2050 Metropolitan Transportation Plan

Chapter 11 | Transportation Systems Management & Operations

Needs Assessment

Adopted: December 10, 2025

WHAT IS IN THIS DOCUMENT?

This document describes the development, findings and recommendations of MetroPlan Orlando's Transportation Systems Management and Operations (TSM&O) Master Plan. The purpose of the TSM&O Master Plan was to provide a coordinated vision with defined goals and objectives that reflect existing planning efforts and lay the foundation for future TSM&O planning and project selection. TSM&O solutions can be applied to the existing transportation network and, in the right locations, may even serve as a viable alternative to constructing new or expanded transportation infrastructure. The TSM&O Master Plan was also the mechanism for identifying TSM&O-related needs to be incorporated into the 2050 Metropolitan Transportation Plan (MTP) Needs Assessment.

HOW TO GET INVOLVED IN THE 2050 PLAN

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11.1 Introduction

Transportation Systems Management and Operations, or TSM&O (pronounced "tizmo") is a set of strategies that can be employed to maintain and/or improve mobility through relatively low-cost solutions that yield a range of benefits, including:

- Improved safety for all users
- Smoother, more reliable flow of traffic
- Reduced fuel consumption and improved air quality

TSM&O solutions can be applied to the existing transportation network and, in the right locations, may even serve as a viable alternative to constructing new or expanded transportation infrastructure.

A TSM&O Master Plan was prepared for the MetroPlan Orlando region in advance of the 2050 Metropolitan Transportation Plan (MTP) development process. The purpose of the Master Plan (2024) is to define TSM&O needs and priorities, and to serve as a complete TSM&O resource for the three-county MetroPlan Orlando planning area, building on other previous planning efforts such as MetroPlan Orlando's Intelligent Transportation Systems (ITS) Master Plan (2017), Connected and Automated Vehicle (CAV) Readiness Study (2020), and 2045 MTP.

The TSM&O Master Plan establishes a vision to create:

> A regional multimodal transportation network that strategically leverages cost-effective technology and operations to maximize system mobility and safety.

The TSM&O master planning effort was the first step in defining TSM&O-related needs in the region. Implementing the projects and strategies identified in the TSM&O Master Plan will help our region to achieve that vision, and this chapter draws on the extensive research and coordination involved with the creation of the TSM&O Master Plan to summarize the approach for identifying and addressing TSM&O needs through 2050.

11.2 What is TSM&O

TSM&O is an approach to maintain, improve, and even restore the transportation system through relatively low-cost improvements. TSM&O utilizes technology solutions and other approaches to improve how the transportation system operates. These improvements can enhance safety, efficiency, and reliability through the application of technology and communication capabilities to infrastructure and vehicles. TSM&O strategies are wide-ranging and can include examples such as:

- Traffic Incident Management – This strategy supports the detection, verification, clearance, and management associated with incidents (crashes, etc.) on roadways to reduce unnecessary delay, idling, fuel consumption, emissions, and secondary crashes.
- Adaptive Signal Control – This strategy is intended to respond more intelligently to fluctuations in traffic patterns by utilizing sensors for traffic data and algorithms to develop and implement customized signal timings that continuously adapt to changes.
- Transit Signal Priority – This strategy is deployed to maintain schedule adherence for transit agencies by slightly modifying existing timing plans at signalized intersections to give priority to transit vehicles to pass through.
- Real Time/En-Route Driver Information/Route Guidance – This strategy provides information through smart phones or in-vehicle information systems to improve real-time decision-making for drivers.

TSM&O includes a broad suite of solutions from ITS improvements to identification of intersection projects that will improve system operations. For example, while TSM&O strategies range from low-tech to high-tech solutions, there are also no-tech options to be considered to achieve the same goals, such as queue jump lanes and bike facilities. The complete set of strategies considered can be found in Section 11.7.

11.3 TSM&O Master Plan Development

The purpose of the TSM&O Master Plan is to align past and present TSM&O-related planning efforts within the MetroPlan Orlando region and to identify TSM&O-related needs in the region for inclusion in the 2050 MTP. The TSM&O Master Plan Steering Committee defined the comprehensive goals and objectives outlined in Table 11-1 to advance the vision established in the Plan. These goals and objectives incorporate the diverse areas of emphasis to be considered in TSM&O planning ranging from safety to environment. Collectively, the goals and objectives provide an overarching direction for future TSM&O planning efforts.

Table 11-1 | TSM&O Master Plan Goals and Objectives

TSM&O Master Plan Goals	TSM&O Master Plan Objectives
Safety and Security: Provide a safe and secure transportation system for all users	• In support of Vision Zero, eliminate the rate and occurrence of transportation system fatalities, injuries, and crashes with emphasis on the most vulnerable users. • Increase transportation system reliability through TSM&O solutions that improve emergency response and help prepare for, respond to, and recover from emergencies. • Increase the hardening of infrastructure against risks, including extreme weather and environmental conditions. • Prevent and mitigate cybersecurity and transportation-related security risks.
Reliability and Performance: Leverage innovative solutions to optimize system performance, efficiency, and reliability	• Collaborate to enhance and expand the region's ITS, adaptive, and actively managed traffic systems to improve reliability and support effective corridor management. • Improve the reliability and predictability of travel by monitoring the use of the transportation system and through the collection of pertinent data. • Implement TSM&O solutions on priority corridors to reduce delay and travel time for automobiles, commercial vehicles, transit, and bicyclists/pedestrians. • Adapt transportation infrastructure and technologies to enhance system performance to address evolving traveler needs and preferences.
Investment and Economy: Support economic prosperity through strategic transportation investment	• Promote collaborative regional TSM&O projects that are cost feasible and support, expand and enhance economic prosperity. • Improve regional transportation efficiency and economic performance through the reduction of per capita delay for residents, visitors, and businesses. • Utilize data and information to promote the business case for TSM&O to elected officials, the public, and industry groups such as freight and tourism. • Implement TSM&O solutions to address identified freight movement needs and enhance efficient transport and delivery of goods.

TSM&O Master Plan Goals	TSM&O Master Plan Objectives
Access and Connectivity: Integrate information, communication, and technology to improve access and empower users to make informed choices	▪ Collaborate regionally to improve access for all users to essential services across all modes of transportation. ▪ Implement TSM&O strategies that reduce reliance on single-occupant vehicle travel through improved convenience of and access to all modes. ▪ Improve service to underserved populations through TSM&O solutions that facilitate access to multimodal transportation options and information to empower choices. ▪ Strive to eliminate transportation-related obstacles and improve equitable outcomes for individuals in transportation underserved communities, especially communities of color. ▪ Improve access, mobility, and trip decision-making for all users through specialized traveler information systems.
Health & Environment: Protect and preserve our region's public health, environment, and quality of life	▪ Pursue regional collaborative efforts to improve air quality and reduce emissions. ▪ Reduce fuel consumption through TSM&O strategies that support electric mobility alternatives and efficient management of traffic volumes across the transportation network. ▪ Encourage transit use and increase the number of passengers per vehicle mile through implementation of TSM&O solutions such as real-time dynamic travel information. ▪ Ensure that active transportation modes are meaningfully considered and incorporated in TSM&O planning and implementation. ▪ Leverage TSM&O projects to minimize the physical capacity expansion of transportation infrastructure which can lead to environmental and socioeconomic impacts, particularly to individuals in transportation underserved communities.

Following establishment of the vision, goals and objectives, TSM&O Master Plan development included the steps and components summarized in Figure 11-1.

Figure 11-1 | TSM&O Master Plan Process Summary

1. Define Needs

- Conduct Documentation Review
- Conduct Existing Conditions Review
- Conduct Regional Intelligent Transportation Systems Architecture (RITSA) Review
- Conduct Gap Analysis
    - Strategies & Operations
    - Agency & Organizational
    - Corridors and Intersections

2. Identify How to Address Needs

- Define Principal Strategies
- Identify Funding Opportunities

3. Develop Prioritized Projects List

- Define Priority Scoring Criteria Framed on Goal Areas and Shaped by Objectives
- Prioritize Corridors and Intersections from Gap Analysis
- Apply Strategies to Corridors
- Prioritize Advanced ITS Projects

4. Identify Regionwide Strategies and Future Considerations

The resulting priorities and strategies recommended in the TSM&O Master Plan inform the 2050 MTP development process, and the list of TSM&O project needs identified through the master planning process are included in the 2050 MTP Needs Assessment list that feeds the Cost Feasible Plan.

11.4 Shaping the TSM&O Master Plan

The Master Plan is a result of the feedback and ideas provided by many with primary input coming from agency partners who serve as the implementers of TSM&O planning and programs in the MetroPlan Orlando area. The TSM&O Master Plan Steering Committee provided the principal mechanism for input to develop the Master Plan (Section 11.4.1). In addition, presentations to MetroPlan Orlando's Board and committees at strategic points during Master Plan development and for its final review offered opportunities for input from elected officials, agency staff, citizen representatives, and the public. Targeted outreach was also conducted with MetroPlan Orlando's Community Advisory Committee (CAC) through a workshop that provided committee members opportunity to learn more about TSM&O and provide input.

11.4.1 TSM&O MASTER PLAN STEERING COMMITTEE

A Steering Committee was established to support TSM&O Master Plan development and ensure a high-level of coordination among MetroPlan Orlando and its partner agencies. Steering Committee membership (Table 11-2) consisted of nine agency representatives who administer, implement, and support TSM&O programs and projects in the region.

Table 11-2 | TSM&O Master Plan Steering Committee Membership

Agency	Member
MetroPlan Orlando (Convening Agency)	Eric Hill
Central Florida Expressway Authority	Bryan Homayouni
City of Orlando	Akil Toussaint
Florida Department of Transportation	Jeremy Dilmore
Florida's Turnpike Enterprise	Eric Gordin
LYNX	Doug Jamison
Orange County	Hazem El-Assar
Osceola County	Gary Yeager
Seminole County	Charlie Wetzel

Steering Committee meetings provided a forum for the planning team to engage with and receive input from partner agency staff who are among the key TSM&O implementers in the region. Their input informed identification of needs, development of priorities, and the approach to evaluate effectiveness of strategies. These meetings were noticed on the MetroPlan Orlando website.

11.4.2 METROPLAN ORLANDO BOARD AND COMMITTEES

During Master Plan development, status updates were provided at appropriate check-in points to the MetroPlan Orlando Board and the following committees:

- Community Advisory Committee
- Technical Advisory Committee
- Transportation Systems Management & Operations Advisory Committee
- Municipal Advisory Committee

These updates were for the purpose of informing Board and committee members about the status of plan development and the direction the plan was moving in terms of defining priorities. These presentations provided a forum where the public could follow, learn about, and provide input regarding the Master Plan development during publicly noticed meetings. The Board's engagement with the plan development process culminated in their final review and acceptance on May 8, 2024.

11.4.3 COMMUNITY INPUT

Because of their technical and "behind the scenes" characteristics, TSM&O improvements are often not as easily understood or "seen" by the public in contrast to other types of transportation projects. This makes engagement through a public workshop approach challenging because participation may be limited. In consideration of this the Community Advisory Committee (CAC), which represents the citizens of the MetroPlan Orlando planning area, was determined to be an appropriate group for engagement on this topic. A TSM&O Master Plan Workshop was held for the CAC at the FDOT District 5 Regional Traffic Management Center in Sanford on September 27, 2023. Committee members were given a tour of the facility and they also viewed a presentation on MetroPlan Orlando's TSM&O Master Plan where they provided feedback through a facilitated discussion. Through this discussion, committee members emphasized areas where they would like to see more TSM&O strategies, and which strategies they find the most valuable.

Example comments from the committee members attending the workshop included the following:

- It is recognized that TSM&O acronyms and technology can be confusing, so it is important to communicate future improvements and projects to the public in a simple way.
- Traffic signal timing coordination has been experienced along certain roadways and is appreciated as a means to keep traffic moving efficiently.
- Considering bicyclists and pedestrians in TSM&O planning is critical.
- The traffic incident information provided in Dynamic Messaging Signs is valuable to the public.

> All Steering Committee meetings and MetroPlan Orlando Board and committee meetings where status of the Master Plan was presented were open to the public and included opportunity to provide comments and learn about TSM&O and development of the Master Plan.

11.5 TSM&O Needs Assessment

To define TSM&O needs within the region, an assessment was performed to obtain a programmatic view of needs for each stakeholder agency and a project view of needs for each local stakeholder agency. The needs assessment was developed with consideration of the Master Plan's Goals and Objectives and was based upon the following:

- TSM&O Master Plan Steering Committee Input
- Documentation Review (TSM&O Master Plan - Appendix 1)
- Existing Conditions Review (TSM&O Master Plan - Appendix 2)
- Regional ITS Architecture (RITSA) Review (TSM&O Master Plan - Appendix 3)
- Stakeholder Agency Interviews

An overview of the TSM&O Needs Assessment can be viewed in Appendix 4 of the TSM&O Master Plan. All Master Plan Appendices are available on the MetroPlan Orlando website HERE. The TSM&O needs assessment included a gap analysis for each stakeholder agency that consisted of the actions noted in Figure 11-2.

Figure 11-2 | Summary of TSM&O Gap Analysis
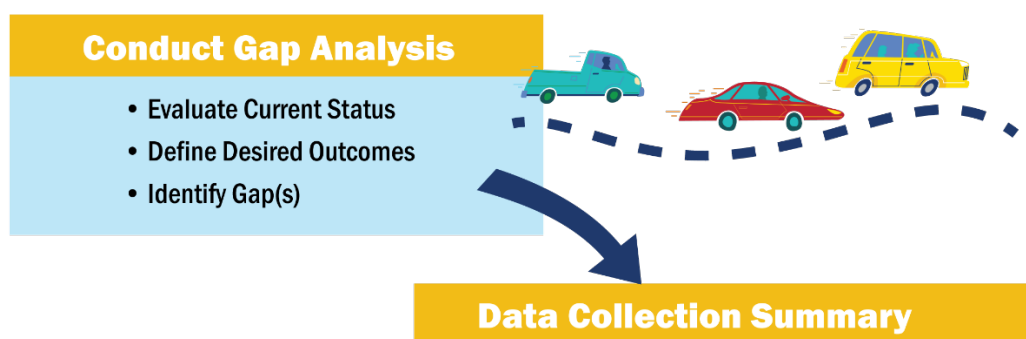
A summary of the gap analysis findings is provided in Table 11-3 and Table 11-4 which summarize gaps and opportunities for each stakeholder agency from two perspectives: which TSM&O-supportive strategies and procedures are currently being used by each organization, and which structural components of each organization may support implementation of TSM&O strategies. The elements in this matrix are drawn from the Federal Highway Administration's (FHWA's) Capability Maturity Frameworks guidance that facilitates the review of common barriers to the adoption and success of TSM&O.

The gaps identified by Seminole County, Osceola County, Orange County, and the City of Orlando were used to develop the Master Plan. Additionally, gaps in fiber optic and ITS at traffic signals were identified in all three Counties, and the City of Orlando. These gaps are illustrated in Figure 11-3 through Figure 11-6. More detail regarding these gaps is included in the TSM&O Needs Assessment (TSM&O Master Plan - Appendix 4).

Table 11-3 | Strategies & Operations Gap Analysis

Strategy	FDOT D5	Orange	Osceola	Seminole	Orlando	Turnpike	LYNX	CFX
Annual Financial Plan with TSM&O Capital Improvements	●	○	●	◐	◐	●	◐	●
Education of Staff/Leadership on Benefits of Technology-Supported Enhancements	●	○	●	◐	◐	●	◐	●
Organizational Approach for Assessing System Performance	●	◐	○	◐	○	◐	●	◐
Regional Traffic Management Center-to-Center Connectivity	◐	◐	◐	◐	○	◐	○	◐
Identification of output and outcome measures for determining agency efficiency	●	○	●	○	○	●	◐	◐
Use regional architecture to identify data to be measured	●	○	●	●	◐	●	◐	●
Standardized Performance reports to Assess Project-Level Impacts	◐	○	◐	◐	○	◐	◐	◐
Establish Performance benchmarks and targets for traffic management	●	●	○	◐	○	●	◐	●
Procedures for Data Standardization	●	◐	◐	○	○	◐	○	◐
Agency Policy Linking Performance Measures to Operational Objectives	◐	●	○	○	○	○	○	●
Action Plan to Utilize Performance Measures for Managing the System	●	○	◐	◐	◐	◐	◐	◐
Establish Shared Data Feed Requirements	◐	○	○	◐	○	◐	◐	◐
Develop roles, responsibilities, and conditions/rules for sharing data and resources	●	◐	●	●	◐	●	○	●
Expand business models to involve new private-sector partnerships	●	○	●	◐	◐	●	◐	●
Identify corridor programs and data feeds to be considered in multi-agency context	●	○	●	◐	◐	●	◐	●
Identify corridor programs and data feeds to be considered in multi-agency context	●	○	●	◐	◐	●	◐	●

○ = Gap Identified   ◐ = Partial Gap Identified   ● = No Gap Identified

Table 11-4 | Agency & Organizational Gap Analysis

Strategy	FDOT D5	Orange	Osceola	Seminole	Orlando	Turnpike	LYNX	CFX
Comprehensive List of Roles and Responsibilities	●	◐	◐	◐	◐	●	◐	●
High-Level Training Mechanisms for TSM&O Staff	●	◐	◐	◐	○	●	◐	●
Immediate Action Plan to Address Critical Vacancies	◐	○	○	○	○	◐	○	◐
Professional Capacity Building Activities and Materials	●	◐	◐	◐	◐	◐	◐	◐
Regular Cross-Training of Staff on All Critical Functions	◐	○	○	○	○	◐	○	●
Staff Retraining to Facilitate Job Reassignments	●	◐	◐	◐	◐	◐	◐	●
Documentation of TSM&O Project Benefits and Lessons Learned	●	◐	○	◐	○	●	○	●
TSM&O Resource Library for Training Plans	◐	○	○	◐	○	◐	○	●
Performance Measure Reporting Process	●	◐	○	◐	○	●	●	●
Link Agency Strategic Plan with Traffic Management and Core Functions	●	◐	○	◐	○	●	◐	●

○ = Gap Identified   ◐ = Partial Gap Identified   ● = No Gap Identified
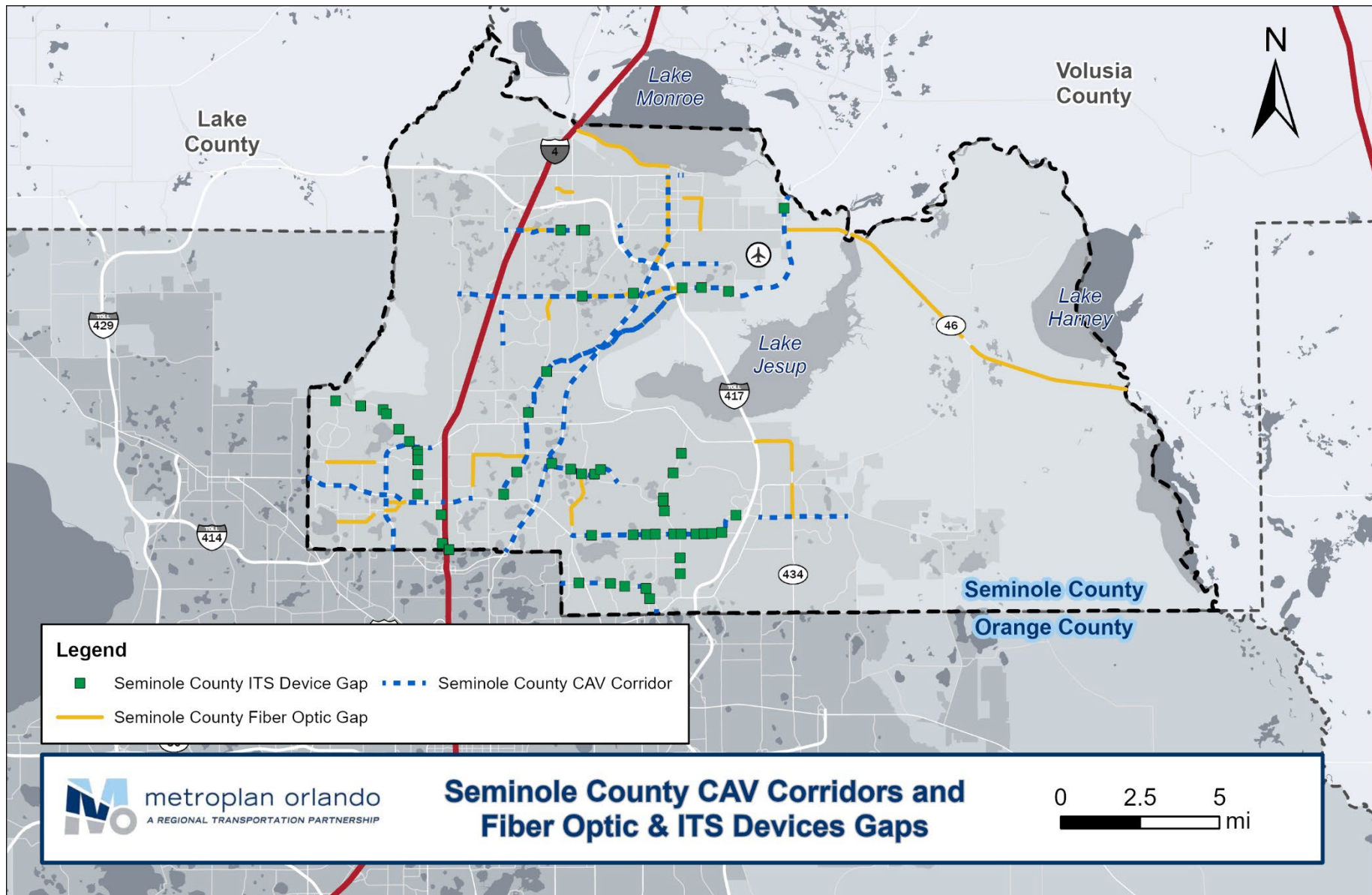
Source: Seminole County, 2023

Figure 11-4 | Orange County Fiber Optic and ITS Device Gaps
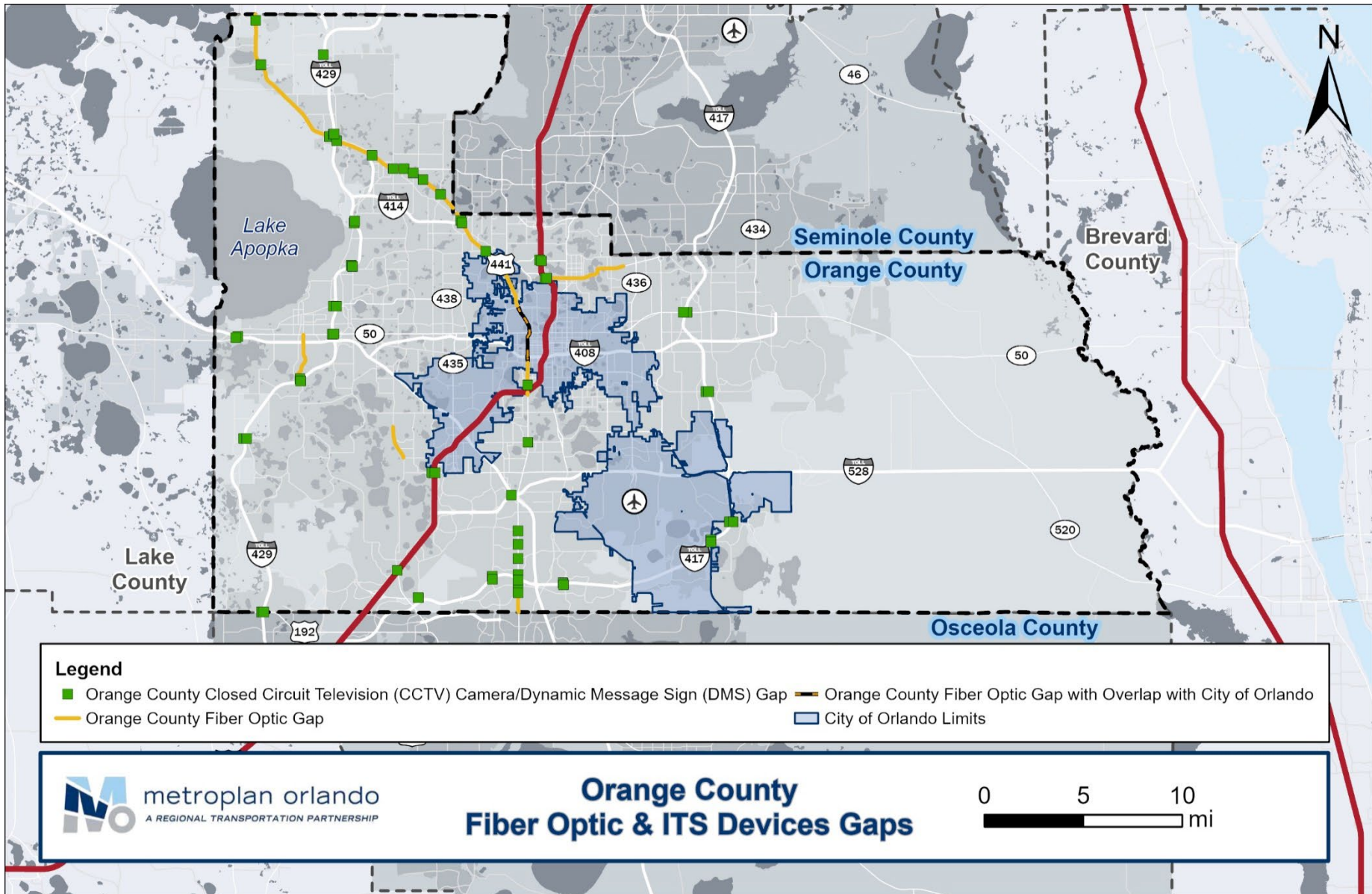
Source: Orange County, 2023

Figure 11-5 | City of Orlando Fiber Optic and ITS Device Gaps

City of Orlando
Fiber Optic and ITS Devices Gaps
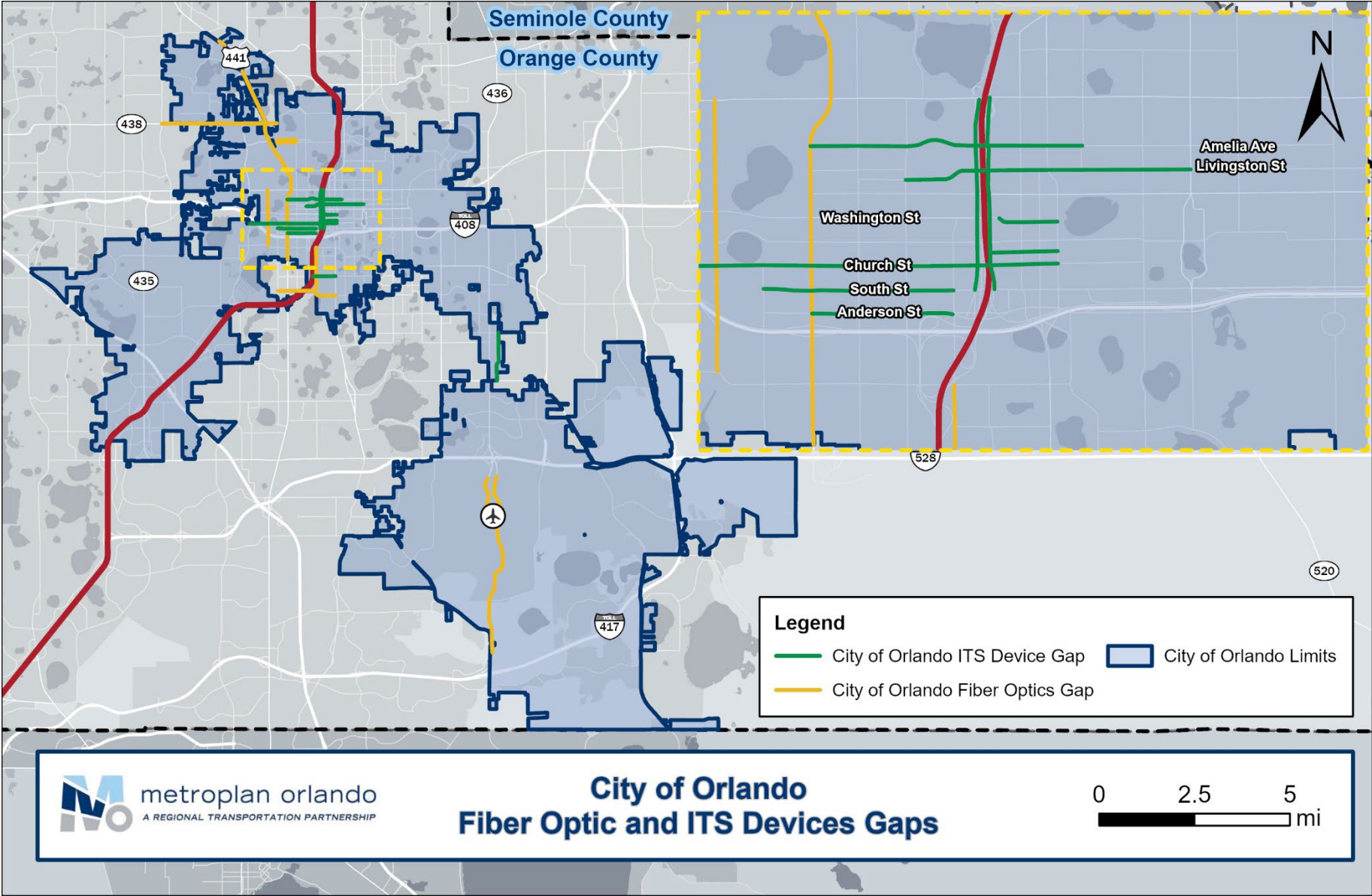
Source: City of Orlando, 2023

Figure 11-6 | Osceola County Fiber Optic and ITS Device Gaps

Osceola County Fiber Optic & ITS Devices Gaps

Legend
- ■ Osceola County ITS Device Gap
- — Osceola County Fiber Optic Gap
- ▢ City of Kissimmee Limits

Source: Osceola County, 2024

11.6 Addressing TSM&O Needs

The strategies evaluated to address the identified TSM&O needs are each intended to address one or more "Focus Areas" that relate back to the criteria that defined the prioritization of projects 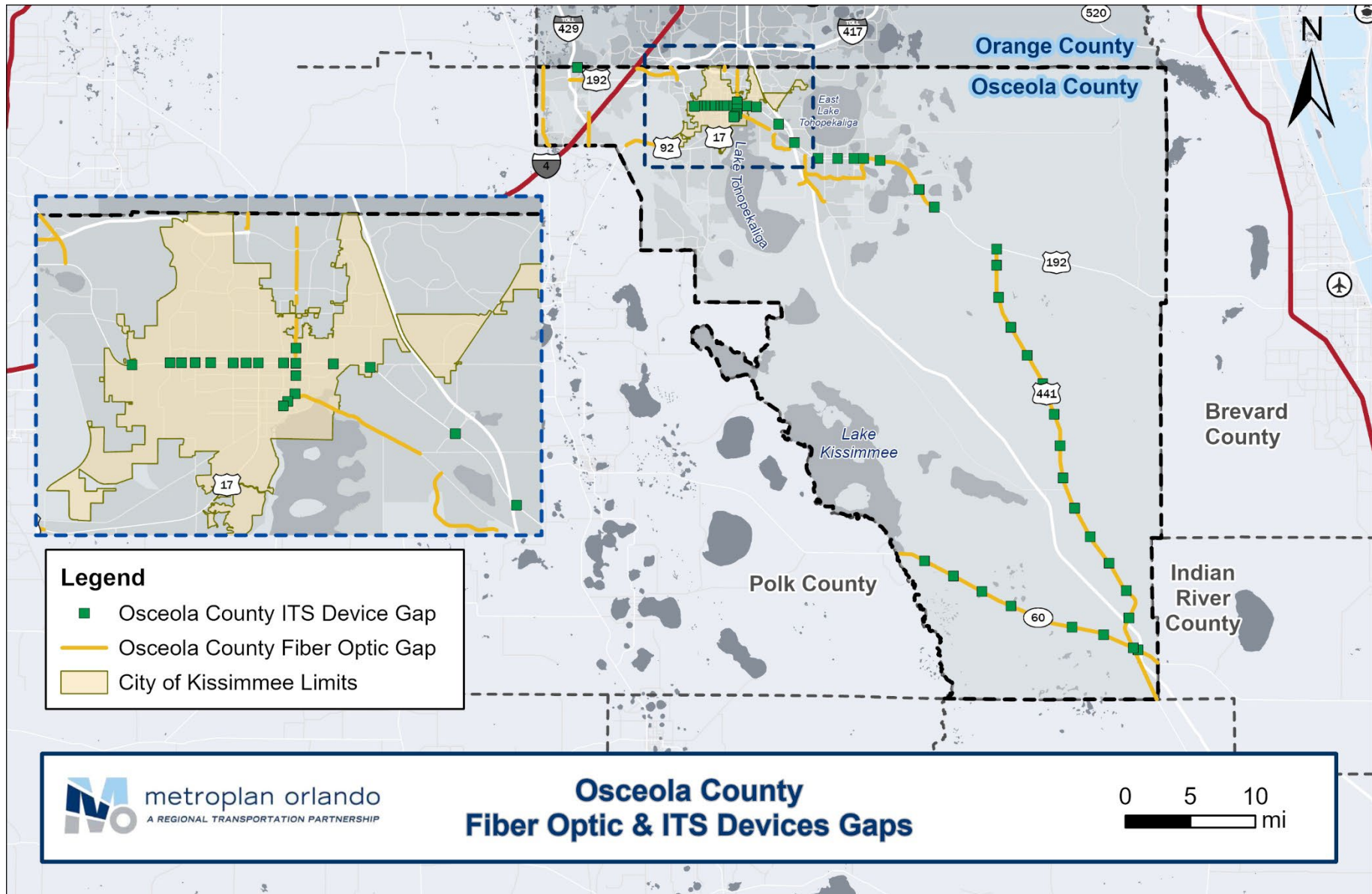within the Master Plan. This approach ensured that the strategies and prioritization approach collectively advance the Master Plan's goals and objectives. Table 11-5 provides an overview of the Focus Areas in the context of the TSM&O Master Plan goals; the Focus Areas shown in Bold are also included as evaluation criteria in the overall 2050 MTP Prioritization Process (Chapter 16).

Table 11-5 | Overview of Focus Areas within the Master Plan Goals

Goal Area: Safety & Security
Crash Rate
Fatalities/Serious Injuries
Bicycle/Pedestrian Crash Rate
Goal Area: Reliability & Performance
Level of Travel Time Reliability
Communication Presence
Volume-to-Capacity
Evacuation Route Designation
Goal Area: Investment & Economy
Commercial Vehicle Traffic
MetroPlan Orlando Truck Bottlenecks
Regional Project
Truck Parking Locations (Existing/Planned)
Multimodal Hub/Regional Activity Centers
Goal Area: Access & Connectivity
LYNX System Headway
Express Route/Critical Routes
Stop Density
Transit Ridership
SunRail Stations/Crossings
Priority Active Transportation Corridor
Goal Area: Health & Environment
Public Health Indicator Rates
Intensity & Proximity: Environmental Justice Populations

11.6.1 STRATEGIES TO ADDRESS TSM&O GAPS

To address the TSM&O needs in the region, strategies were identified using the FDOT TSM&O Strategy Guide (2018) as guidance. Each identified need or gap is associated with a "menu" of strategies that can be selected based on the criteria, or focus areas, that need to be addressed. Table 11-6 through Table 11-10 organize the strategies by the five goal areas, as noted above, and summarize each through the following subcategories:

- **Description**: Provides a simple definition of the strategy.
- **Focus Area:** Notes the specific TSM&O Master Plan prioritization criteria the strategy corresponds to (see Table 11-5).
- **Purpose**: Defines the reason the strategy is useful, based on the FDOT TSM&O Strategy Guide.
- **What to Consider for Implementation:** Notes factors to be evaluated when implementing the associated strategy.

The full TSM&O Master Plan also identifies the goal areas each strategy aligns with – see the Master Plan Summary, Section 6.2 available HERE. These strategies have been recommended for implementation on specific corridors identified through the gap analysis and prioritized for action through the TSM&O master planning process. See MTP Appendix K for a listing of the corridors prioritized for TSM&O improvements through the gap analysis and the associated menu of strategies for each.

The TSM&O Master Plan included a comparative evaluation process developed to assist in defining the relative priority order for the identified TSM&O needs as compared to one another. Once incorporated into the 2050 MTP, the identified TSM&O needs were then subject to the MTP prioritization rubric and are listed within the Cost Feasible Plan (Chapter 19) based on that rubric.

11.6.2 ADVANCED ITS PROJECTS

Project lists were also developed for each maintaining agency for corridors that lie under their jurisdiction and have existing fiber to account for Advanced ITS strategies beyond the strategies previously listed. These corridors have the potential to support projects involving Connected/Automated Vehicles (CAV), Emergency Vehicle Preemption, Transit Signal Priority, Automated Traffic Signal Performance Measures, and implementation of Artificial Intelligence (AI). Additionally, these advanced ITS projects are prime candidate projects for implementing regionwide strategies due to the existing infrastructure and systems that can be leveraged. These regionwide strategies could be implemented as part of a pilot project or as a part of a large-scale deployment that leverages the existing investments in infrastructure to support them. Regionwide strategies that could be considered for advanced ITS deployment include, but are not limited to: Unified Communication Platforms, Integrated Corridor Management Strategies, Arterial Traffic Incident Management, or Cross-Boundary Emergency Response Plans. The TSM&O master planning process identified more than 30 corridors that are good candidates for Advanced ITS project; as noted in the Cost Feasible Plan (Chapter 19).

11.6.3 INTERSECTION PROJECTS

In addition to the defined corridors, the TSM&O Master Plan Steering Committee determined that implementing intersection improvements was also essential to help address delay, safety, and other needs. To address this, the four maintaining agencies (Seminole County, Osceola County, Orange County, and City of Orlando) identified a total of twenty priority intersections, for which intersection improvements were identified. Each agency defined its top intersection needs proportionate to the number of intersections it manages:

- Seminole County – Four (4) intersections
- Osceola County – Four (4) intersections
- Orange County – Seven (7) intersections
- City of Orlando – Five (5) intersections

More than 40 needs related to Intersection TSM&O and Signal Improvements are reflected in the Cost Feasible Plan (Chapter 19).

Table 11-6 | Safety and Security Strategies

Strategy	Focus Area(s)	Description / Purpose	Implementation Considerations
Adaptive Signal Control	Crash Rate, Fatal/Serious Injury Crashes	This strategy adjusts signal timings to accommodate changing traffic patterns and ease congestion by utilizing sensors for and algorithms.	▪ Project costs based on number of intersections and existing infrastructure. ▪ Implementation cost based on training and increased operations and maintenance.
Traffic Incident Management	Fatal/Serious Injury Crashes	This strategy uses CCTV, traffic sensors, and telecommunications to support the detection, clearance, and management of incidents on roadways to reduce unnecessary delay, emissions, and secondary crashes.	▪ Programmatic costs for sustained traffic incident management; partnerships based on roadway ownership. ▪ Robust and sustained funding required to implement an agency-specific program in an arterial environment.
Bicycle/Pedestrian Safety Systems	Bicycle/Pedestrian Crash Rate	This strategy utilizes ITS solutions to help protect pedestrians and bicyclists, such as bicycle alert systems, infrared detectors, illuminated pushbuttons, and rectangular rapid flashing beacons.	▪ Varied costs based on needs and available systems. ▪ Coordination with other departments within the agency and other agencies to determine system location(s), planned use(s), and desired data to collect, process, and use for informed future deployments.

Table 11-7 | Reliability and Performance Strategies

Strategy	Focus Area(s)	Description / Purpose	Implementation Considerations
Integrated Corridor Management	Level of Travel Time Reliability, Regional Project	This strategy involves coordination between multiple agencies to optimize the operational efficiency of the transportation network while managing the corridor as one multimodal system.	▪ Close coordination required between multiple agencies and operational stakeholders. ▪ Implementation cost is typically high, with many variables.
Fiber, CCTV, Data Collection	Communication	This strategy involves the implementation of fiber optic cable and CCTV to enable data transmission and real-time monitoring of roadways to support traffic management and improve efficiency.	▪ Current and future use cases for the communications components, including traffic signal systems uses. ▪ Implementation vary based on devices used and maintenance costs for long-term planning.
Active Arterial Management	Volume-to-Capacity	This strategy uses sensors and traffic signal control on major arterials to collect traffic flow and travel time data, which maximizes safety and minimizes delay.	▪ Enhanced operations and maintenance resources to perform real-time monitoring and coordination. ▪ Implementation costs based on existing systems and availability of space to house operations staff.
Disaster Response and Evacuation	Evacuation Route	This strategy provides access to the scene for incident response personnel and resources via smart phones or in-vehicle instrumentation to provide a more effective response to disasters and evacuations.	▪ Close coordination with state and federal agencies during major events; assess existing infrastructure. ▪ Implementation costs require capital expenditures as well as resources to support staff training.

Table 11-8 | Investment and Economy Strategies

Strategy	Focus Area(s)	Description / Purpose	Implementation Considerations
Freight Mobility	Commercial Vehicle Traffic, Truck Parking, Truck Bottlenecks	This strategy includes applications to take advantage of real-time traffic information, such as Freight Real-Time Traveler Information with Performance Measures and Freight Dynamic Route Guidance, to optimize operations by providing traffic, vehicle, and load information to truck drivers.	▪ Close coordination with freight operators, project designers, and enforcement agencies. ▪ Implementation costs based on right-of-way availability for truck parking facilities and existing systems in the area.
Freight Signal Priority	Commercial Vehicle Traffic, Truck Bottlenecks	This strategy gives priority to freight vehicles as they approach a signal to reduce stops and delays, which increases travel time reliability for freight traffic and enhances safety at intersections.	▪ Improvements to the traffic signal system should accommodate additional detection devices and hi-resolution data. ▪ Implementation costs based on the existing infrastructure and vehicle detection infrastructure.
Freight Parking	Truck Parking	This strategy informs truck drivers of available parking spaces in rest areas and provides suitable parking locations to provide access to safe, secure, and accessible truck parking.	▪ Determine most suitable location for truck parking, ingress, and egress through detailed siting analysis. ▪ Implementation costs include right-of-way, detection devices, and dynamic message signage.
Advance Traffic Management System (ATMS)	Multimodal Hub/Regional Activity Center	This strategy utilizes ITS infrastructure to improve the efficiency of existing infrastructure by allowing traffic engineers to adjust signals, react to traffic incidents, and maneuver cameras to determine traffic issues. This reduces traffic congestion in urban environments.	▪ Upgrade systems based on size and scale on the existing system while planning for future expansion. ▪ Implementation costs include capital expenditures for centralized software and traffic signal cabinet enhancements.

Table 11-9 | Access and Connectivity Strategies

Strategy	Focus Area(s)	Description / Purpose	Implementation Considerations
Transit Signal Priority	LYNX System Headway, Stop Density	This strategy modifies signal timings at intersections to give priority to transit vehicles to pass through. This supports schedule adherence for transit agencies.	▪ Close coordination with the transit operating agency and determination of project locations. ▪ Implementation costs need to consider upgrades to the vehicles, devices or infrastructure at signalized intersections.
Transit Traveler Information	Transit Ridership	This strategy utilizes equipment on transit vehicles to inform the public of updates regarding the vehicle's current transit stop, upcoming transit stops, and real-time schedule information.	▪ Various local stakeholders, project design teams and transit agencies; coordination with bus maintenance staff to determine availability of power and communication. ▪ Implementation costs are based on the current bus configuration and preferred system capabilities.
Queue Jumps	Express/Critical Routes	This strategy uses separate lanes and signals to allow only a bus to proceed through an intersection, which supports on-time arrivals and reduces travel time delay for transit.	▪ Coordination with the transit operating agency and determination of project locations. ▪ Implementation costs consider upgrades to vehicles & infrastructure; potential campaigns for driver awareness.
Real Time/En-Route Driver Information & Route Guidance	SunRail Station/Crossings	This strategy utilizes smart phones or in-vehicle technology to provide information to improve real-time decision-making for drivers en route.	▪ Regional goals for connected vehicle implementation and utilizing a platform for information distribution, assessment of communications platforms and end user interface. ▪ Implementation costs based on geographic footprint for deployment and target penetration rates for vehicles.

Table 11-10 | Health and Environment Strategies

Strategy	Focus Area(s)	Description / Purpose	Implementation Considerations
Emissions Testing and Mitigation	Public Health	This strategy utilizes emissions sensors to determine traffic conditions and emissions levels in the vicinity of roads and highways. This information can be used to distribute idling vehicles by rerouting traffic or changing signal timings	▪ Proposed requirements and associated legislative impacts to enforce testing; coordination with state and federal agencies to determine best practices. ▪ Implementation costs based on factors including enforcement, testing access, and continuous assessments to determine impacts.
Dynamic Fare Reduction	Under Resourced Populations	This strategy utilizes sensors to monitor traffic conditions to adjust transit fares along corridors with high congestion, encouraging transit use and making it more appealing.	▪ Extensive studies and assessment to determine data collection needs, operational impacts, and end-user experience. ▪ Implementation costs based on the results of the desired impacts and fee reduction goals based on time-of-day use and/or ridership demand.

11.7 The Path Forward

The TSM&O Master Plan set the stage to define MetroPlan Orlando's long range TSM&O priorities. In companion with these priorities, the following regionwide strategies and key considerations are recommended for consideration to help shape the path forward for implementation.

11.7.1 REGIONWIDE STRATEGIES

Strategies that involve multiple agencies, cities, or counties provide the opportunity to advance a collaborative and coordinated approach. They require varying levels of collaboration, organizational and workforce development, assessments of systems and technology, refinement of business processes, and performance management. The implementation of regionwide strategies should relate to the goals and objectives identified in the Master Plan. The aspirational regionwide strategies and associated next steps that were identified through development of the TSM&O Master Plan are summarized in Table 11-11.

Table 11-11 | Regionwide Strategies

Strategy	Description	Next Steps
Interagency Coordination	Establish a formalized interagency coordination mechanism involving MPOs, local governments, transit agencies, law enforcement, and emergency services to enhance communication and collaboration	Continued coordination through the already established TSM&O groups within the region, including MetroPlan Orlando's Transportation System Management and Operations Advisory Committee (TSMOAC) and the TSM&O Consortium facilitated by FDOT. Subcommittees may be created to evaluate specific needs, goals, objectives, and methods for implementation and evaluation.
Regional Transportation Management Center (TMC)	Use the regional TMC to bring together representatives from multiple agencies to monitor and manage traffic conditions on a broader scale. Share real-time information and coordinate responses to incidents across jurisdictional boundaries.	Refine any previously defined governance structure to operate from the RTMC collectively among the signal maintaining agencies, Update relevant Standard Operating Guidelines (SOGs) and/or Standard Operating Procedures (SOPs), especially as they relate to interagency operations and response to events.
Unified Communication Platforms	Implement unified communication platforms for sharing information among agencies, such as a common traffic management system or a shared incident reporting platform.	Conduct a thorough assessment of current communication systems and identifying gaps or redundancies. Then engage in collaborative discussions to select a suitable unified communications platform that meets the needs of all participating agencies.
Joint Planning and Funding	Collaborate on long-term transportation planning efforts, sharing resources and funding to collectively address regionwide needs.	Identify common transportation projects or initiatives that benefit multiple jurisdictions and collaborate to develop a comprehensive funding proposal, highlighting the shared benefits and cost-sharing arrangements among participating agencies. Additionally, there may be opportunity to seek funding opportunities from federal or state transportation grants that prioritize regional collaboration and multi-agency partnerships.
Integrated Corridor Management Strategies	Identify key transportation corridors that span multiple jurisdictions and implement coordinated management strategies to improve overall corridor performance and address the needs of diverse stakeholders along the route.	Continue collaborating to develop coordinated management strategies. This includes implementing dynamic traffic signal timing in response to operational changes, prioritizing transit service, facilitating modal shifts, and coordinating incident response efforts.

Strategy	Description	Next Steps
Standardized Data Sharing Protocols	Establish standardized protocols for data sharing among agencies to ensure seamless exchange of information related to traffic conditions, incidents, and infrastructure status.	Collaborate to establish new and common data formats, protocols, and security standards. Through open dialogue and consensus-building, define clear guidelines for data exchange, including data privacy and security measures. Regular communication and ongoing refinement of these protocols will be crucial to ensure compatibility and effectiveness across all participating MetroPlan Orlando agencies.
Arterial Traffic Incident Management (ATIM)	Develop and implement arterial incident management plans that outline the roles and responsibilities of each agency in responding to cross-boundary events and resolving incidents that affect multiple jurisdictions.	Establish a coordinated response protocol that outlines roles and responsibilities for each MetroPlan Orlando agency involved, including law enforcement, emergency services, and transportation departments. Invest in training programs to ensure personnel are equipped with the necessary skills to promptly detect, respond to, and clear incidents on arterial roadways.
Coordinated Public Outreach and Education	Collaborate on public outreach campaigns to educate residents and commuters about regionwide transportation initiatives.	Continue to coordinate public outreach and coordination by establishing a joint communication strategy common to the region that ensures consistent messaging and outreach efforts across agencies. Continuing to organize collaborative events and workshops that involve representatives from different agencies to provide stakeholders with a platform to voice concerns and provide feedback on regional transportation matters.
Shared Resources for Maintenance and Operations	Explore opportunities for shared resources, such as maintenance facilities, equipment, and personnel, to optimize efficiency and reduce costs across multiple agencies.	Share resources for maintenance and operations by establishing mutual agreements for the sharing of equipment, personnel, and maintenance facilities across jurisdictional boundaries.
Cross-Boundary Emergency Response Plans	Develop and regularly update emergency response plans that involve multiple agencies to ensure a coordinated and effective response to incidents affecting transportation infrastructure.	Develop collaborative protocols that clearly define roles, responsibilities, and communication procedures during emergency situations that affect multiple jurisdictions. Agencies should conduct joint training exercises and drills to familiarize personnel with the plan and enhance coordination.

By collaboratively focusing on these strategies, local agencies can foster a more integrated approach to TSM&O, maximizing the benefits for the entire region and its diverse stakeholders. Regular communication, collaborative planning efforts, and a commitment to shared goals are key elements in successfully implementing regionwide TSM&O initiatives across multiple agencies, cities, and counties.

11.7.2 FURTHER CONSIDERATIONS

Certain planning efforts, topics, and issues were identified during the TSM&O master planning process as worthy of further consideration as the projects and strategies identified in the Plan move forward to implementation, including:

- Artificial Intelligence (AI) – While AI is still evolving as an opportunity for TSM&O, partner agencies are evaluating how it can be leveraged for the benefit of improved operation and safety. FHWA developed a self-assessment checklist to define a transportation agency's readiness to deploy and manage AI for Intelligent Transportation Systems. As AI expands to serve TSM&O, it will become a greater consideration in future planning.

- Cybersecurity – A consistent theme throughout the planning process was the critical role of cybersecurity in safeguarding transportation infrastructure and communication systems from potential cyber threats and attacks. Considerations for the future include:
  - Collaborate on the development and implementation of cybersecurity measures to protect TSM&O technologies, data-sharing platforms, and communication networks across multiple agencies and jurisdictions.
  - Establish joint cybersecurity protocols and standards to ensure a consistent and robust defense against cyber threats, emphasizing the need for regular updates and monitoring of security measures.
  - Conduct cross-agency training programs to enhance the cybersecurity awareness and skills of personnel involved in TSM&O operations, fostering a culture of vigilance and proactive risk management.
  - Establish an incident response plan specific to cybersecurity events, outlining coordinated actions and responsibilities across agencies to mitigate potential disruptions to transportation systems.
- Common User-Based Platforms – Future development of integrated transit systems is an important consideration. For example, consistent with the LYNX ITS Strategic Plan Update (2022), there is an opportunity to integrate the LYNX and SunRail payment systems to ensure smooth transitions between different transit modes and reducing overall travel times.
- Adopting ITS Facility Management (ITSFM) – To adopt the ITSFM platform, an agency could follow a structured implementation process tailored to its specific needs and operational requirements. A critical step would involve the agency obtaining the appropriate enterprise license to utilize FDOT's configuration. The agency would then need to integrate the ITSFM configuration into its existing infrastructure, allowing for seamless incorporation of assets, configuration details, and as-built documents related to the ITS system and the Statewide Telecommunication Network (STN). Interested agencies can explore opportunities to collaborate with regional transportation partners, thus fostering regional data sharing and enhancing the overall effectiveness of the ITSFM platform in managing fiber and other critical infrastructure. This systematic approach allows participating agencies to leverage the ITSFM platform to enhance asset management, streamline configuration processes, and improve overall operational efficiency.
- Regional TSM&O Strategic Plan – As the TSM&O Master Plan was being finalized, a parallel effort was underway to develop a Regional TSM&O Strategic Plan for the Central Florida area. Development of this Strategic Plan involved the collaborative effort of ten M/TPOs, FDOT, and other transportation agencies and authorities. If a Regional TSM&O Program follows completion of the Strategic Plan, it will be beneficial to the implementation of TSM&O projects across the megaregion and will enhance the ability of participating agencies to leverage partnerships to pursue funding and deliver regional TSM&O efforts.

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