LYNX® VISION 2030

LYNX Vision 2030

Final Report

October 2011

metroplan orlando
A REGIONAL TRANSPORTATION PARTNERSHIP

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LYNX
2030 VISION

FINAL REPORT

Prepared for

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Table of Contents

LIST OF MAPS

LIST OF TABLES

LIST OF FIGURES

PREFACE

Originally this study was branded as the *2030 LYNX Transit Master Plan* (or "Paw Print"), but as the project evolved, so did the title of the study. Concerns were expressed that it would be confusing to have both a *2030 LYNX Transit Master Plan* and a *2030 MetroPlan Orlando Long Range Transportation Plan* (LRTP). The *2030 LYNX Transit Master Plan* is to act as a guide for the transit element of the 2040 LRTP update effort, which will begin in earnest in the fall of this year. In light of the potential confusion the two similarly-named plans might cause, the title of this report was changed to *LYNX Vision 2030*.

Documents written prior to the name change are included as addenda to this report and still bear the old name and logo. All are part of the same project and should be considered as one cohesive study despite the differing names and logos.

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1. Introduction

The *LYNX Vision 2030* study is a joint venture between LYNX and MetroPlan Orlando to undertake a comprehensive examination of 22 corridors in Orange, Osceola, and Seminole Counties. The purpose of the study is to determine potential transit modal improvements along these corridors. In addition to primary modal improvements along the corridors, improvements to the supporting network that provide connectivity and circulation between these corridors and activity centers, residences, and employment locations are considered. The final step of the study involves determining a cost for these improvements as well as identifying potential revenue sources to help realize the vision.

This report is divided into six sections in addition to this introduction:

Section 2 briefly describes the baseline and future conditions of the corridors.

Section 3 describes the public involvement activities that were undertaken throughout the study.

Section 4 examines the methodology used to determine what modal improvements were appropriate in each corridor. It also presents the results of this analysis.

Section 5 outlines the changes recommended for the supporting network.

Section 6 provides information on the costs of these improvements. A review of potential revenue sources is also provided.

Section 7 lists recommendations and qualifications for this study.

The following appendices have also been included in a supplementary document to this report. These appendices provide greater detail on the analysis undertaken during the completion of the LYNX visioning effort.

- *Technical Memorandum #1: Baseline Conditions*
- *Technical Memorandum #2: Corridor Future Characteristics*
- *Addendum A: Additional Four Corridors*
- *Technical Memoranda #3 & #4: Methodology and Results*
- *Technical Memorandum #5: Supporting Network*

- *Technical Memorandum #6: Financial Analysis*
- *Technical Memorandum #7: Public Involvement*
- *Addendum B: Prioritization*

2. Baseline and Future Corridor Conditions

The initial study began with the consideration of 18 corridors in the three-county LYNX service area of Seminole, Orange, and Osceola counties. As the study was presented to MetroPlan Orlando boards, staffs of local jurisdictions, and the public, it became clear that four additional corridors should be added. The following corridors were added to the original list.

- SR 434: Maitland Blvd to UCF
- Aloma Ave: Winter Park to Oviedo
- Maitland Blvd: SR 434 to US 17-92
- Seminole Way: Sanford to UCF

As such, the study grew to 22 corridors. These corridors are displayed on Map 2-1. A short description of each corridor follows.

1. **Winter Park SunRail Connector –** This corridor runs from the proposed SunRail station in Winter Park to US 17-92 at Lee Road via Morse Boulevard, Denning Avenue, and Webster Avenue. At 1.4 miles in length, it is the shortest corridor and has the second smallest population.

2. **US 192: Disney to Kissimmee –** This corridor runs from the proposed SunRail station in downtown Kissimmee to the Disney Transportation Center at Walt Disney World via US 192 and World Drive. This is the second least densely populated corridor, but it connects with nine facilities that are designated as part of the Strategic Intermodal System (SIS).

3. **US 192: Lake County to St. Cloud –** This corridor runs along US 192 from US 27 through Kissimmee to St. Cloud. This corridor is the second longest corridor at 27 miles long. As such, it has the third highest population, but the third lowest population density.

4. **Silver Star Road to Parramore –** This corridor travels east and west along Silver Star Road from N. Hiawassee Road to Gore Street in downtown Orlando. In order to travel north and south to reach downtown Orlando, the corridor travels along US 441 (Orange Blossom Trail) to Colonial Drive and travels north and south along Parramore Avenue to

Gore Street. This corridor has a high employment density as well as nine active transit routes along its length.

5. **Sanford SunRail Connector –** This corridor runs from downtown Sanford to the proposed SunRail station on First Street. At 1.8 miles, this is the second shortest corridor and it has the smallest total population and total number of employees of any corridor.

6. **Innovation Way: OIA to UCF –** This corridor runs from Orlando International Airport (OIA) to University of Central Florida (UCF) via the proposed Innovation Way planned development. This corridor is the longest at over 30 miles in length. It is also the only corridor with unconstructed roadway.

7. **US 17-92: Fern Park to Downtown –** This corridor runs north and south along US 17-92 from the Fern Park area to downtown Orlando. The corridor travels via Orange Avenue to downtown from the intersection of Orange Avenue and US 17-92. This corridor has the second highest employment density of the corridors.

8. **US 17-92: Sanford to Fern Park –** This corridor runs north and south along US 17-92 from Sanford to the Fern Park area. This corridor has relatively low employment density, but it does serve Seminole State College.

9. **SR 436: Apopka to Fern Park –** This corridor runs east and west along SR 436 (Semoran Boulevard) from Apopka to the Fern Park area. This corridor is the second most densely populated and also has high transit ridership levels.

10. **SR 436: Fern Park to OIA –** This corridor runs north and south along SR 436 (Semoran Boulevard) from the Fern Park area to OIA. This corridor is the most densely populated of the corridors.

11. **US 441: Apopka to Downtown –** This corridor runs north and south along US 441 (Orange Blossom Trail) from Apopka to downtown Orlando. In downtown Orlando, the corridor runs east and west from I-4 to US 441 along Amelia Street. While only one transit route runs along its length, 32 transit routes cross this corridor.

12. **US 441/17-92: Downtown to Florida Mall –** This corridor runs north and south along US 441 (Orange Blossom Trail) from downtown Orlando to the Florida Mall at Sand Lake Road. In downtown Orlando, the corridor runs east and west from I-4 to Orange Blossom Trail along Amelia Street. This corridor has relatively high transit ridership due to its service into downtown Orlando.

13. **US 441/17-92: Florida Mall to Kissimmee –** This corridor runs north and south along US 441 (Orange Blossom Trail) from the Florida Mall at Sand Lake Road to Vine Street in Kissimmee. This corridor is 10 miles long and serves Florida Mall and downtown Kissimmee.

14. **SR 50: West Oaks Mall to UCF –** This corridor extends east and west along SR 50 (Colonial Drive) from West Oaks Mall through downtown Orlando. The corridor runs north and south along Alafaya Trail from SR 50 to reach the UCF. At 21.8 miles, this is one of the longer corridors, and this corridor has very high transit ridership levels.

15. **John Young Parkway: Downtown to International Drive –** This corridor runs north and south along John Young Parkway and International Drive from downtown Orlando to SR 528 Beach Line. The corridor travels via Colonial Drive in downtown from I-4 to John Young Parkway. The route runs east and west along Oak Ridge Road to travel between John Young Parkway and International Drive. This corridor has the third highest level of employees and very high transit ridership levels.

16. **Orange Avenue: Downtown to Sand Lake Road –** This corridor runs north and south along Orange Avenue from downtown Orlando to Sand Lake Road. This corridor has high employment levels and is one of the shorter corridors.

17. **Kirkman Road: Park Promenade to International Drive –** This corridor runs north and south along Kirkman Road and International Drive from Park Promenade to SR 528 Beach Line. The corridor travels east and west along Silver Star Road from Park Promenade to Pine Hills Road, north and south along Pine Hills Road to Colonial Drive, and east and west along Colonial Drive to Kirkman Road. The route runs east and west along Sand Lake Road to travel between John Young Parkway and International Drive. This corridor is 14.1 miles long and serves Valencia Community College, Universal Studios, and the Orange County Convention Center.

18. **SR 528: Disney to OIA –** This corridor travels from OIA to Walt Disney World along Sand Lake Road, SR 528 Beach Line, and I-4. This corridor has the third smallest total population and is the least densely populated of the corridors.

19. **SR 434: Maitland Blvd to UCF –** This corridor travels from Maitland Boulevard to UCF along SR 434, SR 417, and Alafaya Trail. This corridor has the highest employment density of all the corridors. This is the third longest corridor.

20. **Aloma Avenue: Winter Park to Oviedo –** This corridor travels from Winter Park to Oviedo along Aloma Avenue, SR 426, and Broadway Avenue. This corridor is 8.6 miles long and has two bus routes serving along the corridor.

21. **Maitland Boulevard: SR 434 to US 17-92 –** This corridor travels from SR 434 to US 17-92 along Maitland Boulevard. This is the third shortest corridor at 3.8 miles.

22. **Seminole Way: Sanford to UCF –** This corridor travels from Sanford to UCF along French Avenue, the Seminole Expressway, and Alafaya Trail. This corridor has the largest total population and the third lowest employment density of all the corridors.

For each corridor, a current and future fact sheet was developed that provides pertinent information including a current transit service profile, population and employment demographics, major activity centers, transit facilities, land use distribution, roadway and traffic conditions, bicycle and pedestrian facilities, and a map. These fact sheets can be found in *Technical Memorandum #1: Baseline Conditions*, *Technical Memorandum #2: Corridor Future Characteristics*, and *Addendum A: Additional Four Corridors*.

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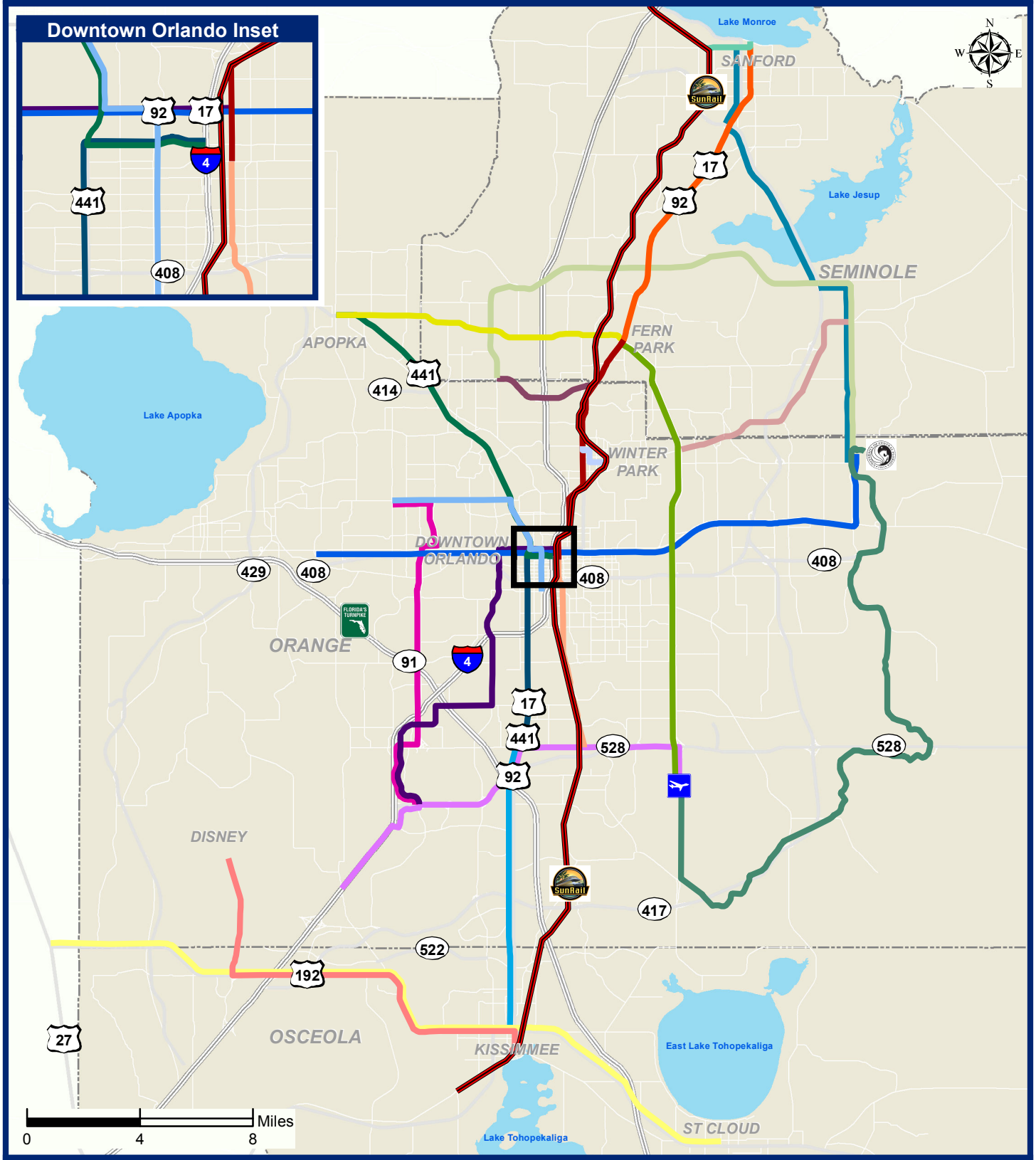

Map 2-1 LYNX Study Corridors

Legend

Study Corridors

- Winter Park SunRail Connector
- US 192: Disney to Kissimmee
- US 192: Lake County to St. Cloud
- Silver Star Rd to Parramore
- Sanford SunRail Connector
- Innovation Way: OIA to UCF
- US 17-92: Fern Park to Downtown
- US 17-92: Sanford to Fern Park
- SR 436: Apopka to Fern Park
- SR 436: Fern Park to OIA
- US 441: Apopka to Downtown
- US 441/17-92: Downtown to Florida Mall
- US 441/17-92: Florida Mall to Kissimmee
- SR 50: West Oaks Mall to UCF
- John Young Pkwy: Downtown to International Drive
- Orange Ave: Downtown to Sand Lake Rd
- Kirkman Rd: Park Promenade to International Drive
- SR 528: Disney to OIA
- SR 434: Maitland Blvd to UCF
- Aloma Ave: Winter Park to Oviedo
- Maitland Blvd: SR 434 to US 17-92
- Seminole Way: Sanford to UCF
- SunRail
- Orlando International Airport

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3. Public Involvement

At the outset of the project, a *Public Involvement Plan* was developed to guide the project's interaction with the public. The *Public Involvement Plan* included the following goals:

- Promoting greater awareness and understanding of LYNX and its vision and mission;
- Increasing public ownership and support for public transportation in Central Florida;
- Developing the *LYNX Vision 2030* to reflect the desires of the community; and
- Enhancing the credibility of and public confidence in LYNX.

The primary outreach activities included public workshops and presentations to existing boards and committees with technical expertise to review the study and provide feedback regarding its development.

BOARD AND COMMITTEE PRESENTATIONS

Identified as the best group to act as a technical advisory committee, the Regional Working Group (RWG) is comprised of representatives from cities and counties located within the tri-county area. The project team presented to the RWG on the following dates.

- August 20, 2010
- January 21, 2011
- June 30, 2011

In addition to the RWG, the project team also presented to a broad spectrum of Florida Department of Transportation (FDOT) District Five employees. These presentations were orchestrated to ensure that FDOT staff was informed about the project and to have another level of review of the study's progress. Meetings were held at the District Five office in DeLand on the following dates.

- November 29, 2010
- April 4, 2011

Presentations were also made to MetroPlan Orlando and several of its standing committees throughout the effort. In December 2010 and Spring 2011, study progress presentations were made to the following committees.

- Bicycle and Pedestrian Advisory Committee
- Citizens Advisory Committee
- MetroPlan Orlando Board
- Municipal Advisory Committee
- Transportation Technical Committee

Routine updates and presentations were made to the LYNX Board of Directors throughout the project. Finally, presentations on the final vision plan were made to all of these groups during Fall 2011.

PUBLIC WORKSHOPS AND OUTREACH

Public involvement included both public workshops and activities that piggybacked on other events. Public workshops were held as standalone events for the sole purpose of updating the public about the *LYNX Vision 2030* process as well as to gather feedback. Several public workshops were held throughout the study timeframe and throughout the three counties. Workshops typically involved a presentation with updates on the project as well as participatory activities such as surveys and questionnaires developed to gather information from the public.

The following events were held or attended for *LYNX Vision 2030*.

- August 2, 2010: Attended LYMMO Expansion meeting and distributed surveys
- October 9, 2010: Surveys distributed at Winter Garden Village at Fowler Groves
- October 16, 2010: Surveys distributed at Sanford Farmer's Market
- November 6, 2010: Surveys distributed at Bithlo Family Day
- November 18, 2010: Public workshop held at LYNX Central Station in downtown Orlando
- March 9, 2011: Public workshop held at Osceola County Library
- March 19, 2011: Surveys distributed at Kissimmee Kowtown Festival
- May 18, 2011: Public workshop held at LYNX Central Station in downtown Orlando
- June 23, 2011: Workshop held at the Osceola and Sanford Superstop

PUBLIC INVOLVEMENT OUTCOMES

While public involvement helped the project team develop a more robust understanding of the 22 corridors, the public's biggest influence was to have 4 corridors added to the study. The initial study began with 18 corridors, but public input made it clear that 4 additional corridors should be added. The following corridors were added to the original list and documented in Addendum A.

- SR 434: Maitland Blvd to UCF
- Aloma Avenue: Winter Park to Oviedo
- Maitland Boulevard: SR 434 to US 17-92
- Seminole Way: Sanford to UCF

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4. Methodology and Results

The methodology used to help develop the vision plan is divided into six steps, as bulleted below. Figure 4-1 was developed to provide a visual depiction of the methodology.

- Mode identification
- Segmentation
- Evaluation
- Preliminary modal assignment
- Final modal assignment
- Prioritization

MODE IDENTIFICATION

In order to assign modes to the corridors, an initial list of potential modes first had to be determined. The following modes were determined to be appropriate for possible consideration.

- **Local bus** is the primary service that LYNX operates today. Local bus operates with traditional bus stops, makes very frequent stops, and travels at lower speeds. It operates in regular traffic, but it can have high or low frequencies.

- **Enhanced express bus** operates with coach-style vehicles, travels in regular traffic, and trips are typically concentrated during peak commute periods. Stops are concentrated at the ends of the route with few or none in the middle. Enhanced express bus often operates out of park-and-ride lots and provides passengers with longer distance rides. The vehicles may offer amenities such as wireless internet, television, or radio. LYNX currently operates several express routes.

- **Bus Rapid Transit**, or BRT, operates in mixed traffic or an exclusive lane. The vehicles are typically stylized to look more like a rail vehicle than a bus, can be articulated, and are usually branded. BRT usually operates at higher frequencies and can use traffic signal priority to help reduce travel time. Optional premium features include level-boarding, off-board fare payment, and larger stations. LYNX's only current example of a BRT in operation is the LYMMO service in downtown Orlando.

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Strategic Master Plan Methodology Diagram

STEP 1
Winter 2010

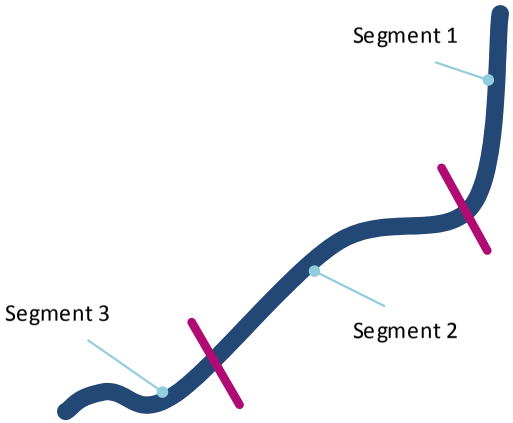
STEP 2
Winter 2010

- Baseline
- Transit-Oriented Land Use Development Scenario

STEP 3
Spring/Summer 2011

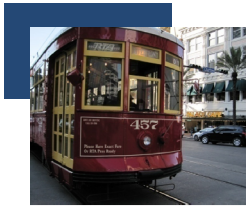
- Baseline
  - Current Funding
  - Current Funding
  - Increased Funding
- Transit-Oriented Land Use Development Scenario

Corridor Segment Identification
How do we organize 22 corridors into segments with similar demand characteristics?

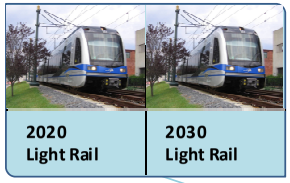


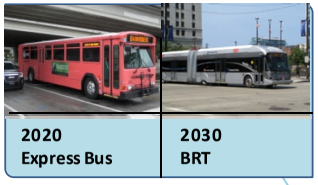
Segment Potential
Which type of transit service is appropriate for each segment?

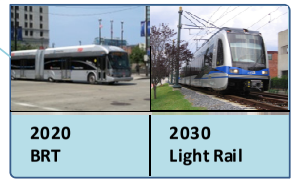
- Local Bus
- Express Bus
- Bus Rapid Transit
- Streetcar
- Light Rail
- Commuter Rail



Corridor/Segment Prioritization
Which corridor and transit service combinations should be prioritized for implementation between today and 2030?







Considerations:

- Population Density
- Employment Density
- Land Use
- Area Type
- User Market
- Accessibility

Considerations:

- Population Density
- Employment Density
- Land Use
- User Market
- Transit Orientation
- Activity Centers
- Trip Length
- Existing Transit Ridership
- Right-of-Way Availability
- Public Involvement

Considerations:

- Land Use
- Transit Demand
- Traffic Conditions
- Roadway and Intersection Improvements
- Network Compatibility
- Public Involvement

- **Streetcar** is typically a single car operated on rails traveling at lower speeds. It is used for shorter distances of travel than light rail and works well with tourist populations. It is specially branded, has medium frequencies, and is usually semi-segregated from traffic. Stops can have minimal or more substantial infrastructure. LYNX does not currently operate any streetcars.

- **Light rail** is not currently used by LYNX. While streetcar is a form of light rail, they tend to serve different markets. Light rail can be one or two cars in length, operates on rail, and is segregated from traffic. It operates at medium speeds, has medium frequencies, and makes frequent stops. Light rail is specifically branded and has significant stations.

- **Commuter rail** is planned for the area in the form of SunRail, but is not currently operational. Commuter rail provides an option for long distance travel. Stations are substantial and fairly far apart. Commuter rail has multiple-car trains and operates on rail. It is segregated from traffic and operates at higher speed and lower frequency.

SEGMENTATION

Segmentation was used to create more uniformly characteristic pieces of the corridors for analysis. Each of the corridors connects a logical beginning and ending point, but they do not have uniform characteristics throughout their lengths. Corridors may wind through more or less transit-supportive areas. As such, each of the corridors was divided into segments that provided uniformity among the following six characteristics.

- Population density
- Employment density
- Land use
- Area type
- User market
- Accessibility

Population and employment densities were based on the corresponding 2030 transit-oriented development (TOD) scenario approved in the *2030 MetroPlan LRTP*. The land use characteristic examined the breakdown of commercial, residential, industrial, right-of-way, institutional, and other land uses. Area type refers to a downtown environment versus a suburban environment.

The user market characteristic focused on whether the uses along the segment primarily served local residents or tourists. Accessibility refers to the connectivity of the system. In addition, for those areas where there was overlap between two corridors, a separate segment was typically identified. These segments were isolated because more than one corridor was feeding into

them. Corridors ranged from one to six segments, although the average corridor was subdivided into three segments.

EVALUATION

After segmentation, each segment was evaluated to determine the appropriate mode for that particular segment. The segment evaluation process examined the following six characteristics.

- Population density
- Employment density
- Transit propensity index
- Land use
- Transit ridership
- Activity centers

In order to capture permanent and transient population, population density was based on dwelling unit data developed for the *2030 LRTP* as well as on occupied hotel room data developed for the LRTP. Employment density was based on data developed for the *2030 LRTP*. The transit propensity index is an aggregate scoring system developed to account for the relative density of traditional transit markets (i.e., older adults, youth, and low-income households).

A land use score was developed based on the percentage of land uses that are transit supportive (e.g., downtown business districts). Using automatic passenger counter (APC) data collected during a twelve-month period in 2009-2010, an analysis of benefitting riders (i.e., current transit riders) was conducted to highlight potential ridership. Activity centers were identified and scored on a per-mile basis.

The evaluation process was undertaken for a baseline and two scenarios.

- Existing land use conditions
- 2030 under trend land use development patterns
- 2030 under transit-oriented land use development patterns

The trend land use development pattern is based on the continuation of current development patterns into the future, and the transit-oriented land use development pattern is based on the final 2030 LRTP adopted in August 2009.

PRELIMINARY MODAL ASSIGNMENT

Each segment received a score for each characteristic under the evaluation step. Using a total score for the segments, modal assignments were made based on relational thresholds that had been established for each mode. The modes considered were local bus, enhanced express bus, bus rapid transit (BRT), and light rail/streetcar. Figure 4-2 provides a description of the latter three of these modes.

FINAL MODAL ASSIGNMENT

After the analysis, the segments were recombined into a network. To ensure that the network would make sense as a whole, professional judgment by the consultant team and LYNX staff was used to adjust some of the segment modal assignments to create a logical and coherent network. Table 4-1 displays the results of the final modal analysis. Map 4-1 displays the final modal assignments under the trend scenario and Map 4-2 displays the final modal assignments under the TOD scenario.

PRIORITIZATION

The final step prior to developing cost estimates for *LYNX Vision 2030* was to develop a phased implementation plan. In order to develop an implementation plan, the corridor premium modes were prioritized. In *Technical Memoranda #3 and #4: Methodology and Results*, scoring was used to determine which mode was appropriate for which corridor.

During the prioritization process, the corridors each received a baseline score and a TOD 2030 score. The baseline score was developed based on existing conditions within each corridor. The TOD 2030 score was based on future characteristics of each corridor assuming each developed in a manner consistent with the adopted 2030 LRTP.

Using the baseline conditions score (2010) and the 2030 TOD score for each corridor, scores for 2015, 2020, and 2025 were interpolated. These scores were used to determine the estimated implementation timeframe for each modal evolution. Table 4-2 provides the proposed implementation timeframes for each corridor improvement. Maps 4-3 through 4-6 display the premium network as it would exist in 2015, 2020, 2025, and 2030.

The implementation plan is not meant to indicate that improvements will only be made in 2015, 2020, 2025, and 2030. Improvements are intended to occur throughout the time period, but for ease of analysis, the improvements have been assigned to one of these five-year periods.

MODE INFORMATION

Express Bus

CHARACTERISTICS

- Coach-style vehicles
- Medium-to-high capacity vehicles
- Travel in regular traffic
- Limited stops
- Medium frequency (30-minute headways)
- Transit stops



Premium Rapid Bus (also known as Bus Rapid Transit)

CHARACTERISTICS

- Stylized vehicle design
- High capacity vehicles
- Segregated from traffic
- Traffic signal priority
- High frequency (10- to 15-minute headways)
- Specially branded
- Larger, more substantial stations


Rail/Streetcar

CHARACTERISTICS

- Single or multiple cars
- Operated on rail
- High frequency
- Segregated from traffic
- Specially branded
- Larger, more substantial stations




Photo courtesy of www.seefloridago.com

Table 4-1
Final Modal Assignments

Corridor	Segment	2030 Trend Mode	2030 TOD Mode
Winter Park SunRail Connector	1-1	BRT	Streetcar
US 192: Disney to Kissimmee	2-1	BRT	BRT
	2-2	BRT	BRT
	2-3	BRT	Streetcar
	2-4	BRT	Streetcar
US 192: Lake County to St. Cloud	3-1	BRT	BRT
	3-2	BRT	BRT
	3-3	BRT	Streetcar
	3-4	Express	Express
Silver Star Rd to Parramore	4-1	Local Bus	Local Bus
	4-2	Local Bus	Local Bus
	4-3	Local Bus	Local Bus
	4-4	BRT	Local Bus
	4-5	BRT	Local Bus
Sanford SunRail Connector	5-1	Express	Local Bus
Innovation Way: OIA to UCF	6-1	Express	BRT
	6-2	Express	Express
US 17-92: Fern Park to Downtown	7-1	Local Bus	Local Bus
	7-2	LRT	LRT
	7-3	LRT	LRT
US 17-92: Sanford to Fern Park	8-1	Local Bus	Local Bus
	8-2	Local Bus	Local Bus
SR 436: Apopka to Fern Park	9-1	Express	Express
	9-2	Express	Express
	9-3	Express	Express
SR 436: Fern Park to OIA	10-1	Express	Express
	10-2	Express	Express
US 441: Apopka to Downtown	11-1	Local Bus	Express
	11-2	Local Bus	Express
	11-3	BRT	Express

Table 4-1
Final Modal Assignments (continued)

Corridor	Segment	2030 Trend Mode	2030 TOD Mode
US 441/17-92: Downtown to Florida Mall	12-1	LRT	BRT
	12-2	Local Bus	BRT
	12-3	Express	BRT
US 441/17-92: Florida Mall to Kissimmee	13-1	Express	Express
	13-2	Express	Express
	13-3	Express	Express
SR 50: West Oaks Mall to UCF	14-1	Express	Express
	14-2	BRT	BRT
	14-3	BRT	BRT
	14-4	BRT	BRT
	14-5	Express	BRT
	14-6	Express	BRT
John Young Parkway: Downtown to International Drive	15-1	BRT	BRT
	15-2	BRT	BRT
	15-3	BRT	BRT
	15-4	LRT	BRT
	15-5	N/A	Streetcar
Orange Ave: Downtown to Sand Lake Rd	16-1	LRT	BRT
	16-2	Express	BRT
Kirkman Rd: Park Promenade to International Drive	17-1	Local Bus	Local Bus
	17-2	Local Bus	Local Bus
	17-3	BRT	BRT
	17-4	LRT	Streetcar
	17-5	N/A	Streetcar
SR 528: Disney to OIA	18-1	BRT	BRT
	18-2	BRT	BRT
	18-3	BRT	BRT
SR 434: Maitland Blvd to UCF	19-1	Express	Local Bus
	19-2	Express	Local Bus
	19-3	Express	Local Bus
Aloma Ave: Winter Park to Oviedo	20-1	Express	Local Bus
	20-2	Express	Local Bus
Maitland Blvd: SR 434 to US 17-92	21-1	Express	Local Bus
Seminole Way: Sanford to UCF	22-1	Express	Express
	22-2	Express	Express
	22-3	Express	Express

Note: A segment was added to both Corridor 15 and Corridor 17 during the prioritization phase of the analysis. These segments were only analyzed for the TOD scenario.

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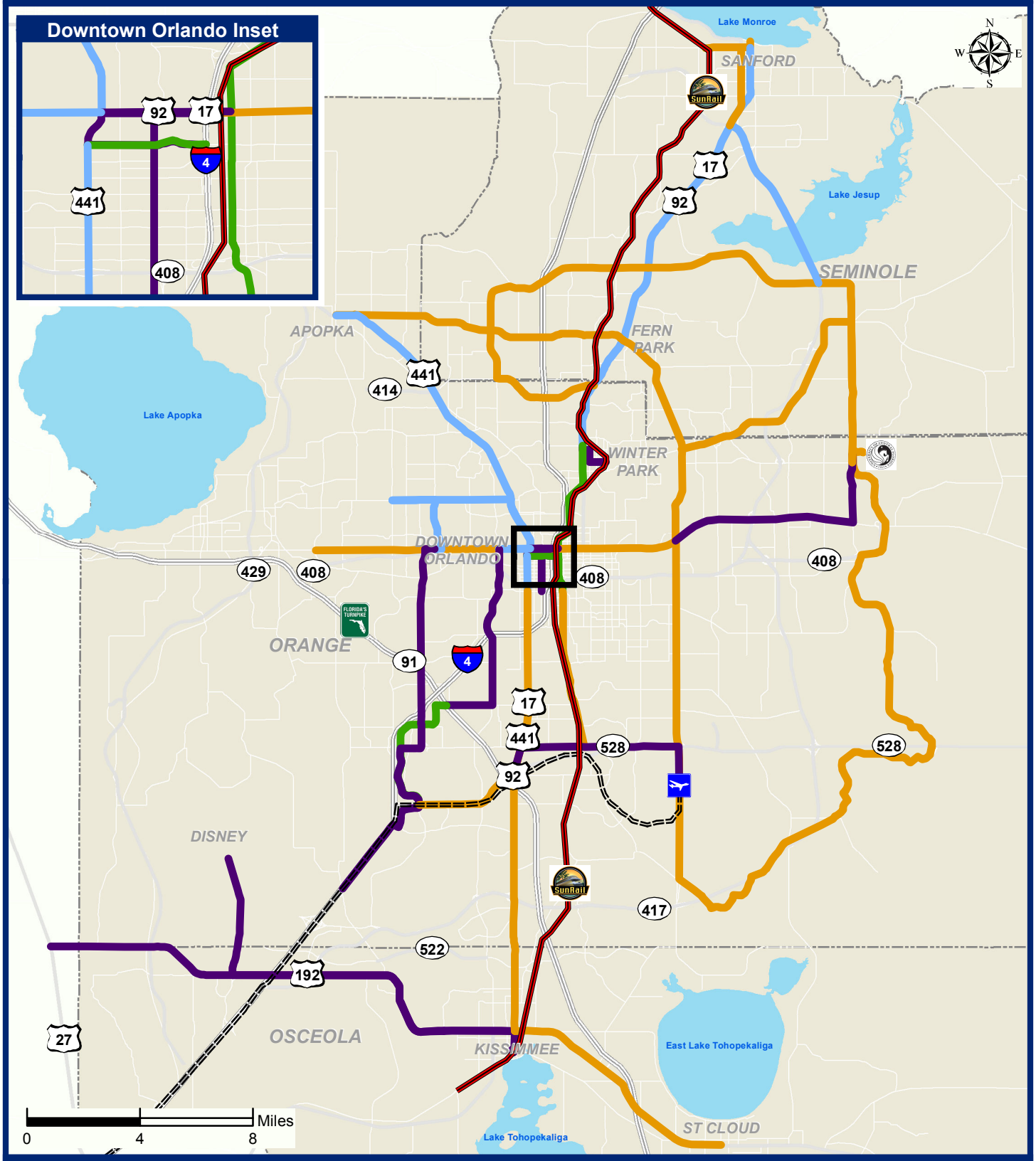

Map 4-1 Final Modal Assignments - Trend Scenario

Legend

Corridor Segments

Mode

- LRT
- BRT
- Express
- Local Bus

- SunRail
- Potential Future High Speed Rail Corridor
- Orlando International Airport

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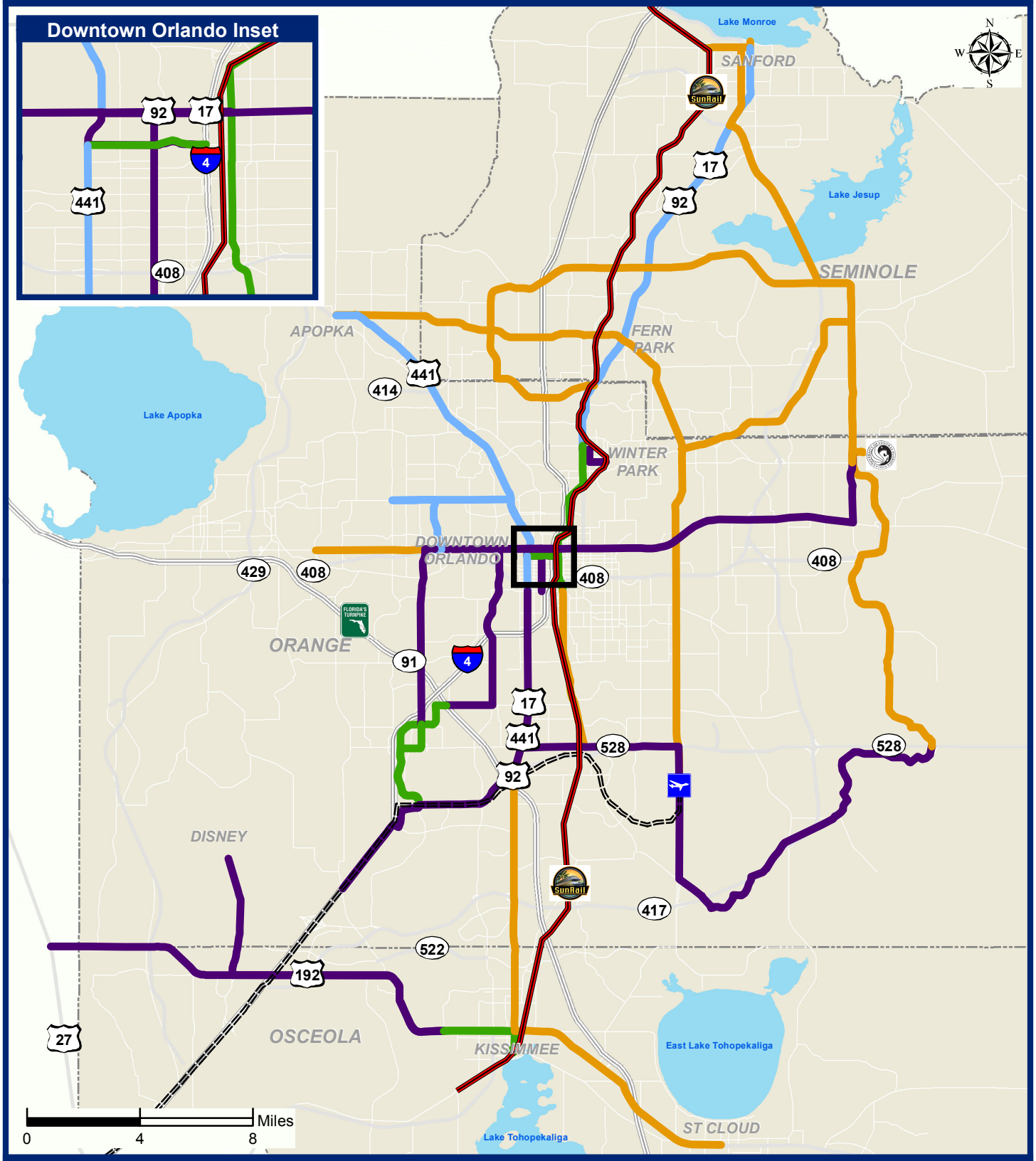

Map 4-2 Final Modal Assignments - TOD Scenario

Legend

Corridor Segments

Mode

- LRT
- BRT
- Express
- Local Bus

- SunRail
- Potential Future High Speed Rail Corridor
- Orlando International Airport

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Table 4-2
Implementation Plan and Prioritization

Corridor	Segment	Implementation Year (Prioritization)							
		2015		2020		2025		2030	
Winter Park SunRail Connector	1-1	Local Bus	2	Local Bus	2	Local Bus	2	Streetcar	30
US 192: Disney to Kissimmee	2-1	Exclusive BRT	19	Exclusive BRT	18	Exclusive BRT	14	Exclusive BRT	10
	2-2	Exclusive BRT	19	Exclusive BRT	18	Exclusive BRT	14	Exclusive BRT	10
	2-3	Local Bus	1	Local Bus	1	Local Bus	1	Streetcar	28
		Exclusive BRT	19	Exclusive BRT	18	Exclusive BRT	14	Exclusive BRT	10
	2-4	Local Bus	1	Local Bus	1	Local Bus	1	Streetcar	28
		Mixed BRT	19	Mixed BRT	18	Mixed BRT	14	Mixed BRT	10
US 192: Lake County to St. Cloud	3-1	Exclusive BRT	17	Exclusive BRT	17	Exclusive BRT	15	Exclusive BRT	11
	3-2	Exclusive BRT	17	Exclusive BRT	17	Exclusive BRT	15	Exclusive BRT	11
	3-3	Local Bus	1	Local Bus	1	Local Bus	1	Streetcar	28
		Exclusive BRT	17	Exclusive BRT	17	Exclusive BRT	15	Exclusive BRT	11
	3-4			Express	25	Express	21	Express	18t
Silver Star Rd to Parramore	4-1	Local Bus	4	Local Bus	3	Local Bus	3	Local Bus	2
	4-2	Local Bus	4	Local Bus	3	Local Bus	3	Local Bus	2
	4-3	Local Bus	4	Local Bus	3	Local Bus	3	Local Bus	2
	4-4	Local Bus	4	Local Bus	3	Local Bus	3	Local Bus	2
	4-5	Local Bus	4	Local Bus	3	Local Bus	3	Local Bus	2
Sanford SunRail Connector	5	Local Bus	5	Local Bus	4	Local Bus	5	Local Bus	3
Innovation Way: OIA to UCF	6-1							Exclusive BRT	22
	6-2			Express	15	Express	11	Express	6
US 17-92: Fern Park to Downtown	7-1	Local Bus	11t	Local Bus	11t	Local Bus	12t	Local Bus	8t
	7-2			Exclusive BRT	16	Exclusive BRT	8	LRT	15
	7-3			Exclusive BRT	16	Exclusive BRT	8	LRT	15
US 17-92: Sanford to Fern Park	8-1	Local Bus	11t	Local Bus	11t	Local Bus	12t	Local Bus	8t
	8-2	Local Bus	11t	Local Bus	11t	Local Bus	12t	Local Bus	8t
SR 436: Apopka to Fern Park	9-1			Express	22	Express	17	Express	12
	9-2			Express	22	Express	17	Express	12
	9-3			Express	22	Express	17	Express	12
SR 436: Fern Park to OIA	10-1	Express	21	Express	23	Express	20	Express	16
	10-2	Express	21	Express	23	Express	20	Express	16
US 441: Apopka to Downtown	11-1	Express	22	Express	24	Express	22	Express	23
	11-2	Express	22	Express	24	Express	22	Express	23
	11-3	Express	22	Express	24	Express	22	Express	23
US 441/17-92: Downtown to Florida Mall	12-1	Express	14	Express	13	Mixed BRT	27	Mixed BRT	27
	12-2	Express	14	Express	13	Mixed BRT	27	Mixed BRT	27
	12-3	Express	14	Express	13	Exclusive BRT	27	Exclusive BRT	27
US 441/17-92: Florida Mall to Kissimmee	13-1	Express	20	Express	20	Express	19	Express	20
	13-2	Express	20	Express	20	Express	19	Express	20
	13-3	Express	20	Express	20	Express	19	Express	20

Table 4-2
Implementation Plan and Prioritization (continued)

Corridor	Segment	Implementation Year (Prioritization)							
		2015		2020		2025		2030	
SR 50: West Oaks Mall to UCF	14-1	Express	18	Express	21	Express	18	Express	18t
	14-2	Express	18	Express	21	Exclusive BRT	25	Exclusive BRT	24
	14-3	Express	18	Express	21	Mixed BRT	25	Mixed BRT	24
	14-4	Express	18	Mixed BRT	26	Mixed BRT	25	Mixed BRT	24
	14-5	Express	13	Exclusive BRT	26	Exclusive BRT	25	Exclusive BRT	24
	14-6	Express	13	Exclusive BRT	26	Exclusive BRT	25	Exclusive BRT	24
John Young Parkway: Downtown to International Drive	15-1	Express	15	Express	10	Mixed BRT	24	Mixed BRT	17
	15-2	Express	15	Express	10	Mixed BRT	24	Mixed BRT	17
	15-3	Express	15	Express	10	Exclusive BRT	24	Exclusive BRT	17
	15-4	Express	15	Express	10	Exclusive BRT	24	Exclusive BRT	17
				Streetcar	27	Streetcar	26	Streetcar	26
	15-5			Streetcar	27	Streetcar	26	Streetcar	26
Orange Ave: Downtown to Sand Lake Rd	16-1	Express	16	Express	14	Express	10	Mixed BRT	25
	16-2	Express	16	Express	14	Express	10	Exclusive BRT	25
Kirkman Rd: Park Promenade to International Drive	17-1	Local Bus	9	Local Bus	9	Local Bus	9	Local Bus	7
	17-2	Local Bus	9	Local Bus	9	Local Bus	9	Local Bus	7
	17-3	Express	3	Exclusive BRT	19	Exclusive BRT	16	Exclusive BRT	13
	17-4			Exclusive BRT	19	Exclusive BRT	16	Exclusive BRT	13
				Streetcar	28	Streetcar	28	Streetcar	29
	17-5			Streetcar	28	Streetcar	28	Streetcar	29
SR 528: Disney to OIA	18-1	Express	10	Express	8	Exclusive BRT	23	Exclusive BRT	21
	18-2	Express	10	Express	8	Exclusive BRT	23	Exclusive BRT	21
	18-3	Express	10	Express	8	Exclusive BRT	23	Exclusive BRT	21
SR 434: Maitland Blvd to UCF	19-1	Local Bus	6	Local Bus	5	Local Bus	4	Local Bus	1
	19-2	Local Bus	6	Local Bus	5	Local Bus	4	Local Bus	1
	19-3	Local Bus	6	Local Bus	5	Local Bus	4	Local Bus	1
Aloma Ave: Winter Park to Oviedo	20-1	Local Bus	7t	Local Bus	6t	Local Bus	6t	Local Bus	4t
	20-2	Local Bus	7t	Local Bus	6t	Local Bus	6t	Local Bus	4t
Maitland Blvd: SR 434 to US 17-92	21-1	Local Bus	7t	Local Bus	6t	Local Bus	6t	Local Bus	4t
Seminole Way: Sanford to UCF	22-1							Express	14
	22-2							Express	14
	22-3							Express	14

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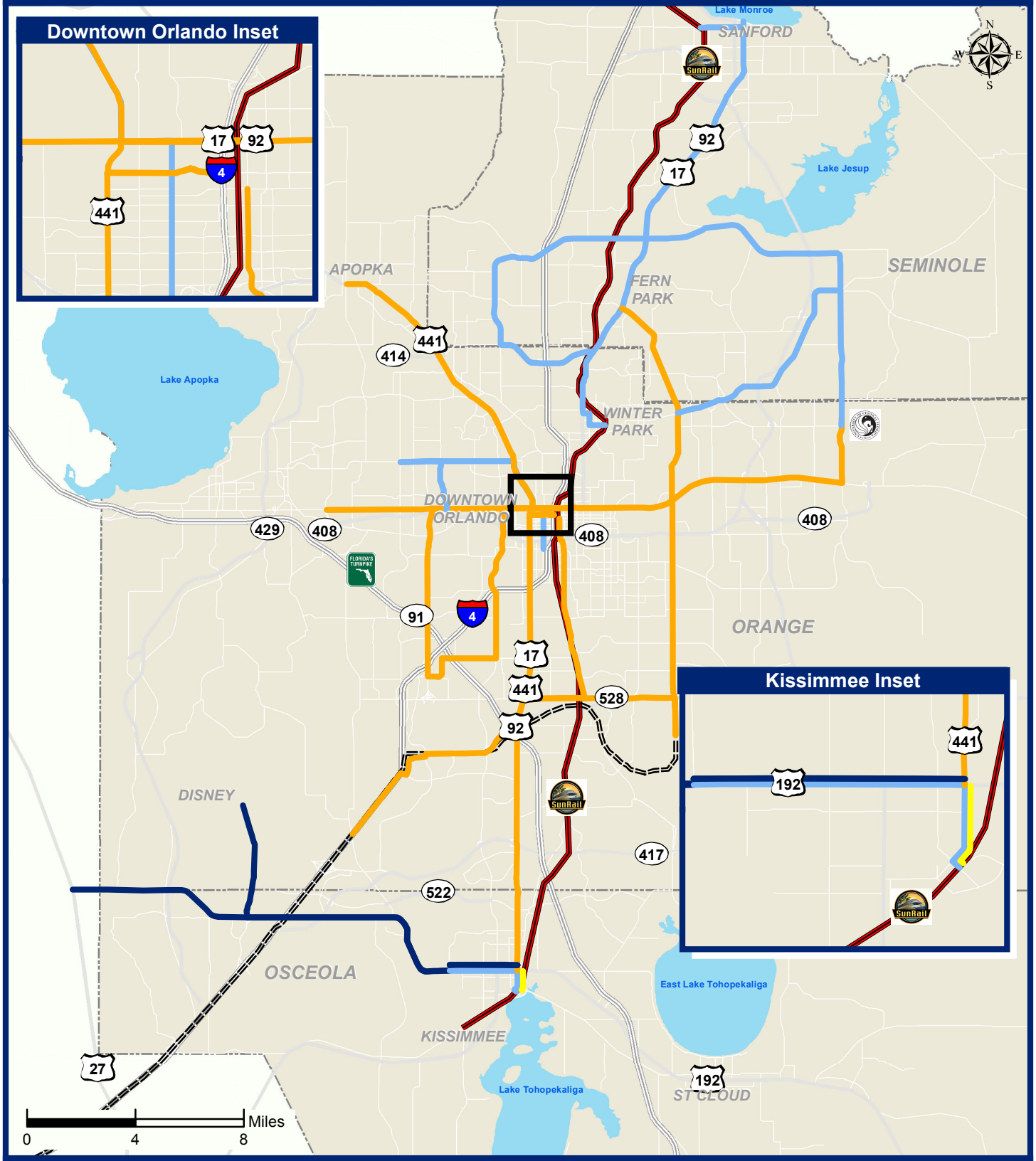

Map 4-3 2015 Network

Legend

- Mixed BRT
- Exclusive BRT
- Express Bus
- Local Bus
- SunRail
- Potential Future High Speed Rail Corridor
- Interstates
- Toll Roads

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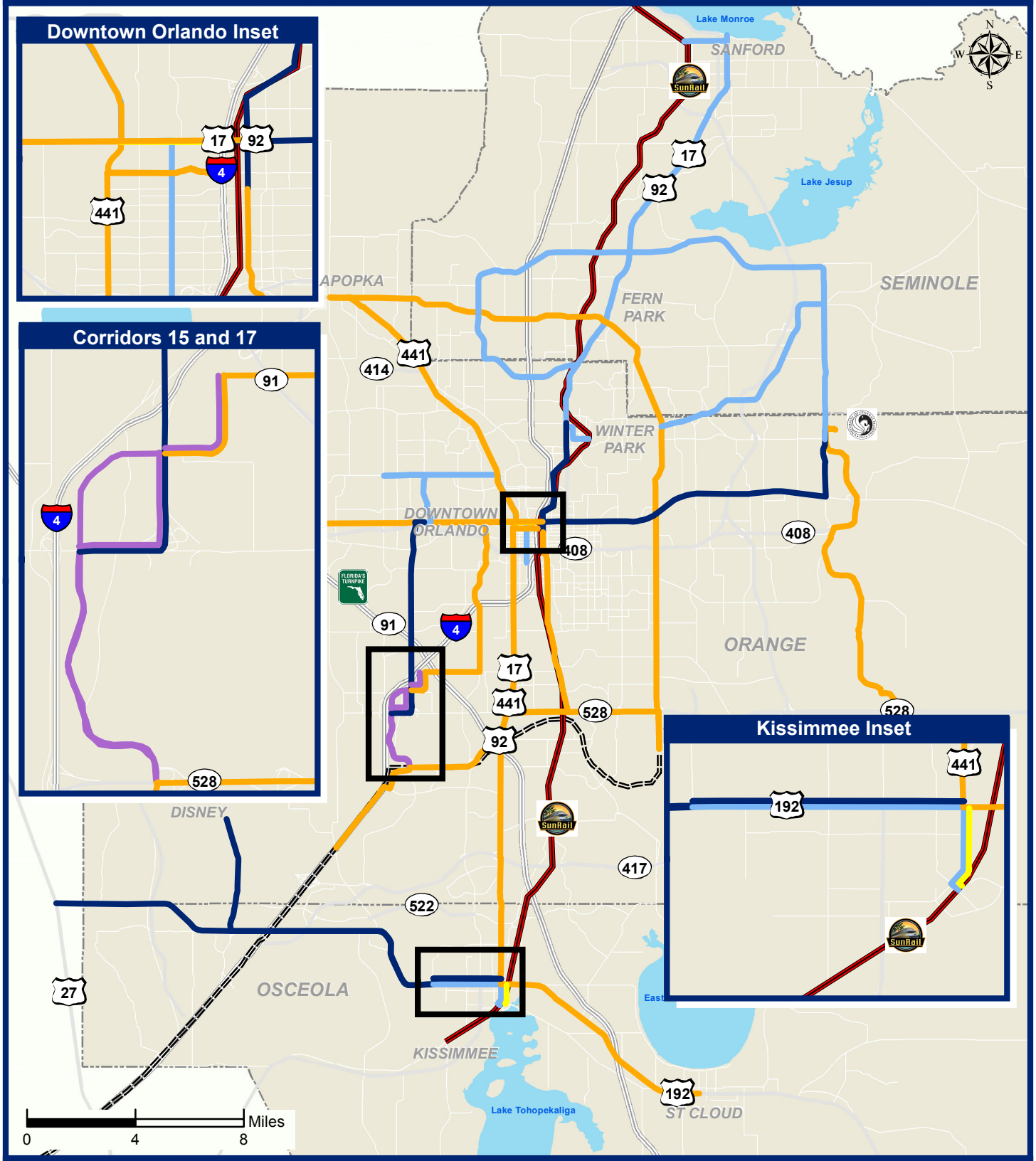
LYNX Vision 2030



Map 4-4 2020 Network

Legend

- Exclusive BRT
- Express Bus
- Local Bus
- Mixed BRT
- Streetcar
- SunRail
- Potential Future High Speed Rail Corridor
- Interstates
- Toll Roads

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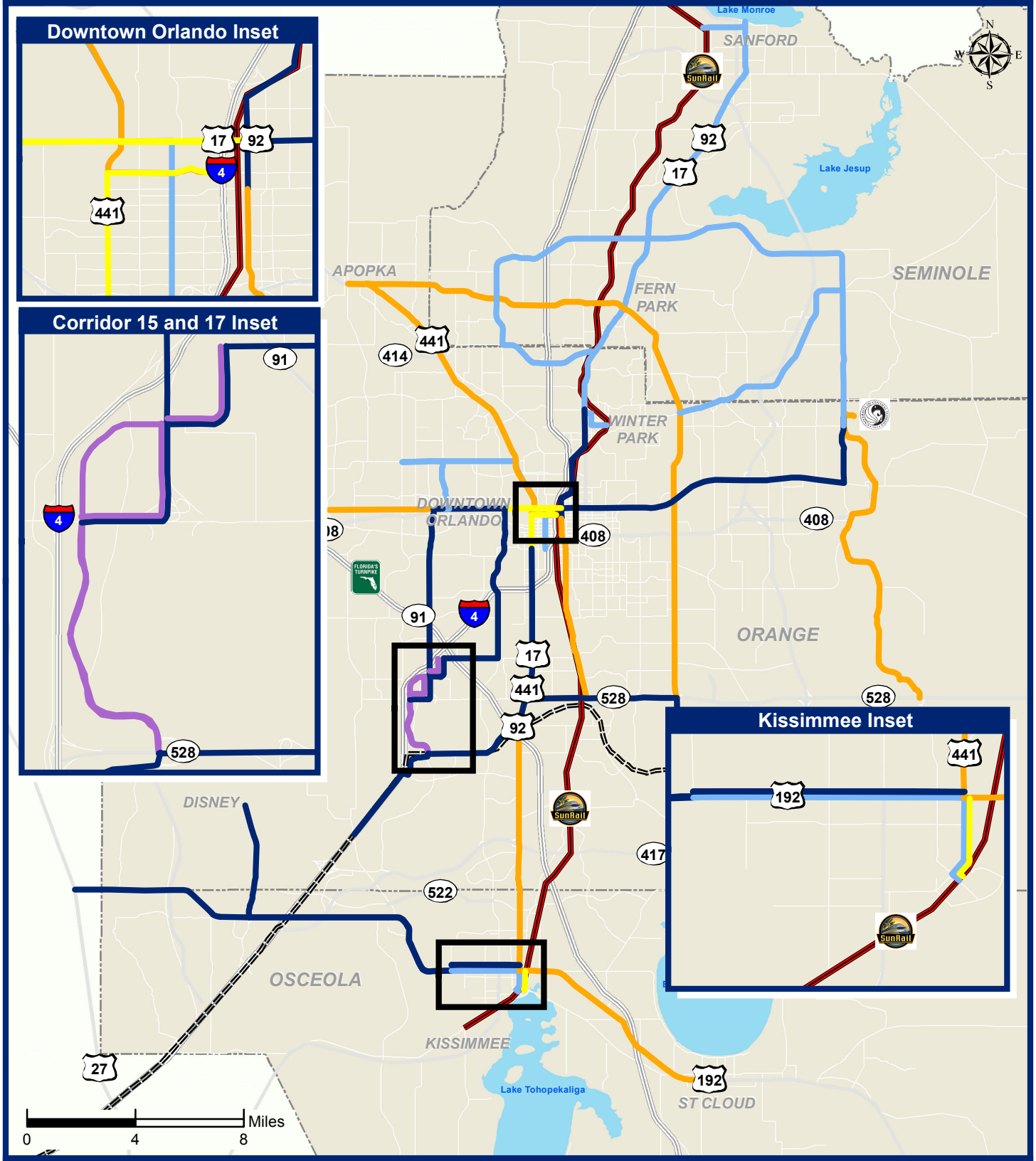
LYNX Vision 2030



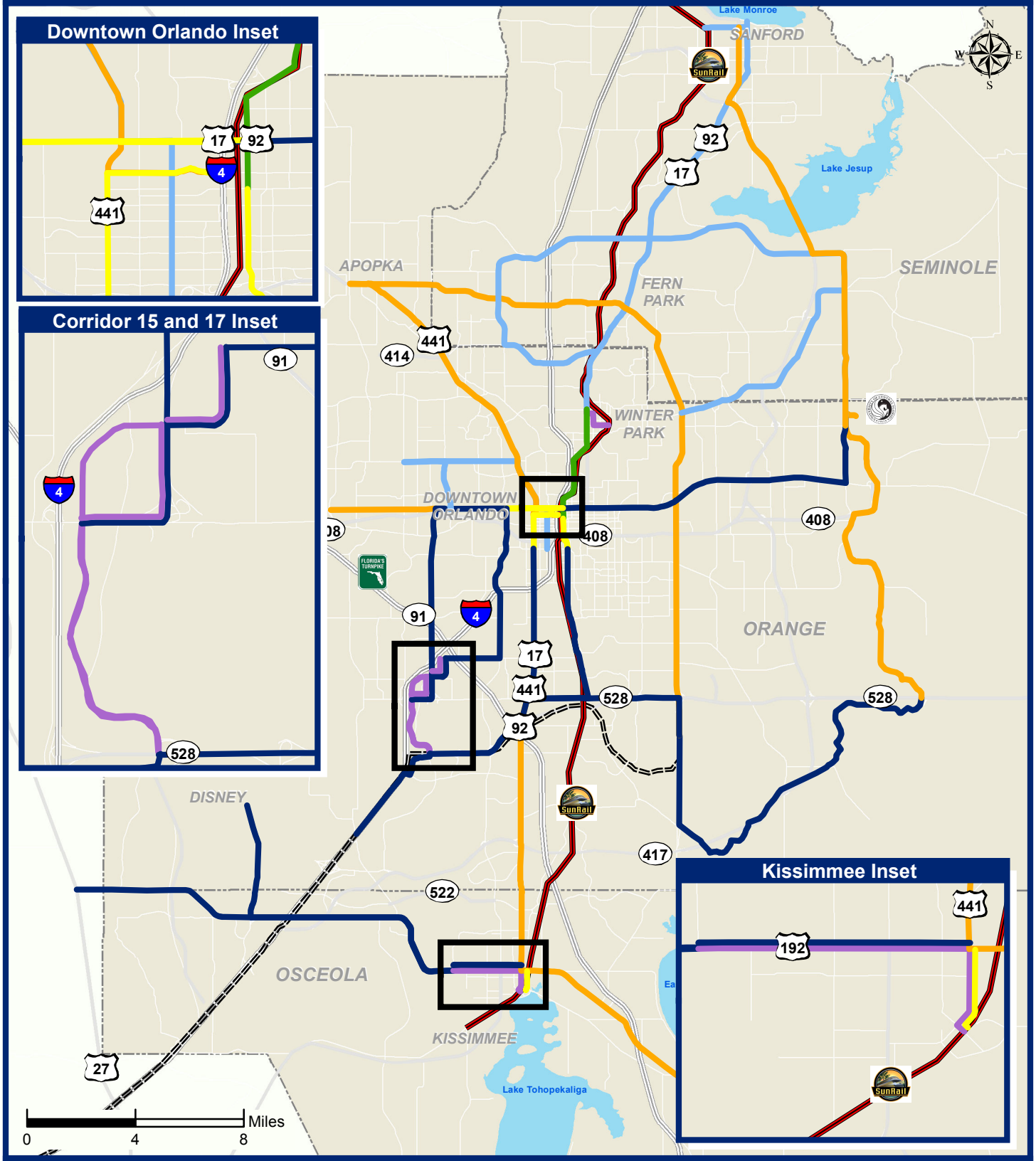
Map 4-5 2025 Network

Legend

- Exclusive BRT
- Express Bus
- Local Bus
- Mixed BRT
- Streetcar
- SunRail
- Potential Future High Speed Rail Corridor
- Interstates
- Toll Roads

LYNX VISION 2030

LYNX Vision 2030



Map 4-6 2030 Network

Legend

- Exclusive BRT
- Mixed BRT
- SunRail
- Express Bus
- Streetcar
- Interstates
- Local Bus
- Light Rail
- Toll Roads

LYNX VISION 2030

5. Supporting Network

In addition to the primary modal assignments made for the corridors, a supporting network of community connectors, flex-route circulators, local bus, express bus, and BRT was developed. This supporting network provides a connection between the corridors and other areas where people live, work, recreate, and shop.

COMMUNITY CONNECTORS AND FLEX-ROUTE CIRCULATORS

A community connector circulates on a specific route and makes frequent stops at pre-determined bus stops. It is used to connect activity centers to the corridor. The flex-route circulator operates in a specified area and along a pre-determined route, although upon request the service can deviate from the route as long as it is still within the service area. This type of service works well in areas where origins and destinations are dispersed and there are lower levels of ridership.

In several instances, multiple premium modes may be recommended for the same corridor to provide feeder service and connectivity. Multiple modes are recommended when the relationship between the two modes and the potential trip levels could successfully support more than one premium service. For example, BRT is recommended in the US 192 corridor to connect with streetcar in the downtown Kissimmee area.

To develop the underlying network, activity centers and bus stops were examined. Using aggregated daily boardings and alightings at each bus stop, locations with higher and lower current transit ridership were identified. Using the activity centers and bus stops to identify areas that needed to be connected to the corridors, a supporting network was developed. Map 5-1 displays the supporting network of community connectors and flex-route circulators.

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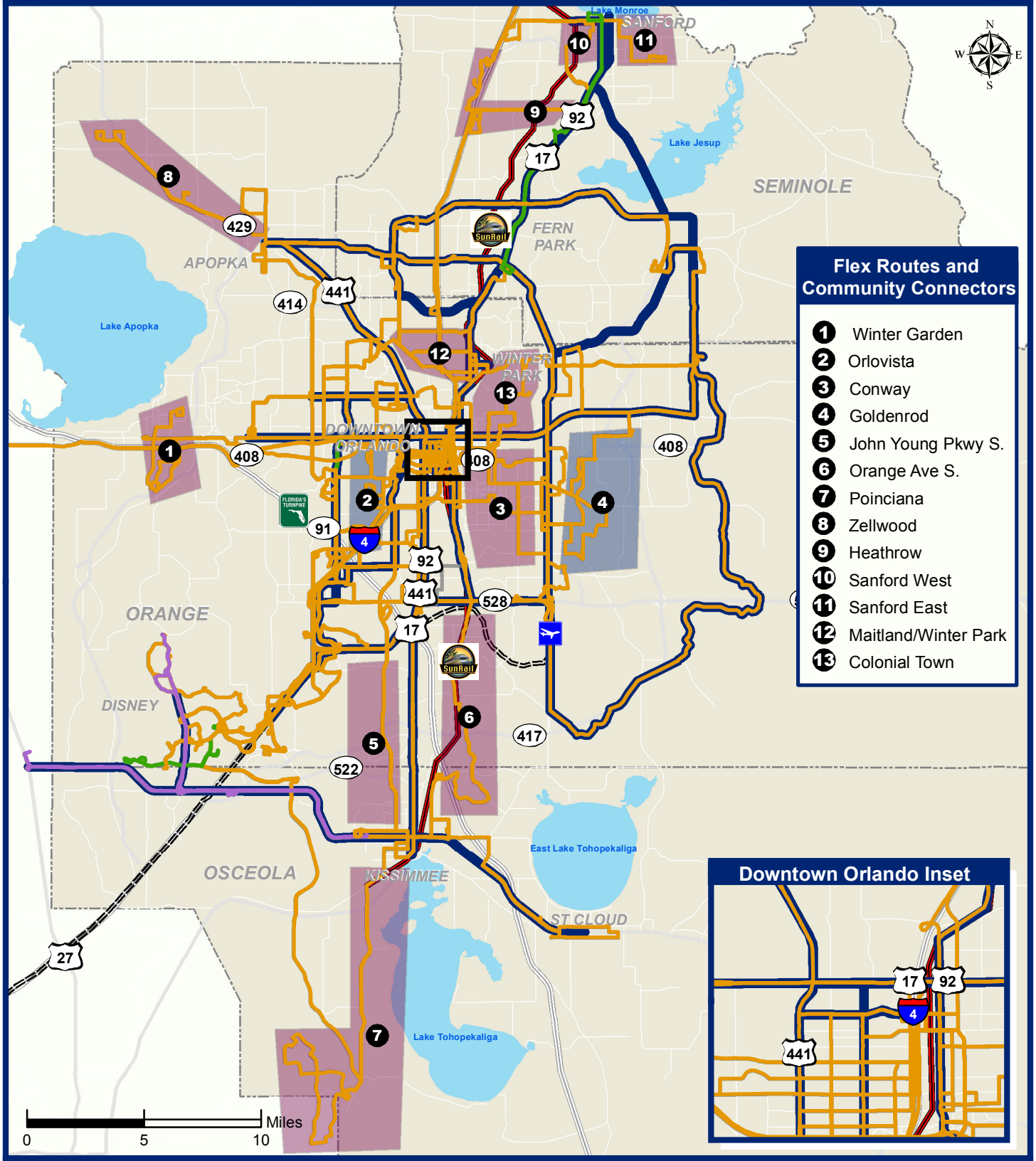


Flex Routes and Community Connectors

1. Winter Garden
2. Orlovista
3. Conway
4. Goldenrod
5. John Young Pkwy S.
6. Orange Ave S.
7. Poinciana
8. Zellwood
9. Heathrow
10. Sanford West
11. Sanford East
12. Maitland/Winter Park
13. Colonial Town

Downtown Orlando Inset

Map 5-1 Community Connectors and Flex-Route Circulators

Legend

- 15 Minutes
- 30 Minutes
- 60 Minutes
- Community Connector
- Flex Route Circulators
- Existing Local Bus Network
- Premium Corridor
- SunRail
- Potential Future High Speed Rail Corridor
- Interstates

LYNX VISION 2030

6. Financial Analysis

The previous sections have described how *LYNX Vision 2030* was developed. This section focuses on how LYNX can potentially fund these improvements. To perform the financial analysis, the financial model that was developed for the *LYNX FY 2011-to-FY 2014 Short Range Transit Plan* was extended to project costs and revenues through FY 2030.

OPERATING AND CAPITAL COST ASSUMPTIONS

Within the financial model, future year costs are projected based on changes in service levels and changes in annual cost escalation rates for operating and maintenance cost drivers. Costs were evaluated for the baseline scenario and the future alternative TOD and Trend scenarios.

Operating Costs

The baseline scenario assumes no changes to existing levels of service over the FY 2011 to FY 2030 time period. In the baseline scenario, operating and maintenance costs are assumed to increase from $116.4 million in FY 2011 to $238.6 million in FY 2030, which reflects a compound annual average growth rate of 3.8 percent.

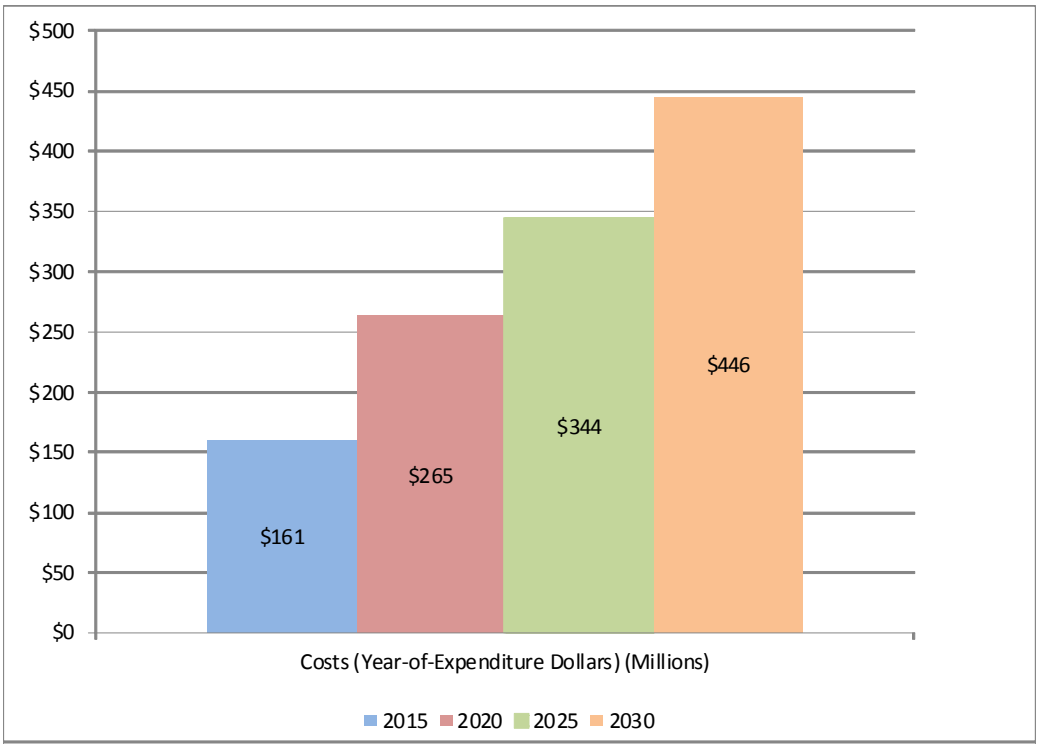
By providing increased service under the TOD and Trend scenarios, costs increase under these scenarios. TOD scenario operating costs are shown in Figure 6-1. In the TOD scenario, costs are expected to be $161 million in 2015 and $446 million in 2030. According to the corridor evaluation, premium service in the Trend scenario differs from the TOD scenario on four corridors. Service type and level of service assumptions are consistent between the TOD and Trend scenarios on the remaining corridors. Compared to the TOD scenario, the Trend scenario's annual costs are projected to be lower by approximately $4.4 million in FY 2020, $7.2 million in FY 2025, and $25.9 million in FY 2030.

Capital Costs

Capital requirements in the baseline scenario include costs associated with fleet replacement, passenger amenities, service expansion projects, additional operating buses, other capital projects, and State Infrastructure Bank (SIB) loan and bus lease payments. Annual capital

costs are projected to vary from year to year primarily based on the required level of vehicle replacement and the timing of service expansion projects and maintenance facility projects.

Figure 6-1
TOD Scenario Operating Costs

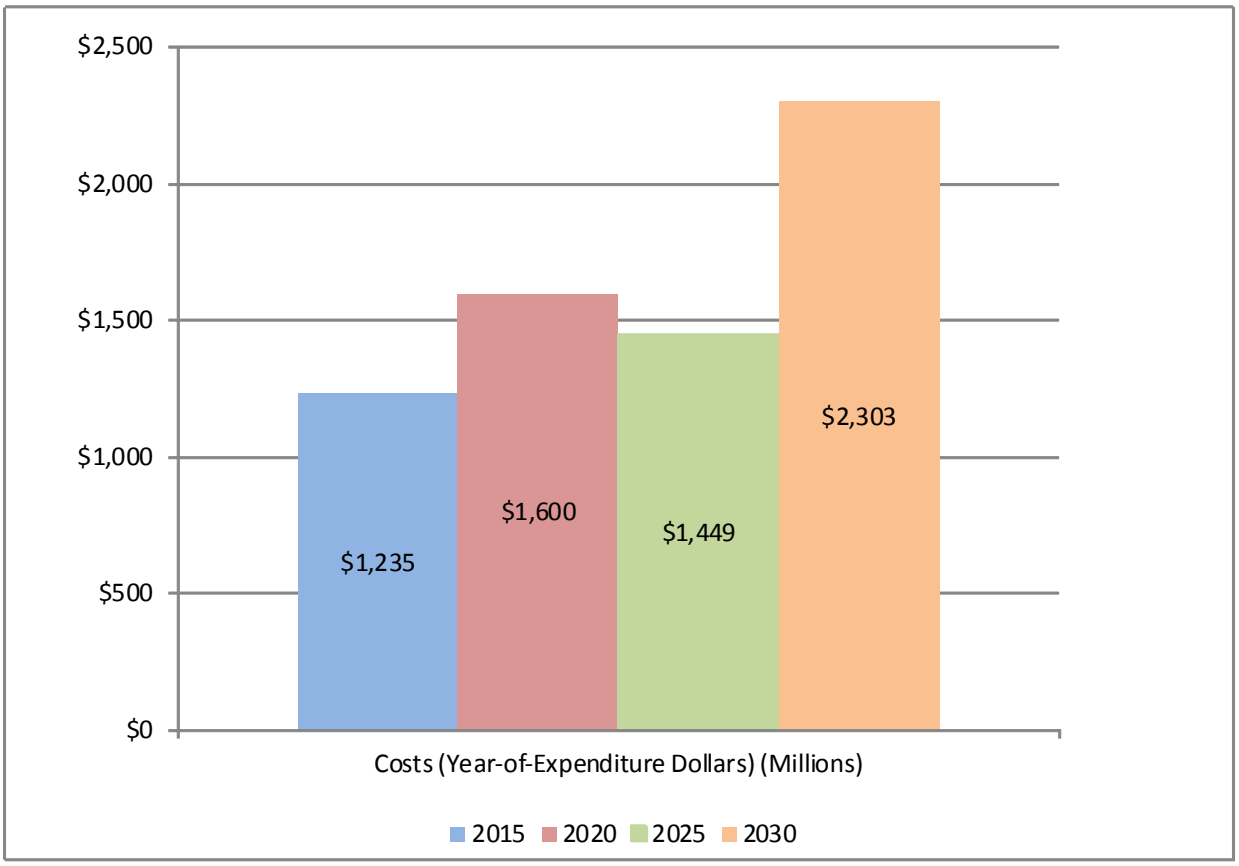


Several assumptions were used to develop capital cost estimates for the TOD and Trend scenarios. Unit costs for all of the modes are assumed to grow at 3 percent per year. Vehicle purchases for new and expansion local bus routes, enhanced express bus, and the circulator network include a 20-percent spare ratio.

In the TOD scenario, approximately 96 percent of total costs reflect implementation of three premium modes: BRT mixed traffic projects, BRT exclusive lane projects, and streetcar/light rail projects. Vehicle acquisition associated with implementing new and improving existing local routes, enhanced express bus, and the circulator network combined with lifecycle replacement of these vehicles represents the remaining 4 percent. In the Trend scenario, implementation costs are 94 percent, and vehicle acquisition comprises the remaining 6 percent. The slight

difference in the two scenarios is related to enhanced express bus requirements in Segment 6-1 in FY 2030. Figure 6-2 shows the projected TOD scenario capital costs for 2015 through 2030.

Figure 6-2
TOD Scenario Capital Costs



OPERATING AND CAPITAL REVENUE ASSUMPTIONS

Revenue sources to be explored to fund these improvements include the following:

- Existing Federal, State and local revenue sources,
- Additional gas tax revenue,
- Rental car surcharge, and
- County transportation surtax.

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7. Findings and Recommendations

A series of findings and recommendations was developed as a result of the analysis completed as part of the *LYNX Vision 2030* plan. The recommendations were divided into three categories: near-term, mid-term, and long-term. Recommendations for each category are listed below and described further in Table 7-1.

Near-Term Recommendations

- Work with MetroPlan to ensure that *LYNX Vision 2030* is incorporated into 2040 LRTP update and future transit development plan (TDP) updates
- Meet with local jurisdictions and MetroPlan Land Use Subcommittee to discuss how localities can make adopted LRTP land use plan a reality
- Ensure changes do not create disproportionate adverse impacts to under-represented individuals
- Explore options for dedicated/supplementary funding for transit
- Develop and implement bicycle- and pedestrian-friendly land use policies
- Continue coordination and discussions with stakeholders

Mid-Term Recommendations

- Update the plan on a regular basis
- Identify additional corridors for inclusion in next update
- Work with counties and municipalities to develop transit-supportive growth plans
- Undertake individual corridor studies to identify better termini, plan operational improvements, and develop specific implementation plans
- Study the possibility of implementing Limited Stop Connector Service
- Secure dedicated funding source for transit
- Identify locations for park-and-ride lots
- Continue coordination and discussions with stakeholders

Long-Term Recommendations

- Monitor changing conditions
- Continue coordination and discussions with stakeholders

Table 7-1
LYNX Vision 2030 Findings & Recommendations

Action Item	Description/Details of Action Item
Near-term Actions	
1. Work with MetroPlan to ensure that *LYNX Vision 2030* is incorporated into 2040 LRTP update.	MetroPlan should ensure that the *2040 LRTP* update is consistant with *LYNX Vision 2030*. Interagency coordination is also necessary to ensure that the analysis and recommendations developed as part of the *LYNX Vision 2030* are incorporated into the 2040 MetroPlan LRTP update and future TDP updates.
2. Meet with local jurisdictions and MetroPlan Land Use Subcommittee to discuss how localities can make adopted LRTP land use plan a reality.	Work with the counties and the cities to adopt growth management policies/plans that could include the following characteristics: • Promote infill development and redevelopment in established urban activity centers • Concentrate development around existing and planned major transit facilities • Allow transfers of development rights to urban areas
3. Ensure changes do not create disproportionate adverse impacts to underrepresented individuals.	Any modifications to the existing transit system must not disproportionately affect low-income and minority populations. All service modifications should be evaluated to ensure that these populations do not experience adverse impacts.
4. Explore options for dedicated/ supplementary funding for transit.	A major action for any regional transit authority is to pursue a dedicated funding source for transit. Funding that is free from competing interests enhances stability and is essential in maintaining adequate service levels and planning for future service improvements. In the near-term time period, options for potential dedicated funding sources should be explored.
5. Develop and implement bicycle and pedestrian-friendly land use and zoning policies.	Walking and bicycling should be encouraged, as these modes support transit services. Existing land use and zoning policies should be modified and new policies should be adopted to improve the safety and comfort of bicyclists and pedestrians. A key aspect of these policies should involve the implementation of a more complete, accessible network of sidewalks and bicycle paths.
6. Continue coordination and discussions with stakeholders.	This item includes continuing to coordinate public involvement activities to engage key stakeholders and the public in a review of the recommended alternatives and modes for each corridor. Key stakeholders include Disney, Orlando International Airport, and the University of Central Florida, for example.

Table 7-1 (continued)
***LYNX Vision 2030* Findings & Recommendations**

Action Item	Description/Details of Action Item
Mid-term Actions	
7. Update the plan on a regular basis.	*LYNX Vision 2030* should be updated regularly to ensure conformity with all transit system modifications, population characteristics, and policies enacted by other local government entities.
8. Identify additional corridors for inclusion in next update.	Additional corridors throughout the region should be indentified for analysis to ensure a dynamic approach to providing premium transit service in the region.
9. Work with counties and municipalities to develop transit-supportive growth plans (including transit-supportive corridor plans).	Work with counties and cities to adopt policies/plans such as: • Subarea and station area plans and policies that include initiatives to develop or redevelop in the premium transit/rail corridors • Policies that promote mixed-use development within and near premium transit/rail corridor • Requirements and/or capital improvement plans that outline sidewalk improvements, connected streets and walkways, and other pedestrian infrastructure around stations
10. Undertake individual corridor studies to identify better termini, plan operational improvements, and develop specific implementation plans.	*LYNX Vision 2030* provides a high- and mid-level analysis that identifies appropriate transit modes based on a variety of criteria for 22 corridors. Individual corridors should be analyzed further in order to flesh out operational characteristics, termini, stop locations, and a specific plan for funding and implementation.
11. Study the possibility of implementing Limited Stop Connector Service.	In addition to rail components, *LYNX Vision 2030* evaluates Local Bus, Express Bus, and BRT modes for implementation in each corridor. Limited Stop Connector Service is an additional transit mode that should be considered for providing premium service in the region.
12. Secure dedicated funding source for transit.	A major action for any regional transit authority is to pursue a dedicated funding source for transit. Funding that is free from competing interests enhances stability and is essential in maintaining adequate service levels and planning for future service improvements. In the mid-term time period, LYNX and its stakeholders should be taking necessary steps to secure a dedicated funding source(s).

Table 7-1 (continued)
***LYNX Vision 2030* Findings & Recommendations**

Action Item	Description/Details of Action Item
Mid-term Actions	
13. Identify locations for park-and-ride lots.	Analysis should be conducted to identify ideal locations for park-and-ride lots throughout the region. Site identification may include right-of-way analysis, evaluating the possibility of public-private partnerships for building new park-and-ride sites, and integrating shared parking facilities in new or existing developments.
14. Continue coordination and discussions with stakeholders.	This item includes continuing to cooordinate public involvement activities to engage key stakeholders and the public in a review of the recommended alternatives for each corridor and the selection of a preferred alternative(s) for mid-term implementation. Key stakeholders include Disney, Orlando International Airport, and the University of Central Florida, for example.
Long-term Actions	
15. Monitor changing conditions.	System modifications, new policies, changing populations, and additional condition changes should be monitored and evaluated. Future plans and route implementation should be informed by changing conditions throughout the region. Particular attention should be paid to development in the Medical City/Innovation Way corridor and SunRail.
16. Continue coordination and discussions with stakeholders.	This item includes continuing to coordinate public involvement activities to engage key stakeholders and the public in a review of the recommended alternatives for each corridor and the selection of a preferred alternative(s) for long-term implementation. Key stakeholders include Disney, Orlando International Airport, and the University of Central Florida, for example.

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