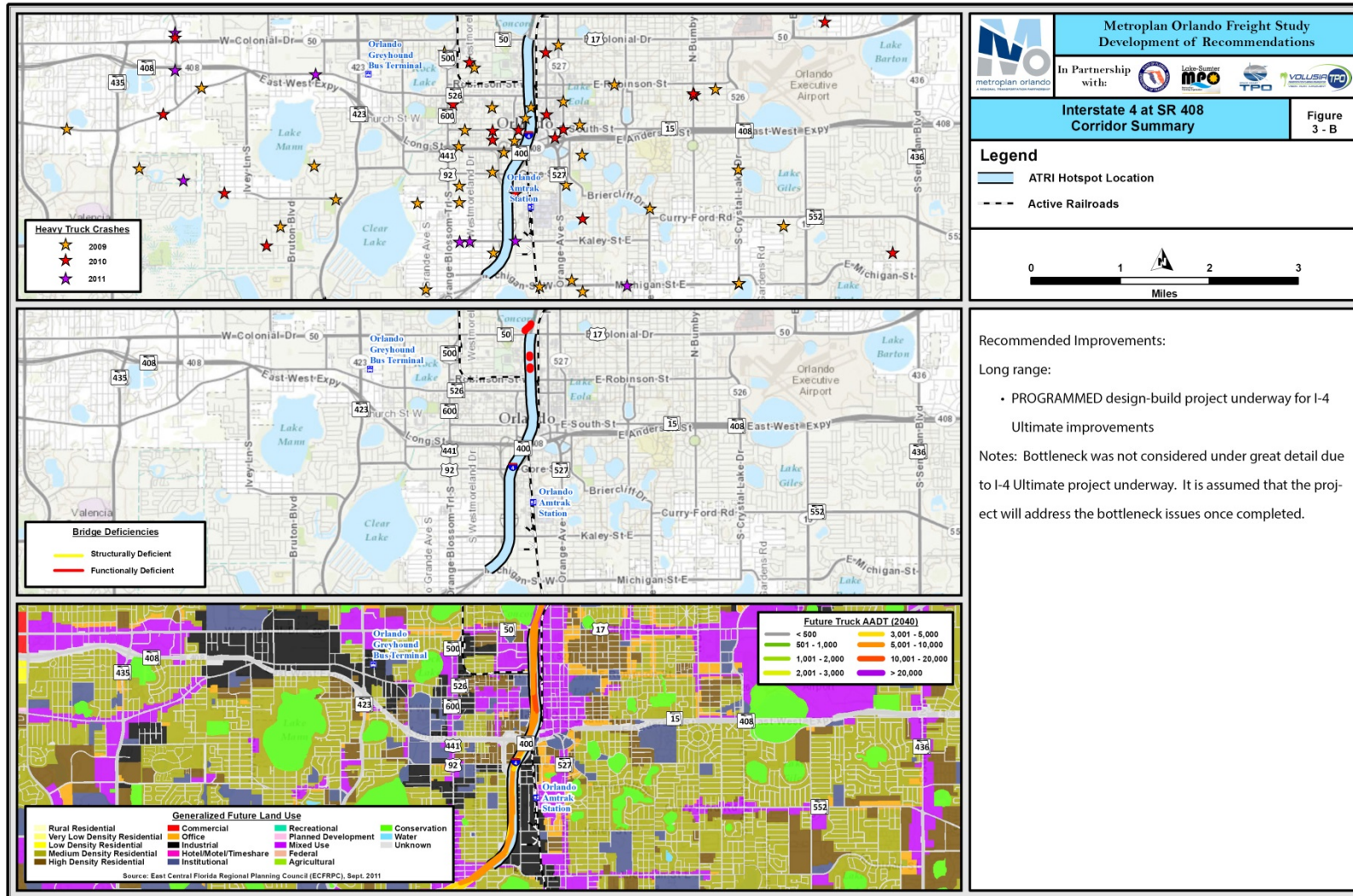


Figure 3.4 Analysis of Freight Bottleneck at I-4 and SR 408





Recommended Improvements:

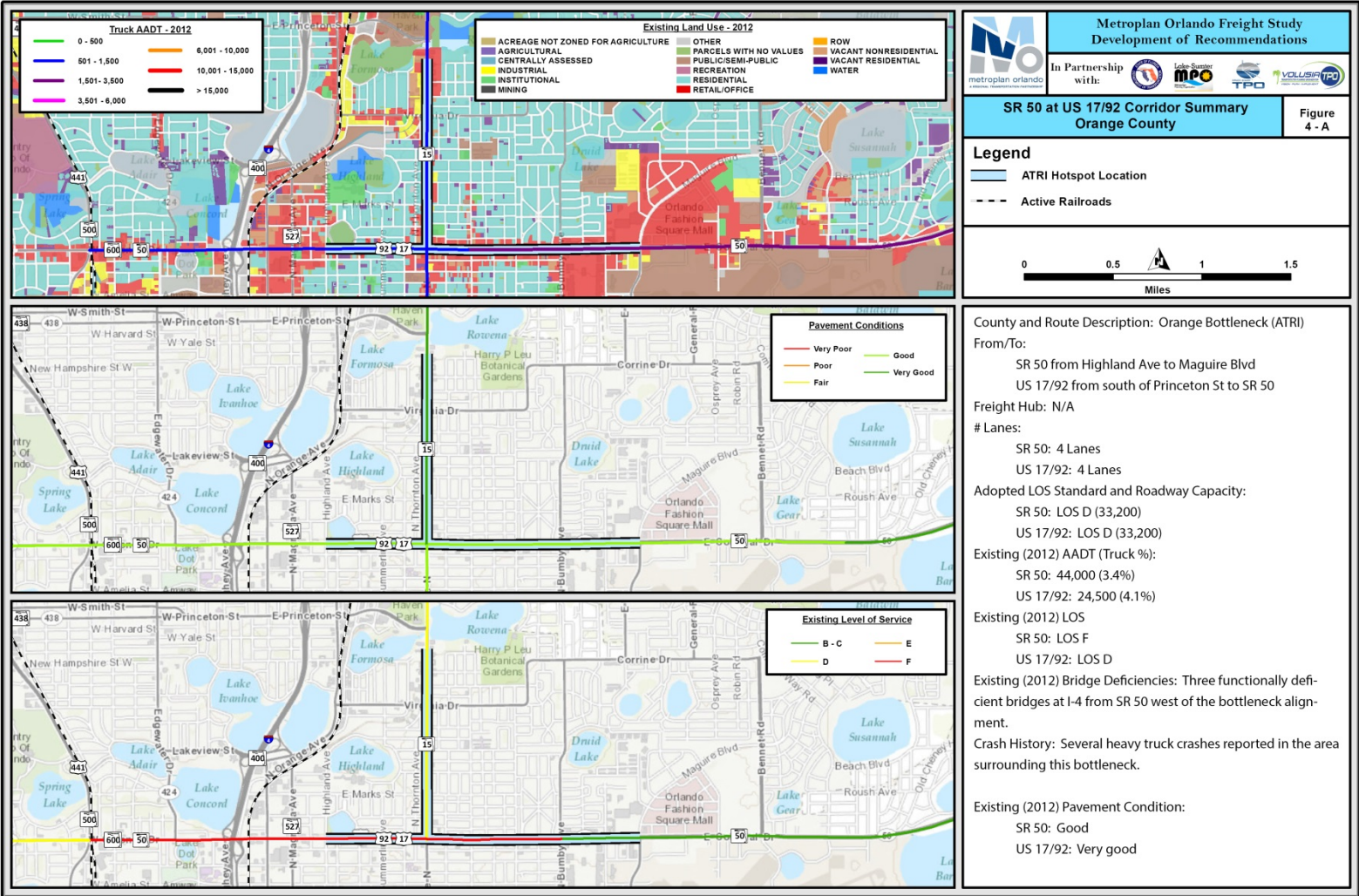
Long range:

- PROGRAMMED design-build project underway for I-4 Ultimate improvements

Notes: Bottleneck was not considered under great detail due to I-4 Ultimate project underway. It is assumed that the project will address the bottleneck issues once completed.



Figure 3.5 Analysis of Freight Bottleneck at SR 50 and US 17/92



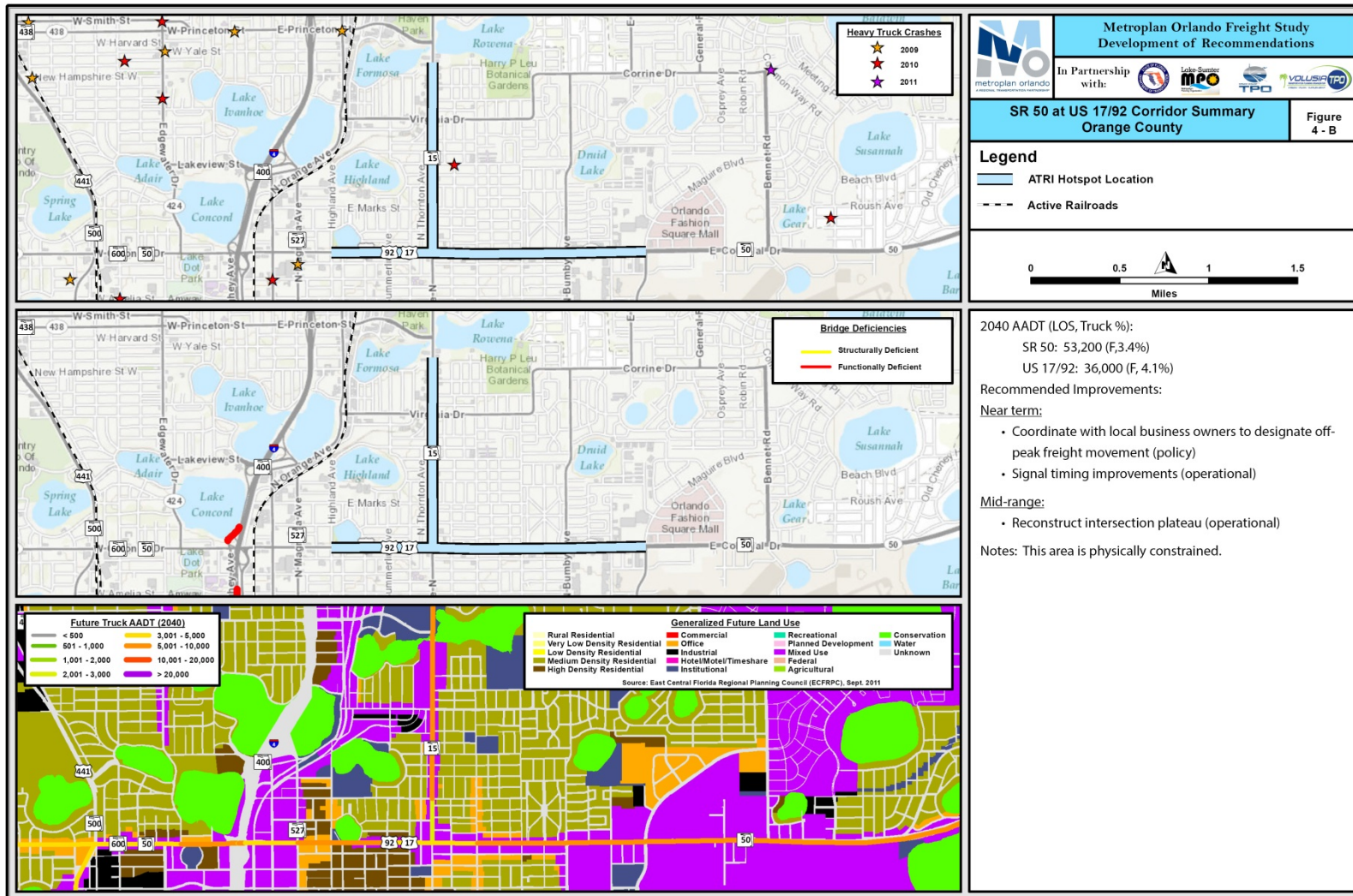
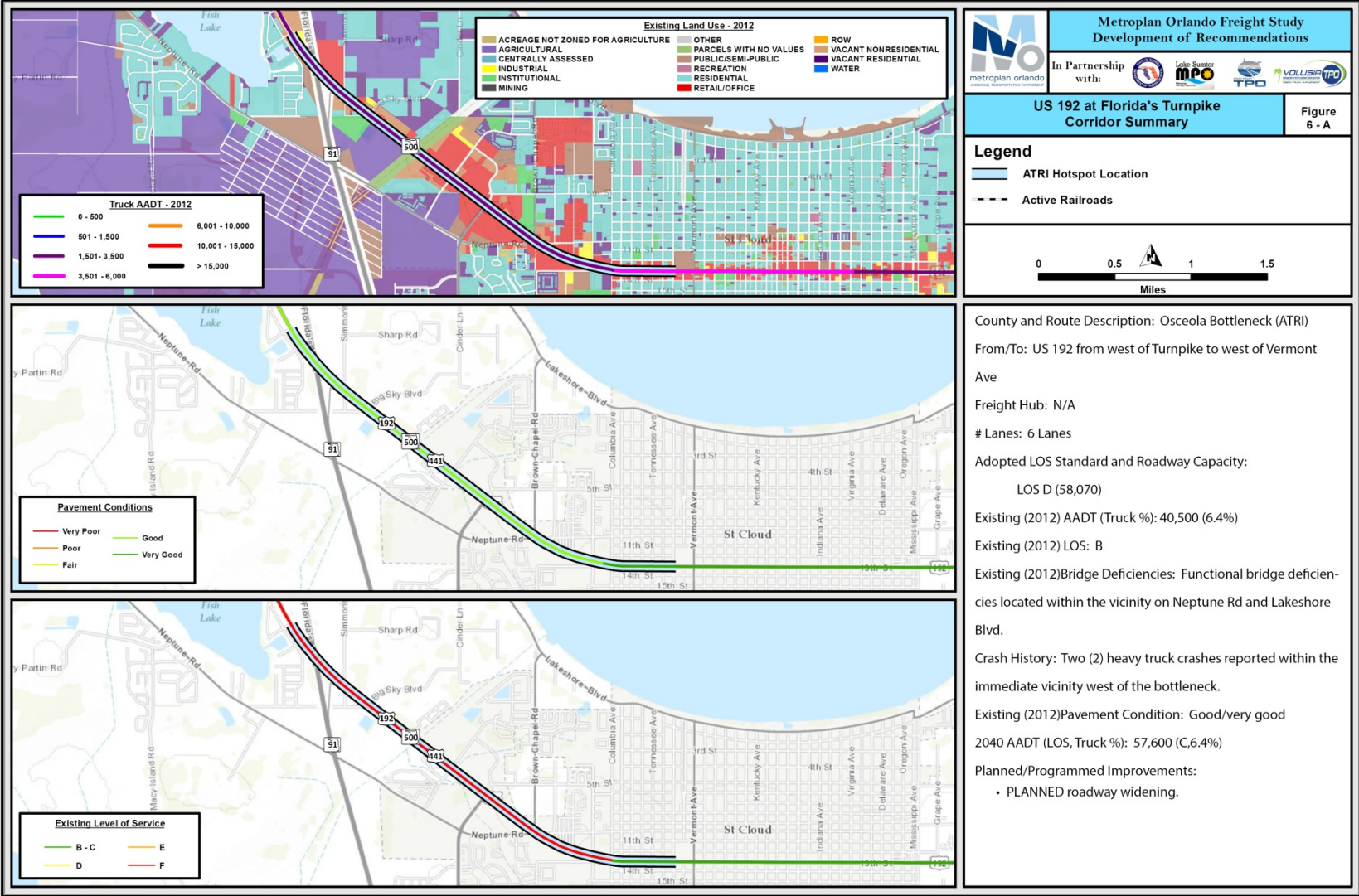


Figure 3.6 Analysis of Freight Bottleneck at US 192 Near US 17/92





Figure 3.7 Analysis of Freight Bottleneck at US 192 at Florida's Turnpike



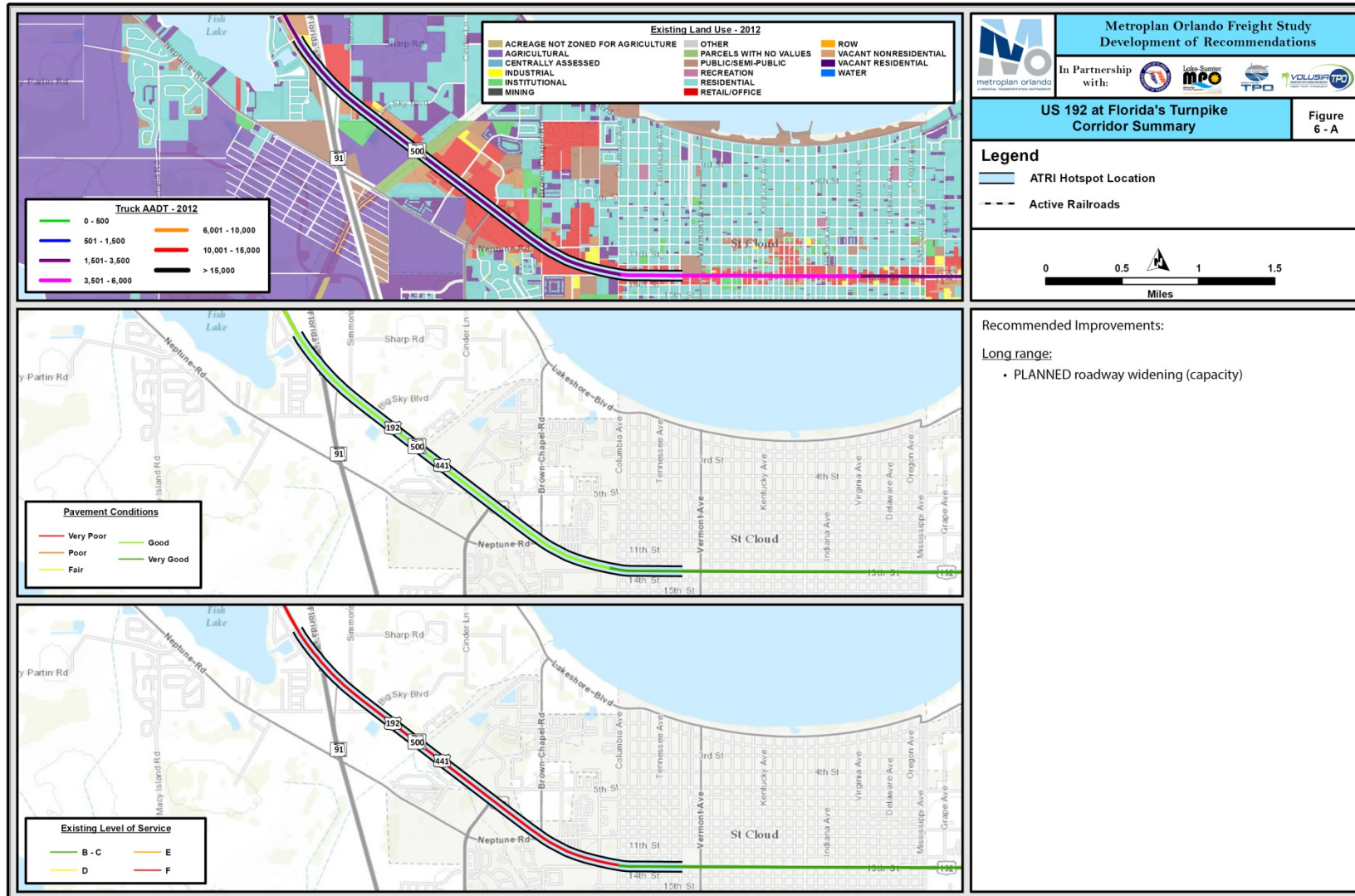


Figure 3.8 Analysis of Freight Bottleneck at SR 434 at I-4

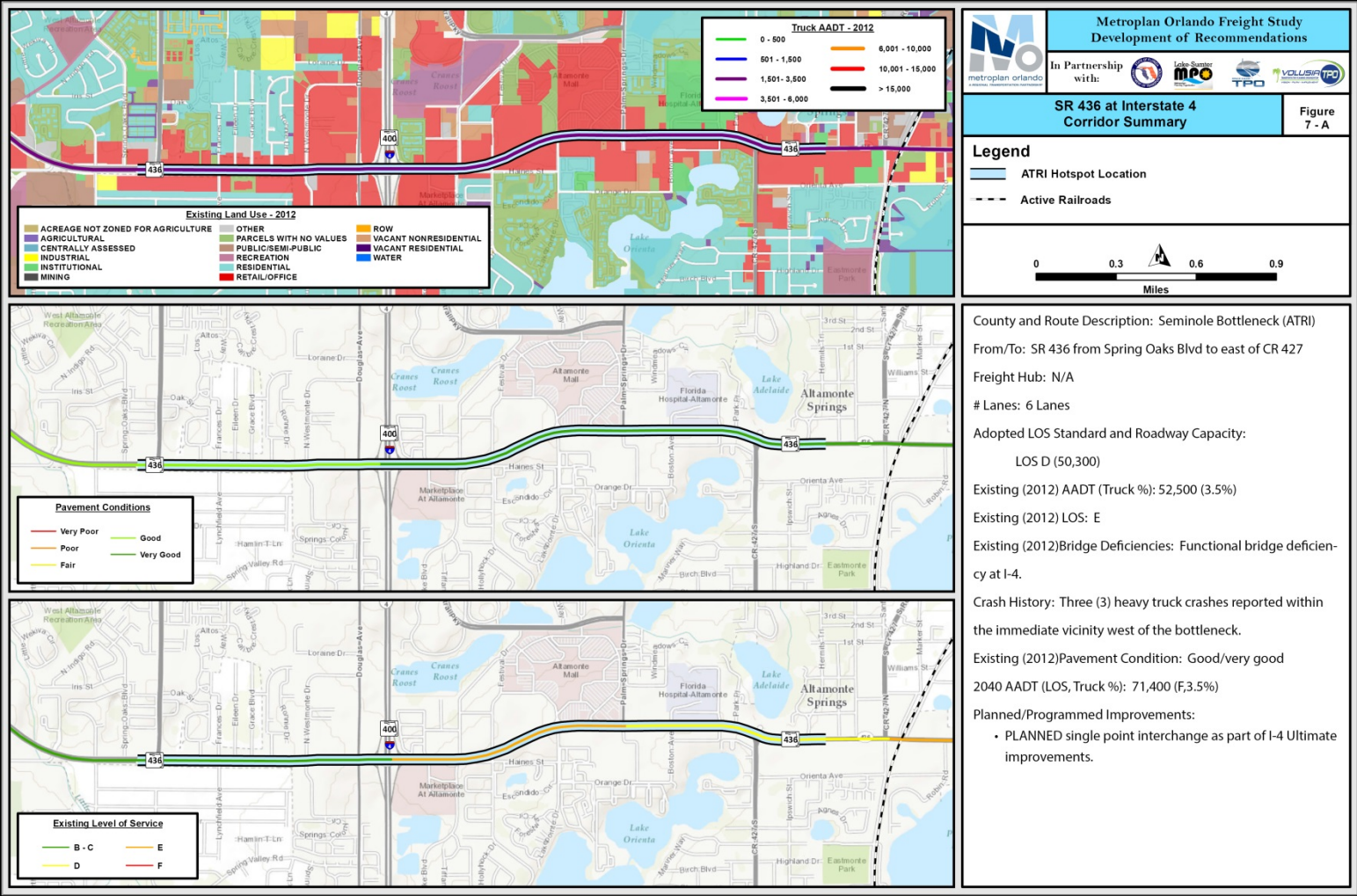
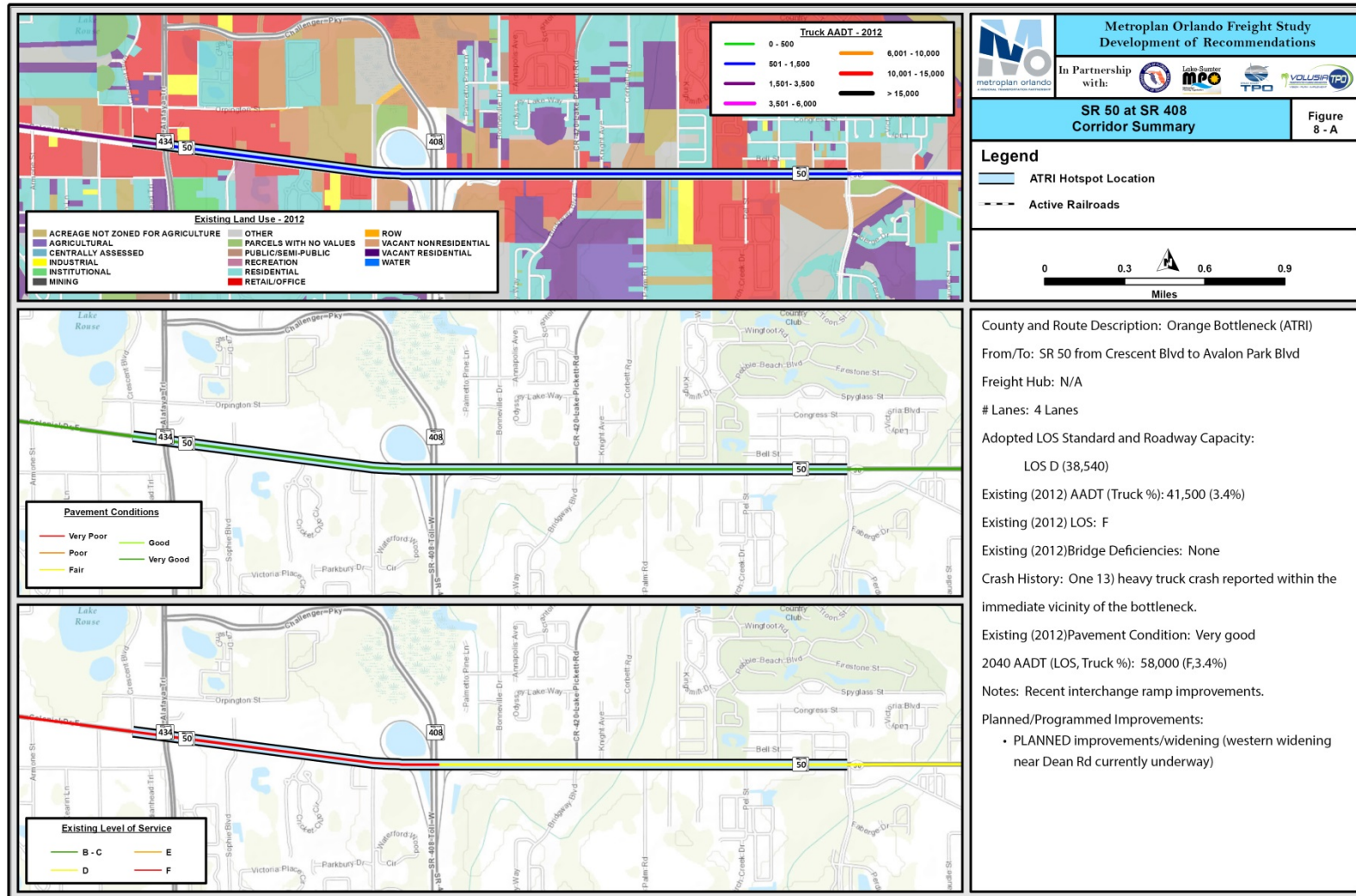


Figure 3.9 Analysis of Freight Bottleneck at SR 50 and SR 408





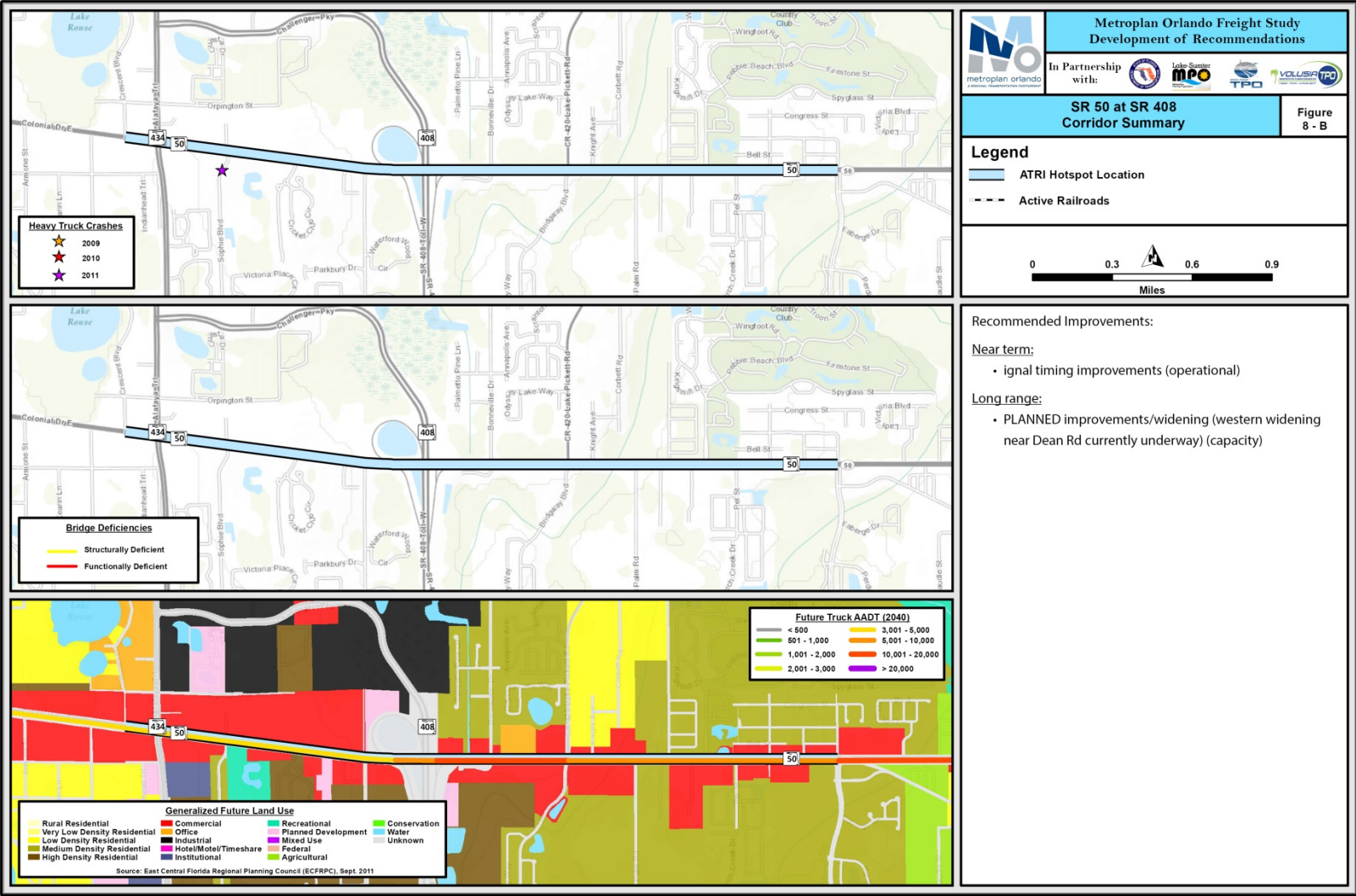
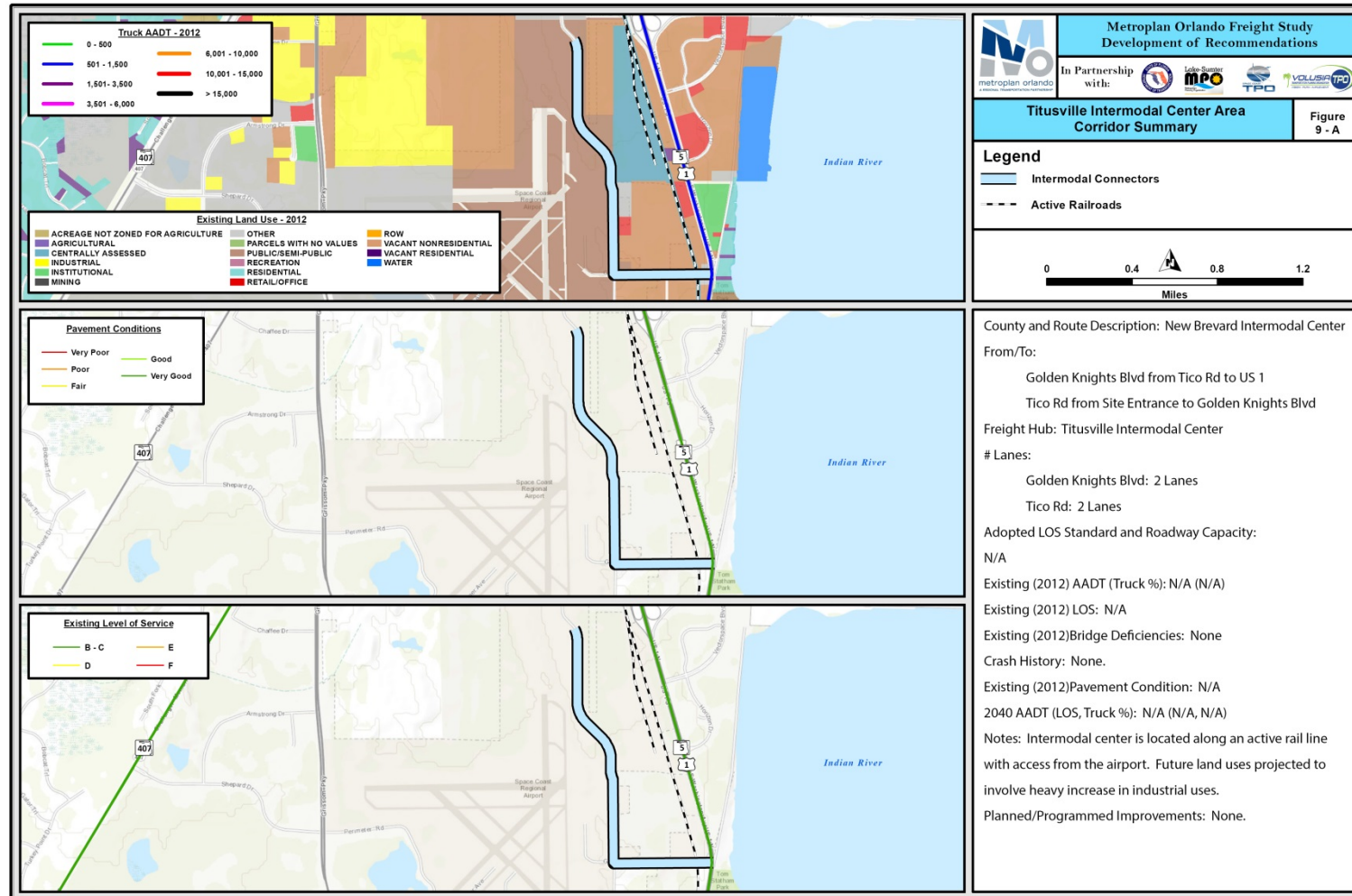


Figure 3.10 Analysis of the Titusville Intermodal Center Connector



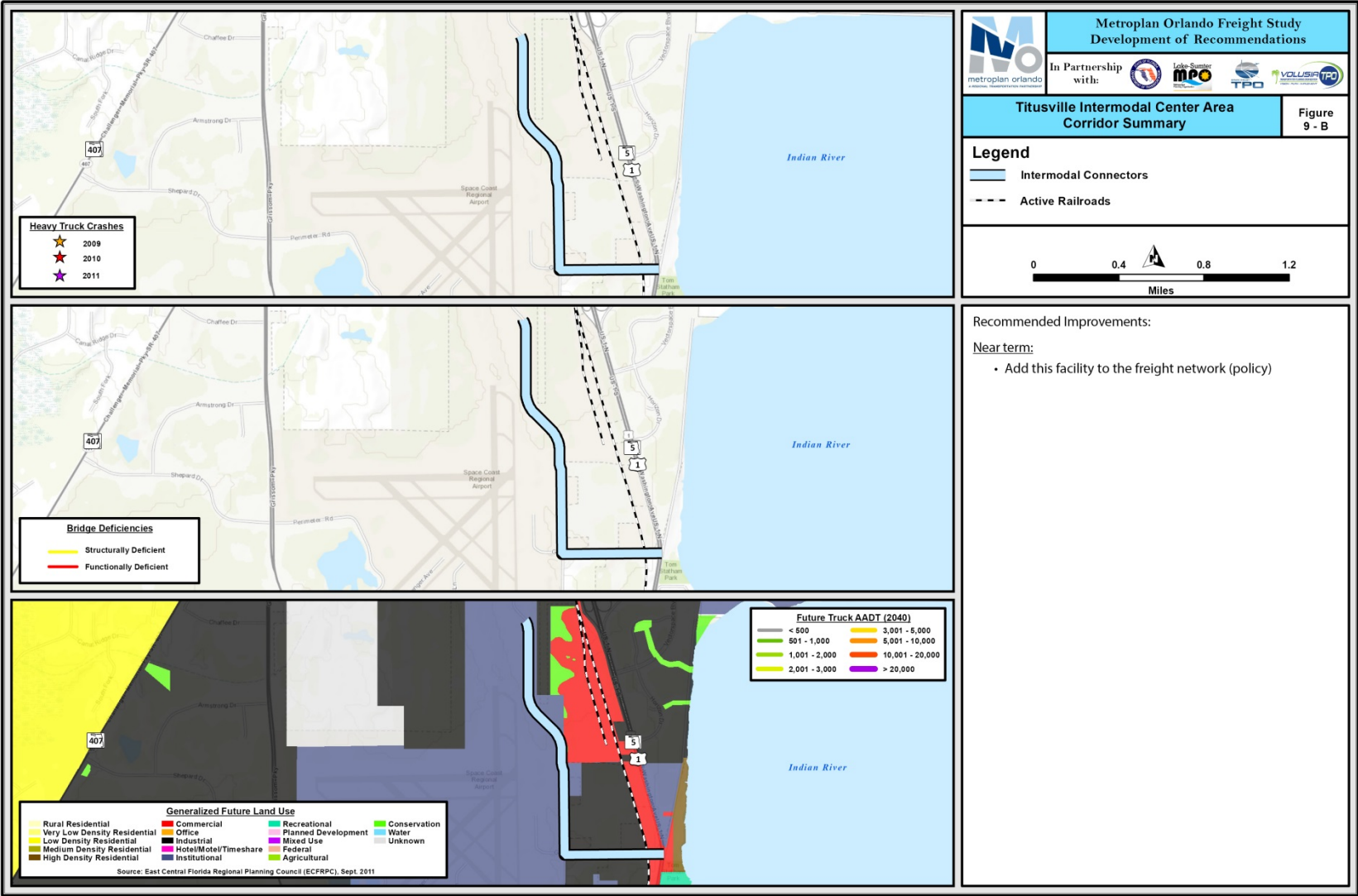
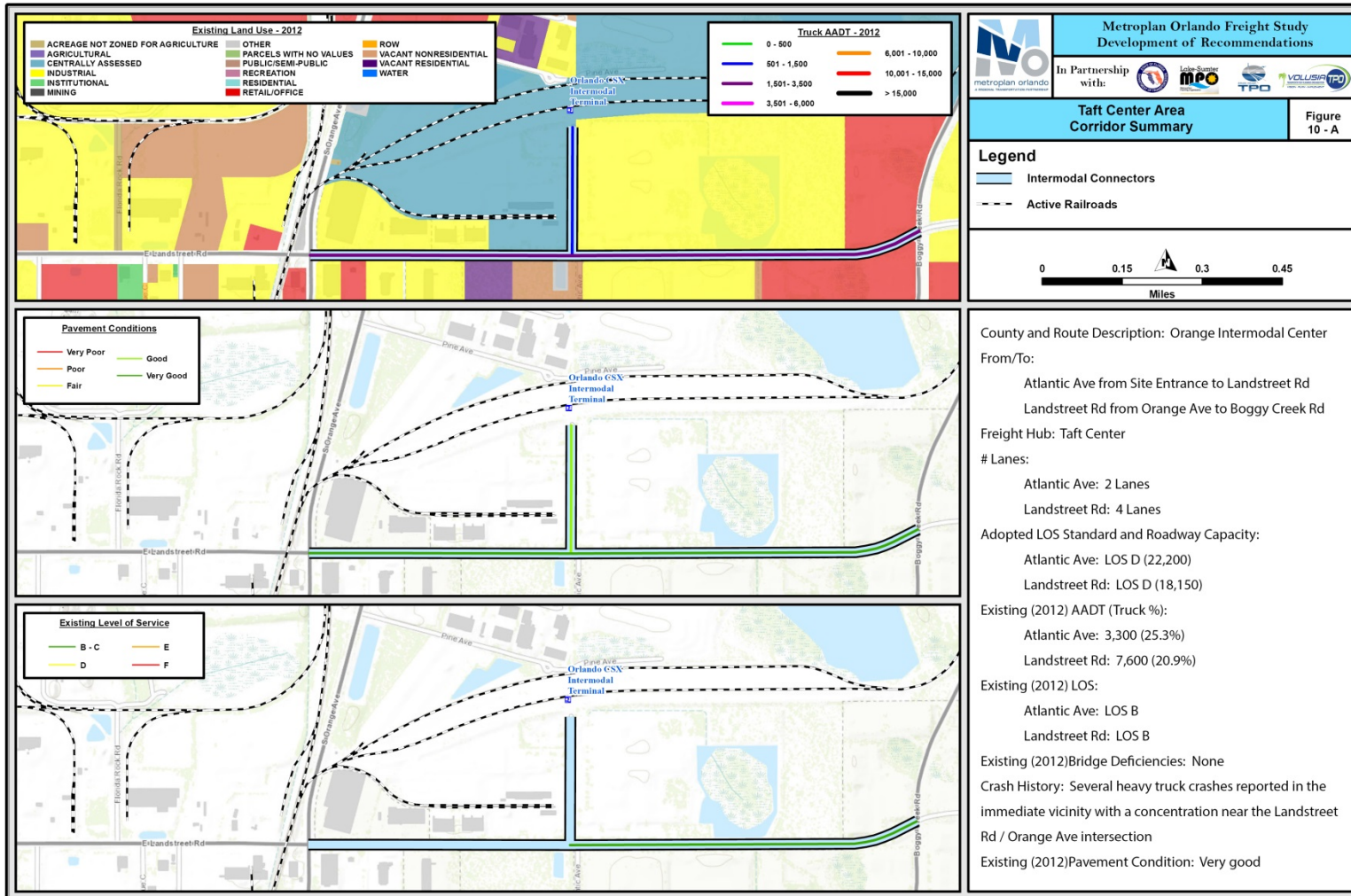
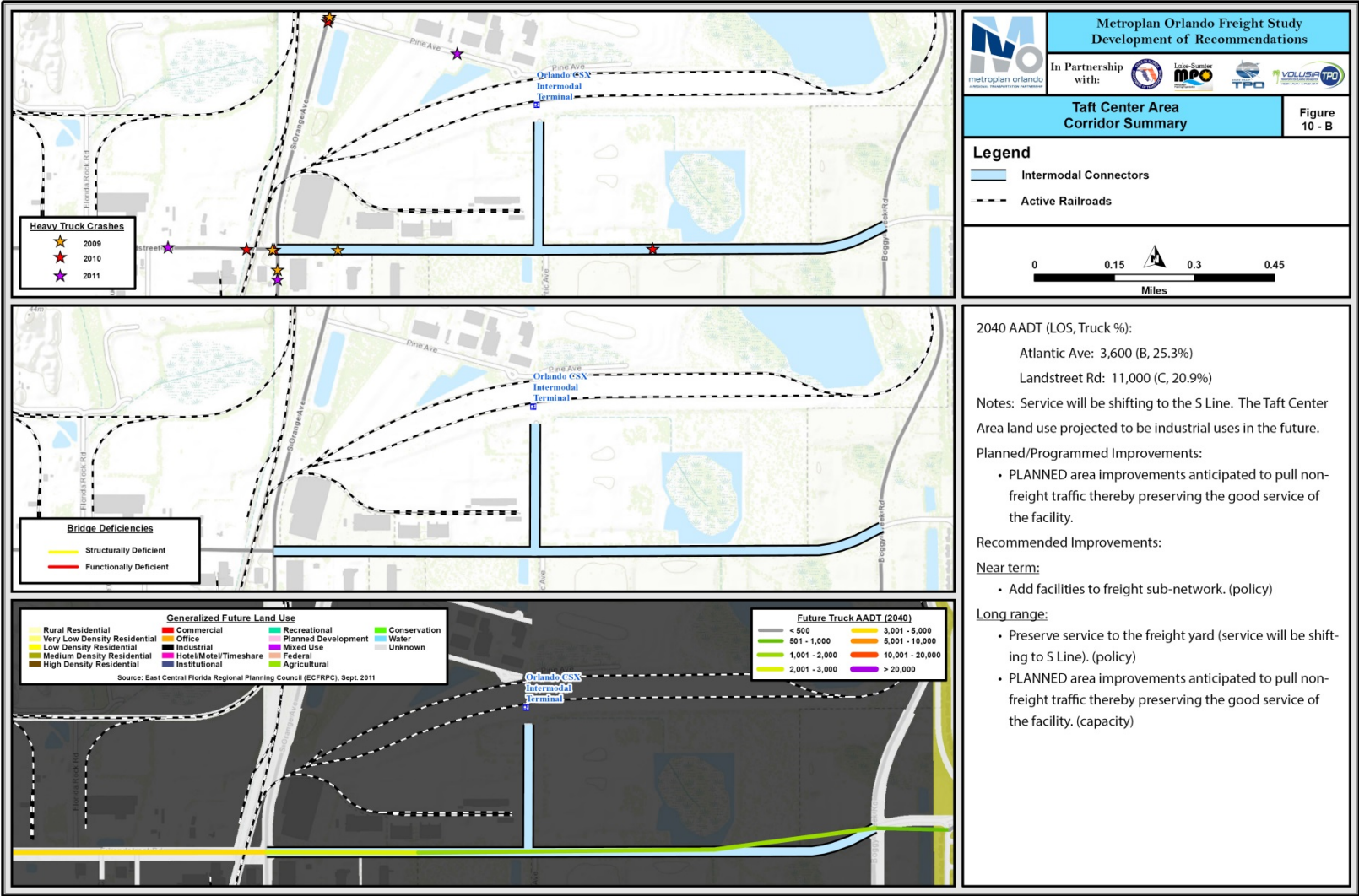


Figure 3.11 Analysis of the Taft Intermodal Center Connector





### **3.3 SOLUTIONS FROM PRIVATE SECTOR STAKEHOLDERS**

As part of the needs assessment, a series of regional maps were placed in driver break rooms of regional shippers and carriers including Publix Warehouse and Distribution, Lowes Distribution, Waste Management and FedEx Freight. The truck drivers were asked to identify bottlenecks as well as potential solutions impacting freight movement across the regions. The results of this exercise reinforced much of the information gleaned from other sources. However, some additional needs and solutions were identified. Table 3.2 displays the input from the truck driver break room maps.

In addition to the information obtained for the current study effort, the 2009 Volusia County Freight and Goods Movement Study also contains direct input from the private sector

Table 3.2 Input on Needs and Solutions from Local Truck Drivers

Location (Road Name and Cross Street)	Area (County or City)	Need or Bottleneck	Potential Solution
SR 436 and 17-92	Casselberry	Intersection back up during peak hours	Interchange or Overpass
SR 50	Lake County and Orange County Groveland to Winter Garden	Highly Congested. Too many lights, too much traffic, too many hills	Build a bypass
SR 60 and Story Rd	Lake Wales	Trucks entering a 60 mph zone from stop. No ability to accelerate	Acc Lane too light
US 27 From north of 192 to Haines City	Clermont and Haines City	Lights are not well synchronized and too short. Causes truck to race up and stop	Smart light and longer cycles. Count down light to identify when to anticipate light change
528 and Industry Road	Cocoa	Exit ramp difficult to make a left	Traffic Light
SR 33 and 474	Clermont	No ability to accelerate into the truck route	Light at intersection
528/I-4 on ramp	Orlando	Traffic is constricted and difficult to maneuver in a truck	Widening of road and no lane change laws on ramp to prevent cutting off vehicles
192 to I-4 EB	Kissimmee	Congestion and excessive lights	
Entrance Ramps on highways	All over	When getting on a highway and there is an overpass, cars on the other side of the overpass can't see you. Crest the hill there the truck is entering	Longer acceleration lanes to allow big rigs to get up to speed/

Fairbanks and I-4	Orange	Road is slick and the turn leads itself to accident	Straighten out or make it more gradual or reduce speed
All toll road	Central FL	Tolls are too high for a trucker. Annual exp 6500-7000	Reduce tolls for volume or certain times to encourage use
17-92 and Ham Brown Rd	Osceola	Traffic light pole is too close to SW corner, forcing very wide turns from eastbound 17-92 on to Ham Brown Rd	Move pole; improve clearance or relocate the stop bar for the left turning lane on Ham Brown Rd back 20 ft
192 and John Young	Osceola	North and South Bound traffic on John Young encounter an unexpected transition causing them to brake quickly	Improve transition, crossing 192
I-4 Corridor	Multiple	Accidents often close travel on multiple/all lanes; for extended periods	Review practices for alternative detour improvement and accident clearance timeliness
Poinciana Blvd	Osceola	Traffic Volume during rush hours NB AM, SB PM	Complete divided highway

Source: Stakeholder input from truck driver break room maps



## 4.0 Identification of Non-Infrastructure Solutions and Recommendations

### 4.1 OPERATIONAL RECOMMENDATIONS

Input from both private and public sector stakeholders indicated that operational solutions should receive some priority. Operational improvements represent a critical element of the freight mobility strategy by making it is possible to get more use out of the existing regional infrastructure by increasing system efficiency. This strategy is important considering the financial constraints facing the region, with operational improvements being relatively lower cost with shorter implementation timeframes. Operational strategies can be divided into two primary categories – public sector improvements and private sector initiatives. Key operational solutions and recommendations in addition to those noted for specific roadway facilities in the previous section are discussed below.

*Recommendation: Prepare a Regional Truck Route Map and Identify Freight Facilities Signage Improvements*

Truck routing strategies and restrictions vary by local jurisdictions. Some cities and counties have an extensive truck route system which others have limited guidance to the trucking industry on preferred routing. It is recommended that the Central Florida region prepare a Regional Truck Route Map with the priority freight highway subsystem noted as the preferred routing. The map would inform transportation providers and carriers of regional truck routes and restrictions. Many truck drivers are not from the region and, given the turnover rate in the industry, a number are first-time visitors. Drivers unfamiliar with the region depend on signage to direct them to designated truck routes and pick-up and deliveries. Insufficient or ineffective signage leads to time delays for drivers and increases VMT and VHT as drivers search for destinations.

*Recommendation: Implement a Freight-User Communications Program.*

Increasing the use of the highway system information outputs from regional traffic management centers (RTMC) has wide appeal among public and private sector stakeholders. Better utilization of real time traffic incident and delay-related information by the private sector is a tremendous opportunity. Both officials at FDOT and select private sector freight stakeholders have expressed

interest in developing freight specific programs. The District 5 RTMC is co-located with the Florida Highway Patrol Troop D Headquarters and the FDOT District 5 Orlando Urban Office at 133 South Semoran Boulevard, Orlando, Florida. This RTMC is the regional hub for the Central Florida Intelligent Transportation Systems (ITS). This system includes the operation of hundreds of closed-circuit television cameras, dynamic message signs, and vehicle detector sensors on I-4, I-95 and other arterial state roads via the extensive fiber optic network. A program that encourages directly sharing information between RTMC staff and dispatchers for major regional freight carriers and shippers and focuses on all the stakeholder-identified freight significant roadways is recommended. These contacts would share information on crashes, construction and general congestion for dispatchers to pass on to truck drivers in addition to making the data available on the 511 website via a freight specific page. Centralizing communication through dispatchers increases system efficiency and effectiveness.

*Recommendation: Implement an Off-Peak Delivery Pilot Program  
Promoting Off-Peak Freight Operations in Key Commercial Areas.*

Building on the success of similar programs by private sector shippers in other metro regions throughout the country, a program should be implemented to encourage off-peak deliveries. Close coordination between the region's MPO, TPO and FDOT staff and local communities is needed to identify commercial or industrial areas willing to participate in and help lead the program. A potential proposal is to focus on commercial corridors such the heavily commercialized sections of SR 50 identified in the top truck delay bottlenecks discussed above or major facilities like Orlando Medical Center (which is currently being examined as a pilot under the FHWA FRATIS program). Upon completion of a pilot program, the effectiveness and usefulness of strategies can be assessed and potentially applied to other areas. Business districts and corridors with dense retail and commercial and freight loading and unloading activity and that have relatively low proximity to residential areas should be given priority consideration.

## **4.2 INSTITUTIONAL SOLUTIONS**

A comprehensive approach to goods movement requires a regional approach to planning, public awareness of the challenges and benefits of freight movement, and a planning process that institutionalizes freight needs. The following recommendations address the institutional and policy aspects necessary to promote freight mobility while mitigating negative impacts.

*Recommendation: Develop a Performance- Based Process for Implementing and Funding Investments in the Freight System*

Perhaps the biggest challenge facing the region is funding the necessary freight system improvements. The fact that a significant portion of the benefits from the recommended improvements will flow outside the region or to the private sector suggests that a funding program based on the allocation of benefits received is desirable. The first step in accomplishing a benefit or performance based funding system is to establish a framework for quantifying and allocating the benefits. The framework must be transparent and replicable while not being resource prohibitive. It will require cooperation between the public and private sectors as well as among different levels of governments. For example, because the region plays a significant role in freight flows statewide, the framework should account for benefits that accrue to the state to position the region for federal and state funding.

The criteria developed as part of the current study include factors that account for mobility, economic, environmental, safety and community impact benefits. While these follow the goals laid out in FDOT's statewide long range plan, the specific measures used differ.

FDOT is in the process of completing its project prioritization framework for the statewide freight study. Staff for the region's MPOs, TPOs, local governments and FDOT District 5 should participate in these discussions and share the criteria developed as part of the current effort. In the end, the region's framework needs to combine regional and statewide goals and objectives.

*Recommendation: Provide Local Government Freight-Related Training and Capacity Building.*

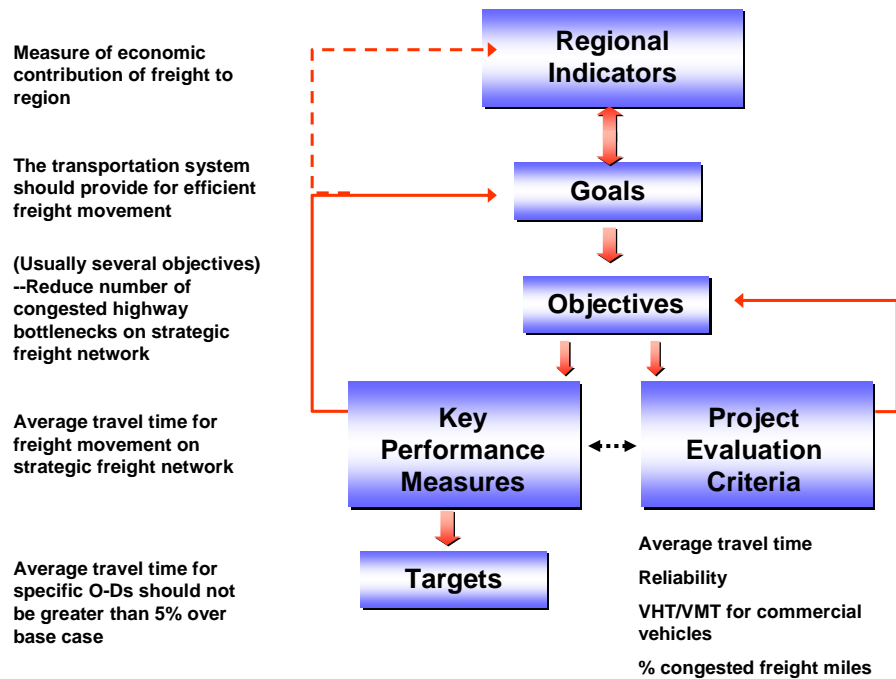
The limited exposure of governmental planning staff regarding freight planning principles is a challenge for the region. It is recommended that the MPOs and TPOs continue to train regional transportation planning staff on freight planning basics. This training should include providing access and notification to national resources available through programs such as NCFRP, FHWA Freight Office research and SHRP; resources available from FDOT; courses and workshops available through NHI, I-95 Freight Academy and FDOT's newly established freight academy; and freight specific conferences and events. Staff that will be charged with managing and overseeing regional plans and studies should have a working knowledge of freight transportation needs and requirements. This can be accomplished by conducting and/or sponsoring required freight planning training sessions and workshops.

*Recommendation: Incorporate Freight-Specific Measures into Project Prioritization Procedures.*

It is recommended that the region's MPOs and TPOs integrate freight and goods movement into the planning process by incorporating freight specific project criteria into the project selection and prioritization process. The purpose of this is not to give freight special consideration but rather to evaluate all projects for their impact on freight so that projects improving both passenger and goods mobility will receive additional support. Figure 4.1 and the descriptions below illustrate the concepts as they relate to freight mobility.

- *Regional Indicator:* A high level indicator that reflects a characteristic of a region or of a region's transportation system that gives a quick glance look for non-technical people of what is happening, usually over time. In Figure 4.1, the indicator is some measure of economic contribution of the freight sector to the region's economy, perhaps measured through economic input-output models or as number of freight-related jobs in the region. Often, but not always, a regional indicator might not be under the control or direct influence of transportation agencies.
- *Goals:* Goals are fairly amorphous statements that indicate a desired end state or characteristic of a system. Thus, in Figure 4.1, the goal is to have the transportation system provide for efficient freight movement (it does not yet say how this would be done).
- *Objectives:* Objectives are more specific statements of how a plan will achieve the goal. In Figure 4.1, one way of having the transportation system contribute to more efficient freight movement would be to reduce the number of congested bottlenecks on a pre-defined freight strategic network. Usually, there are several objectives associated with a goal.
- *Key Performance Measure* Performance measures are system- or network-level measures that indicate how your transportation plan is performing overall as compared to a small set of measures. Thus, you might have anywhere from 10 to 12 performance measures that are critical for decision making. In Figure 4.1's case, the system performance measure is "average travel time for freight movement on the strategic freight network. This measure allows someone to determine the effectiveness of a system plan in the context of this specific objective.
- *Project Evaluation Criteria* Evaluation criteria relate directly to the evaluation of alternatives and scenarios. These criteria are often numerous and relate to a variety of issues that might be relevant to a particular alternative. Thus, in Exhibit 2.1, we have several criteria shown that are not exactly the same as the system performance measure, but which feed directly into understanding the impacts of alternatives and/or scenarios. They are called "criteria" because they are supposed to help you decide which of the alternatives being considered as the best.

Figure 4.1 Performance Measure Framework



Freight specific criteria based on the ratings provided in Table 2.1 include:

- Safety: Truck Injury/Fatal Crashes
- Safety: Highway/Rail At-Grade Crossings
- Cost Effectiveness
- Congestion Relief
- Reliability
- Other: Cord with Local Governments
- Jobs (Employment Density)
- Freight Demand: Traffic Volumes
- Intermodal Connectivity
- Preservation of Freight Land Use
- Partnerships
- Alternative Funding
- Connectivity to Freight Village/ILC
- Freight/Passenger Conflicts
- Asset Preservation
- Gross Regional Product
- Environmental Feasibility
- Income
- Capacity Utilization: V/C Ratio

### *Recommendation: Develop a Regional Freight Program*

Successful implementation of goods movement strategies will require on-going coordination and management. The establishment of a Regional Freight Program between Central Florida's MPOs, TPOs and District office could provide such functions.

Like Central Florida, many peer regions have conducted an in-depth analysis of regional freight demand, needs and deficiencies. They developed a list of recommendations and an implementation plan. However, the key to moving from study to action in these regions was the formalization of a freight program. While many aspects of freight programs vary depending on regional priorities and characteristics, there were three important elements that are common across the most notable programs:

- An effective Regional Freight Advisory Council;
- An on-going regional freight data program; and
- Freight representation in all transportation planning activities.

### **Regional Freight Advisory Council**

A regional freight advisory committee can be an invaluable tool in ensuring that freight transportation needs and requirements are met while also reducing the negative impacts including safety, emissions, noise and other neighborhood impacts. A freight advisory council is normally comprised of key private and public sector stakeholders with a working knowledge of the region's freight transportation system and requirements. Example of potential private sector members include representatives from the region's railroads, Publix distribution, Saddle Creek Logistics, Florida's Natural Cooperative, FedEx Freight, UPS, Freeman Company, Waste Management and Florida Trucking Association.

The freight advisory council assembled for the current effort lays the foundation for an effective freight group. It is recommended that membership of this group be expanded to include some of the private sector stakeholders interviewed as part of this study. In addition, the involvement of this group in the transportation planning process could be continued by seeking input from the group regarding not only freight projects but the impact of all projects on the freight community.

### **Freight Data Program**

One of the biggest challenges with freight planning is the data requirements and sources are very different than that of passenger planning. To fully integrate freight into the planning process, MPOs and TPOs need a continuous freight data collection program. Much like passenger travel, models and forecasts need to be updated on a regular basis and the data necessary to do those updates for freight are not readily available. The first step in establishing a freight data program is to complete a data inventory and needs assessment. That has been

completed as part of the current study as well as the regional and MetroPlan travel demand model update efforts. The results of the data assessment and collection efforts provide the foundation necessary to initiate a regional freight data program.

## **Integration of Freight into Regional Planning**

The Central Florida region is increasingly reliant on freight transportation to support local economic development. Public transportation agencies are being challenged to support modern business supply-chain management through investments and policy actions affecting transportation service providers across all modes. To help the region's businesses succeed in the global trade environment, public sector agencies responsible for transportation planning must foster integrated modal systems by supplying infrastructure that can support responsive, reliable transport for goods and people.

There has been growing interest and understanding among state and local governments, as well as the greater business community regarding the impact of freight movements on economic vitality, and the consequences of inadequate or unreliable transportation systems. However, due to a multiplicity of issues and barriers, state and local transportation agencies have struggled to identify, incorporate, and implement freight supportive projects into their planning and project implementation programs.

Steps the region's MPOs, TPOs and FDOT district staff can take to integrate freight into it planning activities include:

- Engaging a freight stakeholder (or member from the freight advisory council) on all major project advisory committees and technical coordinating committees;
- Incorporating freight specific criteria for project evaluation for alternatives analysis and recommendation screening;
- Reaching out to freight stakeholders as part of the public involvement process;
- Evaluate impact of all projects on freight movement as well as passenger mobility including recognizing potential conflicts;
- Increase freight planning training for all project managers;
- Develop freight performance measures to monitor progress; and
- Implement on-going outreach activities to elected officials and the general public on freight transportation needs and impacts.