4

Evaluation Methodology

4.1 Evaluation Methodology

A methodology was developed to evaluate the proposed project alternatives and to assess their consistency with the defined goals and objectives. Consistent with the FTA's guidance on conducting Alternatives Analyses, the evaluation methodology is structured around determining the most appropriate mode and alignment for the transportation needs of this corridor.

A three-tier process was used to screen the alternatives:

1. From a range of transportation technologies to a Long List of Alternatives;
2. From the Long List of Alternatives to a Short List of Alternatives; and
3. Ultimately from the Short List of Alternatives to the recommended Locally Preferred Alternative[24].

Each evaluation phase was linked and showed the gradual progression from a qualitative to a quantitative evaluation of the alternatives. Values or ranges of values were assigned to each criterion/measure at each screening level to be applied so that consistent data for each candidate technology and subsequent alternative could be compared and used in the screening. Alternatives whose criteria values do not meet a defined threshold were eliminated. The evaluation methodology provided reliable information on the alternatives for project decision makers.

The first tier "technology" screen was used to eliminate modal technologies that were:

- Least consistent with the Study Area's operating environment and existing rights-of-way (scale and suitability);
- Least able to flexibly and effectively connect the key travel origins and destinations (small, medium and longer distance trip-making);
- Not technically mature and proven for effective passenger transport (reliability and availability);

[24] The screening will result in a recommendation for the Locally Preferred Alternative. Selection of the Locally Preferred Alternative will be informed by public input and will ultimately be at the direction of project decision-makers, including MetroPlan Orlando, responsible for adopting the LPA into the fiscally constrained Long Range Transportation Plan (LRTP).

- Discouraging to broad competition by multiple manufacturers and suppliers, which may result in higher implementation and long term costs; and
- Not consistent with desired short-term (implementation period) and long-term staged solutions (expandability).

This first tier screen was based on primarily qualitative data on each modal technology.

The modal technologies that emerged from the first tier screening were paired with alignments and initial routings/station stops and operating characteristics to create the Long List of Alternatives. The second tier screening incorporated a more comprehensive level of quantitative and qualitative criteria, tied to the goals and objectives, including a range of costs, travel time and potential environmental impacts.

The final tier screening led to the recommendation of the Locally Preferred Alternative and included a qualitative, quantitative, and comparative evaluation, all directly tied to the goals and objectives. This final evaluation was more detailed than the previous screenings due to further developed engineering, operational, environmental, ridership and cost data that was developed for each Short List Alternative. This final screening included an analysis that focused on the key differences among the alternatives across all of the quantitative and qualitative measures, highlighting the advantages and disadvantages of each alternative and identifying the key trade-offs of costs and benefits.

Criteria that were used to implement the alternatives' evaluation are summarized, by project goal, in **Table 4-1.** The overall evaluation methodology is shown in **Figure 4-1.** The results of the alternative evaluation process are described in detail in the following chapters of this Alternatives Analysis Report.

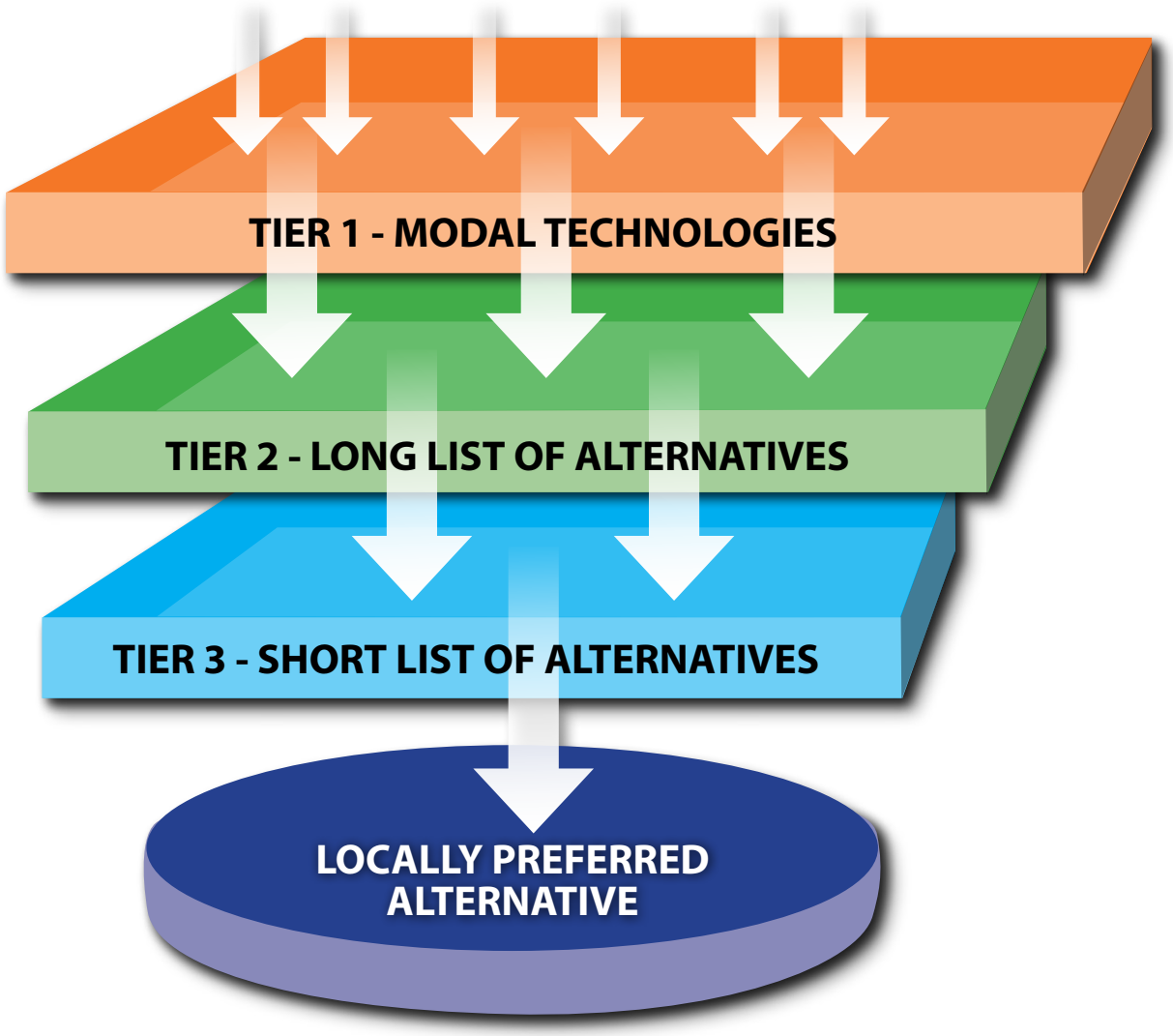
Table 4-1: Evaluation Criteria

GOAL	SCREEN 2 CRITERIA	SCREEN 3 CRITERIA
Improve Mobility and Transportation Access	• Order of Magnitude Travel Time Savings • Number of potential transfer locations • Number of proposed routes in Study Area • Potential to serve employee/student commute and recreational trips • Ability to provide system redundancy • Ability to open/attract new markets to transit service • Potential to increase average travel speed of all modes in corridor	• Travel time savings (total and between major O/D pairs) • Transportation system user benefits • Miles of exclusive guideway • Reduction in number of transfers between major O/D pairs • Number of stations with consistent and multi-modal amenities • Number of proposed routes with headways between 10-15 minutes • Routes structured to serve traditional and tourism-based trips • Change in transit ridership • Number of new transit trips • Number of stations with sidewalk, bike-path and/or park and ride connections

Table 4-1: Evaluation Criteria (continued)

GOAL	SCREEN 2 CRITERIA	SCREEN 3 CRITERIA
Improve Mobility and Transportation Access		• Number of stations primarily accessed by walking • Ability to effectively serve riders during maintenance and other outages • Number of stations located at signalized intersections with sufficient pedestrian phases • Change in traveler-transport capacity of each corridor • Number of TSP-connected traffic signals resulting from project • Potential change in highway LOS (number of miles or locations improved)
Enhance the Livability and Economic Competitiveness of the Study Area through an Improved Transportation System	• Potential need for right-of-way acquisition • Ability to serve major residential and employment centers directly • Ability to directly serve proposed DRIs	• Percent of alignment on new right-of-way • Number of major residential (within ¼ mile) and employment (within 1,000 feet) centers directly served by stations • Transit oriented development potential • Ability to utilize DRI transportation commitments • Maintains or improves service to transit-dependent populations
Develop the Most Efficient Transportation System, Which Maximizes Limited Resources for the Greatest Public Benefit	• Order of Magnitude Capital Cost • Order of Magnitude O&M Cost • Serves SunRail with a mix of route types (express and local) • Compatibility with existing fleet and facilities • Ability to implement project in stages • Implementation timeframe	• Capital Cost (Total and Per Mile) • O&M Cost • Cost-effectiveness • Acreage of private property to be acquired • Revenue and potential subsidy (annual total and per rider) • Potential to qualify for Small or New Starts Funding • Potential for public/private funding opportunities • Direct, quality connection to SunRail (less than ¼ mile walk) • Serves SunRail with consistent feeder and distributor headways • Number of new support facilities required • Ease of expandability of proposed project • Implementation timeframe
Develop a Transit System Consistent With Adopted Local and Regional Plans and Policies	• Consistency with adopted plans • Builds upon previous/current LYNX planning efforts • Consistency with CRA objectives • Potential to support compact development	• Consistency with adopted plans • Builds upon previous/current LYNX planning efforts • Consistency with CRA objectives • Potential to support compact development • Connectivity to other planned, funded transportation improvements
Preserve and Enhance the Environment, Natural Resources and Open Space	• Potential to use low-emission fleet • Potential to impact sensitive environmental areas	• Use of low-emission fleet • Reduction in the growth of Vehicle Miles Travelled • Level of potential impact: Noise, Parklands/4f, Hazardous Materials, Water Quality, Cultural Resources, Air Quality, Visual Quality

Source: VHB



Three Tier Screening Process

Figure 4-1

5 Modal Technologies

5.1 Technology Identification

The modal technologies being considered for the US 192 AA Study Area were structured to meet the defined purpose and need, and the goals and objectives of the project. The modal technologies would therefore improve transit travel times, frequency, coverage and the LYNX system accessibility and identity within the Study Area for existing and projected riders. The modal technologies that were considered are in operation or have been proposed to operate in the region and were based on public input, previous planning documents and overall suitability for the corridor.

5.2 Technology Description

Short descriptions of the modal technologies are listed below. More information on these modal technologies is included in Appendix B.

Enhanced Bus

The Enhanced Bus Alternative would include minimal capital infrastructure investment in the Osceola and Kissimmee corridors. Traffic Signal Priority would be installed at select locations to improve the travel time and reliability of bus service. Bus service frequency would be expanded to more frequent headways.[25]

Bus Rapid Transit

The Bus Rapid Transit (BRT) Alternative would create a premium bus service along the Kissimmee and Osceola Corridors. BRT uses a variety of infrastructure and technological improvements to improve the travel time and reliability of bus service. These infrastructure improvements could

[25] The Enhanced Bus Alternative was originally called the Transportation Systems Management Alternative in order to be consistent with FTA guidance. The passage of the federal transportation bill, Moving Ahead for Progress in the 21st Century (MAP-21) removed the need for the TSM Alternative in the middle of the project. The alternative was retained and renamed the "Enhanced Bus" Alternative.

include exclusive running-ways, queue jumps and/or transit-signal-priority at intersections. BRT infrastructure could be used by multiple BRT routes that serve geographical different termini. BRT stop spacing is typically less than local bus service (every 1/2 to 1 mile apart). BRT stations typically are more developed than standard bus stops, and include enhancements such as "next-bus" enunciators, sheltered waiting areas and fare-payment machinery. The improvements associated with BRT can also benefit non-BRT bus routes using the same corridor by speeding traffic flow and reducing sources of delay.

Light Rail

The Light Rail (LRT) Alternative would create a fixed rail transit line serving the Osceola and Kissimmee Corridors. The LRT Alternative would be best accommodated within an exclusive running-way but mixed-traffic segments could be investigated for portions of the corridor. LRT systems are typically comprised of 1 to 2 tracks for most of its route.

The LRT Alternative would use either US 192 or Osceola Parkway for its operations and would be comprised of a single route that could not serve more than two geographically separated termini.

LRT stop spacing is typically 1/2 to 1-mile apart. LRT stations typically include slightly elevated platforms, shelters, next-train enunciators, and fare payment machinery.

Streetcar

The Streetcar Alternative would create a fixed rail transit line serving the Osceola and Kissimmee Corridors. The streetcar would most likely be accommodated in mixed traffic, although in some locations it would operate in an exclusive guideway. Streetcars are typically comprised of 1 to 2 tracks for most of its route.

The Streetcar Alternative would use either US 192 or Osceola Parkway for its operations and would be comprised of a single route that could not serve more than two geographically separated termini.

Streetcar stop spacing is typically every 1 to 2 blocks. It is assumed that a Streetcar Alternative would stop at or close to the existing bus stops along the corridor.

Commuter Rail

The Commuter Rail Alternative would create a fixed rail transit line serving the Osceola Corridor. The Commuter Rail Alternative would require an exclusive running-way, typically single track with sections of double track, for the entire length of its route.

Commuter rail systems typically share right-of-way and infrastructure with freight rail providers, however there is no existing rail infrastructure serving east-west movements (the Osceola Corridor) within the study area, and SunRail is already slated to provide service for north-south movements. The Commuter Rail Alternative would use either US 192 or Osceola Parkway for its

operations and would be comprised of a single route that could not serve more than two geographically separated termini.

Commuter Rail stop spacing is typically 2 to 10-miles apart. Commuter Rail stations typically include slightly elevated platforms with shelters. Commuter Rail service typically operates every 15-60 minutes.

Commuter rail is typically used to connect outlying regions to centralized cities or downtowns over longer distances, providing long-haul, and limited hour service. Commuter Rail services typically have more frequent service during peak commute times - morning and evening rush hours - and limited or no service at other times. Commuter Rail systems utilize both on-board and off-board fare collection systems, with barrier-separated fare zones.

Heavy Rail

The Heavy Rail Alternative would create a fixed guideway, two rail system within an exclusive running-way.

The Heavy Rail Alternative would use either US 192 or Osceola Parkway for its operations and would be comprised of a single route that could not serve more than two geographically separated termini.

Heavy Rail stop spacing is typically every 1 to 2 miles. Heavy Rail stations must be elevated and typically include shelters, next train enunciators, and fare payment infrastructure.

Monorail

The Monorail Alternative would create a fixed guideway system within an exclusive running-way. Single beam monorails exist, but are mainly used for uni-directional operation. Two beams would be required for bi-directional operation.

The Monorail Alternative would use either US 192 or Osceola Parkway for its operations and would be comprised of a single route that could not serve more than two geographically separated termini.

Monorail stop spacing is typically every 1/2 to 2 miles. Monorail stations must be elevated and typically include shelters, next train enunciators, and fare payment infrastructure.

High Speed Rail

The High Speed Rail (HSR) Alternative would create a single, fixed rail transit line serving the Osceola Corridor that could not serve more than two geographically separated termini. High-speed rail is a type of passenger transport that operates significantly faster than traditional rail traffic - 150 to 220 mph trains. HSR alignments typically consist of two tracks and must be grade separated, which requires substantial infrastructure. HSR stations are typically spaced 10 miles apart or greater.

Maglev

Maglev (or magnetic levitation) transport, is a form of transportation that suspends, guides and propels vehicles via electromagnetic force.

The Maglev Alternative would create a single, fixed rail transit line serving the Osceola Corridor that could not serve more than two geographically separated termini. The Maglev Alternative will require an exclusive running-way for the entire length of its route. Maglev alignments are typically elevated or tunneled, though at-grade alignments do exist. Maglev stations are typically spaced every 2 to 10 miles apart and require substantial infrastructure.

6

Tier One (Modal Technology) Screening

6.1 Screening Introduction

The first tier screening qualitatively evaluated potential alternative modal technologies and assessed whether they were suitable for use in the corridor.

Five evaluation criteria were developed for the first tier screening, based on the Goals and Objectives. These criteria capture the region's desire to develop a proven alternative which can be implemented in a timely fashion and adapt to the changing transportation needs of the US 192 corridor. The five criteria are:

Consistency of the technology with the Study Area's operating environment and existing right-of-way.

Modal technologies were rated on whether they were compatible with the scale and travel characteristics in the Osceola and Kissimmee corridors and whether the technology was currently in use in the Study Area. Modal technologies scored better if they were lower in overall footprint (right-of-way and station size) and could be integrated into the existing cross-section of US 192 and US 441. Modal technologies which were currently not operational in the Study Area and those that would require fully separated rights-of-way or aerial guideways scored worse. Commuter Rail was considered to be operational in the Study Area since SunRail is currently under construction.

Flexibility of the technology in connecting key travel origins and destinations.

Modal technologies were rated on whether they could serve the short, medium, and long trip distances exhibited by travelers in the Study Area today, which are expected to continue in the future. Modal technologies scored better if they were able to have stops spaced close enough to serve short and medium distance trips, while still improving overall travel times. Modal technologies which required stops to be spaced far apart in to achieve travel time savings scored worse.

Availability of technology from multiple vendors.

Modal technologies were rated on whether their physical components and vehicles were available from a variety of different vendors, which would enable competitive bidding, cost-effective implementation and cost-effective short and long-term maintenance. Modal technologies available from multiple vendors scored better, those which were proprietary to single (or only a few) companies scored worse.

Maturity of the technology.

Modal technologies were rated on whether they had been implemented in a variety of locations (in Florida, the United States or North America) and were proven as a reliable transit mode. Modal technologies scored better if they were used by multiple transit agencies, and if the technology had been used long enough to have a proven record of reliability. Modal technologies which had not been implemented for public service, those that had only been implemented in a few locations, or those that have not been in use for a long period of time (thus allowing for proof of their reliability) scored worse.

Expandability of the technology.

Modal technologies were rated on whether they could be expanded easily to meet the short and long-term needs of the corridor. Modal technologies scored better if they were able to be expanded with minimal impact and cost. Modal technologies which would require significant investment in guideways, propulsion, or stations to expand service scored worse.

The summary results of this analysis are reported in **Table 6-1** were scored from one to five, with five being the best and one being the worst.

Table 6-1: Tier One Screening Results

Evaluation Criteria	Enhanced Bus	Bus Rapid Transit	Light Rail	Streetcar	Commuter Rail	Heavy Rail	Monorail	High Speed Rail	Maglev
Consistency	5	5	4	4	3	2	3	1	1
Flexibility	5	5	3	3	1	1	3	1	1
Availability	5	5	5	5	5	5	1	2	1
Maturity	5	5	5	5	5	5	3	3	4
Expandability	5	5	4	4	3	3	3	2	2
Total	**25**	**25**	**21**	**21**	**17**	**16**	**13**	**9**	**9**

Maximum score=25; 5=Best, 1=Worst

Source: VHB

6.2 Scoring Results

Enhanced Bus and Bus Rapid Transit

Implementing additional or improved Bus Service or introducing Bus Rapid Transit (BRT) service would be consistent with the operating environment of the Study Area, and both technologies could be expanded easily to meet demand. Also, due to their operational characteristics, Bus and BRT systems would be able service short, medium, and long distance trips while simultaneously improving the travel times of each. Bus and BRT systems are mature technologies proven in many cities throughout the United States. There are multiple bus manufacturers that compete for bus delivery contracts which ensure price, delivery and quality competitiveness. Both Bus and BRT have been advanced for further evaluation in this study.

Light Rail and Streetcar

A Light Rail and/or Streetcar system would be consistent with the Study Area's operating environment and existing right-of-way. Both Light Rail and Streetcar systems require moderate infrastructure and are flexible enough that they can be modified/extended to serve future demand and travel patterns. While they require more infrastructure and a longer implementation timeframe than Bus systems, they are equally mature and available in the United States. Streetcar systems are best suited for compact, downtown areas where multiple short distance trip-making is present. As such, Streetcar may be only suited for the downtown Kissimmee portions of the Study Area. The Light Rail and Streetcar technologies have been advanced for further evaluation in this study.

Commuter Rail

Commuter Rail would be consistent with the Study Area's operating environment, but would be inconsistent with the existing right-of-way. Commuter Rail requires a dedicated rail alignment for operations. In order to optimize travel time savings, Commuter Rail station spacing is typically far apart and stations require broad footprints. This makes it not suitable to serve short and medium distance trips. Additionally, extensions and modifications to Commuter Rail lines are quite costly as they require new track systems and stations. Commuter Rail is a proven and cost-competitive technology. Commuter Rail was not advanced for further consideration in this study.

Heavy Rail

A Heavy Rail system would be inconsistent with the Study Area's operating environment and existing right-of-way. An aerial guideway and/or physically separated right-of-way would be primarily required for operational and safety reasons. While Heavy Rail is a proven technology it is best suited for dense, urban environments. Extensions and modifications to Heavy Rail lines are quite costly as they require new structures, track, systems and stations. Heave Rail is fixed to a guideway and while it can serve trips of varying lengths, it is inflexible. Heavy Rail would have a long implementation timeframe. Heavy Rail was not advanced for further consideration in this study.

Monorail

A Monorail system would not be consistent with the Study Area's operating environment and existing right-of-way. An aerial guideway and/or physically separated right-of-way would be required for operational and safety reasons. Additionally, extensions and modifications to Monorail operations are quite costly as they require new track and stations. While Monorail systems are operational in the United States, they are not well proven as a reliable technology for consistent commuter service over the distance considered in the Study Area. Monorail is a proprietary technology with few manufacturers which may result in short or long-term cost issues. Monorail was not advanced for further evaluation in this study.

High Speed Rail

High Speed Rail would be inconsistent with the Study Area's operating environment and existing right-of-way. An aerial guideway and/or physically separated right-of-way would be required for operational and safety reasons. Additionally, since the travel time savings of a High Speed Rail system are largely dependent on long distances between stops, this option would be unable to serve short and medium distance trips. High Speed Rail is a relatively unproven technology in the United States. While High Speed Rail projects in the U.S. have spurred competition, the selected technology would most likely be proprietary. High Speed Rail requires a separate dedicated right-of-way with significant infrastructure. As such, its ability to be expanded is highly limited. High Speed Rail has a very long implementation timeframe. High Speed Rail was not advanced for further consideration in this study.

Maglev

Maglev would be inconsistent with the Study Area's operating environment and existing right-of-way. An aerial guideway and/or physically separated right-of-way would be required for operational and safety reasons. Additionally, since the travel time savings of Maglev systems are largely dependent on long distances between stops, this option would be unable to serve short and medium distance trips. Maglev is not a proven technology in reliable passenger service in the United States today. Additionally the technology is proprietary to only a few manufacturers which may result in short and long-term cost issues. Extensions and modifications would require new track, structures, systems and stations. Maglev was not advanced for further evaluation in this study.

Based on this evaluation, the best technology alternatives for the US 192 AA Study Area are Bus, BRT, Light Rail, and Streetcar. The remaining alternatives – Commuter Rail, Heavy Rail, High Speed Rail, Maglev, and Monorail, were significantly lower performing than the top four. Bus, BRT, light rail, and streetcar modal technologies will all be advanced for further study in the Long List of Alternatives.

7

Description of the Long List of Alternatives

7.1 Introduction

Each of the four technologies that advanced past the Tier 1 screening was further developed to formulate the Long List of Alternatives (LLA) to include potential routes, alignments, stations and service patterns. A No Build Alternative was developed and will be included in the Alternatives Analysis as a basis of comparison with the Build Alternatives.

A consistent analysis year is required for the comparative assessment of the alternatives. Consistent with FTA's requirement that forecasts are based upon the current, regionally adopted LRTP, year 2030 has been defined as the analysis year for the study. The MetroPlan 2030 Long Range Transportation Plan (LRTP) was first adopted in August 2009 and has been amended periodically since then. While the 2040 LRTP is currently under development, it is not adopted and is not expected to be adopted prior to completion of this study. Based upon the nature of the Study Area needs, it is expected that the project implementation year will range from 2016 to 2025.

Logical termini and key transit stops for each of the build alternatives were defined based on existing high ridership locations and areas with existing/proposed significant land development. The logical termini include:

- Four Corners Wal-Mart (intersection of Osceola, Orange, Lake and Polk Counties)
- Walt Disney World
- Kissimmee SunRail Station/Kissimmee Intermodal Facility
- Osceola Parkway SunRail Station

Sixteen preliminary Long List Alternatives (one No Build, and 15 Build alternatives) were developed using various combinations of the following elements:

- **Mode/Technology** – The four technologies that advanced from the Tier 1 screening – bus, BRT, Streetcar and LRT.

- **Alignment** – Service is primarily located along US 192 between downtown Kissimmee and the Four Corners Wal-Mart with supplementary alignments along World Drive and US 441

(Orange Blossom Trail) providing service to Walt Disney World and the Osceola Parkway SunRail Station respectively. Several BRT alternatives also propose use of Osceola Parkway for Express Service.

- **Service Type** – The main service goal for all of the alternatives is to provide expeditious service between the logical termini; the nuances of the proposed service types are described below.

- **Infrastructure** – The following infrastructure improvements are proposed to help improve the speed of the BRT or LRT vehicles throughout the Study Area:

  - Queue jump lanes: There are at least two widely-used categories of queue jumpers—those with a physical lane only and those that are integrated with traffic signals. Physical queue jump lanes are designated for use by transit vehicles and only allow transit vehicles to pass a queue of general traffic ("jumping the queue") at a traffic bottleneck. When queue jump lanes are not integrated with traffic signals, they typically require a merging lane or bus bypass lanes on the far side of the bottleneck to allow the transit vehicle to safely merge into traffic. Queue jumpers integrated with traffic signals have a special traffic signal that gives an early green light to buses, allowing them to move into the general lanes ahead of other traffic. A right-turn-only signal is often displayed in advance of the bus-only green to clear any right- turning vehicles from the lane.

  - Transit Signal Priority (TSP): TSP can alter signal timing to give priority to BRT vehicles. Signal timing is changed by extending the green for the detected vehicle, truncating an opposing movement to provide an early green, or inserting a bus movement to reduce delay to the BRT. This allows BRT vehicles to improve schedule adherence, reliability, and speed. The technology requires installation of sensors on buses and at intersections along bus routes. Available strategies include green extension (extending the green phase to allow BRT vehicles to travel through) and early green (providing an early green signal to allow BRT vehicles to spend less time at an intersection). Sometimes transit signal priority treatments may be coupled with dedicated queue bypass lanes, or a special "buses only" signal, where BRT vehicles stop on the near side shoulder to provide buses with the right-of-way for rejoining the general purpose travel lanes. Several TSP technologies and signal priority methods are available. A basic TSP system consists of communication from a BRT vehicle to a receiver at signalized intersections. A signal is sent from the BRT vehicle to the signal at the upcoming intersection. In turn, priority may be given to that vehicle. Emitters on board buses use short range communications such as infrared and radio frequency (RF) to communicate with the receivers. The controllers within the Study Area are currently enabled to accommodate TSP.

To support the goal of providing expeditious service, running the service in dedicated lanes is also proposed for several of the alternatives. Three levels of dedicated lanes are considered for the LRT and BRT alternatives: no dedicated lanes (BRT alternatives only); providing dedicated lanes over a portion of the US 192 corridor – where the existing congestion is heaviest (the area has generally been defined as being between Celebration Avenue and downtown Kissimmee); or providing dedicated lanes along US 192 from the Four Corners Wal-Mart to downtown Kissimmee. Dedicated lanes may be incorporated into the roadway cross-section by constructing additional lanes to the outside of the existing general use lanes, or by converting existing general

use lane to be designated for transit use only. Dedicated lanes and queue jumps are implemented exclusive of one another, so queue jumps would not be used in locations where there are dedicated lanes.

The alternatives that comprise the Long List are described in further detail below, are summarized in **Error! Reference source not found.** at the end of this section and are shown in **Figures 7-1 to 7-16.**

7.2 No Build Alternative

The No Build Alternative reflects the continuation of existing traffic and transit operations within the Study Area to the analysis year (2030). It is assumed that LYNX would maintain its current vehicle type and schedule for bus operations along the corridor. The No Build Alternative includes programmed transportation infrastructure and service improvements in the Study Area that have committed funding and are included in the MetroPlan Transportation Improvement Program (FY2013-2017). The No Build Alternative is a requirement in Alternatives Analysis studies and serves as a comparison point for future analyses.

Projects included in the No Build Alternative would generally expand the capacity of the transportation system and would generally be located in the eastern section of the Study Area in and around Kissimmee, including the construction of the Kissimmee Intermodal Facility and SunRail Phase II.

The No Build Alternative assumes relocation of the significant transfer and bus activity that currently occurs at the Osceola Square SuperStop to the Kissimmee Intermodal Facility and the provision of feeder services to SunRail; this is also true of the Enhanced Bus and Build Alternatives which include all projects and assumptions from the No Build Alternative.

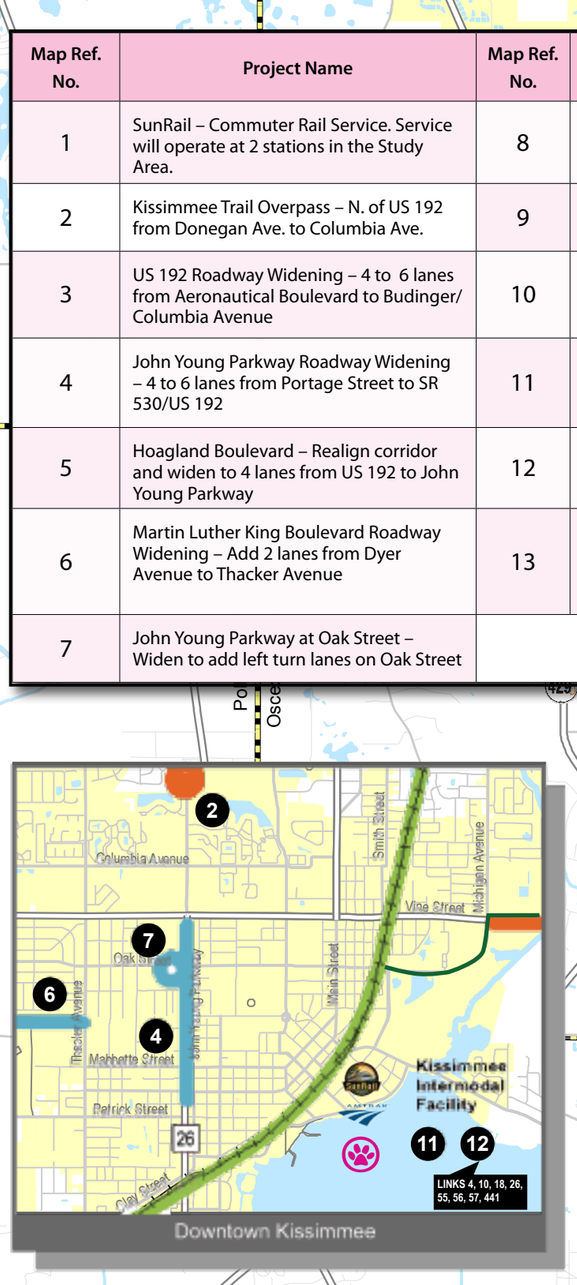
Table 7-1 lists the specific projects included as part of the No Build Alternative.

Table 7-1: No Build Alternative Projects

Map Reference Number	Project Name	Description	Project Type: Transit/Roadway/ Other	Capacity Expansion/ Repair Existing Facilities	Anticipated Year of Completion
1	SunRail	Commuter rail service operating at 30 minute frequency during the peak and 2-hour midday frequency on weekdays only. This service will operate at 4 stations in Osceola County.	Transit—Operating and capital	Capacity expansion	Operational—2016
2	Kissimmee Trail Overpass	North of US 192 from Donegan Ave. to Columbia Ave.	Infrastructure—Capital	Expansion	2013
3	US 192	Widen to 6 lanes from Aeronautical Boulevard to Budinger/Columbia Avenue	Roadway—Capital	Increase Capacity	2014
4	John Young Parkway	Widen to 6 lanes from Portage Street to SR 530/US 192	Roadway—Capital	Increase Capacity	2016
5	Hoagland Boulevard	Realign corridor and widen to 4 lanes US 192 to John Young Parkway	Roadway—Capital	Increase Capacity	2016
6	Martin Luther King Boulevard	Add 2 lane construction from Dyer Avenue to Thacker Avenue	Roadway—Capital	Increase Capacity	2012
7	John Young Parkway at Oak Street	Widening to add left turn lanes on Oak Street	Roadway—Capital	Increase Capacity	2013
8	Carroll Street	Widen to 4 lanes from John Young Parkway to Michigan Street	Roadway—Capital	Increase Capacity	2015
9	Simpson Road	Widen to 4 lanes from US 192 to Florida's Turnpike	Roadway—Capital	Increase Capacity	2016
10	Shady Lane	Widen to 5 lanes from Partin Settlement to US 192	Roadway—Capital	Increase Capacity	2016
11	Kissimmee Intermodal Center	Facility that will allow for intermodal connections between buses, pedestrians, and rail.	Transit—Capital	Increase Capacity	2012
12	Link 26	Modify service to 30 minute frequency	Transit – Operating	Capacity Expansion	2013—peak hour 2015—all day
13	Osceola Express Route	Express service from downtown Orlando to Osceola County along a major corridor from LCS to Michigan	Transit – Operating	Increase Capacity	2013
N/A	Kissimmee SunRail Connector	Weekday fixed-route peak service with stops at Osceola Square Mall, Osceola Regional Medical Center, Kissimmee AMTRAK, and Sand Lake Road Station	Transit – Operating	Capacity Expansion	2014-16 Service will be discontinued in 2016 with Phase II of SunRail

Source: MetroPlan Transportation Improvement Program (FY2013-2017)

Map Ref. No.	Project Name	Map Ref. No.	Project Name
1	SunRail – Commuter Rail Service. Service will operate at 2 stations in the Study Area.	8	Carroll Street – Widen to 4 lanes from John Young Parkway to Michigan Street
2	Kissimmee Trail Overpass – N. of US 192 from Donegan Ave. to Columbia Ave.	9	Simpson Road – Widen to 4 lanes from US 192 to Florida's Turnpike
3	US 192 Roadway Widening – 4 to 6 lanes from Aeronautical Boulevard to Budinger/ Columbia Avenue	10	Shady Lane – Widen to 5 lanes from Partin Settlement Road to US 192
4	John Young Parkway Roadway Widening – 4 to 6 lanes from Portage Street to SR 530/US 192	11	Construction of Kissimmee Intermodal Facility (KIF) – Facility will allow for intermodal connections.
5	Hoagland Boulevard – Realign corridor and widen to 4 lanes from US 192 to John Young Parkway	12	Reroute Links 4, 10, 18, 26, 55, 56, 57 and 441 to serve KIF. Modify Link 26 service to 30 minute frequency
6	Martin Luther King Boulevard Roadway Widening – Add 2 lanes from Dyer Avenue to Thacker Avenue	13	Osceola Express Route - Express service from downtown Orlando to Osceola County along a major corridor from LCS to Michigan
7	John Young Parkway at Oak Street – Widen to add left turn lanes on Oak Street		



VHB

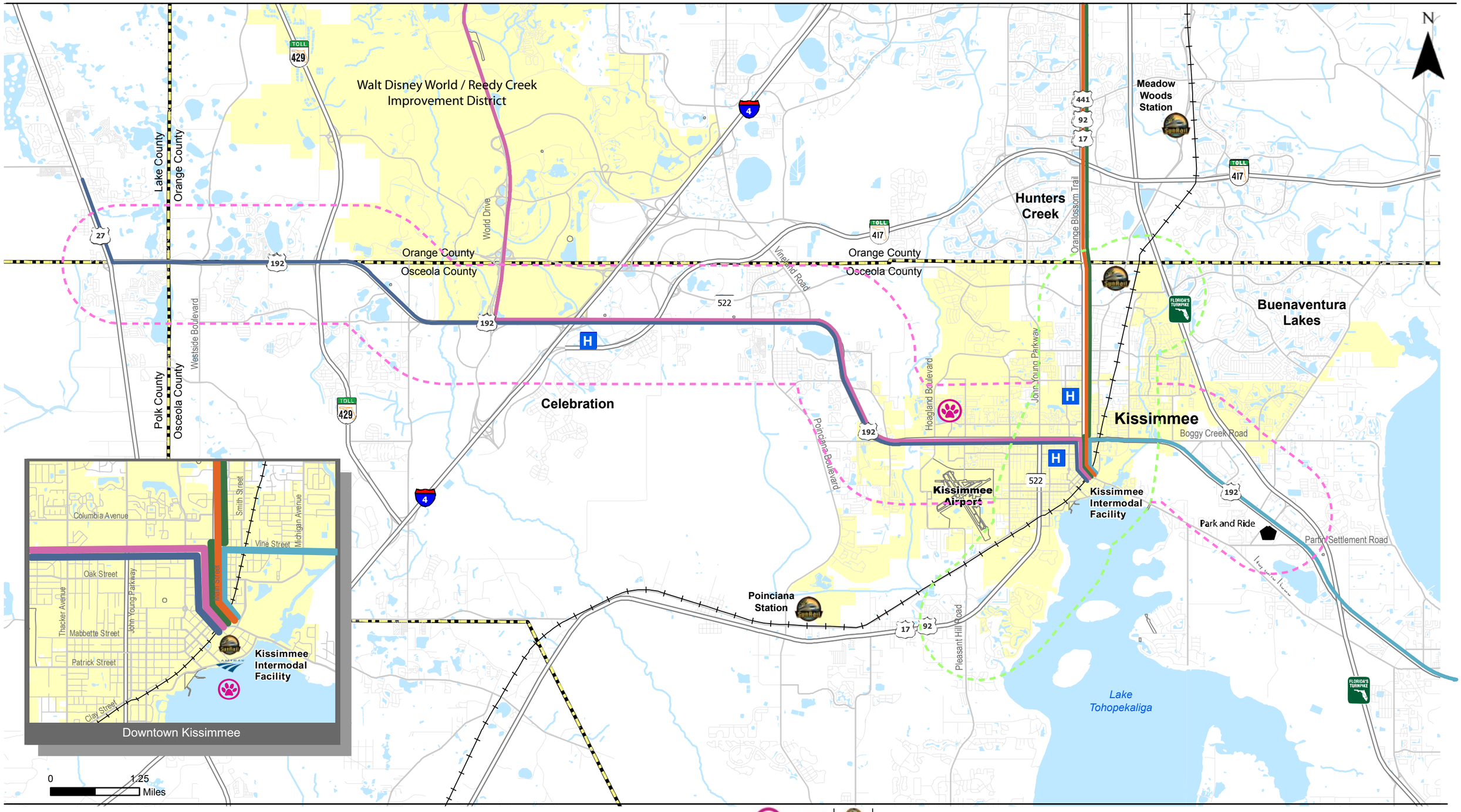
- Roadway Improvement
- New Transit Route
- Bike/Pedestrian Improvements
- Osceola Corridor
- Kissimmee Corridor

LYNX | US 192 Alternatives Analysis

No Build

Alternative 0-1

Figure 7-1



Improved Bus Service - KIF to St. Cloud

Improved Bus Service - KIF to Four Corners

Improved Bus Service - KIF to Walt Disney World

Additional Fastlink 441 Service

Osceola Corridor

Kissimmee Corridor

*Notes:
Improvements are in addition to the No Build Alternative
Improved bus service may include express service with queue jumps and transit signal priority (TSP) as feasible.

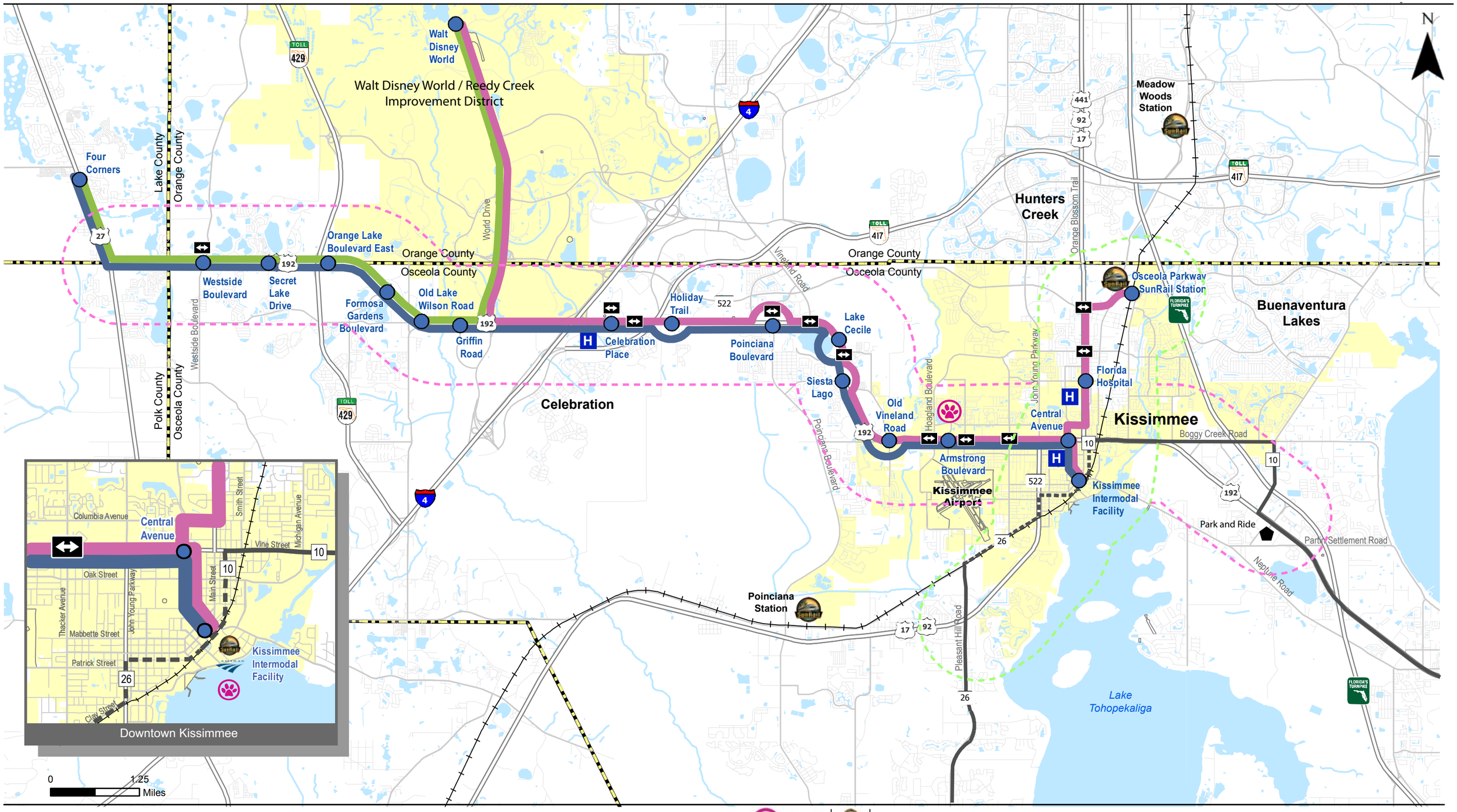
LYNX

US 192 Alternatives Analysis

Enhanced Bus Alternative

Alternative 1-1

Figure 7-2



Queue Jump
BRT Stations
LYNX Route (Reroute)
LYNX Route (Existing)
Osceola Corridor
Kissimmee Corridor

BRT Routes
Route A
Route B
Route C

*Note:
Traffic Signal Priority (TSP) assumed along all BRT Routes.

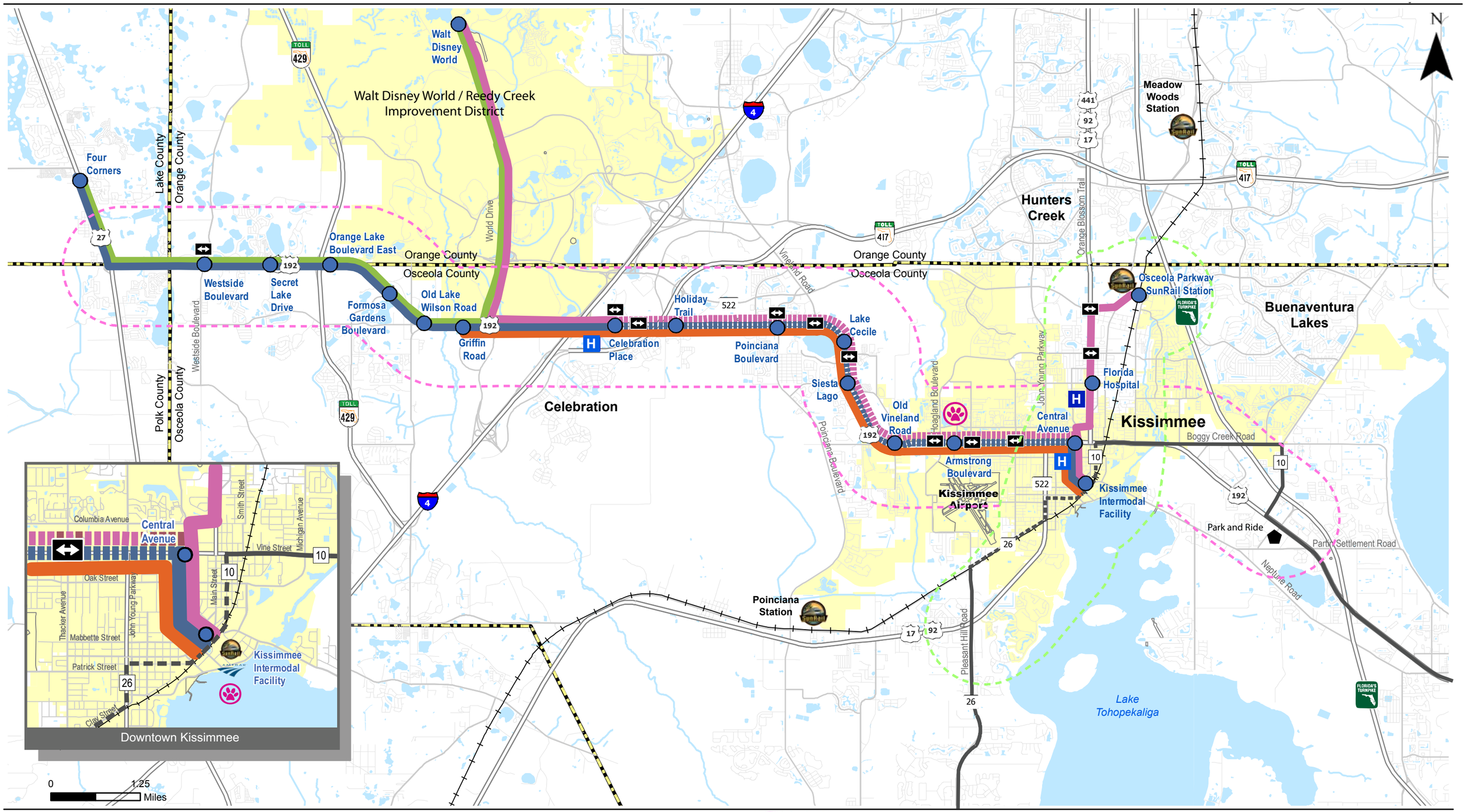
LYNX

US 192 Alternatives Analysis

Bus Rapid Transit (BRT)

Alternative 2-1

Figure 7-3



Queue Jump
BRT Stations
LYNX Route (Reroute)
LYNX Route (Existing)
Osceola Corridor
Kissimmee Corridor

BRT Routes
Route A
Route B
Route C
Route D
Route A Non Stop
Route B Non Stop

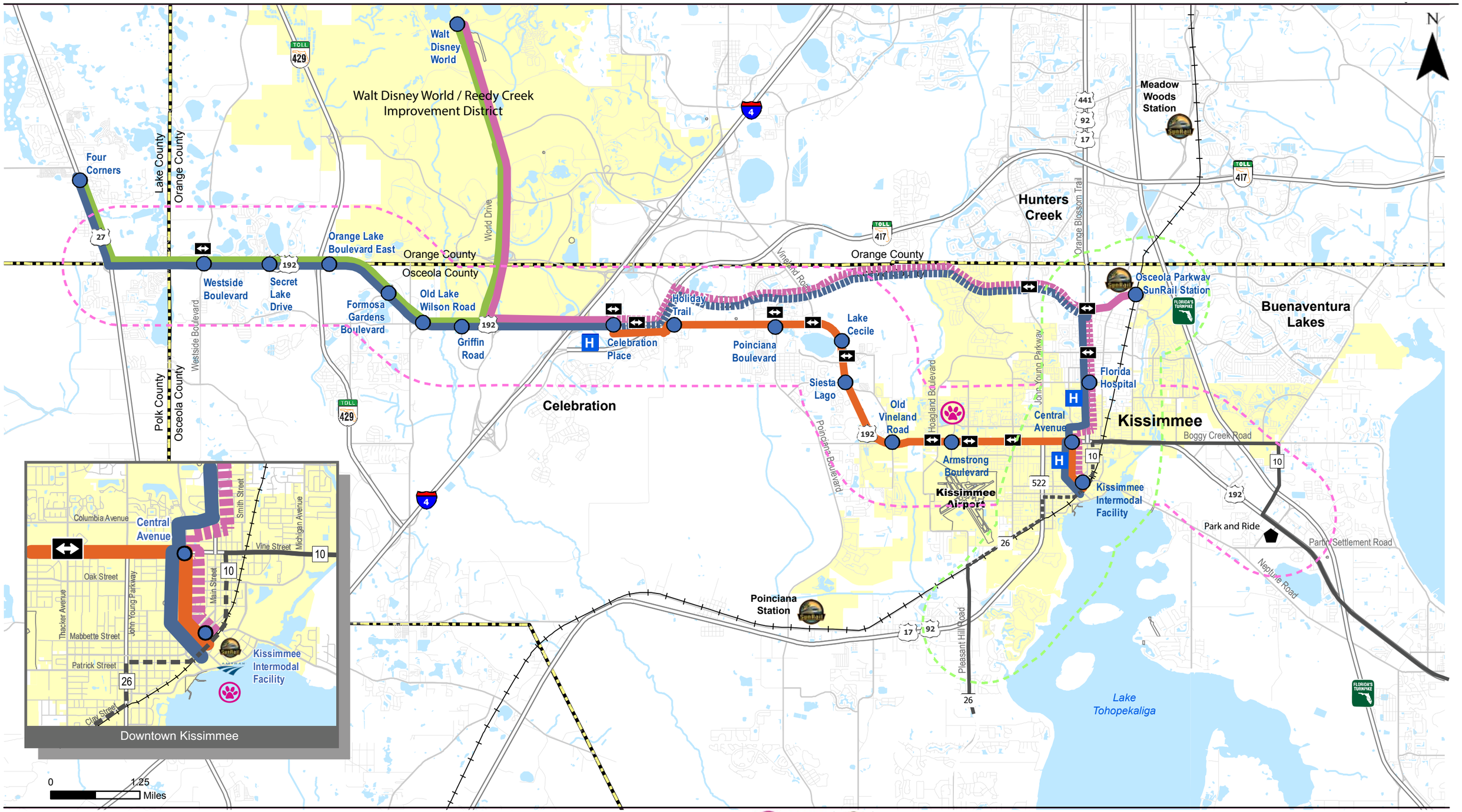
*Note:
Traffic Signal Priority (TSP) assumed along all BRT Routes.

LYNX | US 192 Alternatives Analysis

Bus Rapid Transit (BRT)

Alternative 2-2

Figure 7-4



Queue Jump
BRT Stations
LYNX Route (Reroute)
LYNX Route (Existing)
Osceola Corridor
Kissimmee Corridor

BRT Routes
Route A
Route B
Route C
Route D
Route A Non Stop
Route B Non Stop

*Note:
Traffic Signal Priority (TSP) assumed along all BRT Routes.

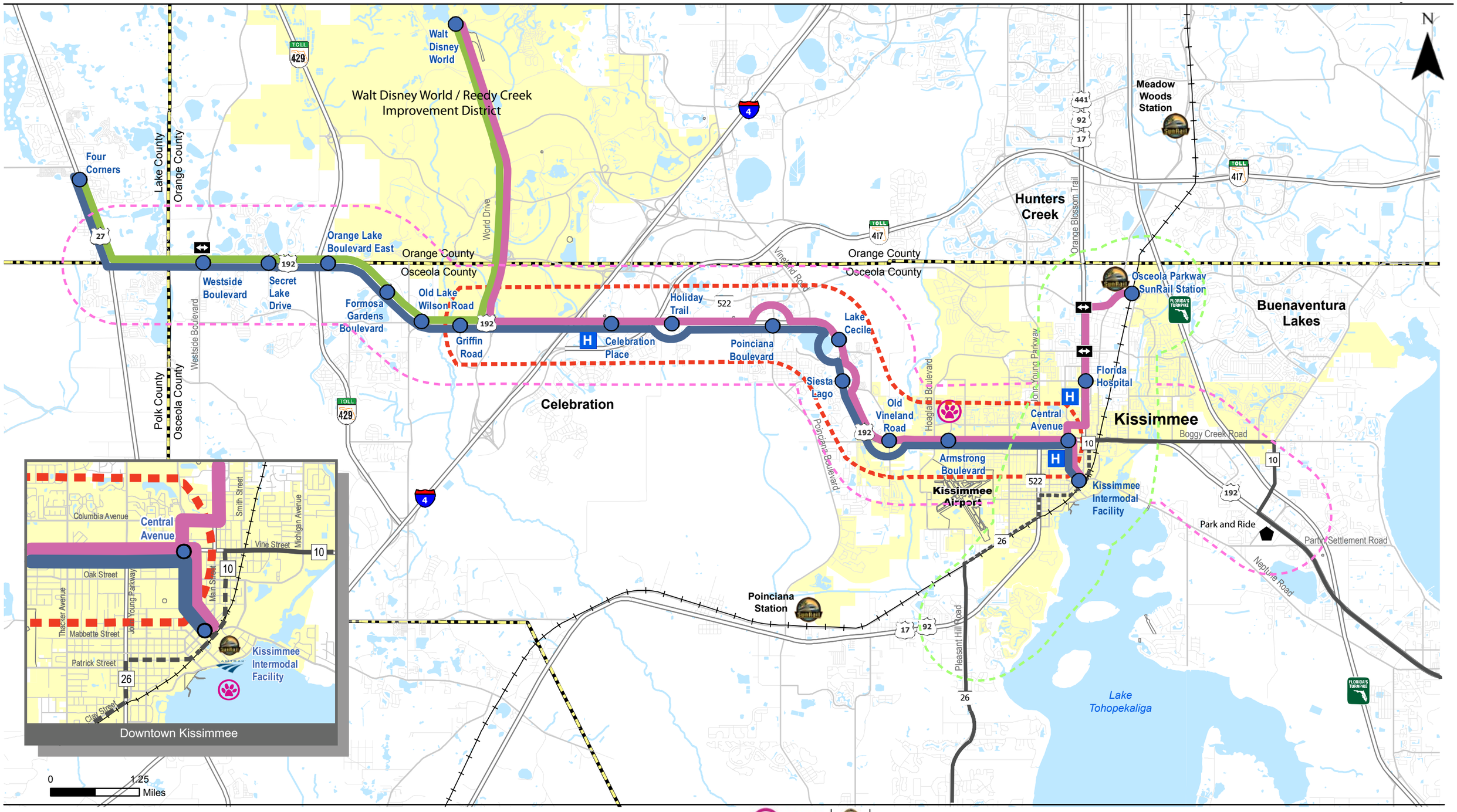
LYNX

US 192 Alternatives Analysis

Bus Rapid Transit (BRT)

Alternative 2-3

Figure 7-5



Queue Jump
BRT Stations
LYNX Route (Reroute)
LYNX Route (Existing)
Osceola Corridor
Kissimmee Corridor

BRT Routes
Route A
Route B
Route C

Dedicated Bus Lane

*Note:
Traffic Signal Priority (TSP) assumed along all BRT Routes.

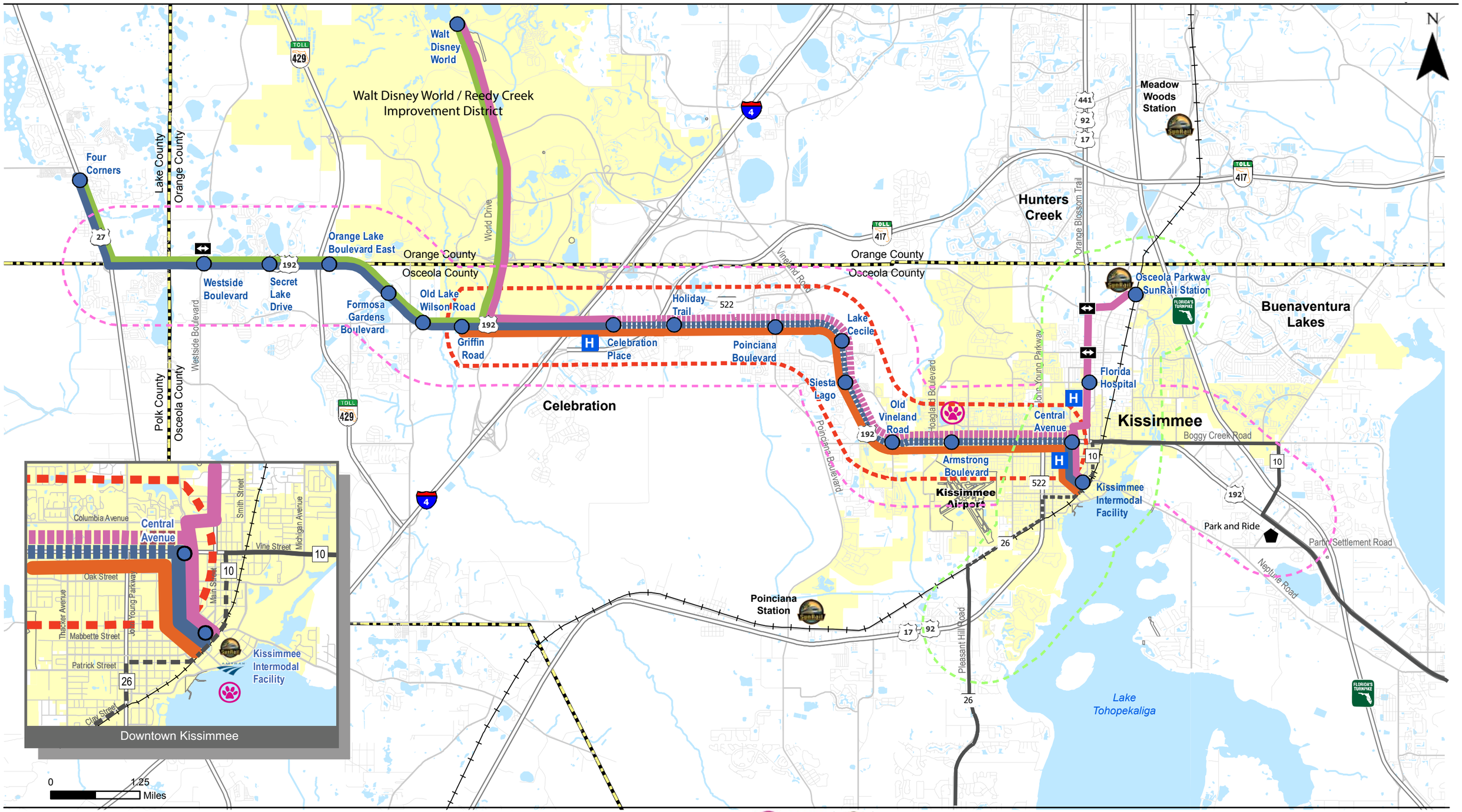
LYNX

US 192 Alternatives Analysis

Bus Rapid Transit (BRT)

Alternative 2-4

Figure 7-6



Queue Jump
BRT Stations
LYNX Route (Reroute)
LYNX Route (Existing)
Osceola Corridor
Kissimmee Corridor

BRT Routes
Route A
Route B
Route C
Route D
Route A Non Stop
Route B Non Stop
Dedicated Bus Lane

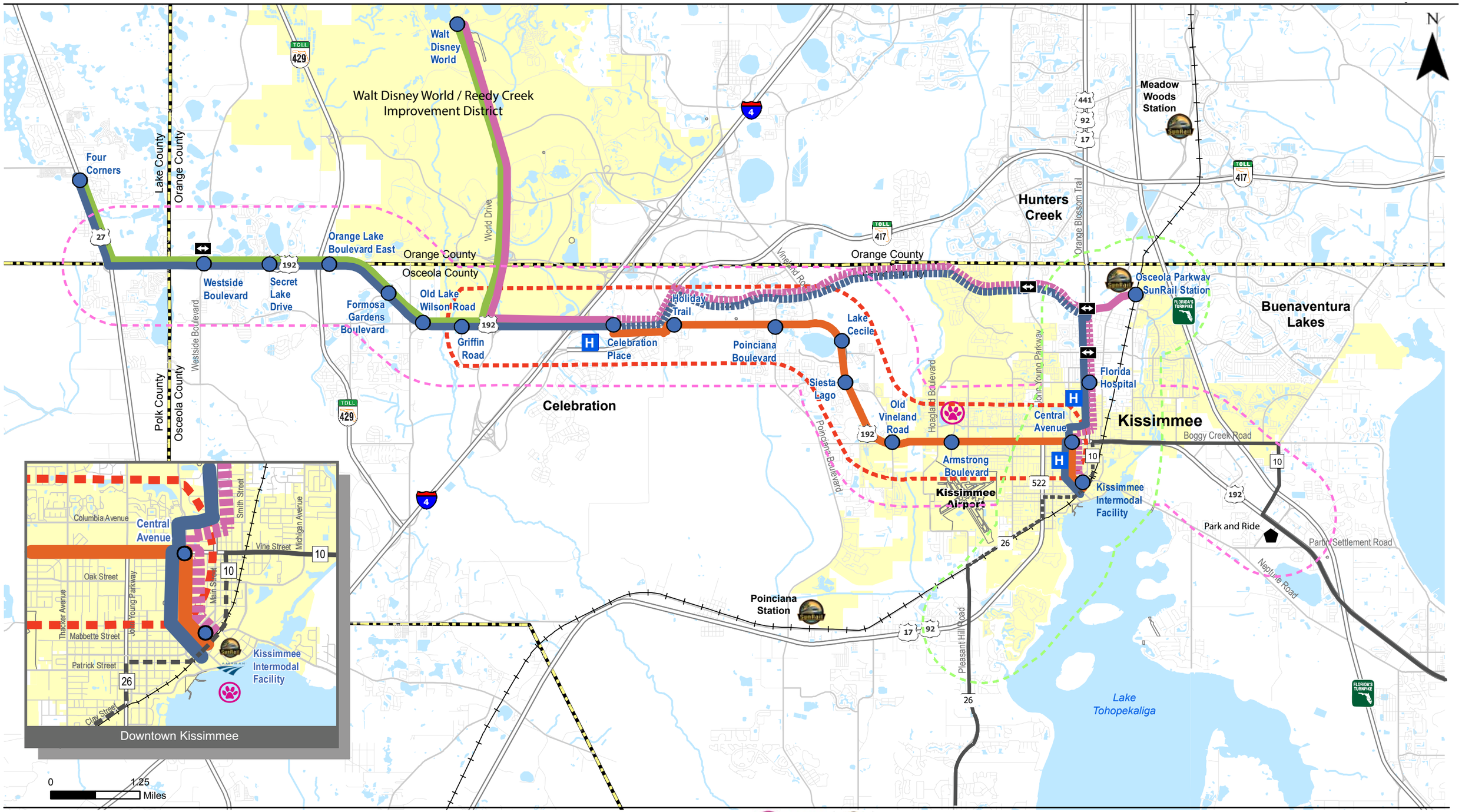
*Note:
Traffic Signal Priority (TSP) assumed along all BRT Routes.

LYNX | US 192 Alternatives Analysis

Bus Rapid Transit (BRT)

Alternative 2-5

Figure 7-7



BRT Routes

- BRT Stations
- LYNX Route (Reroute)
- LYNX Route (Existing)
- Osceola Corridor
- Kissimmee Corridor
- Route A
- Route B
- Route C
- Route D
- Route A Non Stop
- Route B Non Stop
- Dedicated Bus Lane

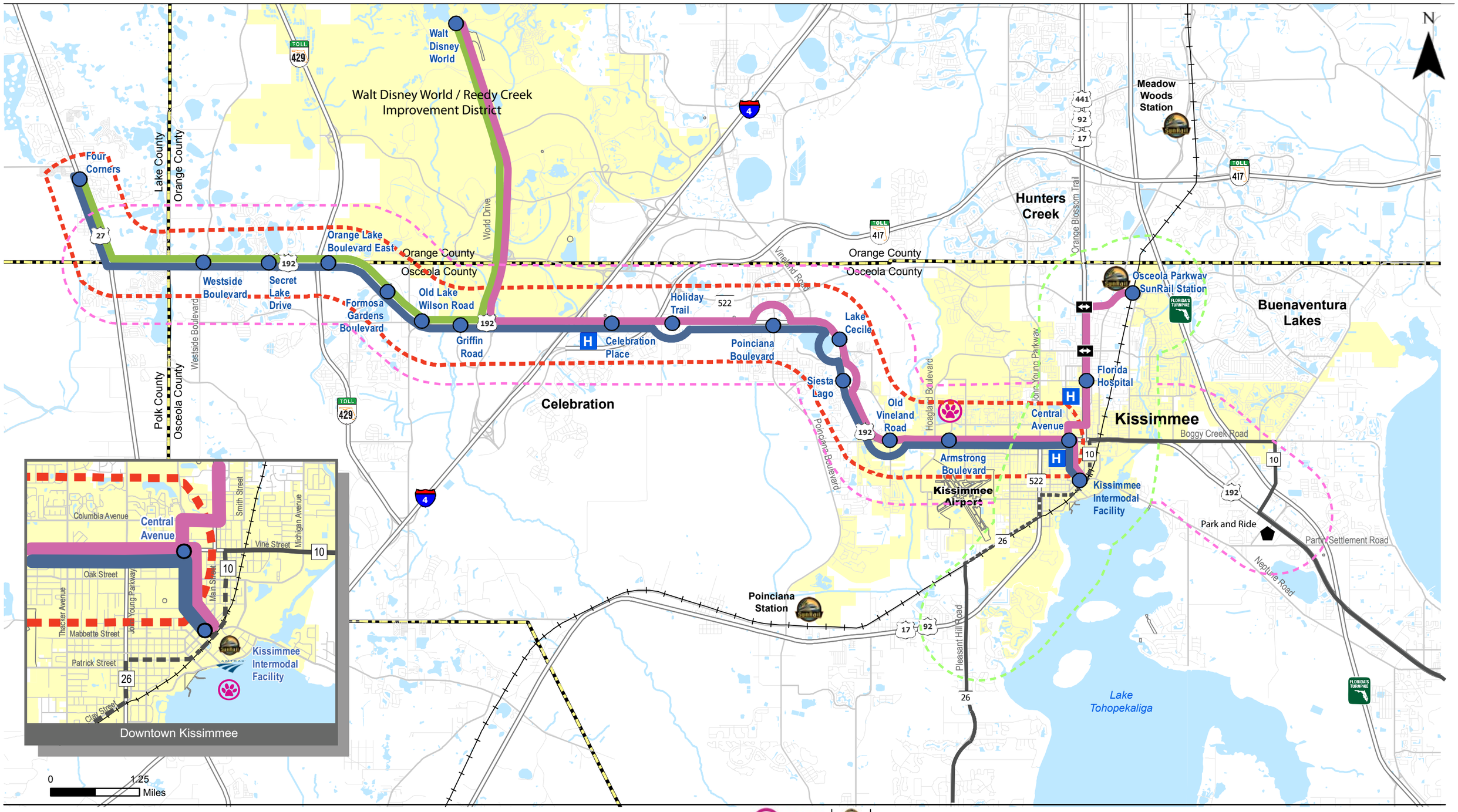
*Note:
Traffic Signal Priority (TSP) assumed along all BRT Routes.

LYNX | US 192 Alternatives Analysis

Bus Rapid Transit (BRT)

Alternative 2-6

Figure 7-8



VHB

Queue Jump
BRT Stations
LYNX Route (Reroute)
LYNX Route (Existing)
Osceola Corridor
Kissimmee Corridor

BRT Routes
Route A
Route B
Route C

Dedicated Bus Lane

*Note:
Traffic Signal Priority (TSP) assumed along all BRT Routes.

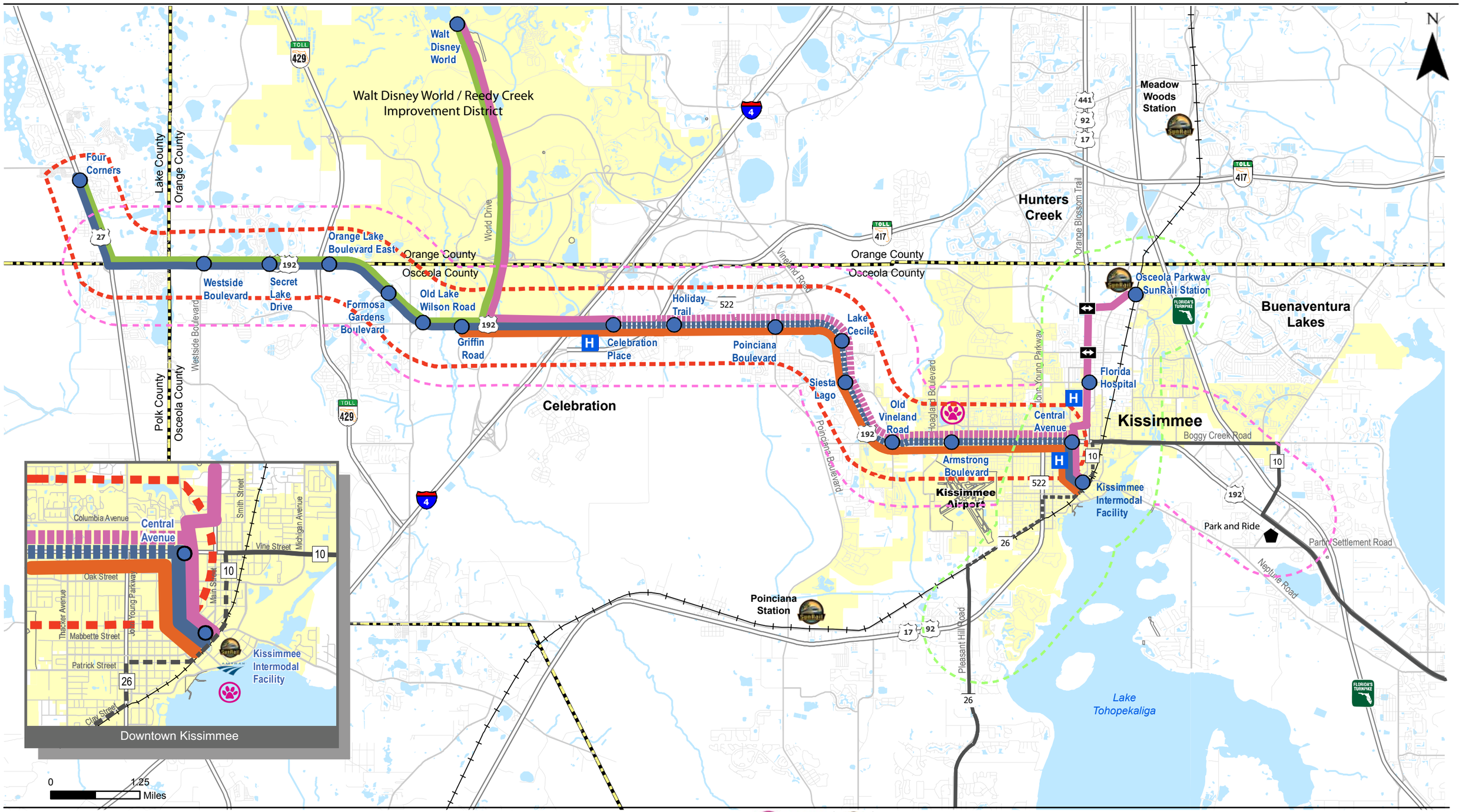
LYNX

US 192 Alternatives Analysis

Bus Rapid Transit (BRT)

Alternative 2-7

Figure 7-9



Queue Jump
BRT Stations
LYNX Route (Reroute)
LYNX Route (Existing)
Osceola Corridor
Kissimmee Corridor

BRT Routes
Route A
Route B
Route C
Route D
Route A Non Stop
Route B Non Stop
Dedicated Bus Lane

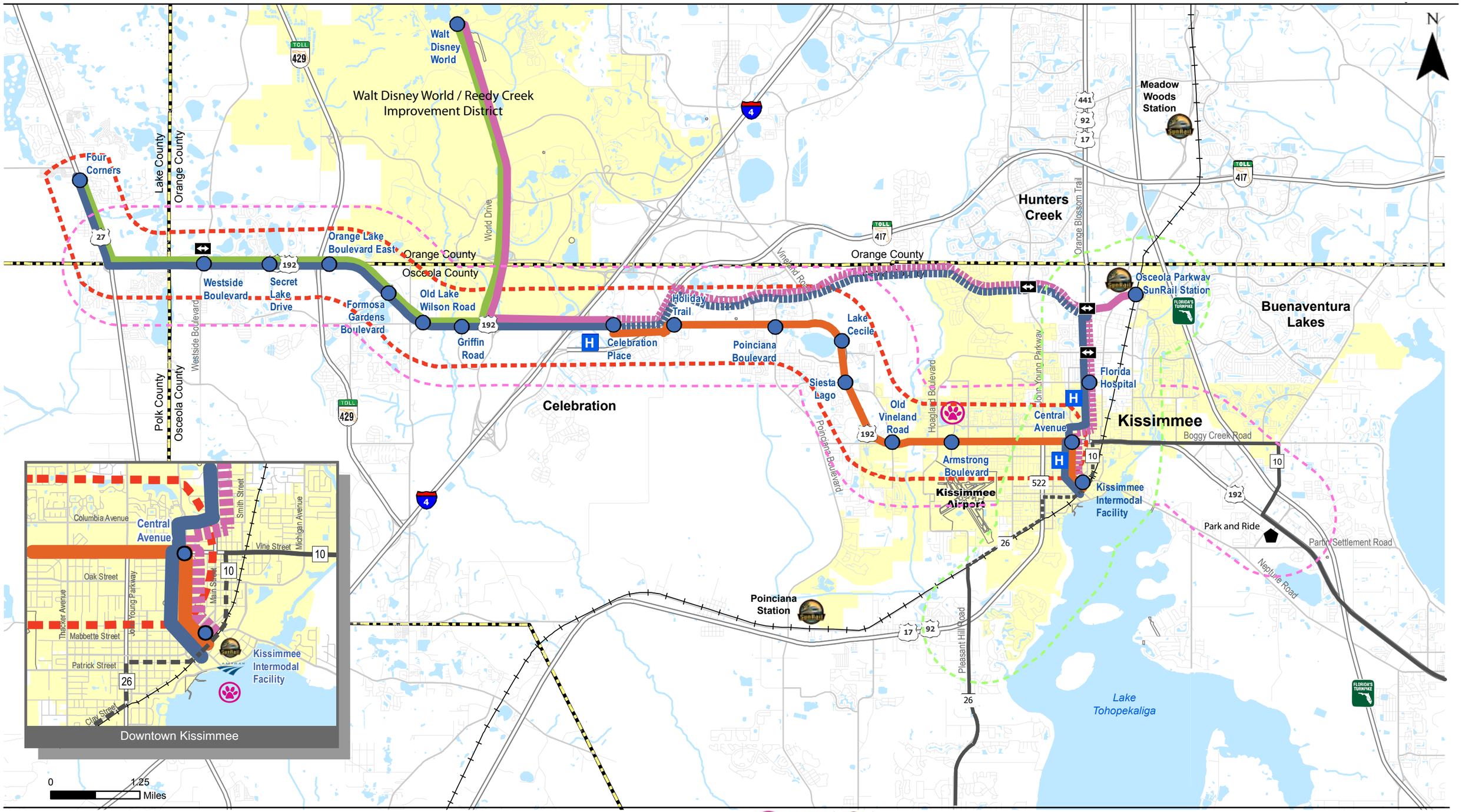
*Note:
Traffic Signal Priority (TSP) assumed along all BRT Routes.

LYNX | US 192 Alternatives Analysis

Bus Rapid Transit (BRT)

Alternative 2-8

Figure 7-10



BRT Routes

- BRT Stations
- LYNX Route (Reroute)
- LYNX Route (Existing)
- Osceola Corridor
- Kissimmee Corridor
- Route A
- Route B
- Route C
- Route D
- Route A Non Stop
- Route B Non Stop
- Dedicated Bus Lane

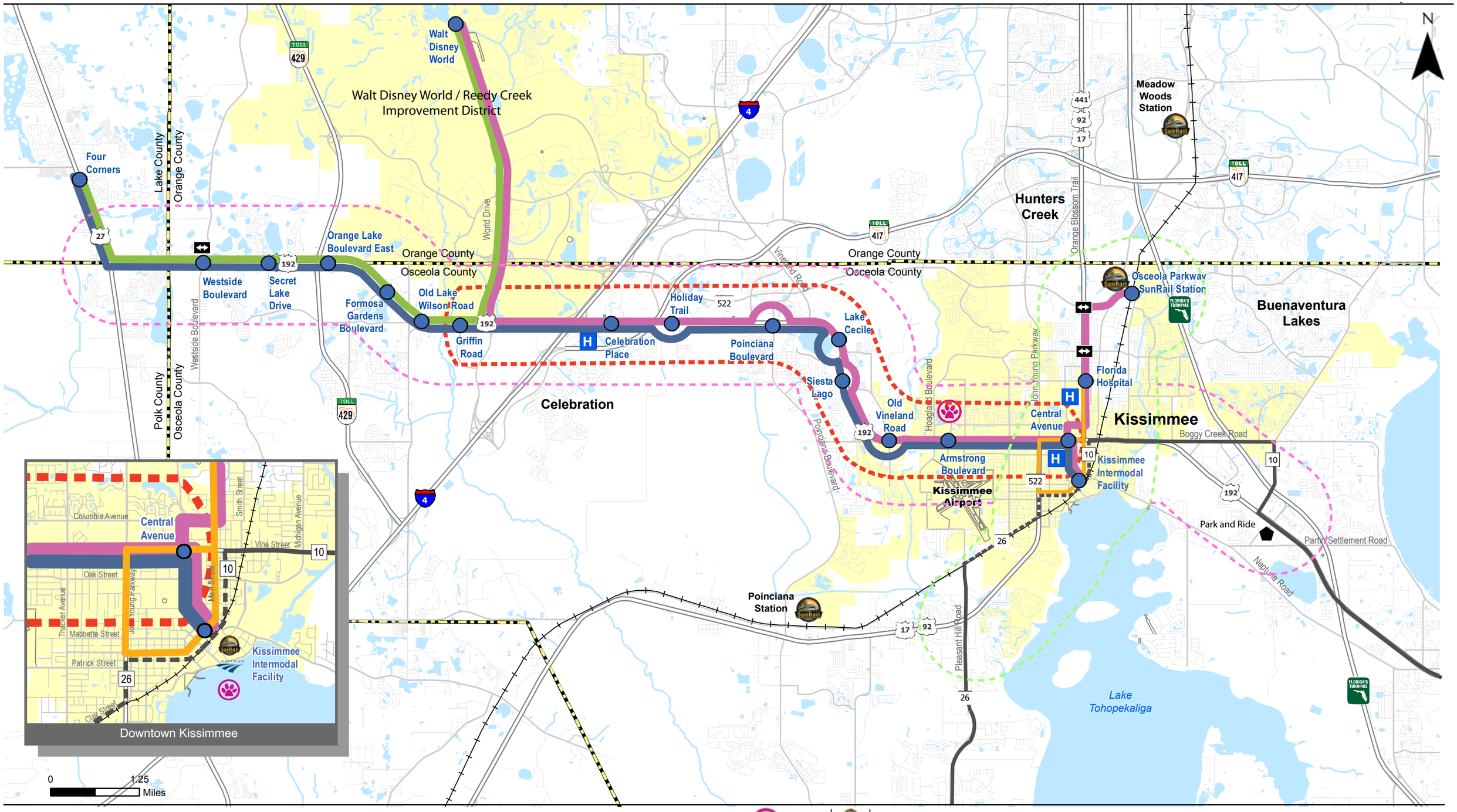
*Note:
Traffic Signal Priority (TSP) assumed along all BRT Routes.

LYNX | US 192 Alternatives Analysis

Bus Rapid Transit (BRT)

Alternative 2-9

Figure 7-11



Queue Jump
BRT Stations
LYNX Route (Reroute)
LYNX Route (Existing)
Osceola Corridor
Kissimmee Corridor

BRT Routes
Route A
Route B
Route C
Dedicated Bus Lane

Streetcar

*Note:
Traffic Signal Priority (TSP) assumed along all BRT Routes.

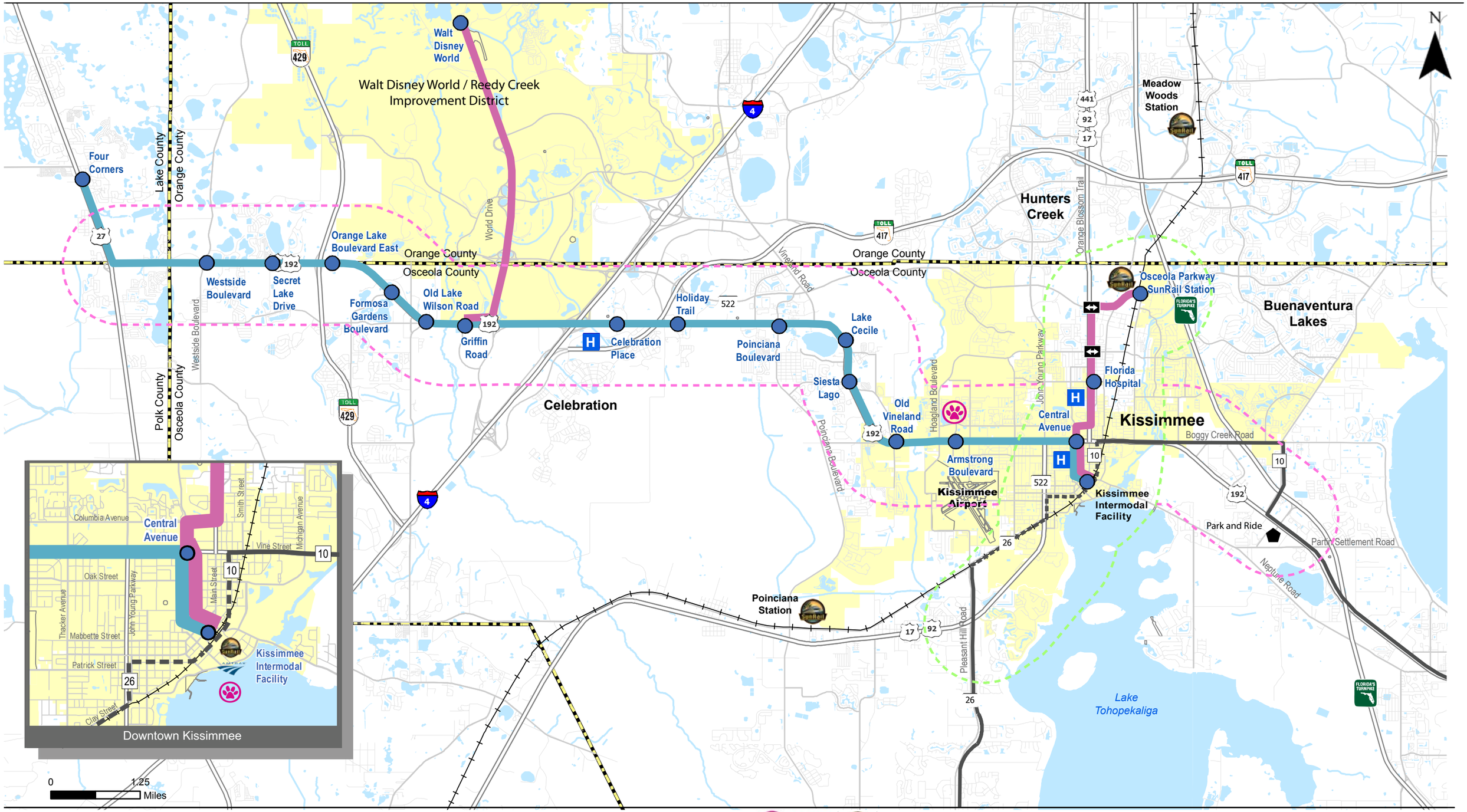
LYNX

US 192 Alternatives Analysis

Bus Rapid Transit (BRT) plus Streetcar

Alternative 3-1

Figure 7-12



Queue Jump
LRT Stations
LYNX Route (Reroute)
LYNX Route (Existing)
Osceola Corridor
Kissimmee Corridor

Bus Connection
LRT

Note 1:
*Assume LRT running in dedicated ROW throughout..
*Traffic Signal Priority (TSP) assumed along all routes.

Note 2:
**Assume one track with passing sidings throughout.

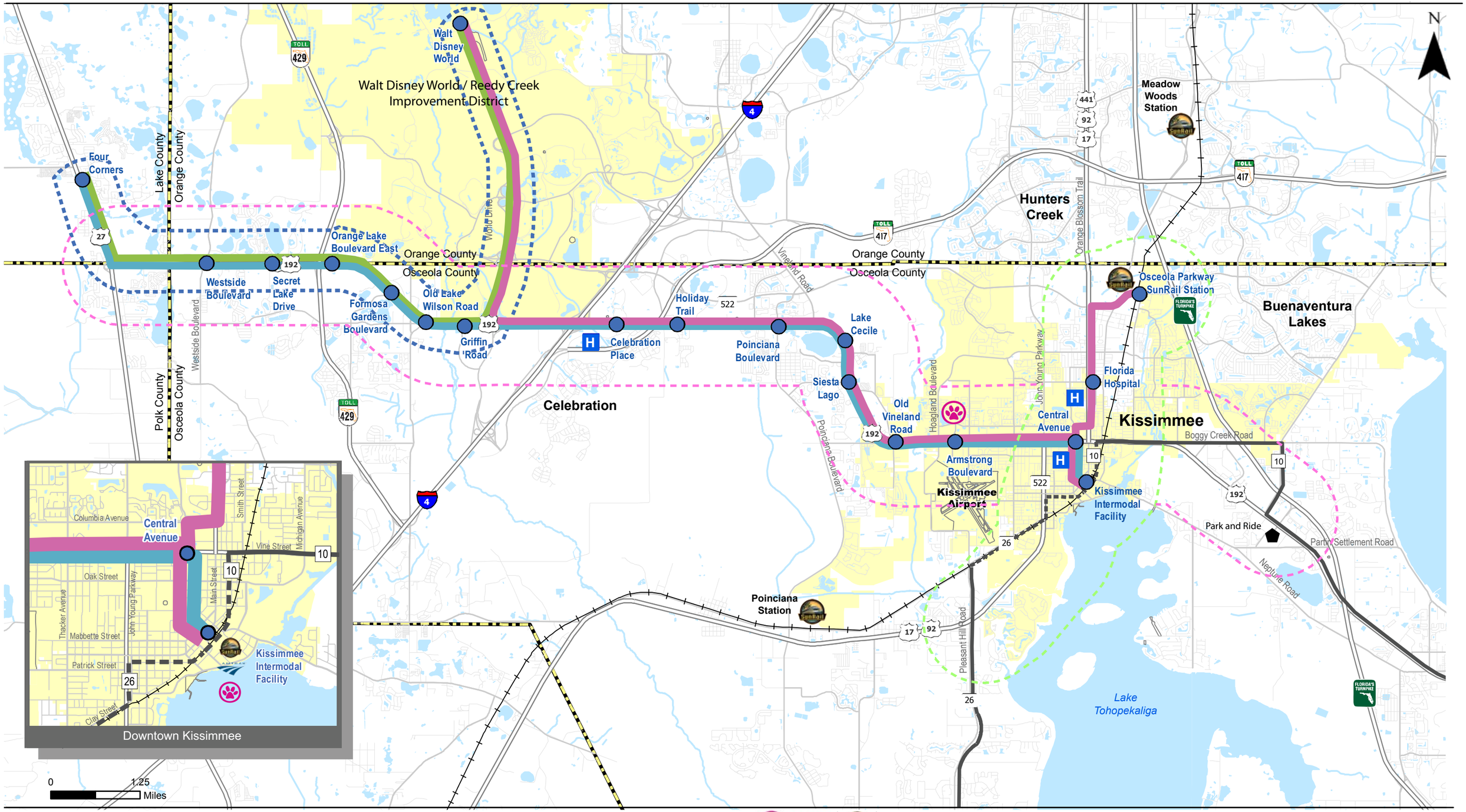
LYNX

US 192 Alternatives Analysis

Light Rail Transit (LRT)

Alternative 4-1

Figure 7-13



LRT Stations
LYNX Route (Reroute)
LYNX Route (Existing)

Osceola Corridor
Kissimmee Corridor

LRT Routes
A Route
B Route
C Route

1 Track with Sidings

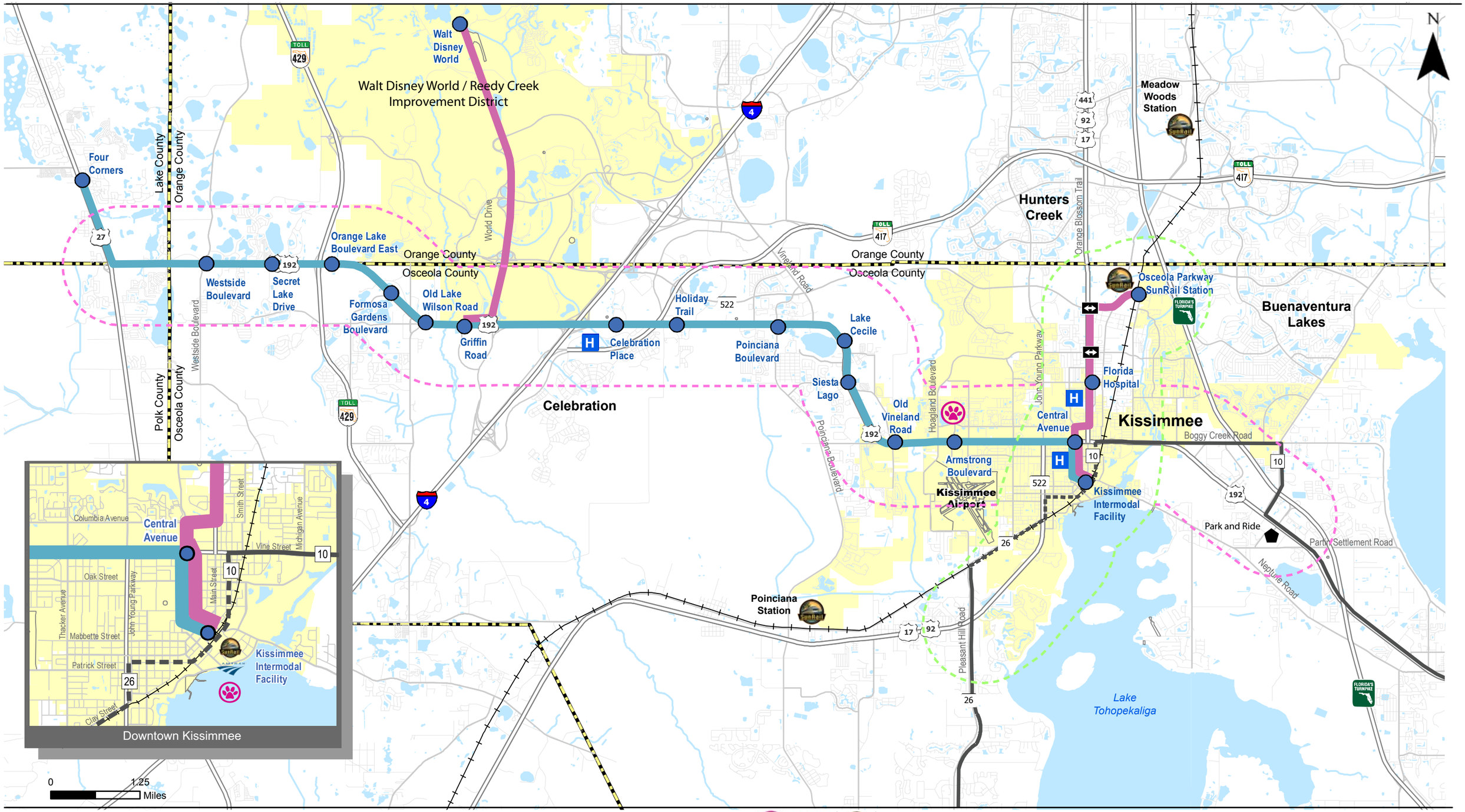
Note 1:
*Assume LRT running in dedicated ROW throughout..
*Traffic Signal Priority (TSP) assumed along all routes.
Note 2:
**Assume two tracks East of Griffin Road Station.

US 192 Alternatives Analysis

Light Rail Transit (LRT)

Alternative 4-2

Figure 7-14



Queue Jump
LRT Stations
LYNX Route (Reroute)
LYNX Route (Existing)
Osceola Corridor
Kissimmee Corridor

Bus Connection
LRT

Note 1:
*Assume LRT running in dedicated ROW throughout..
*Traffic Signal Priority (TSP) assumed along all routes.

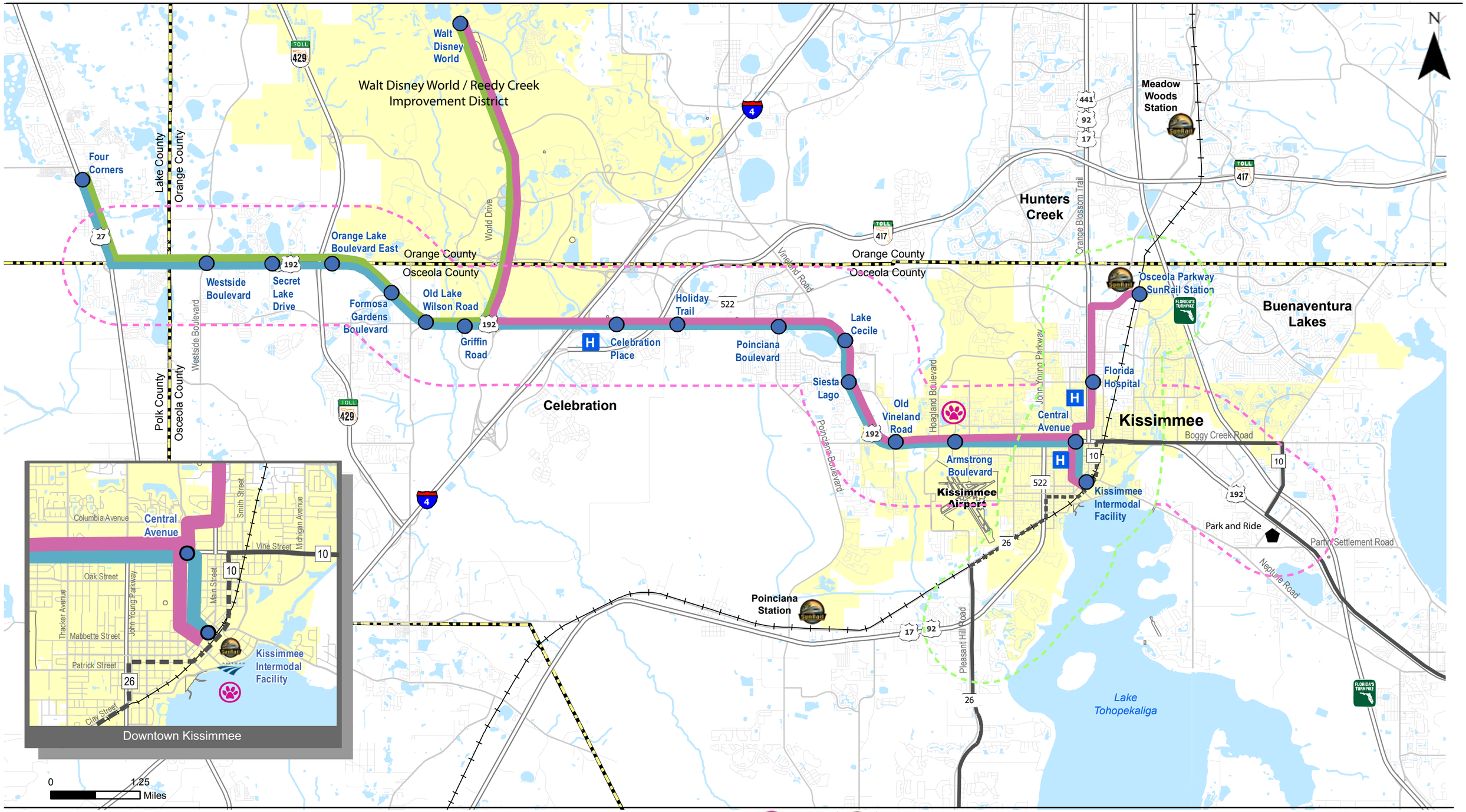
Note 2:
**Assume two tracks throughout.

LYNX | US 192 Alternatives Analysis

Light Rail Transit (LRT)

Alternative 4-3

Figure 7-15



LRT Stations
LYNX Route (Reroute)
LYNX Route (Existing)
Osceola Corridor
Kissimmee Corridor

LRT Routes
A Route
B Route
C Route

Note 1:
*Assume LRT running in dedicated ROW throughout..
*Traffic Signal Priority (TSP) assumed along all routes.
Note 2:
**Assume two tracks throughout.

LYNX | US 192 Alternatives Analysis

Light Rail Transit (LRT)

Alternative 4-4

Figure 7-16

7.3 Enhanced Bus Alternative

Alternative 1, the Enhanced Bus Alternative builds upon the No Build Alternative and would be comprised of traffic signal priority improvements along US 192 and US 441 (Orange Blossom Trail) that would shorten travel times for local and new limited bus services. Service for the Enhanced Bus Alternatives would include two new FastLink-style routes (Links 855 and 856) that would operate to limited, existing curbside bus stops at improved frequency (minimum 15 minute bi-directional headways) and a new FastLink-style route (Link 810) that would operate to limited existing bus stops between St. Cloud and KIF at 30 minute headways. These new routes would supplement existing local bus service that would continue to operate at existing headways and serve at all bus stops. The enhanced bus routes would be developed to maximize connectivity with SunRail. The Enhanced Bus Alternative would also capture the maximum effectiveness afforded by proposed and committed transportation infrastructure that comprises the No Build Alternative, including the Kissimmee Intermodal Facility.

7.4 Bus Rapid Transit (BRT) Alternatives

Alternative 2 is comprised of several BRT sub-alternatives that vary by proposed alignment, infrastructure and service pattern. Alternative 2 would also build upon the No Build Alternative. Alternative 2 would be comprised of a range of infrastructure improvements along US 192 and US 441 (Orange Blossom Trail) including: queue jumps, traffic signal priority (TSP), partial alignments with dedicated bus lanes, full alignments with dedicated bus lanes, improved and substantial stations, branded buses and off-board fare collection. These infrastructure improvements would be applied to the primary alignments that the BRT would utilize: US 192, US 441, World Drive and the Osceola Parkway. Service for the BRT alternatives would include potential skip-stop and zone express service at minimum 15 minute bi-directional headways to BRT designated station stops (fewer than served by local bus service but in the same general locations at the proposed Enhanced Bus Alternative stops). In addition, a new FastLink-style route would operate to limited existing bus stops between St. Cloud and KIF at 30 minute headways. These new routes would supplement existing local bus service that would continue to operate at existing headways and serve at all bus stops. The routes included in this alternative would be developed to maximize connectivity with SunRail. The BRT alternatives would capture the maximum effectiveness afforded by proposed and committed transportation infrastructure that comprises the No Build Alternative, including the Kissimmee Intermodal Facility.

The BRT Alternatives would include all possible combinations of the following infrastructure and service options:

<u>Infrastructure (one of the below)</u>

- Queue jumps and TSP only
- Some dedicated bus lanes + TSP and Queue jumps
- Dedicated bus lanes + TSP and Queue Jumps

<u>Service (one of the below)</u>

- Skip Stop service via US 192
- Zone Express service via US 192

- Zone Express service via US 192 and Osceola Parkway

Table 7-2 shows the sub-alternative number for each of the nine combinations of infrastructure and service.

Table 7-2: BRT Alternatives Comparison

BRT Alternative		Infrastructure: Queue jumps and TSP only	Infrastructure: Some dedicated lanes + TSP and queue jumps	Infrastructure: Dedicated lanes along all US 192; TSP and queue jumps along US 441
Service	Skip stop	Alt. 2-1	Alt. 2-4	Alt. 2-7
	Zone express, US 192 only	Alt. 2-2	Alt. 2-5	Alt. 2-8
	Zone express, US 192 and Osceola Pkwy	Alt. 2-3	Alt. 2-6	Alt. 2-9

Source: VHB

7.5 Bus Rapid Transit with Streetcar Alternative

Alternative 3, the BRT with Streetcar Alternative, would build upon the No Build Alternative and would be a mixed-mode alternative that combines BRT and Streetcar for their optimal use. This alternative would include a BRT alternative similar to those described as Alternative 2 to serve the Osceola Corridor plus a mixed-traffic streetcar providing circulation between Florida Hospital and the Kissimmee SunRail Station and within downtown Kissimmee. The BRT component of the alternative would include the most effective infrastructure and service treatments studied and developed for the BRT alternatives, supplemented by strong connections with the proposed streetcar alignment. In addition, a new FastLink-style route would operate to limited existing bus stops between St. Cloud and KIF at 30 minute headways. These new routes would supplement existing local bus service that would continue to operate at existing headways and serve at all bus stops. The BRT with Streetcar Alternative would capture the maximum effectiveness afforded by proposed and committed transportation infrastructure that comprises the No Build Alternative, including the Kissimmee Intermodal Facility.

7.6 Light Rail (LRT) Alternatives

The LRT alternatives build upon the No Build Alternative and would include fixed guideway light rail transit in a full-length dedicated guideway with either a single track with passing sidings or double tracks. The LRT alternatives would be primarily located on US 192 with a connection to the Kissimmee Intermodal Facility and to Walt Disney World. Service would operate as either a single trunk route with off-alignment destinations served by feeder/distributor bus service or as multiple routes with LRT branches to off-alignment destinations. Service would be provided at improved frequency (minimum 15 minute bi-directional headway). The LRT alternatives would be designed to be as comparable as possible with the BRT alternatives, in order to isolate the differences between the two modes. Both alternatives would have roughly the same logical termini, stations, and operating plan. In addition, a new FastLink-style route would operate to

limited existing bus stops between St. Cloud and KIF at 30 minute headways. These new routes would supplement existing local bus service that would continue to operate at existing headways and serve at all bus stops. The LRT alternatives would capture the maximum effectiveness afforded by proposed and committed transportation infrastructure that comprises the No Build Alternative, including the Kissimmee Intermodal Facility.

The LRT alternatives would include all possible combinations of the following infrastructure and service options:

Infrastructure

- Some single track w/passing sidings (in dedicated ROW), double-track otherwise.
- Double track throughout(in dedicated ROW)

Service

- Basic – One trunk route along US 192 plus express bus service to Walt Disney World and Osceola Parkway SunRail Station
- Intermediate – Three separate LRT routes that, in combination, provide service to each of the logical termini

Table 7-3 shows the sub-alternative numbering for each of the combinations of infrastructure and service; **Table 7-4** includes a brief description of each alternative.

Table 7-3: LRT Alternatives Comparison

LRT Alternative		Infrastructure	
		Some single track w/passing sidings (dedicated ROW)	All double track (in dedicated ROW)
Service	Basic - Single route via US 192	Alt. 4-1	Alt. 4-3
	Intermediate – Three routes via US 192	Alt. 4-2	Alt. 4-4

Source: VHB

Table 7-4: Preliminary Long List of Alternatives

Alternative	Primary Alignments	Infrastructure	Service Pattern
Alternative 0-1 No Build	US 192, US 441	Committed, funded transportation infrastructure improvements in 2030 LRTP	Committed, funded transit service improvements in the 2030 LRTP
Alternative 1-1 Enhanced Bus	US 192, US 441	Low cost TDM and intersection improvements	Local and Express Bus service; 15 min. minimum headway; some route modifications
Alternative 2-1 Bus Rapid Transit	US 192, US 441	Queue jumps, TSP, off-board fare collection, substantial stations; branded buses	Three route skip stop service; 15 min. minimum headway; possible local bus overlay
Alternative 2-2 Bus Rapid Transit	US 192, US 441	Queue jumps, TSP, off-board fare collection, substantial stations; branded buses	Four route zone express; 15 min. minimum headway; possible local bus overlay
Alternative 2-3 Bus Rapid Transit	US 192; US 441; Osceola Parkway	Queue jumps, TSP, off-board fare collection, substantial stations; branded buses	Four route zone express; 15 min. minimum headway; possible local bus overlay
Alternative 2-4 Bus Rapid Transit	US 192, US 441	Some dedicated bus lanes on US 192, queue jumps, TSP, off-board fare collection, substantial stations; branded buses	Three route skip stop service; 15 min. minimum headway; possible local bus overlay
Alternative 2-5 Bus Rapid Transit	US 192, US 441	Some dedicated bus lanes on US 192, queue jumps, TSP, off-board fare collection, substantial stations; branded buses	Four route zone express; 15 min. minimum headway; possible local bus overlay
Alternative 2-6 Bus Rapid Transit	US 192; US 441; Osceola Parkway	Some dedicated bus lanes on US 192, queue jumps, TSP, off-board fare collection, substantial stations; branded buses	Four route zone express; 15 min. minimum headway; possible local bus overlay
Alternative 2-7 Bus Rapid Transit	US 192, US 441	Full length dedicated bus lanes on US 192, queue jumps, TSP, off-board fare collection, substantial stations; branded buses	Three route skip stop service; 15 min. minimum headway; possible local bus overlay
Alternative 2-8 Bus Rapid Transit	US 192, US 441	Full length dedicated bus lanes on US 192, queue jumps, TSP, off-board fare collection, substantial stations; branded buses	Four route zone express; 15 min. minimum headway; possible local bus overlay
Alternative 2-9 Bus Rapid Transit	US 192; US 441; Osceola Parkway	Full length dedicated bus lanes on US 192, queue jumps, TSP, off-board fare collection, substantial stations; branded buses	Four route zone express; 15 min. minimum headway; possible local bus overlay

Table 7-4: Preliminary Long List of Alternatives (continued)

Alternative	Primary Alignments	Infrastructure	Service Pattern
Alternative 3-1 Bus Rapid Transit with Streetcar	US 192, US 441	Preferred BRT infrastructure[26] on US 192 with Kissimmee/ US 441 Streetcar circulator	Preferred BRT service plan[27] with multi-stop Kissimmee Circulator; 15 min. minimum headway; possible local bus overlay
Alternative 4-1 Light Rail Transit	US 192	Partial dedicated guideway and mixed traffic alignment with TSP; off-board fare collection; substantial stations	Single route all stop service (15 min. minimum headway) with possible local bus overlay and express feeders/distributors
Alternative 4-2 Light Rail Transit	US 192, US 441	Partial dedicated guideway and mixed traffic alignment with TSP; off-board fare collection; substantial stations	Three routes all stop service, (15 min. minimum headway) with possible local bus overlay
Alternative 4-3 Light Rail Transit	US 192	Full dedicated guideway on US 192; off-board fare collection; substantial stations	Single route all stop service with possible local bus overlay and express feeders/distributors
Alternative 4-4 Light Rail Transit	US 192, US 441	Full dedicated guideway on US 192 and Osceola Parkway; off-board fare collection; substantial stations	Three routes all stop service, (15 min. minimum headway) with possible local bus overlay

Source: VHB

[26] Preferred BRT infrastructure would be the most effective infrastructure selected from the nine BRT alternatives with modifications to incorporate streetcar circulator

[27] Preferred BRT service plan would be the most effective infrastructure selected from the nine BRT alternatives with modifications to incorporate streetcar circulator

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8

Tier Two Screening

8.1 Tier Two Screening

The goal of the Tier Two Screening was to qualitatively evaluate the Long List Alternatives and select the alternatives that best meet the project's purpose and need. The determination of which alternatives satisfy this goal was made by evaluating each of the Long List Alternatives against the Tier 2 Screening criteria, which are based upon the project's goals and objectives.

Alternative 0-1 (No Build) and Alternative 1-1 (Enhanced Bus) are benchmark alternatives against which the Short List Alternatives were compared to select the Locally Preferred Alternative. As such, the No Build and Enhanced Bus alternatives automatically qualify as Short List Alternatives and were not evaluated against the Tier Two criteria. It is possible that the No Build or Enhanced Bus alternatives could be selected as the Locally Preferred Alternative after the Tier Three Screening.

The remaining eleven build alternatives (Alternative 2-1 through Alternative 4-4) on the Long List were evaluated against the criteria. Each alternative was given a rating of High (effectively satisfies the criterion), Medium (partially satisfies the criterion) or Low (does not effectively satisfy the criterion) for each of the Tier Two criteria. The alternatives that received the highest ratings in meeting the five project goals were advanced to the Short List. Table 8- presents the results by criteria and Table 8-2 includes a summary of the results by goal.

Table 8-1: Tier Two Evaluation

Tier Two Criteria	Consolidated Long List Alternatives										
	Bus Rapid Transit (BRT)						BRT+Streetcar	Light Rail			
	Alt. 2-1/2-2	Alt. 2-3	Alt. 2-4/2-5	Alt. 2-6	Alt. 2-7/2-8	Alt. 2-9	Alt. 3-1	Alt. 4-1	Alt. 4-2	Alt. 4-3	Alt. 4-4
Goal 1: Improve Mobility and Transportation Access											
Order of magnitude travel time savings	Low	Low	Medium	Medium	High	High	Medium	High	High	High	High
Number of potential transfer locations	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Low	High	Low	High
Number of proposed routes in Study Area	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Potential to serve employee/student commute & recreational trips	Medium	Low	Medium	Low	Medium	Low	Medium	Low	Low	Low	Low
Ability to provide system redundancy	Medium	High	High	High	High	High	High	Low	Low	Medium	Medium
Ability to open/attract new markets to transit service	Medium	Low	High	Low	High	Low	Medium	Medium	High	Medium	High
Potential to increase average travel speed of all modes in corridor	Medium	Medium	High	High	High	High	Medium	High	High	High	High
SUMMARY GOAL 1	**Medium**	**Medium-Low**	**Medium-High**	**Medium**	**High**	**Medium**	**Medium**	**Medium**	**Medium-High**	**Medium**	**Medium-High**
Goal 2: Enhance the Livability and Economic Competitiveness of the Study Area through an Improved Transportation System											
Potential need for right-of-way acquisition	High	High	High	High	High	High	Medium	Low	Low	Low	Low
Ability to serve major residential and employment centers directly	Medium	Low	Medium	Low	Medium	Low	Medium	Low	Low	Low	Low
Ability to directly serve proposed DRIs	Medium	Low	Medium	Low	Medium	Low	Medium	Medium	Medium	Medium	Medium
SUMMARY GOAL 2	**Medium-High**	**Medium-Low**	**Medium-High**	**Medium-Low**	**Medium-High**	**Medium-Low**	**Medium**	**Low**	**Low**	**Low**	**Low**

Table 8-1: Tier Two Evaluation (continued)

Tier Two Criteria	Consolidated Long List Alternatives										
	Bus Rapid Transit (BRT)						BRT+Streetcar	Light Rail			
	Alt. 2-1/2-2	Alt. 2-3	Alt. 2-4/2-5	Alt. 2-6	Alt. 2-7/2-8	Alt. 2-9	Alt. 3-1	Alt. 4-1	Alt. 4-2	Alt. 4-3	Alt. 4-4
Goal 3: Develop the Most Efficient Transportation System, Which Maximizes Limited Resources for the Greatest Public Benefit											
Order of magnitude capital cost	High	High	Medium	Medium	Medium	Medium	Medium	Low	Low	Low	Low
Order of magnitude operating and maintenance (O&M) cost	Medium	Medium	Medium	Medium	Medium	Medium	Low	Low	Low	Low	Low
Serves SunRail with a mix of route types (express and local)	High	High	High	High	High	High	High	Low	Low	Low	Low
Compatibility with existing fleet and facilities	High	High	High	High	High	High	Medium	Low	Low	Low	Low
Ability to implement project in stages	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Low	Low	Low	Low
Implementation timeframe	High	High	Medium	Medium	Medium	Medium	Medium	Low	Low	Low	Low
SUMMARY GOAL 3	**High**	**High**	**Medium**	**Medium**	**Medium**	**Medium**	**Medium**	**Low**	**Low**	**Low**	**Low**
Goal 4: Develop a Transit System Consistent With Adopted Local and Regional Plans and Policies											
Consistency with adopted plans	High	High	High	High	High	High	High	Medium	Medium	Medium	Medium
Builds upon previous/current LYNX planning efforts	High	Low	High	Low	High	Low	High	Medium	Medium	Medium	Medium
Consistency with CRA objectives	High	Low	High	Low	High	Low	High	Medium	Medium	Medium	Medium
Potential to support compact development	Medium	Low	Medium	Low	Medium	Low	Medium	High	High	High	High
SUMMARY GOAL 4	**High**	**Low**	**High**	**Low**	**High**	**Low**	**High**	**Medium**	**Medium**	**Medium**	**Medium**

Table 8-1: Tier Two Evaluation (continued)

Tier Two Criteria	Consolidated Long List Alternatives										
	Bus Rapid Transit (BRT)						BRT+Streetcar	Light Rail			
	Alt. 2-1/2-2	Alt. 2-3	Alt. 2-4/2-5	Alt. 2-6	Alt. 2-7/2-8	Alt. 2-9	Alt. 3-1	Alt. 4-1	Alt. 4-2	Alt. 4-3	Alt. 4-4
Goal 5: Preserve and Enhance the Environment, Natural Resources and Open Space											
Potential to use low-emission fleet	Medium	Medium	Medium	Medium	Medium	Medium	Medium	High	High	High	High
Potential to impact sensitive environmental areas	High	High	Medium	Medium	Medium	Medium	Medium	Low	Low	Low	Low
SUMMARY GOAL 5	**Medium-High**	**Medium-High**	**Medium**	**Medium**	**Medium**	**Medium**	**Medium**	**Medium**	**Medium**	**Medium**	**Medium**
OVERALL EVALUATION	**Medium-High**	**Medium-Low**	**Medium-High**	**Medium-Low**	**Medium-High**	**Medium-Low**	**Medium**	**Medium-Low**	**Medium-Low**	**Medium-Low**	**Medium-Low**
PASS TO SHORT LIST	**Yes**	No	**Yes**	No	**Yes**	No	No	No	No	No	No

Source: VHB

Table 8-2: Tier Two Evaluation Summary by Goal

Tier Two Criteria	Consolidated Long List Alternatives										
	Bus Rapid Transit (BRT)						BRT+Streetcar	Light Rail			
	Alt. 2-1/2-2	Alt. 2-3	Alt. 2-4/2-5	Alt. 2-6	Alt. 2-7/2-8	Alt. 2-9	Alt. 3-1	Alt. 4-1	Alt. 4-2	Alt. 4-3	Alt. 4-4
GOAL 1: Improve Mobility and Transportation Access	Medium	Medium-Low	Medium-High	Medium	High	Medium	Medium	Medium	Medium-High	Medium	Medium-High
GOAL 2: Enhance the Livability and Economic Competitiveness of the Study Area through an Improved Transportation System	Medium-High	Medium-Low	Medium-High	Medium-Low	Medium-High	Medium-Low	Medium	Low	Low	Low	Low
GOAL 3: Develop the Most Efficient Transportation System, Which Maximizes Limited Resources for the Greatest Public Benefit	High	High	Medium	Medium	Medium	Medium	Medium	Low	Low	Low	Low
GOAL 4: Develop a Transit System Consistent With Adopted Local and Regional Plans and Policies	High	Low	High	Low	High	Low	High	Medium	Medium	Medium	Medium
GOAL 5: Preserve and Enhance the Environment, Natural Resources and Open Space	Medium-High	Medium-High	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
OVERALL EVALUATION	**Medium-High**	**Medium-Low**	**Medium-High**	**Medium-Low**	**Medium-High**	**Medium-Low**	**Medium**	**Medium-Low**	**Medium-Low**	**Medium-Low**	**Medium-Low**
PASS TO SHORT LIST	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**No**	**No**	**No**	**No**	**No**

Source: VHB

Bus Rapid Transit

The Bus Rapid Transit (BRT) alternatives are differentiated by alignments that would include east-west transit service on US 192 and alignments that would split east-west transit service between US 192 and Osceola Parkway. Additionally, the alternatives are differentiated by infrastructure improvements that will affect travel time. The BRT alternatives that would provide east-west service on US 192 alone (Alts. 2-1/2-2, Alts. 2-4/2-5 and Alts. 2-7 and 2-8) scored better against land use and planning consistency goals (Goals 2 and 4) because these alternatives would directly serve the US 192 businesses, Community Redevelopment Agencies (CRAs) and Developments of Regional Impact (DRIs). The BRT alternatives that would split the planned east-west service routings between US 192 and Osceola Parkway (Alts. 2-3, 2-6 and 2-9) would limit access for some riders to the existing and planned land uses on US 192. Since none of the Osceola Parkway routes would stop on Osceola Parkway, they would also fail to attract new markets along their route. Therefore, Alternatives 2-3, 2-6 and 2-9 received lower evaluations than the alternatives with east-west service on US 192 exclusively.

The BRT alternatives (Alts. 2-4/2-5 and Alts. 2-7/2-8) that would provide partial or full length dedicated bus lanes on US 192 would result in the highest mobility benefits. These benefits would be partially offset by higher capital costs and longer implementation timeframes. It was assumed through initial qualitative assessments that existing right-of-way is available for these dedicated facilities (either existing lanes or new lanes). Thus, property would not need to be acquired and environmental impacts would not be expected to be significant. Overall, when considering all five goals, the pros and cons of the alternatives with dedicated bus lanes offset each other and thus these alternatives were evaluated equal with the alternatives that just provide TSP/queue jump infrastructure (2-1/2-2).

All the BRT alternatives would require a transfer from some or all stations between the Kissimmee Intermodal Facility (KIF) and Celebration to access Four Corners or Walt Disney World (WDW). In addition all of the BRT alternatives would require a transfer between the Osceola Parkway SunRail station and Four Corners.

In summary, the BRT alternatives 2-1/2-2, 2-4/2-5 and 2-7/2-8 were scored as Medium-High overall for the five goals. BRT alternatives 2-3, 2-6 and 2-9 were scored as Medium-Low overall. These alternatives include service along Osceola Parkway and scored lower than the other BRT alternatives. This is a reflection of their inability to effectively satisfy the Tier Two criteria and thus the project's goals and objectives (in particular those related to consistency with adopted plans and policies promoting redevelopment and infrastructure investment along the US 192 corridor).

Bus Rapid Transit and Streetcar

Since Alternative 3-1 assumed combined results of the considered BRT alternatives, the evaluation of this alternative focused on its differentiating feature: the streetcar element. Since the streetcar would require an electric propulsion system, new substations would be required to power that system. Additionally, the streetcar would be a new vehicle type for LYNX and would require acquisition of new vehicles as well as a new storage and maintenance facility. In addition to these capital investments, the track infrastructure for a streetcar would be an added capital cost not required by the BRT alternatives. The streetcar element would also add operating and maintenance costs (over the BRT vehicles). The complexity of the installation of the track in the

roadway right-of-way and propulsion infrastructure would result in a longer implementation timeframe for this alternative as compared with the BRT-only alternatives. This alternative would require all of the transfers described for the BRT alternatives as well as an additional transfer between the BRT vehicle and the streetcar circulator within Kissimmee. Therefore, this alternative received an overall evaluation of Medium, reflecting its lower effectiveness at meeting the project goals as compared with the BRT-only alternatives.

Light Rail Alternatives

The Light Rail Transit (LRT) alternatives are differentiated by single route alternatives (Alts. 4-1 and 4-3) and multi-route alternatives (4-2 and 4-4). The alternatives with a single route (4-1 and 4-3) require a transfer for all riders to access WDW and the Osceola Parkway SunRail station. The LRT alternatives with multiple routes provide full one-seat ride access (no transfers) for all the stations between KIF and Celebration to WDW and Four Corners and thus they were evaluated higher for this criterion than the single route alternatives. Since the BRT alternatives would all require some transfers, Alternatives 4-2 and 4-4 would provide better service and connectivity.

The LRT alternatives are also differentiated by infrastructure, with Alternatives 4-1 and 4-2 providing a single track with passing sidings in some locations and Alternatives 4-3 and 4-4 providing double track throughout. The alternatives with double track would have better travel times, system capacity and system redundancy. However, like the streetcar alternative (but to a greater extent) the LRT alternatives will all require a traction power system with substations, new vehicles, a new storage and maintenance facility and track. In addition, the LRT alternatives would require substantial stations which would be larger and more complex than the potential BRT stations. The LRT alternatives would require a train control (signal) system. These elements would result in a higher capital cost than the BRT and BRT + Streetcar alternatives. Additionally, the LRT alternatives would have a higher operating and maintenance cost. Though the LRT alternatives would result in the greatest travel time savings of all the alternatives, they would require new right-of-way, would take longer to implement and would be less flexible at serving land uses directly. The LRT alternatives also are not consistent with previous planning efforts, which have recommended BRT infrastructure for the Study Area. Thus, the LRT alternatives were evaluated lower than the BRT and BRT + Streetcar alternatives, with overall Medium-Low evaluations.

Selection of Short List Alternatives

As a result of the evaluation, the Tier Two screening results in the advancement of the top three rated build alternatives to the Short List. The No Build and Enhanced Bus alternatives complete the Short List. The Short List Alternatives are:

- **No Build - Alternative 0-1**: Make no improvements beyond those already committed;
- **Enhanced Bus - Alternative 1-1**: Improve the existing bus system with transit signal priority, queue jumps and service modifications but make no additional capital investments;
- **Alternatives 2-1/2-2**: BRT service and infrastructure with transit signal priority and queue jumps;
- **Alternatives 2-4/2-5**: BRT service and infrastructure with transit signal priority, queue jumps and dedicated bus lanes for part of the US 192 alignment; and
- **Alternatives 2-7/2-8**: BRT service and infrastructure with transit signal priority, queue jumps and dedicated bus lanes for the full US 192 alignment.

The following alternatives were eliminated from further consideration:

- BRT Alternatives 2-3, 2-6 and 2-9;
- BRT + Streetcar Alternative 3-1; and
- LRT Alternatives 4-1, 4-2, 4-3 and 4-4