Transit Concept and Alternatives Review (TCAR)

FINAL REPORT

FDOT CAF24 TWO 15

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ACRONYMS

ACS	American Community Survey
BRT	Bus Rapid Transit
CDD	Community Development District
CFRPM	Central Florida Regional Planning Model
CFRTA	Central Florida Regional Transportation Authority
CRA	Community Redevelopment Area
DRI	Developments of Regional Impact
DVMT	Daily Vehicle Miles Traveled
EA	Environmental Assessment
ETDM	Efficient Transportation Decision Making
FDOT	Florida Department of Transportation
FLU	Future Land Use
FLUCFCS	Florida Land Use, Cover and Forms Classification System
FMLM	First Mile/Last Mile
FONSI	Finding of No Significant Impact
HSR	High-Speed Rail
MCO	Orlando International Airport
NEPA	National Environmental Policy Act
NTD	National Transit Database
OCCC	Orange County Convention Center
OD	Origin/Destination
O & M	Operations and Maintenance
PD & E	Project Development & Environment
PIP	Public Involvement Plan

ROD	Record of Decision
ROW	Right-of-Way
SOV	Single Occupancy Vehicle
STOPS	Simplified Trips-on-Project Software
TCAR	Transit Concept and Alternatives Review
TNC	Transportation Network Company
TOD	Transit Oriented Development
UPT	Unlinked Passenger Miles
V/C	Volume-to-Capacity
VP	Vanpool

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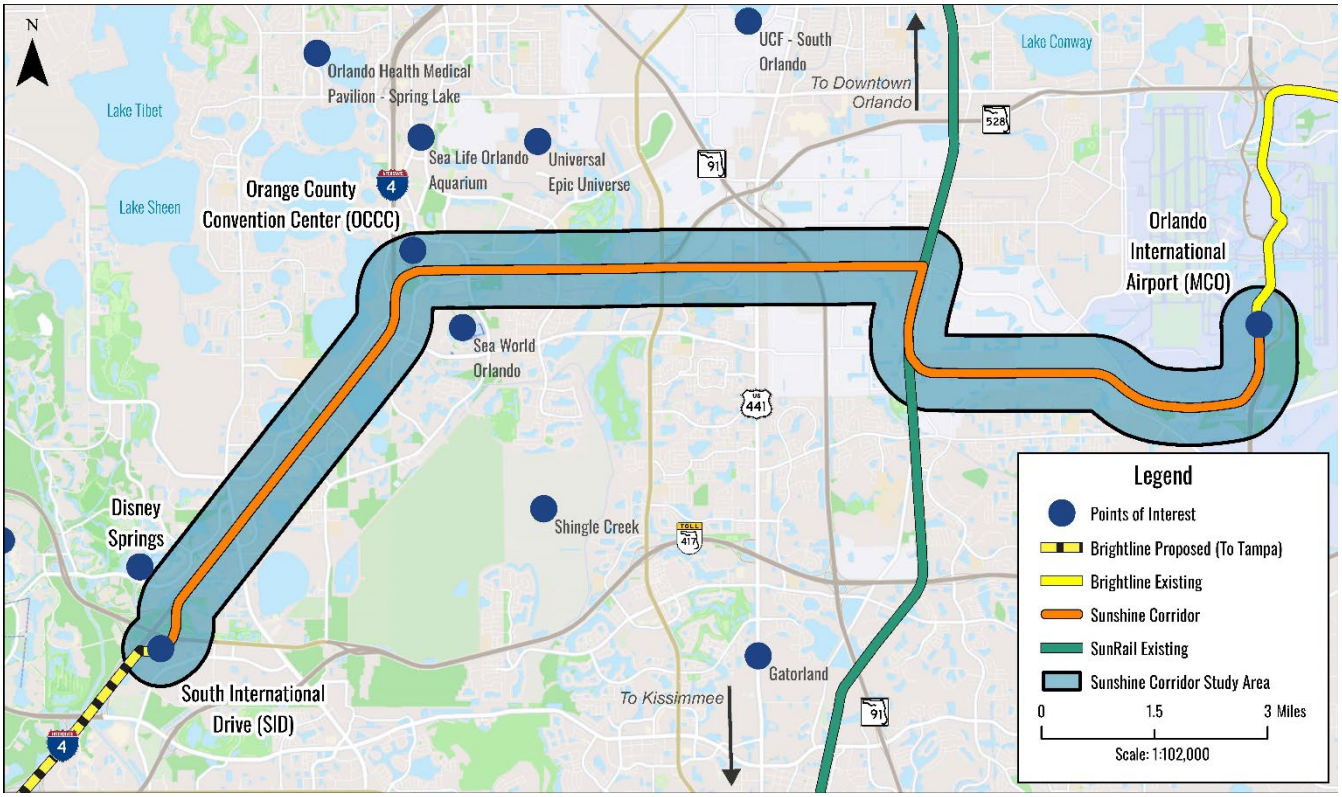
Executive Summary

The Sunshine Corridor is a component of a comprehensive multimodal passenger rail improvement program to significantly increase mobility options for residents, workers, and visitors in the Central Florida region. The Sunshine Corridor project leverages previous and planned modal investments in SunRail commuter rail, the Orlando International Airport's Terminal C expansion, and Brightline's Miami to Tampa intercity passenger rail program.

The Sunshine Corridor (**Figure 1)** proposed passenger rail transportation program focuses on linking the Orlando International Airport (MCO), downtown Orlando (via LYNX Central Station), Kissimmee (via the Kissimmee SunRail station), the Orange County Convention Center (OCCC), and South International Drive (SID) with an optional extension to Disney Springs (DS). It would accommodate both future commuter rail service and the proposed Brightline intercity passenger rail. This comprehensive, multi-phase passenger rail program will provide premium transit service connecting the SunRail Central Florida Rail Corridor and the proposed Brightline intercity passenger rail with major activity centers and multimodal facilities within the Orlando region.

Driven by discussions with key stakeholders, including Universal Studios Florida, International Drive Orlando, and local governments, the Sunshine Corridor would be a publicly-owned, joint-use passenger rail corridor. This corridor is poised to provide a critical link for the vision of intercity passenger rail service from Orlando to Tampa, building on the Miami to Orlando rail service that began operations in Fall of 2023 with a proposed expansion to Tampa in the future.

Figure 1: The Sunshine Corridor



Purpose and Need

Project Purpose: The purpose of the Sunshine Corridor project is to provide a critical transportation link, leveraging previous and planned modal investments, to address the mobility, connectivity, and economic development needs of the rapidly growing Central Florida region. The proposed Sunshine Corridor project advances the extension of the existing SunRail commuter rail service connecting major employment and activity centers in the Orlando area and supports the viability of implementing a multi-phase intercity passenger rail program that will serve areas beyond the Central Florida region.

Project Need: The need for the Sunshine Corridor project is three-fold:

- **Access to Employment/Activity Centers:** The Sunshine Corridor would be a vital link in the regional transportation system to improve mobility, connectivity, and access to major employment and activity centers.
- **Provides Multimodal Mobility Options:** The Sunshine Corridor would provide a viable transportation option for residents and visitors, as the area and state continue to experience expansive growth and economic development, putting a strain on the existing transportation facilities and infrastructure.
- **Leverages Investment:** The Sunshine Corridor project advances local priorities focused on regional transit needs established in previous planning efforts and leverages significant investments in multimodal facilities, SunRail, and the Brightline intercity passenger rail system.

Project Objectives: The goals of the Sunshine Corridor project are:

- **Connectivity to Activity Centers:** Connect residents to employment, education, leisure opportunities, and essential services.
- **Safety:** Provide a safe travel option for local and regional travel.
- **Mobility:** Enhance transportation equity by expanding multimodal transportation options.
- **Economic Development:** Promote economic development and increase local commerce.
- **Environmental Benefits:** Produce environmental benefits associated with air quality and energy through the reduction of single-occupant vehicle travel.
- **Supports Regional Travel:** Provide a cost-effective regional transportation solution that reduces the need for roadway capacity or expansion projects.

History of the Sunshine Corridor

In 2009, the Federal Rail Administration (FRA) approved a proposed high-speed rail corridor from Orlando to Tampa. Project approval was achieved by adhering to National Environmental Policy Act (NEPA) requirements, minimizing impacts on natural and human environments through pre-existing transportation corridors, and to other mitigation measures. The FRA's 2010 Record of Decision (ROD) established the corridor for intercity passenger rail.[1]

Phase 1 of the SunRail commuter rail system began construction in January 2012, with service starting on May 1, 2014. Phase 1 spans 32 miles of at-grade single-track and double-track railway within the former CSX Transportation railroad right-of-way. It serves 12 stations from DeBary Station in Volusia County to Sand Lake Road Station in Orange County. Phase 2 South, opened on July 30, 2018. It is a 17.2-mile extension from Sand Lake Road in Orange County to Poinciana in Osceola County.

Phase 2 North, is a 12-mile extension from the DeBary Station to the DeLand Amtrak Station in Volusia County, using the existing Central Florida Rail Corridor. This phase is expected to open by summer 2024.

In 2015, a proposed SunRail commuter rail extension to MCO, a 5.5-mile commuter rail project known as Phase 3, was approved by the FTA and entered the Project Development phase of the Capital Investment Program (CIG), where it is still currently considered an active project. The project would connect the existing SunRail north-south section to the airport.

Brightline received approval to construct intercity passenger rail to connect MCO and Tampa, now known as Brightline Florida West. Brightline's initial preferred route included an alignment along SR-417, which bypassed the Orange County Convention Center (OCCC), Universal Parks and Resorts, and the central-north International Drive area. However, after discussions with the neighboring Hunter's Creek residential community and private partners, they agreed to amend the alignment to a northern route that bypassed Hunter's Creek, while connecting the International Drive and OCCC areas.

In spring 2022, the Florida Department of Transportation (FDOT) established the Sunshine Corridor Steering Committee and Policy and Technical Working Group to bring together all potential program partners for regular discussions and coordination. Later that year, the Central Florida Commuter Rail Commission (CFCRC) passed a Resolution of Support for the Sunshine Corridor project, confirming support of exploring SunRail expansion opportunities, alongside their funding partners, FDOT, and private stakeholders. The FDOT produced a white paper on the Sunshine Corridor documenting a high-level overview of the proposed Sunshine Corridor, as well as formally requesting FTA guidance on potential next steps.

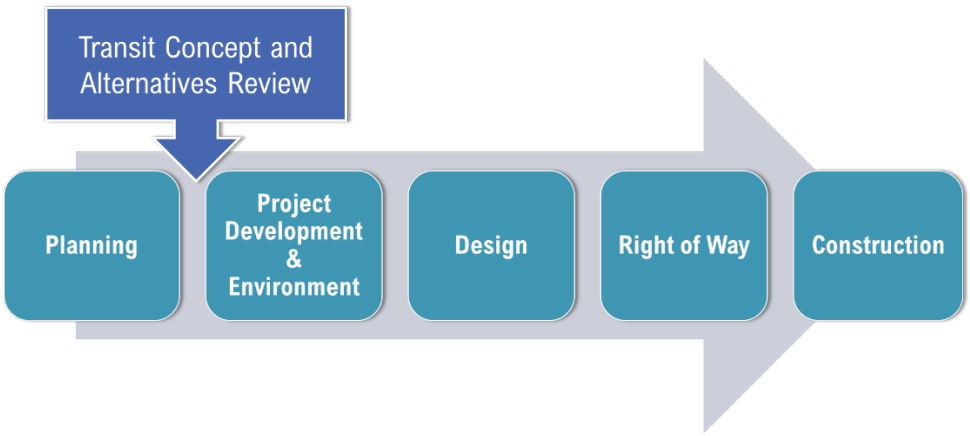
The FDOT, with support from the Sunshine Corridor Working Group, agreed to prepare a Transit Concept and Alternatives Review (TCAR) Study as a key step in the State's process to prepare for project development. This Sunshine Corridor TCAR Study focuses on the segment from the existing SunRail alignment near LYNX Central Station, south to Kissimmee SunRail Station, east to MCO, west to the OCCC, and southwest to South International Drive.

[1] Federal Railroad Administration. (2010). **Record of Decision/Section 4(f) Determination; Florida High Speed Rail, Tampa to Orlando.** U.S. Department of Transportation.

Transit Concept and Alternatives Review

A Transit Concept and Alternatives Review (TCAR)[2] is an FDOT Public Transit Office (PTO) recommended study for evaluating transit projects and positioning them for the subsequent FDOT Project Development and Environment (PD&E) process and the FTA's Capital Investment Grant (CIG) Program (**Figure 2**). The TCAR is meant to assist project sponsors in conducting analysis required to apply for entry into project development (PD).

Figure 2: FDOT Study Process



Due to existing research and analysis on the Sunshine Corridor conducted over the past several years, an abbreviated schedule was approved for the TCAR study. This was conditioned on the availability of previous and ongoing work developed by program partners related to ridership, service development, and establishing high-level preliminary cost estimates. As operations, ridership, and cost analyses were conducted separately from the TCAR Study, they were incorporated as they became available to the study team.

The first step in the TCAR process was to define the program purpose and need. Once this step was complete, the study team gathered, reviewed, and assessed existing data as well as compiled a review of related local plans and initiatives. This was followed by an analysis of existing regional transportation conditions and future needs. In addition, a preliminary environmental scan was conducted to compile available data and identify potential permitting needs. A compressed but extensive public engagement process was conducted, with an online survey, three in person and one virtual public meeting, and a project website requesting public comment submissions.

Four alternative modes (enhanced local bus, bus rapid transit, commuter rail, and trackless tram) were identified and screened based on project objectives developed from the purpose and need. This resulted in the determination of commuter rail as the recommended alternative mode. The commuter rail option was further evaluated to provide information on costs, ridership, high-level infrastructure requirements, safety, mobility, land use, and economic development.

The TCAR Study was documented in an actively updated online StoryMap, multiple public presentations, and eight technical memorandums:

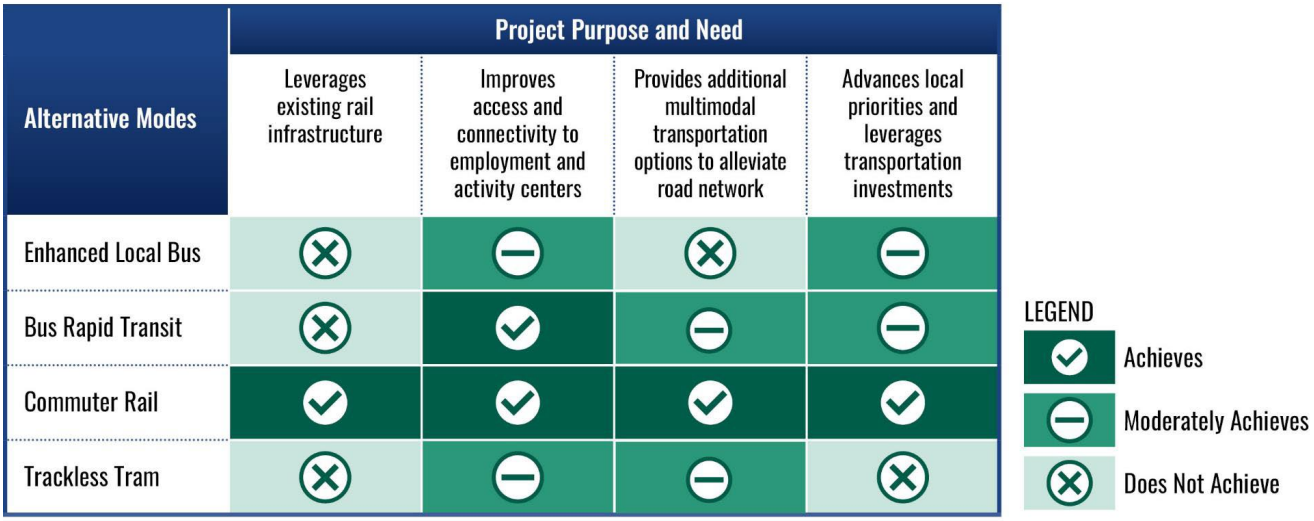
[2] Florida Department of Transportation. (2016). **FDOT Transit Concept and Alternatives Review (TCAR) Guidance**.

- Sunshine Corridor Purpose And Need Technical Memorandum
- Inventory and Assessment of Existing Studies Technical Memorandum
- Public Involvement And Stakeholder Engagement Summary Report
- Existing and Future Conditions Technical Memorandum
- Alternatives Development Technical Memorandum
- Alternatives Screening Technical Memorandum
- Recommended Alternative Technical Memorandum
- Environmental Scan Technical Memorandum

Alternatives Screening & Recommended Alternative

Each of the four alternatives were examined as systems to serve the activity centers outlined by the program: the Orlando International Airport (MCO), the Orange County Convention Center (OCCC) area, the South I-Drive area, and Disney Springs. Routes for bus and trackless tram modes were developed based on current LYNX services and adopted regional planning documents using Remix transit service planning software.[3] This was followed by a qualitative screening process using factors based on the project purpose and need. The results of the preliminary screening process, which identified commuter rail as the most effective alternative to meet program objectives, are shown in **Figure 3**.

Figure 3: Alternatives Screening Results



The following evaluation assumptions in support of the commuter rail option were taken from the screening:

- Commuter rail meets all the screening factors
- Public support was determined through engagement efforts
- Commuter rail leverages planned investment in infrastructure and service
- Commuter rail expansion is included in local and regional planning

[3] Remix Transit. (n.d.). **Public Transit Planning Software**. Via.

- Results in increased modal options by potentially adding rail access to MCO, the OCCC, South I-Drive, and Disney Springs
- Connects SunRail commuter rail system to air travel and intercity rail travel
- Commuter rail operates solely on separated facilities and would not result in a loss of road capacity

Following the initial screening, the computer rail option was further developed using the factors seen in **Table 1**.

Table 1: Commuter Rail Evaluation Factors

Factor	Description
Ridership Estimates	Ridership modeling was completed for all five Options using the FTA-approved STOPS modeling using four key travel markets: Central Florida commuters, air passengers, attraction attendees, and inter-city rail riders.
Costs	Rough order of magnitude cost estimates were developed for Options A-D. These considered construction costs (infrastructure and capital improvements), annual operations and maintenance costs, and right-of-way land acquisitions and easements costs.
Infrastructure Requirements	An inventory of required infrastructure was developed based on concept-level design for each of the options. These will be finalized in the next phase of study.
Safety	The level of safety was determined by the number of conflicts at intersections, entrances, and at-grade rail crossings.
Mobility & Connectivity	Connectivity to bus, BRT routes, shuttles, micromobility, and other passenger rail services was examined at a local and regional level by the number of connections, different options, and routes offered per day.
Land Use & Economic Development	Rail's land use was considered by the number of acres that are impacted either in close proximity to or directly in residential communities/neighborhoods. Support for economic development was three-fold: Job access, affordable housing access, and encouraging transit-oriented development.
Environmental Considerations	An environmental scan was conducted to identify potential effects and create a preliminary list of required permitting.

Next Steps

In order to continue to support the Sunshine Corridor Program and position the project for the eventual FTA CIG application, the following actions should be considered:

- Respond to the FTA's request for an update on the Sunshine Corridor and the existing CIG project;
- Move forward with PD&E;
- Continue discussion with project partners through regular Working Group meetings.

1 Introduction

The implementation of passenger rail service in the Central Florida region has been the subject of numerous transportation studies and planning documents for decades, as an option to improve mobility, and address the region's growth and demand on the existing transportation infrastructure. The Sunshine Corridor is a comprehensive passenger rail improvement program, which focuses on the expansion of the existing SunRail commuter rail service. Additionally, as envisioned, the Sunshine Corridor could potentially integrate with the proposed intercity passenger rail service between Orlando and Tampa, known as Brightline, in the future. Brightline is a private, intercity passenger rail company that operates today between Miami and Orlando.

There is a significant need for this new multi-modal expansion as the Orlando-Kissimmee-Sanford Metropolitan Statistical Areas (MSA) ranks 22nd nationally with a population of 2.8 million. In addition, this market is a leading global destination for tourism. In 2022, Central Florida welcomed 74 million visitors. As the demand for transportation improvements for residents and visitors alike increases, the Sunshine Corridor presents an opportunity to enhance accessibility to the region's key employment and destination centers.

Central Florida's SunRail commuter rail service began operating in 2014 from DeBary to Poinciana, including a connection at Lynx Central Station, in the city of Orlando. The Sunshine Corridor Program proposes to expand passenger rail service by connecting Lynx Central Station to Orlando International Airport, and from the Orlando International Airport (MCO) to South International Drive and/or Disney Springs area.

Building upon previous planning studies, the Florida Department of Transportation (FDOT) commenced a Transit Concept and Alternatives Review Study to continue the dialogue with the community and local government leaders surrounding the expansion of SunRail and the proposed Sunshine Corridor.

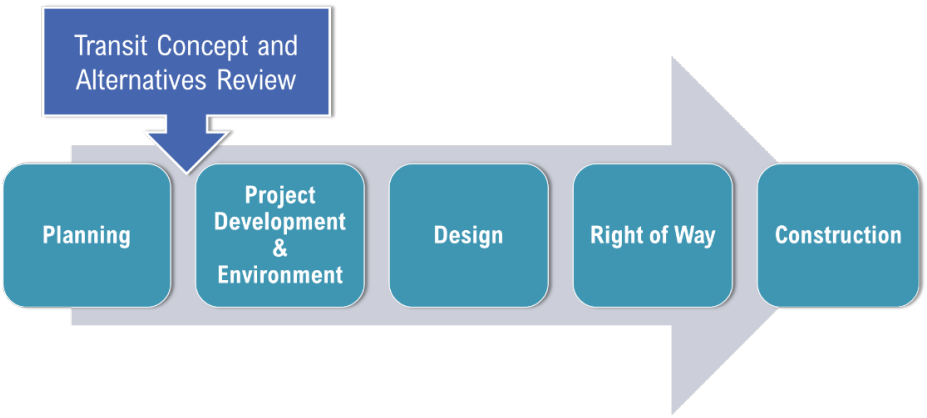
1.1 Transit Concept and Alternatives Review (TCAR)

A Transit Concept and Alternatives Review (TCAR)[4] is an FDOT Public Transit Office (PTO) recommended study for evaluating transit projects and positioning them for the subsequent FDOT Project Development and Environment (PD&E) process and the Federal Transit Administration (FTA) and Capital Investment Grants (CIG) Program **(Figure 2**). The TCAR process is meant to assist project sponsors in conducting analysis required to apply for entry into Project Development (PD). The TCAR process includes several key planning study components, which may vary in level of detail based on the project, due to the pre-PD&E Study project phase. These components include an examination of:

- Project Purpose and Need
- Existing Conditions (Demographics, Environmental, Transportation System, Market Analysis, etc.)
- Future Conditions (Planned Infrastructure, Economic Development, etc.)
- Modal Alternatives
- Ridership Projections and Preliminary Cost Estimates
- Preliminary Screening Evaluation
- Public and Stakeholder Engagement

[4] Florida Department of Transportation. (2016). **FDOT Transit Concept and Alternatives Review (TCAR) Guidance.**

Figure 4: FDOT Study Process



Due to existing research and analysis on the Sunshine Corridor conducted over the past several years, an abbreviated schedule was approved for the Sunshine Corridor TCAR study. This was conditioned on the availability of previous and ongoing work developed by program partners related to ridership, service development, and establishing high-level preliminary cost estimates. As operations, ridership, and cost analyses were conducted separately from the TCAR Study, they were incorporated as they became available to the study team.

The first step in the TCAR process was to define the program purpose and need. The project purpose and need are discussed in more detail in **Section 2**.

Next, in **Section 3**, is an analysis of related plans and studies, a review of existing regional transportation conditions, and the study area demographic profile. In addition, a preliminary environmental scan was conducted to compile available data and identify potential permitting needs. **Section 4** presents an assessment of the transit needs in the area, followed by a more comprehensive review of future needs and conditions in **Section 5.**

Sections 6 and **7** contain a review of the various transit modes under consideration and the results of the evaluation screening process. **Section 8** contains a review of the extensive public engagement process conducted for this project, which involved an online survey, three in person and one virtual public meeting, and a project website requesting public comment submissions.

1.2 Sunshine Corridor Background

In 2009, the Federal Rail Administration (FRA) approved a proposed high-speed rail corridor from Orlando to Tampa. Project approval was achieved by adhering to National Environmental Policy Act (NEPA) requirements, minimizing impacts on natural and human environments through pre-existing transportation corridors, and to other mitigation measures. The FRA's 2010 Record of Decision (ROD) established the corridor for intercity passenger rail.[5]

[5] Federal Railroad Administration. (2010). **Record of Decision/Section 4(f) Determination; Florida High Speed Rail, Tampa to Orlando.** U.S. Department of Transportation.

Phase 1 of the SunRail commuter rail system began construction in January 2012, with service starting on May 1, 2014. Phase 1 spans 32 miles of at-grade single-track and double-track railway within the former CSX Transportation railroad right-of-way. It serves 12 stations from DeBary Station in Volusia County to Sand Lake Road Station in Orange County. Phase 1 also constructed a Vehicle Storage and Maintenance Facility (VSMF) and an Operations Control Center (OCC) in Sanford.

Phase 2 South, opened on July 30, 2018. It is a 17.2-mile extension from Sand Lake Road in Orange County to Poinciana in Osceola County. Four stations are located at Meadow Woods, Tupperware Station, Kissimmee, and Poinciana. Phase 2 South also included construction of a separate Vehicle Storage and Light Maintenance Facility (VSLMF) at the southern terminus, Poinciana Station.

Phase 2 North, is a 12-mile extension from the DeBary Station to the DeLand Amtrak Station in Volusia County, using the existing Central Florida Rail Corridor. This phase is expected to open by summer 2024.

In 2015, a proposed SunRail commuter rail extension to MCO, a 5.5-mile commuter rail project known as Phase 3, was approved by the FTA and entered the Project Development phase of the FTA's CIG Program, where it is still currently considered an active project. The project would connect the existing SunRail north-south section to the airport.

Brightline received approval to construct intercity passenger rail to connect MCO and Tampa, now known as Brightline Florida West. Brightline's initial preferred route included an alignment along SR-417, which bypassed the Orange County Convention Center (OCCC), Universal Parks and Resorts, and the central-north International Drive area. However, after discussions with the neighboring Hunter's Creek residential community and private partners, they agreed to amend the alignment to a northern route that bypassed Hunter's Creek, while connecting the International Drive and OCCC areas.

In spring 2022, the FDOT established the Sunshine Corridor Steering Committee and Policy and Technical Working Group to bring together all potential program partners for regular discussions and coordination. Later that year, the Central Florida Commuter Rail Commission (CFCRC) passed a Resolution of Support for the Sunshine Corridor project, confirming support of exploring SunRail expansion opportunities, alongside their funding partners, FDOT, and private stakeholders. The resolution includes having the private entities, Brightline, Orlando's Right Rail, and Universal Parks and Resorts, potentially contribute to the overall costs, participate in partner collaboration, and support related funding applications. Following conversations with the FTA, the FDOT produced a white paper on the Sunshine Corridor documenting a high-level overview of the proposed Sunshine Corridor Central Project, as well as formally requesting FTA guidance on potential next steps.

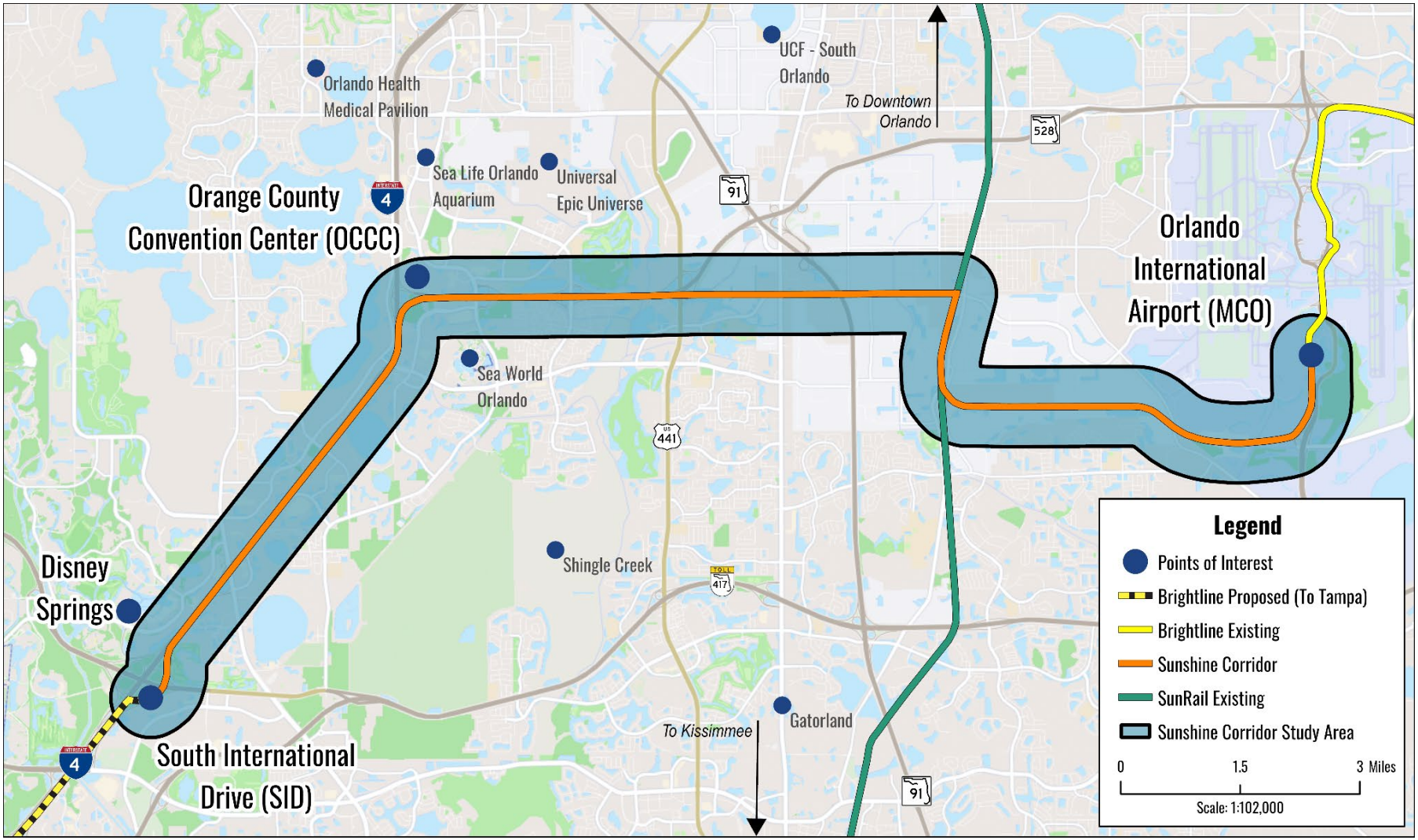
The FDOT, with support from the Sunshine Corridor Working Group, agreed to prepare a Transit Concept and Alternatives Review (TCAR) Study as a key step in the State's process to prepare for project development. This Sunshine Corridor TCAR Study focuses on the segment from the existing SunRail alignment near LYNX Central Station, south to Kissimmee SunRail Station, east to MCO, west to the OCCC, and southwest to South International Drive.

1.3 Project Description

The Sunshine Corridor (**Figure 5**) is a proposed passenger rail transportation program focused on linking the Orlando International Airport (MCO), downtown Orlando (via LYNX Central Station), Kissimmee (via the Kissimmee SunRail station), the Orange County Convention Center (OCCC), and South International Drive (SID) with an optional extension to Disney Springs (DS). It would accommodate both future commuter rail service and the proposed intercity passenger rail connecting Orlando to Tampa. This comprehensive, multi-phase passenger rail program will provide premium transit service connecting the SunRail Central Florida Rail Corridor and the proposed Brightline intercity passenger rail with major activity centers and multimodal facilities within the Orlando region.

Driven by discussions with key stakeholders, including the Florida Department of Transportation (FDOT), the Central Florida Commuter Rail Commission (CFCRC), Universal Parks and Resorts, Orlando's Right Rail Coalition, Brightline, and local governments, the Sunshine Corridor would be a publicly-owned, joint-use passenger rail corridor poised to provide a critical link for the vision of intercity passenger rail service from Orlando to Tampa. The project builds upon the Miami to Orlando rail service that began its operations in Fall of 2023 with a proposed expansion to Tampa in the future. The proposed facility would utilize both new and existing rail tracks and would connect to the new Intermodal Transfer Center at MCO.

Figure 5: Sunshine Corridor



2 Purpose and Need

The first step in the TCAR Study process involves defining the project purpose and need which guide the study process and will be used for future study phases including a National Environmental Policy Act (NEPA) environmental review. The following sections describe these elements of the Sunshine Corridor.

Project Purpose: The purpose of the Sunshine Corridor project is to provide a critical transportation link, leveraging previous and planned modal investments, to address the mobility, connectivity, and economic development needs of the rapidly growing Central Florida region. The proposed Sunshine Corridor project advances the extension of the existing SunRail commuter rail service connecting major employment and activity centers in the Orlando area and supports the viability of implementing a multi-phase intercity passenger rail program that will serve areas beyond the Central Florida region.

Project Need: The need for the Sunshine Corridor project is three-fold:

- **Access to Employment/Activity Centers:** The Sunshine Corridor would be a vital link in the regional transportation system to improve mobility, connectivity, and access to major employment and activity centers.
- **Provides Multimodal Mobility Options:** The Sunshine Corridor would provide a viable transportation option for residents and visitors, as the area and state continue to experience expansive growth and economic development, putting a strain on the existing transportation facilities and infrastructure.
- **Leverages Investment:** The Sunshine Corridor project advances local priorities focused on regional transit needs established in previous planning efforts and leverages significant investments in multimodal facilities, SunRail, and the Brightline intercity passenger rail system.

Project Objectives: The goals of the Sunshine Corridor project are:

- **Connectivity to Activity Centers:** Connect residents to employment, education, leisure opportunities, and essential services.
- **Safety:** Provide a safe travel option for local and regional travel.
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- **Economic Development:** Promote economic development and increase local commerce.
- **Environmental Benefits:** Produce environmental benefits associated with air quality and energy through the reduction of single-occupant vehicle travel.
- **Supports Regional Travel:** Provide a cost-effective regional transportation solution that reduces the need for roadway capacity or expansion projects.

3 Existing Conditions

A thorough examination of study area existing conditions was completed to inform how the Sunshine Corridor fits into current and future regional plans. The information below summarizes area planning and engineering studies related to the project, demographic information, socio-economic conditions, existing transportation networks, and an environmental scan that can be used to inform future phases of the project. Further details on each topic can be found in the following Sunshine Corridor Technical Memorandums:

- Inventory and Assessment of Existing Studies Technical Memorandum
- Existing and Future Conditions Technical Memorandum
- Environmental Scan Technical Memorandum

3.1 Related Plans and Studies

This section of the report provides a brief overview of key plans and studies related to the development and advancement of the Sunshine Corridor and related projects. Central Florida's interest in high-speed rail (HSR) planning began in 2004 when the mode was proposed as an alternative to increasing roadway capacity and a solution to high volumes of traffic, accident rates, and congestion.

Due to the project's complexity, studies and plans are grouped into three categories: Transportation, Governance and Operating Agreements, and Environmental Assessments. Additional plans and studies are summarized in detail in the *Inventory and Assessment of Existing Studies Technical Memorandum*.

3.1.1 Transportation Studies

The following reference documents are transportation and transportation-adjacent studies and projects that have either recently concluded or are ongoing, which have been prepared to help meet the increasing population, congestion, and transit demand in Central Florida, as well as provide rail connectivity across mid-Florida.

All Aboard Florida Intercity Passenger Rail Project: Orlando to Miami, United States DOT FRA (2017)

This 2017 study proposed the construction and operation of a privately owned and operated intercity passenger railroad, connecting Orlando and Miami. Phase I of the project opened in 2018, establishing the rail connection between Fort Lauderdale and West Palm Beach. Phase II of the project, the route from West Palm Beach to Orlando, began service in September of 2023 with a station opening at MCO.

Phase II of Brightline's rail extension may affect rail operations and maintenance for the Sunshine Corridor. Aspects of the project that may affect the Sunshine Corridor include the following:

- The construction of a new railroad line between MCO and Brightline's Cocoa (East-West Corridor), running parallel to SR-528
- The construction of a new Vehicle Maintenance Facility (VMF) on or near MCO property, with track connecting MCO and the VMF to SR-528

LYNX SR-436 Transit Corridor Study, LYNX (2019)

The study produced findings and recommendations for limited-stop transit service and bus rapid transit (BRT) between MCO and the Altamonte Springs SunRail station, along with the next steps for implementing recommendations.

The study recommended implementing a limited-stop bus service between MCO and SunRail in the short term. In the long term, the study recommends establishing BRT service between MCO and the Altamonte Springs SunRail Station. This study concludes that MCO is the practical terminal point for the SR-436 Corridor. MCO supports multimodal and multiscale links to long-distance rail, flights, and micro-mobility options. In addition, a limited-stop or BRT service could be a transit alternative.

SunRail/Orlando International Airport Connection Ridership Report, CFCRC (2021)

This report summarizes the modeling approach and ridership estimates for the MCO-SunRail and MCO-Meadow Woods-Disney Springs alternatives. This study utilizes 2021 ridership forecasts from SunRail rider surveys and ridership data that were previously unavailable.

The report proposes alternatives or additional linkages such as a SunRail link that would extend further west to a new SunRail station at Disney Springs. The SunRail alternatives proposed by the study included a rail shuttle from MCO to the SunRail Meadow Woods station, an extension of the first alternative past Meadow Woods to Disney Springs, and two companion direct shuttles from MCO; one of the direct companion shuttles would extend towards LYNX Central Station while the other to the SunRail Kissimmee/Amtrak Station. The MCO - MetroWest - Disney Springs alternative, similar to the rail alignment examined during this study, yielded the most horizon year trips, or final year of the planning period.

I-Drive Transit Feasibility and Alternative Technology Assessment Report, Orange County (2021)

This report explored how emerging transportation technology can be applied in the I-Drive District to provide additional mobility options and help support the immense economic potential of the district. Planning a dynamic and efficient transportation system will benefit the region. Mobility needs have often been accommodated for single occupancy vehicles, private shuttle buses, and a bus circulator that oftentimes struggles to deliver rides in a timely manner. Transportation improvements would be a welcome addition as limited mobility options can be a barrier for visitors to utilize the array of shopping, dining, and other attractions.

After a comprehensive summary of existing traffic data, transit options, land use, and the built environment, the report suggested alternatives, including four premium bus options and four streetcar options with varying routes. After evaluating multimodal potential, market needs, economic development, human/environmental impacts, traffic/pedestrian impacts, and constructability, Alternative 1a was chosen as the preferred alternative. This alternative would operate a premium transit option, likely a BRT service, from Sand Lake Road to SeaWorld. This would interact with a crucial stop along the Sunshine Corridor, the OCCC. This station has the potential to offer consistent access to some of Central Florida's best attractions almost immediately after servicing MCO.

Transit Development Plan (TDP) FY2022 – FY2023, LYNX (2022)

The LYNX Transit Development Plan (TDP) outlines the agency's strategic initiatives and service plans for a ten-year period. LYNX is interested in pursuing partnership opportunities with SunRail. This partnership includes developing a plan for a transit pass program and integrated fare collection for both LYNX and SunRail.

Florida Rail System Plan, FDOT (2022)

The Florida Rail System Plan is a guide developed by the FDOT that describes freight and passenger rail priorities and plans. The Rail System Plan mentions the Sunshine Corridor and the possibility of a multiphase expansion from MCO, OCCC, Central Florida's theme parks, and expansion eastward and westward. It confirms the FDOT and partnering organizations' commitment to the potential for passenger rail expansion in Florida.

3.1.2 Governance and Operating Agreements

When sharing rail infrastructure, all parties using, managing, and operating the corridor must be well equipped to negotiate and balance their needs across the corridor. This is especially critical on multi-use rail corridors such as the Sunshine Corridor. Beginning with the establishment of the Central Florida Commuter Rail Commission (CFCRC) in 2007, there have been several legal agreements between FDOT and local government partners regarding SunRail operations, funding, management, and maintenance, and will ultimately assist with further expansion of SunRail service.[6]

Interlocal Governance Agreement for Creation of the Central Florida Commuter Rail Commission (2007)

The 2007 Interlocal Governance Agreement for Creation of the Central Florida Commuter Rail Commission (CFCRC) demonstrates how FDOT, a public entity, will balance operating passenger rail operations with the private freight operations of CSX Transportation (CSXT). This agreement document creates and assigns responsibilities and operational decisions for the Central Florida Commuter Rail Transit System.

Additionally, the funding, operation, management, and maintenance of the commuter rail system will become the responsibility of the CFCRC after the FDOT funding period concludes.[7] Currently, the commuter rail line is still FDOT's responsibility as the funding period has not yet concluded but granting control of SunRail maintenance and operations to a public entity is being considered.

Joint Use Agreement Between FDOT and Seminole County (2011), Joint Use Agreement Between FDOT and Orange County, FDOT (2011), and Joint Use Agreement Between FDOT and the City of Orlando, FDOT (2011), Joint Use Agreement Between FDOT and Osceola County (2015), Joint Use Agreement Between FDOT and Volusia County (2016)

In 2011, Joint Use Agreements were passed between FDOT and each local government partner of SunRail: Volusia County, Seminole County, Orange County, City of Orlando, and Osceola County. These agreements established that local government partners shall encourage land use policies and restrictions in accordance with transit-oriented

[6] SunRail. (n.d.). **SunRail Governing Board.** Florida Department of Transportation.
[7] SunRail Project Engineering and Administration. (2013). **Exhibit "A," Scope of Services**. SunRail.

land uses and enhance utilization of the commuter rail system by the public. The terms of the agreements included station ownership, site components, maintenance, and revenue. The Joint Use Agreement between FDOT and Orange County was amended in 2014, in response to the SunRail Project moving into Phase II, which included an additional station located in Orange County, Meadow Woods Station.

The Joint Use Agreement between FDOT and Volusia County was also amended in 2016, addressing the increased use of DeBary SunRail Station. This agreement established that FDOT would construct additional parking and that Volusia County would be responsible for maintaining the additional parking.

Petition to Establish Shingle Creek Transit Utility Community Development District, Orange County (2023)

In 2023, the Shingle Creek Transit Utility Community Development District (CDD), also referred to as the "District", was established. The District was created to streamline district growth and development, largely by creating a distinct governing body for the designated Shingle Creek area. Universal Parks and Resorts is the governing body for the area. The distinct District is a promising step in continuing Brightline and SunRail's westward expansion towards Tampa since Shingle Creek, as a limited-purpose public entity, possesses the ability to finance, construct, operate, own, and maintain the proposed rail station at the OCCC. This rail station is also pivotal to the Sunshine Corridor expansion to the Orange County Convention Center (OCCC). Universal Studios is the sole taxpayer in the Shingle Creek District, expediting their ability to issue bonds and purchase land for the station.

3.1.3 Environmental Assessments

A series of environmental assessments related to passenger rail began in 2004 with the *Florida High Speed Rail Project Development and Environment (PD&E) Study* sponsored by FDOT, which was the precursor to a range of comprehensive environmental studies analyzing the environmental ramifications of intercity passenger rail in Central Florida.

The most recent study, *SunRail Extension to OIA (Phase 3) Project Development and Environment (PD&E) Study, CFCRC (2018)* evaluated the potential of a transit connection between the SunRail Commuter Rail Transit system and the new Intermodal Terminal Facility (ITF) at MCO. The transit connection would be enabled through the construction of a five-and-one-half mile extension between the existing SunRail Phase 1 and Phase 2 South service to the ITF along an existing spur track corridor that is owned by the City of Orlando and operated by the Orlando Utilities Commission (OUC). To meet the desired headways, this study recommended the use of two separate tracks, with the use of center platforms.

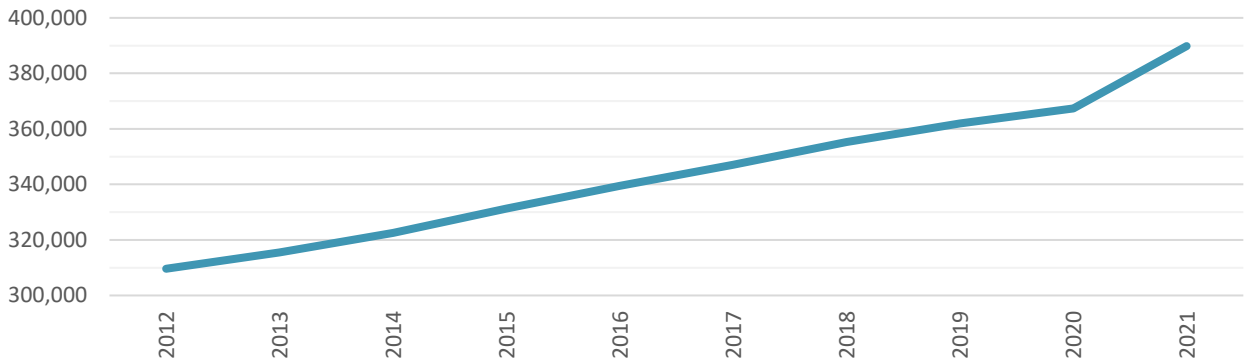
Since this assessment, the potential Sunshine Corridor alignment may have changed, including the number of at-grade track miles compared to elevated, which, in addition to the environmental analysis, also influences costs. While the TCAR Study includes a preliminary environmental scan of the proposed Sunshine Corridor, an environmental determination, in accordance with NEPA requirements, will also need to be completed for the entirety of the Sunshine Corridor during the subsequent Project Development phase.

3.2 Demographics, Socioeconomic Analysis, and Land Use

3.2.1 Demographics

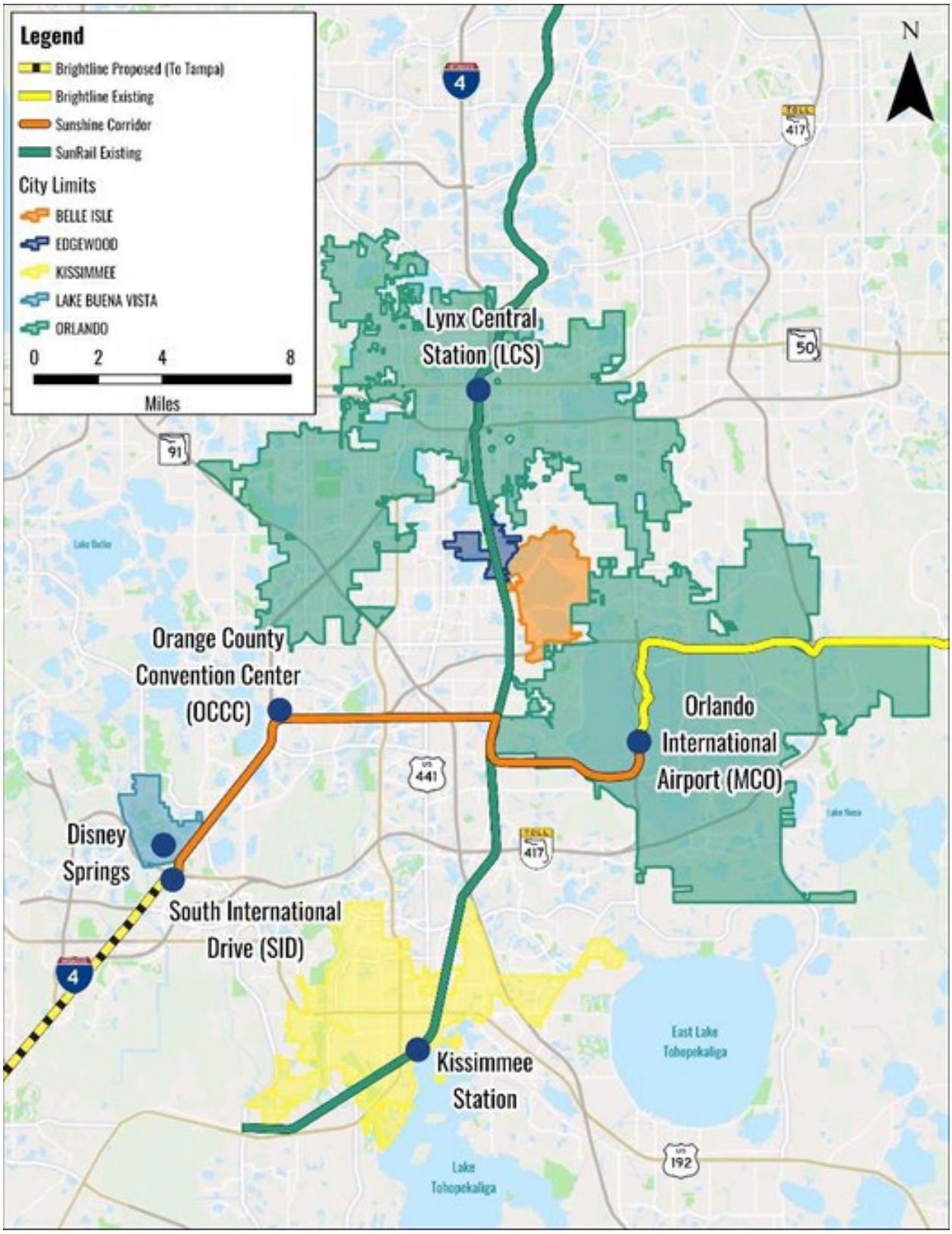
Understanding the demographics and population trends for the study area provides insight into who is being served by public transportation and the broader context in which the service operates. This information can help explain certain ridership trends and provide a framework for adjusting service to the dynamic nature of Central Florida. Municipalities within the study area were analyzed – Edgewood, Belle Isle, Lake Buena Vista, Orlando, and Kissimmee. These areas had an overall increase in population from 2012 to 2021 with Kissimmee and Orlando seeing most of those increases as shown in **Figure 6**. A map depicting these areas is provided as **Figure 7**.

Figure 6: Change in Population from 2012 to 2021 in the Study Area



Source: U.S. Census Bureau ACS 5-Year Estimates from 2012 to 2021

Figure 7: Cities within the Study Area



3.2.2 Employers and Employment

The region's top employers, as defined by the Orlando Economic Partnership[8] Top 75 Employers list from 2021, are clustered around major corridors, such as West Sand Lake Road (west of the Florida Turnpike/SR-91) I-4, and commercial centers, primarily the Orange County Convention Center, South International Drive, and the Orlando International Airport.

The following major employers are located within the project study area:

1. AT&T Mobility
2. BAGS, Inc
3. Bank of America
4. CAE
5. Caribe Royal
6. Charles Schwab
7. Chase Card Services
8. Coca Cola
9. CVS Health
10. Darden Restaurants
11. Disney
12. Electronic Arts, Inc.
13. Fairwinds Credit Union
14. FedEx
15. Florida Blue
16. HCA Healthcare
17. J.P. Morgan
18. Lockheed Martin
19. Marriott Vacations Worldwide
20. Massey Services
21. Mears Transportation
22. Morgan & Morgan
23. Nemours
24. Orlando Health
25. Orlando Utilities Commission
26. Publix
27. Rosen Hotels & Resorts
28. SeaWorld Parks & Entertainment
29. T-Mobile
30. Travel & Leisure Co.
31. Truist Bank
32. TTEC
33. United Parcel Post (UPS)
34. Universal Parks & Resorts
35. Valencia College
36. Wells Fargo
37. Westgate Resorts

According to 2020 Longitudinal Employment-Household Dynamics (LEHD), approximately 278,854 jobs are located within the study area. The highest job densities are clustered around downtown Orlando, downtown Kissimmee, and Disney Springs as well as the Orange County Convention Center. There is also medium job density along the entire east-west leg of the study area. This density of jobs within the Sunshine Corridor confirms that the project area is highly urbanized with a high level of commercial land use. This aligns with 2020 data from the U.S. Census Bureau which indicates that the vast majority of people employed within the study area (267,576) live outside of it, suggesting that the Sunshine Corridor project area likely has more jobs than population or housing units.[9]

A noteworthy and unique characteristic of Orlando, and specifically, the study area, is the importance of tourism. The study area includes, by design, major theme parks like Universal Epic Universe (currently under development) and SeaWorld, the Orange County Convention Center, and International Drive, as well as Disney World, Disney Springs, and the many supporting businesses located near these attractions to serve visitors. Average annual attendance for some of the theme parks[10]:

- Disney World: 58 million, 2019

[8] Orlando Economic Partnership. (2021). **Top 75 Employers**. Orlando MSA.
[9] US Census Bureau. (2020). **OnTheMap – Job Inflows/Outflows.** US Department of Commerce.
[10] AECOM. (2021). **Theme Index and Museum Index: The Global Attractions Attendance Report.** Themed Entertainment Association (TEA).

  - Magic Kingdom Theme Park at Walt Disney World Resort
  - Disney's Animal Kingdom at Walt Disney World
  - EPCOT at Walt Disney World
  - Disney's Hollywood Studios at Walt Disney World

- Universal Parks and Resorts: 21 million, 2019
  - Universal Studios Florida at Universal Orlando
  - Universal's Islands of Adventure at Universal Orlando

- SeaWorld: 4.6 million, 2019

In addition, the Orlando International Airport (MCO) employs 18,000 people and served 24.4 million passengers in 2021.[11,12] This concentration of employment and tourism makes access to and within the study area a critical need for those who work at the parks, airport, hotels, shops, and other supporting businesses in the area.

3.3 Existing Transportation System Features

3.3.1 Public Transit Options

SunRail Commuter Rail

SunRail is Greater Orlando's commuter rail system. The Central Florida Commuter Rail Commission (CFCRC), established in 2007, is the governing body for SunRail and serves in an advisory role to FDOT and will eventually assume operations and maintenance of the system. The CFCRC board is comprised of elected leaders from the local funding partners which includes representatives of Osceola, Volusia, Seminole, and Orange counties, and the City of Orlando.

Phase 1 of the SunRail commuter rail system began construction in January 2012, with service starting on May 1, 2014. Phase 1 spans 32 miles of at-grade single-track and double-track railway within the former CSX Transportation railroad right-of-way. It serves 12 stations from DeBary Station in Volusia County to Sand Lake Road Station in Orange County. Phase 1 also constructed a Vehicle Storage and Maintenance Facility (VSMF) and an Operations Control Center (OCC) in Sanford. Upgrades to track capacity included constructing 17 miles of new second mainline track and upgrading six miles of siding track. 16 turnouts and 20 crossovers were added, and 14 existing turnouts were removed to improve operations.

Phase 2 South, also known as the Southern Expansion, opened on July 30, 2018. It is a 17.2-mile extension from Sand Lake Road in Orange County to Poinciana in Osceola County. Four stations are located at Meadow Woods, Tupperware Station, Kissimmee, and Poinciana. Phase 2 South also included construction of a separate Vehicle Storage and Light Maintenance Facility (VSLMF) at the southern terminus, Poinciana Station. This facility is able to accommodate up to three trainsets and includes a small crew building.

[11] Orlando International Airport. (n.d.). **MCO Cares – Get Involved**. Greater Orlando Aviation Authority.
[12] American Airport Guide. **Orlando International Airport (MCO) Airport Statistics**.

Phase 2 North, also known as the Northern Expansion, is a 12-mile extension from the DeBary Station to the DeLand Amtrak Station in Volusia County, using the existing Central Florida Rail Corridor. This phase broke ground on May 22, 2023, and is expected to open by summer 2024.

SunRail trains operate Monday through Friday, every half-hour during peak morning and evening service, and approximately every hour during the off-peak midday and late evening service. SunRail does not operate on weekends or specific holidays. Ticket fares vary based on the number of counties/zones traveled. Reduced fares are offered for seniors, youth, and those with disabilities. Customers can purchase one-way or round-trip tickets as well as weekly, monthly, or annual SunCard passes.

Average daily ridership in 2023 was approximately 4,000, slightly higher than the average daily ridership from 2022. Comparing the latest ridership data from December 2023 to January 2024 to ridership one year previously during the same two-month period indicates that ridership is trending upwards. Average monthly SunRail ridership grew by 10,750, about 12%.[13]

According to SunRail's ridership by station data for Fiscal Year 2023 (July 2022 to June 2023), LYNX Central Station is the most popular station, with approximately 109,000 boardings annually. The next most popular station is Winter Park/Amtrak, followed by Kissimmee/Amtrak, Church Street and Poinciana. High ridership at stations at the northern and southern ends of the corridor indicate that the system is being used for longer distance commuting trips.[14]

Additional details on SunRail ridership, funding, and operating expenses are included in the *Existing and Future Conditions Technical Memorandum*.

LYNX

LYNX is Central Florida's transit system and is operated by the Central Florida Regional Transportation Authority (CFRTA). The transit system provides bus, curb-to-curb, and paratransit services for greater Orlando in Orange, Seminole, and Osceola counties with limited service to Polk and Lake Counties. The CFRTA was founded in May 1972. The bus system's name was changed to LYNX in 1994 via a public naming contest.

LYNX provides the following services:

- **FastLink** – commuter service advertised as a time-saving alternative as it has fewer stops along specific corridors providing a quicker trip, at the same fare as the standard LYNX services.
- **ACCESS LYNX** – a paratransit program that provides shared ride door-to-door transportation services for eligible individuals who are not able to utilize standard fixed-route bus services due to disability or other limitations.
- **LYNX Vanpool** – provides vehicles to groups of commuters who live and work near one another and have similar work schedules or commutes.

[13] SunRail. (2024). **Train Information**. Florida Department of Transportation.
[14] SunRail. (2023). **CFCRC Meeting Materials – November 16, 2023**. Florida Department of Transportation.

- **NeighborLink** – a flex-service intended to enhance transportation options for residents of less-populated areas by connecting residents to local transportation options and the LYNX local bus system.
- **LYMMO** – operating in partnership with the city of Orlando, this Bus Rapid Transit (BRT) system uses its own right-of-way to operate fare-free service in downtown Orlando.

LYNX routes provide more than 53,000 passenger trips each weekday. The LYNX service area spans about 2,500 square miles. In Fiscal Year 2023 (October 2022 to September 2023), annual ridership totaled 18,419,601, which was a 10.1% increase from Fiscal Year 2022.[15] The hub of the LYNX network is LYNX Central Station in downtown Orlando.

The standard adult fixed route one-way fare is $2.00 with free single transfers valid for 90 minutes. Complimentary fare pass options include $4.50 all day, $16.00 seven-day, and $50.00 thirty-day passes. Additionally, all pass and fare options can be discounted 50% if the rider provides a discount fare ID. Riders aged 7 to 18 or over 65, and persons with disabilities are eligible for a discount fare ID.

The LYNX Fixed Route service saw a 15.7% increase in ridership from September 2022 to September 2023, an increase of about 200,000 rides. LYNX reported that ridership is steadily recovering from losses in ridership from the pandemic.[16]

Additional details on LYNX ridership, funding, and operating expenses, are included in the *Existing and Future Conditions Technical Memorandum*.

Amtrak

Of the nineteen (19) Amtrak stations statewide, five (5) are in the Central Florida region: DeLand, Sanford, Winter Park, Orlando, and Kissimmee. The Sanford station is the terminus of the Auto Train route, which is an 855-mile daily non-stop train service that runs between Sanford and Lorton, Virginia (near Washington, D.C.). The DeLand, Winter Park, Orlando, and Kissimmee stations are part of Amtrak's Silver Service brand of long-distance train services that run between New York City and Miami.

3.3.2 Bicycle, Pedestrian, and Micromobility Options

Bicycle share and pedestrian mobility options in Orlando include on-demand mobility services such as dockless bicycles and electric scooters, with the current total operating fleet in Downtown Orlando comprised of 1,195 vehicles that have provided a total of 2,383,059 trips over 2,249,022 miles. The City of Orlando created designated areas within public rights-of-way (ROW) in downtown Orlando specifically for dockless bicycles or scooters. Bicycle-sharing companies in Orlando include HOPR, CycleHop, and Lime, which provide electric bicycles, also called e-bicycles, for rental.

3.3.3 Private Transportation Options

Vehicle Rentals

[15] LYNX (2023). **2023 LYNX Ridership Year-End Review**. Central Florida Regional Transportation Authority.
[16] Ibid.

Renting a personal vehicle is one of the most popular transportation options for tourists arriving at Orlando International Airport. Generally, as a rule of thumb, car rentals are more expensive than shuttle, taxi, or ride-hailing services.[17] Vehicle rental services experience high demand from tourists and other visitors in the area.

Rideshare/Transportation Network Companies (TNC)

Rideshare or Transportation Network Companies (TNC) offer prearranged transportation using an online application or platform to connect passengers and drivers. Passengers use a mobile app to receive a price quote and connect with drivers who transport them for the agreed fee, generally using their personal vehicles to pick up passengers. TNCs such as Uber and Lyft have gained increasing popularity in the last ten (10) years and provide an on-demand ride-hailing service for residents and visitors attempting to reach their destination. One drawback for the ride-hailing services is that they lack a guarantee, meaning that despite scheduling a trip beforehand, the ride is not guaranteed.

Taxis and Hotel Shuttles

Taxi services are offered by a variety of companies, with the market mainly dominated by Mears. Mears offers a variety of services, with the company being the sole provider of 24-hour shuttles from Orlando International Airport to Walt Disney World Resorts. Universal Parks and Resorts SuperStar Shuttle provides service for park and hotel guests with flight arrivals at Orlando International Airport to all Universal Orlando's Resort Hotels.

3.3.4 Travel Market Assessment

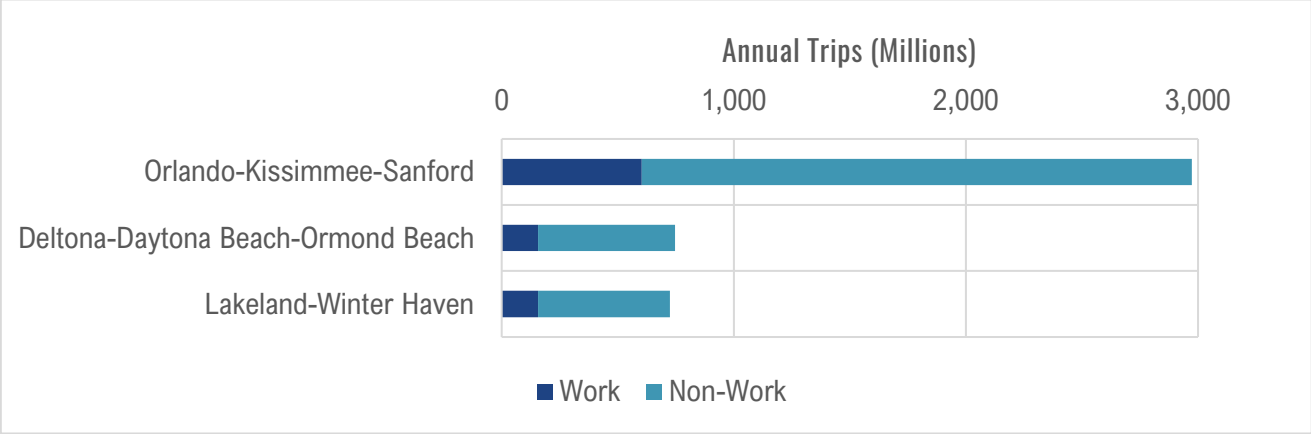
Understanding the spectrum of existing transportation services is a foundation for conducting a travel market assessment. An assessment of the existing and future travel market provides background on the needs and behaviors of potential Sunshine Corridor users. This assessment summarizes travel market characteristics related to trip purpose, trip mode, and origin-destination patterns.

Trip Purpose and Mode

Using existing information on trip purpose and trip mode obtained from the 2021 National Household Travel Survey, the following three zones that encompass the Sunshine Corridor study area were considered: 1) Orlando-Kissimmee-Sanford; 2) Deltona-Daytona Beach-Ormond Beach; and 3) Lakeland-Winter Haven. **Figure 8** shows the annual number of trips by trip purpose for each zone. The Orlando-Kissimmee-Sanford zone accounts for the highest number of annual trips at nearly three billion per year, representing 67% of all the trips between the zones. Despite the disparity in the number of trips, all three zones exhibit similar trip purpose profiles with about 21% being work-related and 79% being non-work related.

[17] Pizzarello, E. (2022). **Best ways to get from Orlando Airport to Disney World.** The Points Guy.

Figure 8: Annual Trips by Purpose, Existing Conditions



Source: 2021 National Household Travel Survey

Most trips within these zones are vehicle-based, either with passenger vehicles or transit vehicles (89%). The remaining trips are primarily active transportation (bicycle/pedestrian). Only 0.05% of existing trips are rail-based, equating to about 2,150,000 rail trips annually. Of these, nearly 86% have both origins and destinations within the Orlando-Kissimmee-Sanford area. Lastly, trip distance was considered by trip purpose and mode. Trip distance does not vary significantly between work and non-work purposes. Most trips (75-79%) are 0-10 miles long, 16-19% are 10-25 miles long, and 4-5% are 25-50 miles long. The percentage of work trips within the 10-25 mile and 25–50-mile ranges is slightly higher than non-work trips, indicating a tendency to travel somewhat farther for work.

Conversely, the trip distance by mode exhibits a very different profile for vehicle, bicycle/pedestrian, and rail travel. Unsurprisingly, 99% of active transportation (bicycle/pedestrian) trips are in the 0–10-mile range. About 75% of vehicle trips are 0-10 miles while only 53% of rail trips are 0-10 miles. This demonstrates that users of existing rail service typically travel longer distances to their destination. As vehicle-based corridors experience worsening congestion with rapidly increasing traffic demands, the trip distance profile for rail users could very well shift towards shorter distance trips.

Daily trip information from the Central Florida Regional Planning Model (CFRPM) was used to evaluate how study area trips and trip purpose are projected to change over time as shown in **Figure 9**. Between 2025 and 2040, the daily study area trips are expected to increase by 21%. Home-based other trips may increase by over 1.3 million trips per day, accounting for 58% of the growth over the planning horizon. Non-home-based trips account for 21% of the area growth, while home-based work trips account for 16% of the area growth. The remaining 5% of growth is attributed to special purpose trips.

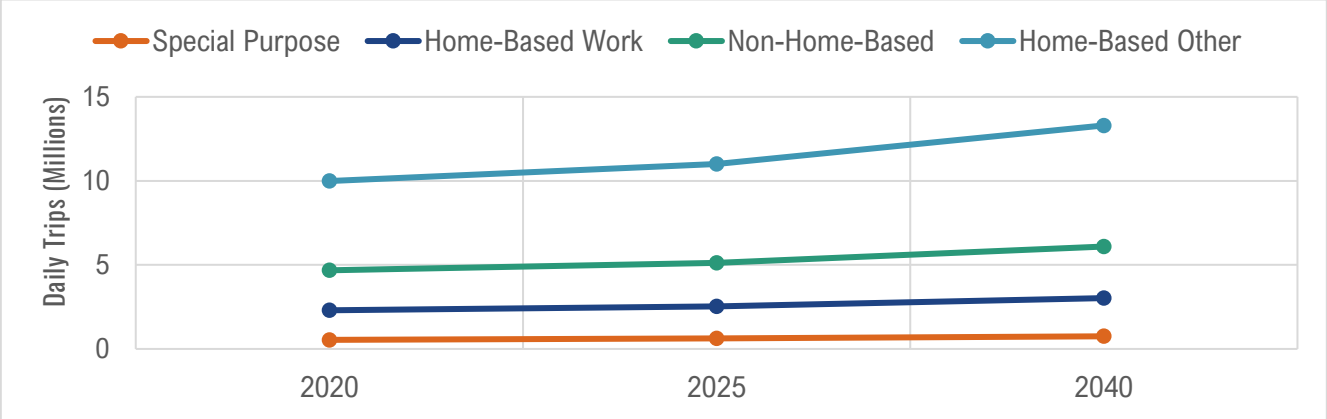
Between 2025 and 2040, the daily study area trips are expected to increase by

21%

Home-based other trips may increase by over

1.3 MILLION TRIPS PER DAY

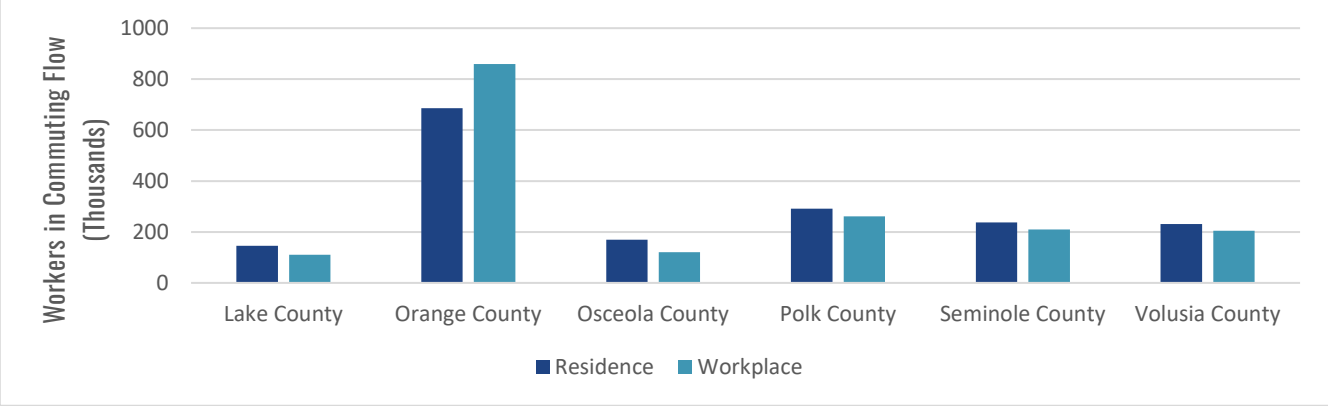
Figure 9: Growth in Daily Trips by Mode, 2025-2040



Existing Commuter Flows

The existing commuter flows provide a basic understanding of the travel market for the Sunshine Corridor within the six-county study area. The 2016-2020 American Community Survey Data summarizes county-to-county flows for work commutes as shown in **Figure 10.** Orange County is the hub of both residences and workplaces. It is also the only county where the number of workers exceeds the number of residents, indicating a higher instance of inter-county commuting to Orange County. Inter-county travel is strongest between Orange/Seminole Counties and Orange/Osceola Counties.

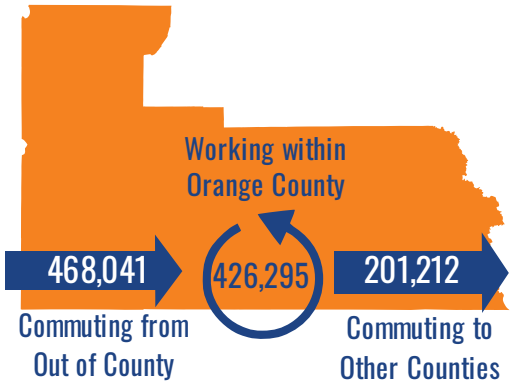
Figure 10: Summary of Existing Commuting Flows



Source: 2016-2020 American Community Survey Data

Figure 11 illustrates the existing commuter inflow/outflow patterns in Orange County obtained from the U.S. Census OnTheMap tool. There is a total of 894,336 people working in Orange County. Of these, about 52% (468,041 workers) commute from outside the county and 48% both live and work in the county. Additionally, a total of 201,212 people living in Orange County commute to other counties for employment.

Figure 11: Orange County Existing Commuter Inflow/Outflow



Major Activity Centers

The MetroPlan Orlando 2045 Metropolitan Transportation Plan summarizes the major activity centers within the MetroPlan service area (Orange, Osceola, and Seminole Counties). Areas that contain the highest population and employment inherently generate the most trips to be served by the transportation network, translating to the top activity centers. The major activity centers are:

- Disney World
- Universal Parks and Resorts/International Drive
- Orlando International Airport (MCO)
- Downtown Orlando
- Suburban areas such as Heathrow/Lake Mary, Waterford Lakes/University of Central Florida, Winter Garden/Ocoee, and Kissimmee

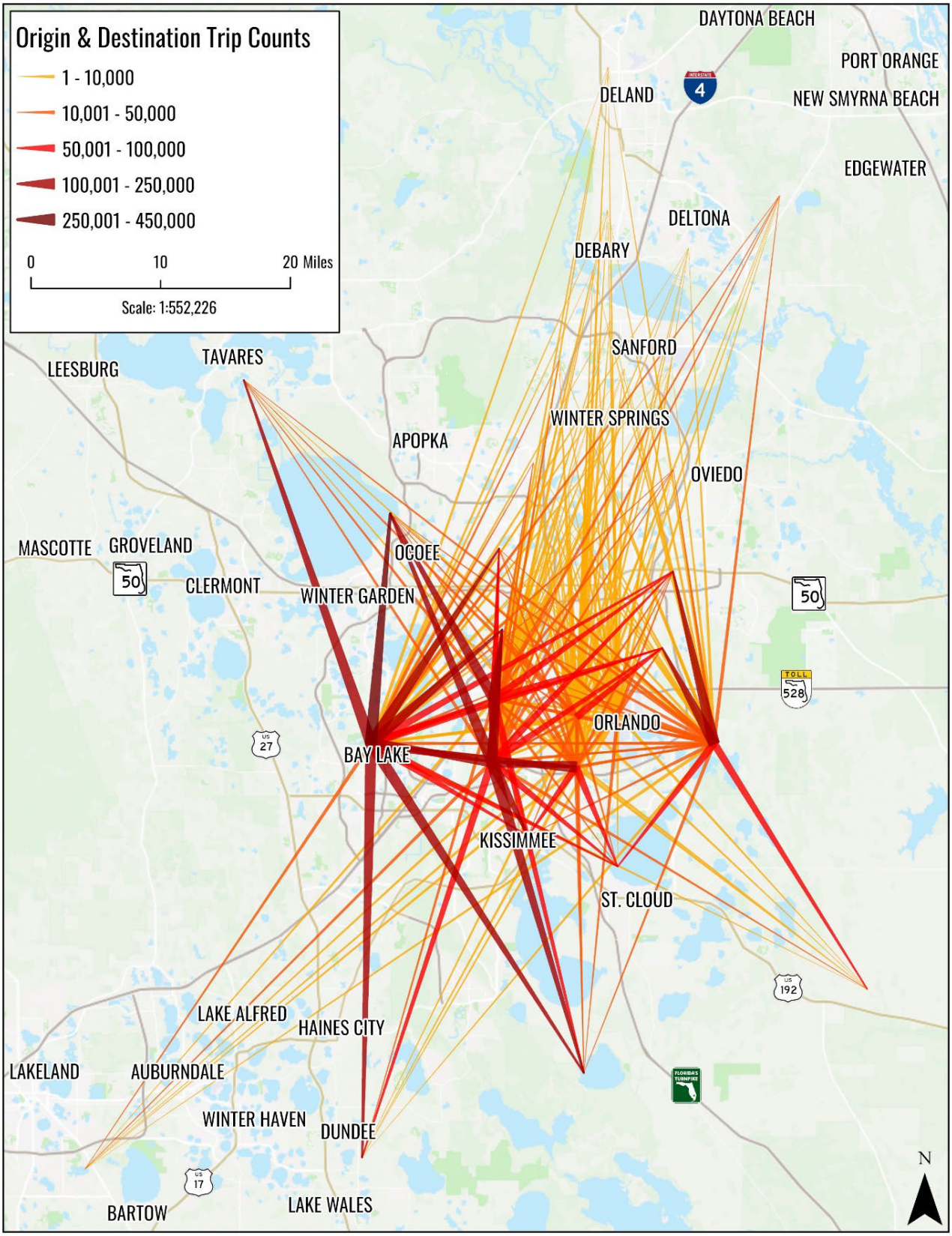
Origin Destination Patterns

EXISTING CONDITIONS

Origin-destination data[18] (obtained for the average weekday 09/30/2023 to 12/22/2023) provided information specific to the major activity centers along the proposed Sunshine Corridor route, including Disney World, the Orange County Convention Center, South International Drive, and the Orlando International Airport. The results are illustrated in **Figure 12**. Disney World attracts the largest number of trips, followed by South International Drive, and the Orange County Convention Center. Each of these destinations has strong links to one another, as well as suburban centers such as Winter Garden/Ocoee/Apopka to the north and Celebration/South Kissimmee/Poinciana to the south. Additionally, Disney World draws trips from locations that are further away, including Davenport/Champions Gate/Haines City in Polk County as well as Lake County. The Orlando International Airport has a distinctly different distribution of trip origins. Airport trips are more evenly distributed throughout the study area and capture more traffic from areas east and south of downtown, including Union Park, Conway, and Belle Isle.

[18] Origin-destination data was assessed using Replica, a planning data analysis platform https://www.replicahq.com/.

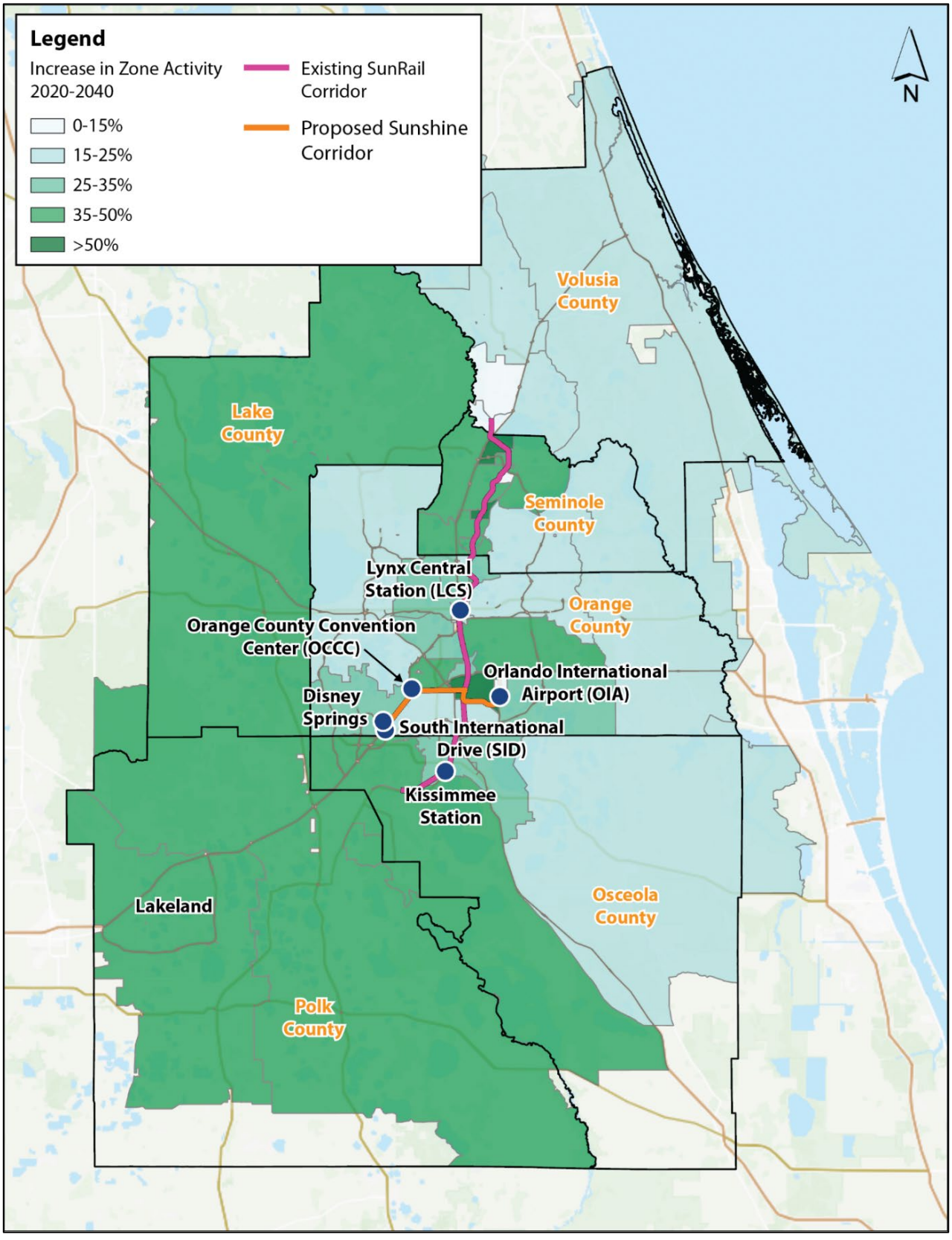
Figure 12: Trip Origins and Destinations in Central Florida (Average Weekday Trips)



FUTURE GROWTH

The Central Florida Regional Planning Model (CFRPM) provided information on changes in regional trip making patterns from 2020 to 2040. **Figure 13** illustrates the percent increase in total daily trips (origin trips and destination trips) by District. Within Orange County, the highest amount of growth is anticipated near the future Universal Epic Universe and surrounding the Orlando International Airport. High growth is also projected in Seminole County near Altamonte Springs and within Sanford. Notably, the highest growth Districts in Orange and Seminole Counties are centered around the existing SunRail corridor. Outside of the reaches of the SunRail system, there is high growth projected for Lake and Polk Counties, a trend that is supportive of future commuter and commercial rail expansion through the region.

Figure 13: Percent Growth in Traffic by District

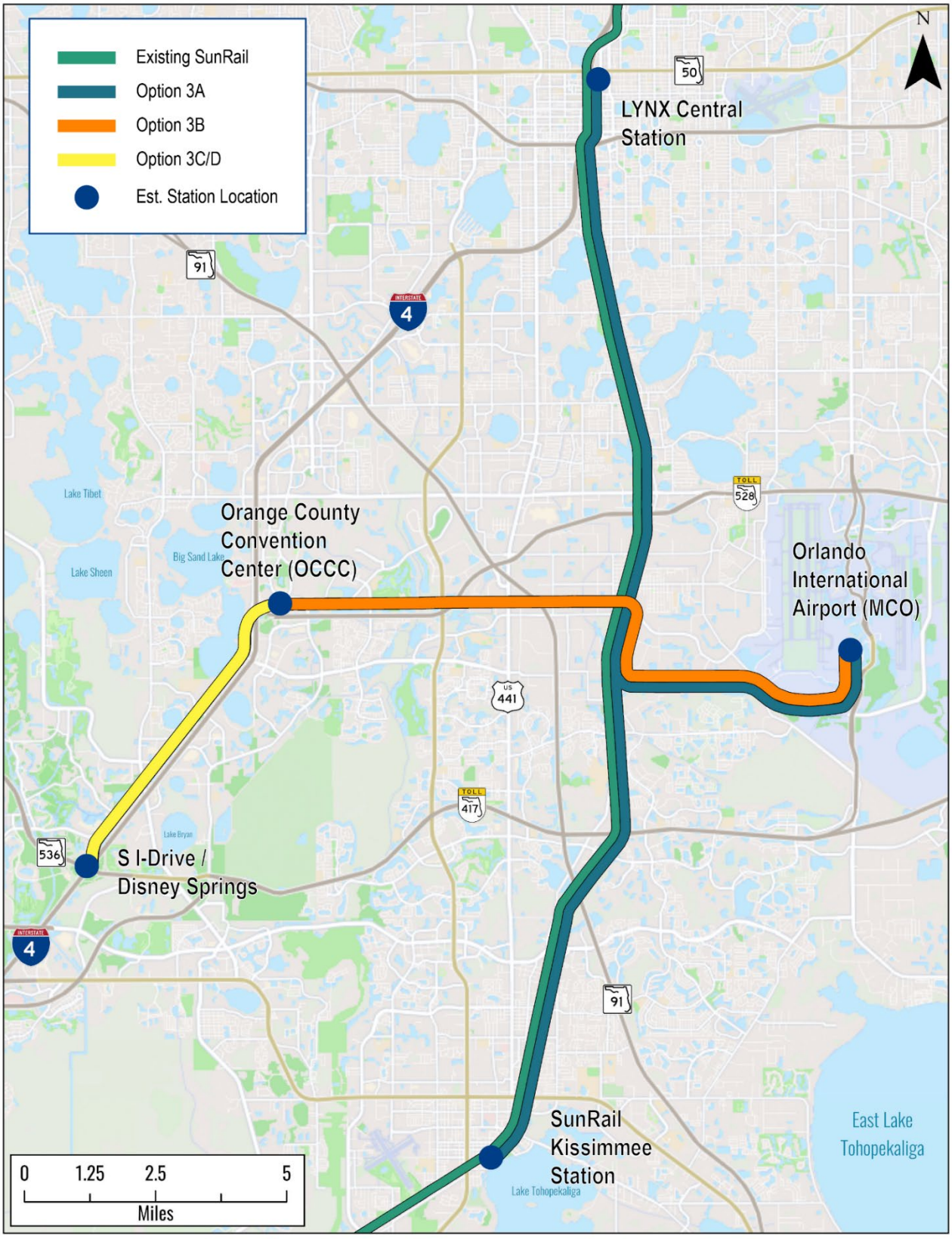


3.4 Existing Environmental Conditions

A preliminary environmental scan conducted for the project study area (**Figure 14**) reviewed existing environmental conditions related to soils, land use and land cover, wetlands and surface waters, and the presence of protected species. The project study area encompasses a 0.5-mile buffered corridor around each of the options. The high-level scan includes a summary of potential impacts on protected resources and a list of permits that may be required for the project. Separate environmental scans were conducted for Options 3A and 3B. Options 3C and 3D were evaluated together. These options might be considered separately or together in future phases.Separate studies allow for options to be isolated if necessary. No field reconnaissance of the project study area was conducted as part of this planning-level scan. Field investigations will be conducted during the Project Development (PD) phase.

An Efficient Transportation Decision Making (ETDM) screening was not conducted. An ETDM screening will be conducted in the next phase of the program.

Figure 14: Sunshine Corridor TCAR Study Area - Options A, B, and C/D



3.4.1 Option 3A

This option, developed from existing SunRail Phase 3 plans, runs along the existing SunRail north-south corridor from the Kissimmee Station (Southern Limit) to the LYNX Central Station (Northern Limit) and connects the existing SunRail mainline to MCO. The Option A study area includes approximately 13,647 acres. This includes the area within 0.5-miles of the Option A alignment.

OPTION 3A STUDY AREA: 13,647 ACRES

Soils

The soils within the project study area appear to be generally suitable for the proposed project except for areas with hydric soil. Approximately 1,775 acres or 13% of the Option 3A study area are hydric soils. Geotechnical investigations should be conducted during the subsequent PD phase to determine soil suitability for building upon.

Land Use and Land Cover

In Florida, land use and vegetative cover are described using the Florida Land Use, Cover and Forms Classification System[19] (FLUCFCS) which was developed by the Florida Department of Transportation (FDOT) and is widely used by various state and local agencies. St. Johns Water Management District (SJRWMD) FLUCFCS maps and data, and Google Earth aerial photographs were used to evaluate uplands within the Option 3A study area.

Much of the Option 3A study area is developed with residential, commercial, industrial, institutional, recreational, and transportation facilities. The dominant land use is Urban and Built-Up (FLUCFCS 1000) covering 61.08% of the project study area or 8,335 acres. This is followed by Transportation, Communication, and Utilities (FLUCFCS 8000) at 8.94% covering 1,220 acres of the Option 3A study area.

Of interest are undeveloped uplands, specifically agricultural (FLUCFCS 2000), rangeland (FLUCFCS 3000) and upland forest (FLUCFCS 4000). Rangeland (FLUCFCS 3000) and upland forest (FLUCFCS 4000) has the potential to contain sensitive environmental features such as protected species and their habitat, critical habitat, and cultural resources.

Agricultural lands that would be impacted by the project would have to be evaluated if they are prime farmland, unique farmland, or state or locally important. Impact on prime, unique, or statewide and locally important farmland requires consultation with Natural Resources Conservation Service (NRCS). Approximately 317 acres or 2.32% of the Option 3A study area is agricultural land (FLUCFCS 2000).

Approximately 8.32 percent or 1,136 acres of the study area are rangeland (FLUCFCS 3000) and upland forest (FLUCFCS 4000).

[19] Florida Department of Transportation. (January 1999). *Florida Land Use, Cover, and Forms Classification System Handbook*. Retrieved from: **https://www.nwfwater.com/content/download/4688/32122/fluccmanual.pdf**.

Wetlands, Surface Waters, and Floodplains

Based on the review of National Wetland Inventory (NWI) maps, FLUCFCS maps, and Google Earth aerial photography, the Option 3A study area contains forested and non-forested wetlands and surface waters. The datasets reviewed for this report do not capture all surface waters.

Approximately 1,190 acres or 8.72% of the Option 3A study area are surface waters. Surface waters mapped within the study area include streams, waterways, natural rivers, lakes, and reservoirs. Wetlands comprise approximately 1,418 acres or 10.39% of the study area. Forested wetlands mapped within the study area include bay swamps, mixed wetland hardwoods, mixed shrubs, cypress, cypress domes/heads, cypress mixed hardwoods, and wetland forested wetlands. Non-forested wetlands mapped within the study area include freshwater marshes, wet prairie, emergent aquatic vegetation, and mixed scrub-shrub wetland.

The project study area, which covers a 0.5-mile buffer around the alignment of Option 3A, includes approximately 2,760 acres within the 100-year floodplain. Construction of the project within the 100-year floodplain will require compensation. Considerations for sea level rise and climate change should also be considered for the proposed infrastructure within Flood Zones A and AE. There are no floodways or navigable waters in the study area.

Biological Resources

Biological resources include fish, wildlife, plants, and their respective habitats. Typical types of biological resources include:

1. Terrestrial and aquatic plants and animal species.
2. Game and non-game species.
3. Special status species including state or federally listed threatened or endangered species, marine mammals, species of special concern, candidate species for listing, or migratory birds.
4. Environmentally sensitive or critical habitats.

The Endangered Species Act of 1973 (ESA), as amended, protects fish, wildlife, and plants listed as threatened or endangered and their respective habitats. Federal species of concern or species proposed for listing are not protected under the ESA, but since they could become listed, they are given special consideration.

Documentation regarding species listed under the ESA that are either known to occur or may potentially occur within or near the project study area were reviewed using the following documents and resources:

- USFWS's Information for Planning and Consultation (iPaC) report for the project study area (*Environmental Scan Technical Memorandum - Appendix A*)
- Florida Natural Areas Inventory (FNAI) Biodiversity Matrix for the project study area (*Environmental Scan Technical Memorandum - Appendix B*)

- Wood Stork core foraging areas and nesting colonies[20,21]
- Audubon EagleWatch Program[22]
- Crested Caracara, Florida Everglades Snail Kite, Florida Scrub Jay, and Red-Cockaded Woodpecker consultation areas[23]

No field survey was conducted for Option 3A area to verify documented occurrences of listed species for this high-level environmental scan. Field surveys will be conducted during the subsequent PD phase.

LISTED SPECIES

The FNAI Biodiversity Matrix lists seven species of mammals, seven species of reptiles, nine species of birds, four insect species, and 32 species of plants that have the potential to occur within the Option 3A study area (*Environmental Scan Technical Memorandum*). Sensitive species that are Federally or state listed, or proposed for listing and have special protection, with known or potential occurrence within or near the Option 3A study area include:

- Florida Panther
- Florida Black Bear
- Florida Bonneted Bat
- Audubon's Crested Caracara
- Eastern Black Rail
- Everglade Snail Kite
- Florida Scrub Jay
- Red-Cockaded Woodpecker
- Whooping Crane
- Wood Stork
- Florida Sandhill Crane
- Southeastern American Kestrel
- Florida Burrowing Owl
- Little Blue Heron
- Tricolored Heron
- Bald Eagle
- American Alligator
- Blue-tailed Mole Skink
- Eastern Indigo Snake
- Sand Skink
- Gopher Tortoise
- Florida Pine Snake
- Short-tailed Snake
- Striped Newt
- Monarch Butterfly

For plant species, refer to the *Environmental Scan Technical Memorandum*. There are three bald eagle nests in the Option 3A study area, one south of MCO, one near the intersection of SR-527 and East Wetherbee Road, and another near SR-527 and the Florida Turnpike.

Potential Impacts

The project study area contains wetlands, surface waters, Waters of the United States, and habitat for Federally and state listed species and candidate species, and species with special protections.

As the project progresses, a variety of surveys will likely be required due to potential impacts on protected species. Federally listed species, including the Crested Caracara, Red-Cockaded Woodpecker, Florida Scrub Jay, Eastern

[20] Florida Department of Environmental Protection. *Wood Stork Core Foraging Area*. Data downloaded August 13, 2023 from: **https://geodata.dep.state.fl.us/datasets/FDEP::florida-wood-stork-foraging-areas/about**.
[21] Koordinates. *Wood Stork Nesting Colonies*. Data downloaded August 13, 2023 from: **https://koordinates.com/layer/97905-florida-wood-stork-active-nesting-colonies/**.
[22] Audubon. *Bald Eagle Nest Location*. Webpage accessed August 8, 2023: **https://cbop.audubon.org/conservation/about-eaglewatch-program**.
[23] U.S. Fish & Wildlife Service. *Florida Ecological Services Map*. Webpage accessed August 8, 2023: **https://www.fws.gov/office/florida-ecological-services/map**.

Black Rail and the Everglade Snail Kite, as well as the state listed Florida Sandhill Crane and Florida Burrowing Owl will all require surveys. A survey by an Authorized Gopher Tortoise Agent will likely be required due to the presence of the species in the study area. Due to the likely presence of the Southeastern American Kestrel, a nest survey will be required. A Wood Stork foraging analysis will be required as the project is within the species' core foraging area. A plant survey will be necessary due to potential impacts to various listed and protected plants. Bald eagles may be impacted, the next required step is to verify if the bald eagle nests in the study area are active.

Permits

The Option 3A study area is within the jurisdiction of the US Army Corps of Engineers, South Florida and St. Johns River Water Management Districts (SJRWMD), and Orange and Osceola Counties. **Table 2** provides a list of permits that may be required for the project. Coordination with permitting agencies during subsequent project development will occur to ensure all required agreements and permits are in place.

Table 2: Permitting Requirements

Permit	Issuing Agency	Jurisdiction	Commenting Agencies
Section 404 Dredge and Fill Permit	FDEP USACE	State Assumed Waters Coastal Waters	Commenting agencies: USFWS and NMFS
Environmental Resource Permit	SFWMD SJRWMD	State Water Quality	Commenting agencies: National Historic Preservation Office and FFWCC
Conservation Area Impact Permit[24]	Orange County Environment Protection Division	Wetlands	N/A
National Pollutant Discharge Elimination System	FDEP	Stormwater Discharge from Construction Activities	N/A
Gopher Tortoise Relocation Permit	FFWCC	Impact to gopher tortoise and their habitat	N/A
Florida Burrowing Owl Incidental Take Permit	FFWCC	Impact to the Florida burrowing owl	N/A
Native Plant Harvesting Permit	FDACS	Impact to federally listed and state protected plants	N/A

[24] Orange County, FL Government. *Florida Conservation Area Impact Permit*. Webpage accessed August 14, 2023 from: **http://www.orangecountyfl.net/PermitsLicenses/Permits/WetlandImpact.aspx**.

Permit	Issuing Agency	Jurisdiction	Commenting Agencies
Bald Eagle Nest Permit	FFWCC	Construction within 660 feet of an active bald eagle nest during the nesting season	N/A
Migratory Nest Removal Permit	FFWCC	Southeastern American Kestrel nest removal	N/A
Bat Permit	FFWCC	Bat exclusion/eviction during bat maternity season (April 15-August 15)	N/A

3.4.2 Option 3B

The proposed alignment for this option will run east-west from MCO to the OCCC and provide connections to the Convention Center as well as Universal Parks and Resorts, including future planned workforce housing and the new Universal Epic Universe theme park as well as other hotels, restaurants, and businesses in the area. The Option 3B study area includes approximately 7,025 acres. This includes the area within 0.5-miles of the Option B alignment.

OPTION 3B STUDY AREA: 7,025 ACRES

Soils

The soils within the Option 3B study area seem to be suitable for the proposed project except for areas with hydric soils. Approximately 1,215 acres or 17.30% of the Option 3B study area is hydric soil. Geotechnical investigations should be conducted during the subsequent PD phase to determine these hydric soils' suitability for building upon.

Land Use/Land Cover

Most of the Option 3B study area is developed with residential, commercial, industrial, institutional, recreational, and transportation facilities.

The dominant land use is Urban and Built-Up (FLUCFCS 1000) covering 50.26% of the study area or 3,531 acres. This is followed by Transportation, Communication, and Utilities (FLUCFCS 8000) at 13.52 percent covering 950 acres of the Option 3B study area. Of particular interest are undeveloped uplands, specifically agricultural (FLUCFCS 2000), rangeland (FLUCFCS 3000) and upland forest (FLUCFCS 4000) as they may support habitats for threatened and endangered species.

Approximately 283 acres or 4.04% of the study area is agricultural land (FLUCFCS 2000). Approximately 11.55% or 812 acres are rangeland (FLUCFCS 3000) and upland forest (FLUCFCS 4000).

Wetlands, Surface Waters, and Floodplains

Approximately 511 acres or 7.28% of the Option 3B study area is surface waters. Surface waters mapped within the study area include streams, waterways, natural rivers, lakes, and reservoirs. Wetlands comprise approximately

920 acres or 13.12% of the study area of which 116 acres are non-forested wetlands and 804 acres are forested wetlands. Forested wetlands mapped within the study area include bay swamps, mixed wetland hardwoods, mixed shrubs, cypress, cypress domes/heads, cypress mixed hardwoods, and wetland forested wetlands. Non-forested wetlands mapped within the study area include freshwater marshes, wet prairie, emergent aquatic vegetation, and mixed scrub-shrub wetland.

Approximately 1,360 acres, or 19.35% of the Option 3B study area, is within the 100-year floodplain. The project study area, which covers a 0.5-mile buffer around the alignment of Option 3B, includes approximately 1,360 acres within the 100-year flood plain. Construction of the project within the 100-year floodplain will require compensation. Considerations for sea level rise and climate change should also be considered for the proposed infrastructure within Flood Zones A and AE. There are no floodways or navigable waters in the study area.

Biological Resources

Documentation regarding species listed under the ESA that are either known to occur or may potentially occur within or near the Option 3B study area were reviewed using the following documents and resources:

- USFWS's Information for Planning and Consultation (iPaC) report for the project study area (*Environmental Scan Technical Memorandum - Appendix C*)
- FNAI Biodiversity Matrix for the project study area (*Environmental Scan Technical Memorandum - Appendix C)*
  - Wood Stork core foraging areas and nesting colonies[25,26]
  - Audubon EagleWatch Program[27]

Crested Caracara, Florida Everglades Snail Kite, Florida Scrub Jay, and Red-Cockaded Woodpecker consultation areas[28] No field survey was conducted at the Option 3B study area to verify documented occurrences of listed species for this high-level environmental scan. Field surveys will be conducted during the subsequent PD phase.

LISTED SPECIES

The FNAI Biodiversity Matrix lists seven (7) species of mammals, seven (7) species of reptiles, nine (9) species of birds, four (4) insect species, and 32 plant species that have the potential to occur within the Option 3B study area (*Environmental Scan Technical Memorandum - Appendix C*).

Sensitive species that are Federally or state listed, or proposed for listing and have special protection, with known or potential occurrence within or near the Option 3B study area include:

- Florida Panther
- Audubon's Crested Caracara
- Eastern Black Rail
- Everglade Snail Kite

[25] Florida Department of Environmental Protection. *Wood Stork Core Foraging Area*. Data downloaded August 13, 2023 from: **https://geodata.dep.state.fl.us/datasets/FDEP::florida-wood-stork-foraging-areas/about**.
[26] Koordinates. *Wood Stork Nesting Colonies*. Data downloaded August 13, 2023 from: **https://koordinates.com/layer/97905-florida-wood-stork-active-nesting-colonies/**.
[27] Audubon. *Bald Eagle Nest Location*. Webpage accessed August 8, 2023: **https://cbop.audubon.org/conservation/about-eaglewatch-program**.
[28] U.S. Fish & Wildlife Service. *Florida Ecological Services Map*. Webpage accessed August 8, 2023: **https://www.fws.gov/office/florida-ecological-services/map**.

- Florida Scrub Jay
- Red-Cockaded Woodpecker
- Snail Kite, Whooping Crane
- Wood Stork
- Florida Sandhill Crane
- Southeastern American Kestrel
- Florida Burrowing Owl
- Little Blue Heron
- Tricolored Heron
- Bald Eagle
- American Alligator
- Blue-tailed Mole Skink
- Eastern Indigo Snake
- Sand Skink
- Gopher Tortoise
- Florida Pine Snake
- Short-tailed Snake
- Striped Newt
- Monarch Butterfly

For plant species, refer to the *Environmental Scan Technical Memorandum*.

There is one Bald Eagle's nest in the Option 3B study area, located near MCO.

Potential Impacts

The project study area contains wetlands, surface waters, Waters of the United States, and habitat for Federally and state listed species and candidate species, and species with special protections. Potential impacts from the project to Waters of the U.S., wetlands and surface waters and wetlands in Orange County will require field wetland delineation. It is recommended to avoid or minimize impacts on wetlands during the design phase.

As the project progresses, a variety of surveys will likely be required due to potential impacts on protected species. Federally listed species, including the Crested Caracara, Red-Cockaded Woodpecker, Florida Scrub Jay, Eastern Black Rail, and the Everglade Snail Kite, as well as the state listed Florida and Florida Burrowing Owl would all require surveys. A survey by an Authorized Gopher Tortoise Agent will likely be required due to the presence of the species in the study area. Due to the likely presence of the Southeastern American Kestrel, a nest survey will be required. A Wood Stork foraging analysis will be required as the project is within the species' core foraging area. A plant survey is necessary due to potential impacts to various listed and protected plants. Bald eagles may be impacted, the next required step is to verify if the bald eagle's nest in the study area is active.

As the project progresses a **VARIETY OF STUDIES** will be required due to potential impacts on protected species.

Permits

The Option 3B study area is within the jurisdiction of the US Army Corps of Engineers, South Florida and St. Johns River Water Management Districts, and Orange and Osceola Counties. **Table 3** provides a list of permits that may be required for the project. Coordination with permitting agencies during subsequent project development will occur to ensure all required agreements and permits are in place.

Table 3: Permitting Requirements

Permit	Issuing Agency	Jurisdiction	Commenting Agencies
Section 404 Dredge and Fill Permit	FDEP USACE	State Assumed Waters Coastal Waters	USFWS and NMFS
Environmental Resource Permit	SFWMD SJRWMD	State Water Quality	National Historic Preservation Office and FFWCC
Conservation Area Impact Permit[29]	Orange County Environment Protection Division	Wetlands	N/A
National Pollutant Discharge Elimination System	FDEP	Stormwater Discharge from Construction Activities	N/A
Gopher Tortoise Relocation Permit	FFWCC	Impact to gopher tortoise and their habitat	N/A
Florida Burrowing Owl Incidental Take Permit	FFWCC	Impact to the Florida burrowing owl	N/A
Native Plant Harvesting Permit	FDACS	Impact to federally listed and state protected plants	N/A
Bald Eagle Nest Permit	FFWCC	Construction within 660 feet of an active bald eagle nest during the nesting season	N/A
Migratory Nest Removal Permit	FFWCC	Southeastern American Kestrel nest removal	N/A

[29] Orange County, FL Government. Florida Conservation Area Impact Permit. Webpage accessed August 14, 2023 from: http://www.orangecountyfl.net/PermitsLicenses/Permits/WetlandImpact.aspx.

3.4.3 Option 3C and Option 3D

Option 3C and Option 3D were evaluated jointly for the preliminary environmental scan, due to their proximity to each other. Option 3C is an extension of the Sunshine Corridor, beginning at the proposed OCCC Station and ending near Interstate 4 and SID, which provides access to the I-Drive Entertainment District. Option 3D is a short extension of track connecting the SID Station to Disney Springs on the opposite side of Interstate 4. The Option 3C/D study area includes approximately 3,477 acres. This includes the area within 0.5-miles of the alignments of Options 3C and 3D.

OPTION 3C & 3D STUDY AREA: 3,477 ACRES

Soils

The soils within the Option 3C/D study area appear to be generally suitable for the proposed project except for areas that are hydric soil. Approximately 427 acres or 12.28% of the study area is hydric soil. Geotechnical investigations should be conducted during the subsequent PD phase to determine soil suitability for building upon.

Land Use/Land Cover

The majority of the Option 3C/D study area is developed with residential, commercial, industrial, institutional, recreational, and transportation facilities. The dominant land use is Urban and Built-Up (FLUCFCS 1000) covering 51.85% of the study area or 1,803 acres. This is followed by Transportation, Communication, and Utilities (FLUCFCS 8000) at 17.24% covering 599 acres of the study area.

Of interest are undeveloped uplands, specifically rangeland (FLUCFCS 3000) and upland forest (FLUCFCS 4000). Approximately 11.91% or 414 acres of the study area are rangeland (FLUCFCS 3000) and upland forest (FLUCFCS 4000).

Wetlands, Surface Waters, and Floodplains

Approximately 386 acres or 11.10% of the Option 3C/D study area is surface waters. Surface waters mapped within the study area include streams, waterways, lakes, and reservoirs. Wetlands comprise approximately 272 acres or 7.82% of the study area of which 92 acres are non-forested wetlands and 180 acres are forested wetlands. Forested wetlands mapped within the study area include mixed wetland hardwoods, mixed shrubs, cypress, cypress domes/heads, cypress mixed hardwoods, wet pinelands hydric pine, and wetland forested mixed. Non-forested wetlands include freshwater marshes and emergent aquatic vegetation.

The project study area, which covers a 0.5-mile buffer around the alignment of Option 3C/D, includes approximately 465 acres within the 100-year flood plain. Roughly 12%, or 416 acres of the project study area are in an undetermined zone owned by Walt Disney World. Construction of the project within the 100-year floodplain will require compensation. Considerations for sea level rise and climate change should also be considered for the proposed infrastructure within Flood Zones A and AE. There are no floodways or navigable waters in the study area.

Biological Resources

Documentation regarding species listed under the ESA that are either known to occur or may potentially occur within or near the project study area were reviewed using the following documents and resources:

- USFWS's Information for Planning and Consultation (iPaC) report for the Option 3C/D study area (*Environmental Scan Technical Memorandum*)
- FNAI Biodiversity Matrix for the Option 3C/D study area (*Environmental Scan Technical Memorandum*)
  - Wood Stork core foraging areas and nesting colonies[30,31]
  - Audubon EagleWatch Program[32]
  - Crested Caracara, Florida Everglades Snail Kite, Florida Scrub Jay, and Red-Cockaded Woodpecker consultation areas[33]

No field survey was conducted at the Option 3C/D study area to verify documented occurrences of listed species for this high-level environmental scan. Field surveys will be conducted during the subsequent PD phase.

Listed Species

The FNAI Biodiversity Matrix lists two (2) species of mammals, five (5) species of reptiles, seven (7) species of birds, and 30 species of plants that have the potential to occur within the study area **(***Environmental Scan Technical Memorandum*). Sensitive species that are Federally or state listed, or proposed for listing and have special protection, with known or potential occurrence within or near the Option 3C/D study area include:

- Florida Panther
- Florida Black Bear
- Audubon's Crested Caracara
- Eastern Black Rail
- Everglade Snail Kite
- Florida Scrub Jay
- Red-Cockaded Woodpecker
- Snail Kite
- Whooping Crane
- Wood Stork
- Florida Sandhill Crane
- Florida Burrowing Owl
- Bald Eagle
- American Alligator
- Blue-tailed Mole Skink
- Eastern Indigo Snake
- Sand Skink
- Gopher Tortoise
- Striped Newt
- Monarch Butterfly

For plant species, refer to the *Environmental Scan Technical Memorandum*.

According to the Audubon EagleWatch Program there are zero bald eagle nests within the Option 3C/D study area.[34]

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[30] Florida Department of Environmental Protection. *Wood Stork Core Foraging Area*. Data downloaded August 13, 2023 from: **https://geodata.dep.state.fl.us/datasets/FDEP::florida-wood-stork-foraging-areas/about**.

[31], Koordinates. *Wood Stork Nesting Colonies*. Data downloaded August 13, 2023 from: **https://koordinates.com/layer/97905-florida-wood-stork-active-nesting-colonies/**.

[32] Audubon. *Bald Eagle Nest Location*. Webpage accessed August 8, 2023: **https://cbop.audubon.org/conservation/about-eaglewatch-program**.

[33] U.S. Fish & Wildlife Service. *Florida Ecological Services Map*. Webpage accessed August 8, 2023: **https://www.fws.gov/office/florida-ecological-services/map**.

[34] Audubon. The *EagleWatch Program*. Webpage accessed from: **https://cbop.audubon.org/conservation/about-eaglewatch-program**.

Potential Impacts

The Option 3C/D study area contains wetlands, surface waters, Waters of the United States, and habitat for Federally and state listed species and candidate species, and species with special protections.

Potential impacts from the project to Waters of the U.S., wetlands and surface waters and wetlands in Orange County will require field wetland delineation. It is recommended to avoid or minimize impacts on wetlands during the design phase.

As the project progresses, a variety of surveys will likely be required due to potential impacts on protected species. Federally listed species, including the Crested Caracara, Red-Cockaded Woodpecker, Florida Scrub Jay, Eastern Black Rail and the Everglade Snail Kite, as well as the state listed Florida Sandhill Crane and Florida Burrowing Owl would all require surveys. A survey by an Authorized Gopher Tortoise Agent will likely be required due to the presence of the species in the study area. A Wood Stork foraging analysis will be required as the project is within the species' core foraging area. A plant survey is necessary due to potential impacts to various listed and protected plants.

Permits

The project study area is within the jurisdiction of the US Army Corps of Engineers, South Florida and St. Johns River WMDs, and Orange and Osceola Counties. **Table 4** provides a list of permits that may be required for the project. Coordination with permitting agencies during subsequent project development will occur to ensure all required agreements and permits are in place.

Table 4: Permitting Requirements

Permit	Issuing Agency	Jurisdiction	Commenting Agencies
Section 404 Dredge and Fill Permit	FDEP USACE	State Assumed Waters Coastal Waters	USFWS and NMFS
Environmental Resource Permit	SFWMD SJRWMD	State Water Quality	National Historic Preservation Office and FFWCC

Permit	Issuing Agency	Jurisdiction	Commenting Agencies
Conservation Area Impact Permit[35]	Orange County Environment Protection Division	Wetlands	N/A
National Pollutant Discharge Elimination System	FDEP	Stormwater Discharge from Construction Activities	N/A
Gopher Tortoise Relocation Permit	FFWCC	Impact to gopher tortoise and their habitat	N/A
Florida Burrowing Owl Incidental Take Permit	FFWCC	Impact to the Florida burrowing owl	N/A
Native Plant Harvesting Permit	FDACS	Impact to federally listed and state protected plants	N/A

[35] Orange County, FL Government. Florida Conservation Area Impact Permit. Webpage accessed August 14, 2023 from: http://www.orangecountyfl.net/PermitsLicenses/Permits/WetlandImpact.aspx.

4 Transit Market Analysis

This analysis takes key demographic data to analyze and identify different populations and their mobility needs. By investigating what types of people use transit, and where those people are located, it is possible to better understand and serve populations who want and need transit.

4.1 Characteristics of Transit-Dependent Populations

The Transit Cooperative Research Program (TCRP) Report 28: *Transit Markets of the Future* identifies fifteen groups of users as being "more likely than average to use transit as their principal mode for commuting to work, relatively independent of their income or the size or density of the metropolitan areas in which they live" (TCRP Report 28, page 8). These user groups are included in **Table 5**.

A socio-economic analysis of variables related to transit usage is important for determining need. For this existing service baseline evaluation, a sample of the following user groups was considered for analyzing transit potential. Data for these Transit Determinants was collected from the U.S. Census Bureau's American Community Survey (ACS) Five-Year Estimates for 2022.

Table 5: Determinant Measures for Transit Use

Determinant	Measure
Population	Population Density
Sex	Women
Age	Workers aged 17 to 29; Workers aged 60+
Race & Ethnicity	Black, Asian, and/or Hispanic populations
Vehicle Ownership	Households with no private vehicle
Education	People with less than a high school education; People without a high school diploma; People with a bachelor's degree; People with a graduate degree
Immigrant Status	People who are foreign born
Disability Status	People living with a disability
Income	Households earning less than $20,000 annually

Source: U.S. Census American Community Survey Five-Year Estimates, 2022

4.2 Relative Transit Propensity and Density Analysis

To better understand the overall likelihood of transit use within a geographic area, a Transit Propensity Index was developed using the characteristics defined in **Table 5** and the methodology based on findings from the TCRP Report 28. Variables with higher values indicate greater need and likelihood of transit use. For example, a Census Block Group with a higher number of zero-car households exhibits a relatively greater need for mobility and has a higher propensity for transit use.

It should be noted that propensity is a measure of need and not necessarily efficiency. A propensity of "1.0" means that the residents of that Census Block Group are most in need of or most likely to ride transit service, but it does not necessarily mean that transit service would be most productive there. Further analysis described later in this report will determine potential ridership.

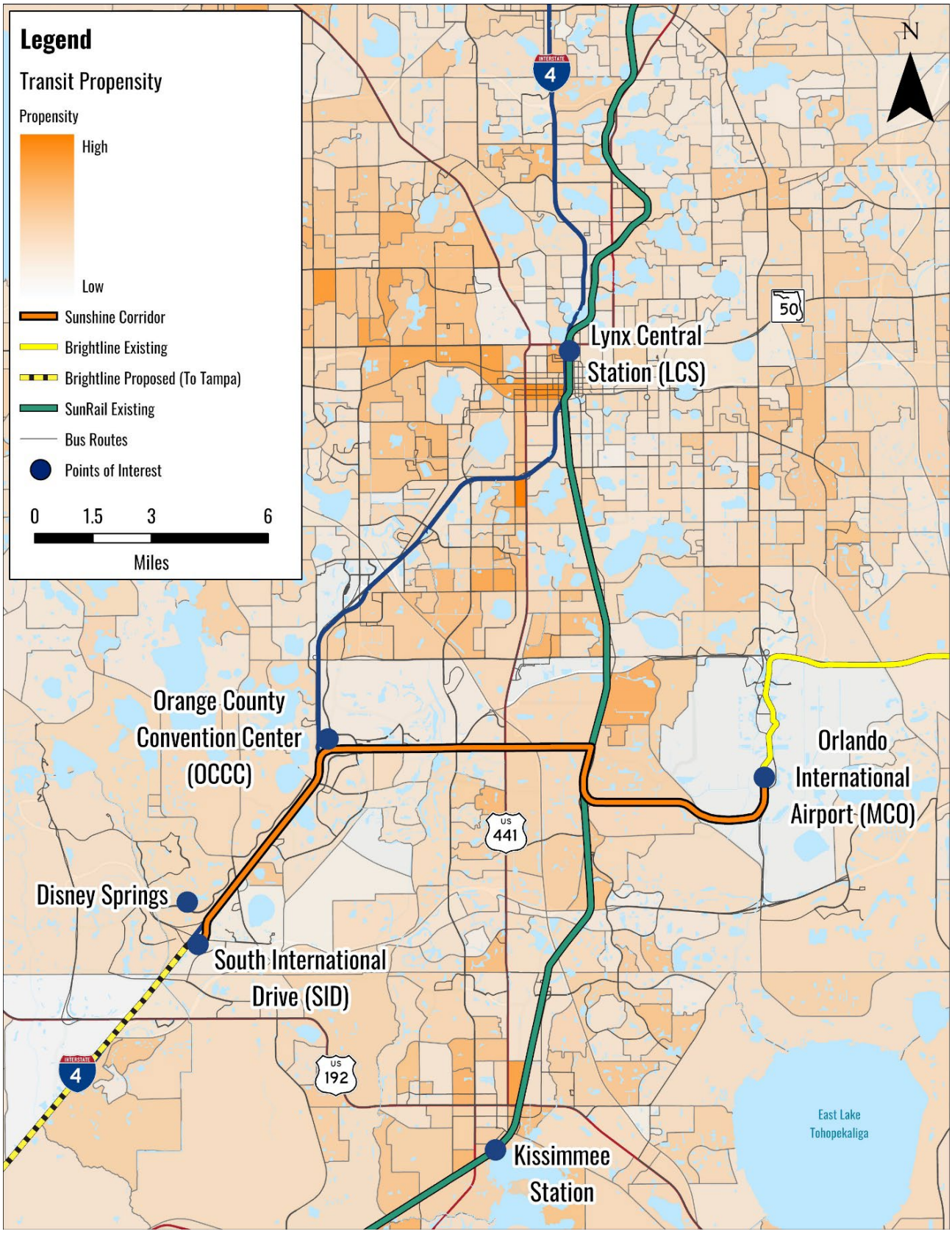
The data is then indexed, weighted, and calculated to determine the propensity for transit use within each Census Block Group. Additional information on the data and methods used to calculate transit propensity are included in the *Existing and Future Conditions Technical Memorandum*.

4.2.1 Transit Propensity

When observed with the proposed rail extension in **Figure 15** there are pockets of Census Block Groups throughout the study area with higher propensity for transit use in darker orange. Many of these areas are located along existing SunRail alignment, including the Parramore neighborhood of Orlando and north-central Kissimmee. The scattered nature of all the high-propensity Block Groups suggests that the proposed extension from the airport would benefit from coordination with LYNX to connect residents with the existing and proposed passenger rail corridor.

In addition to considering high-propensity resident populations in the region, it is important to remember the large number of tourists who travel to the region. Since the transit propensity analysis relies on residential demographic data, it does not take into account the likelihood of tourists who might use transit. The extension from Orlando International Airport to South International Drive would connect tourists from the airport to their accommodations and to key destinations at Universal and Disney Resorts. This connection would support travel to these locations and free up key vehicle corridors in the region, alleviating highway congestion.

Figure 15: Transit Propensity of Study Area by Census Block Group



5 Future Conditions and Needs Assessment

The following section summarizes an examination of future needs for the study area. Further details can be found in the *Existing and Future Conditions Technical Memorandum*.

5.1 Future Conditions Along Corridor

The study area contains parcels of land zoned by Orange County, Osceola County, the City of Orlando, and the City of Kissimmee (**Figure 16**). Zoning along the corridor includes agriculture, residential, urban/office, institutional/governmental, commercial, industrial, and others. Around LYNX Central Station in Orlando, the major zoning districts are Planned Development, Industrial, and Activity Center (near the Orlando International Airport), indicating a high level of transit demand. Planned Development districts are often residential areas, creating a potential demand for transit for those commuting to work and those traveling to nearby activity centers, while Industrial and Activity Center districts create a demand for transit for those commuting for work and leisure. Near Kissimmee SunRail Station, the major zoning district is low density residential, indicating a potential transit demand for those employed along the corridor.

Figure 17 depicts the future land use (FLU) categories within the study area. Future land use is associated with the comprehensive planning process and reflects the community's 25-year vision for land use. FLU categories within the project area include conservation; low, medium, and high density residential; urban/office; institutional; activity center; community center; commercial; industrial; and recreational. LYNX Central Station is located within a Commercial FLU zone; the Orlando International Airport, Orange County Convention Center, and South I-Drive are located within an Activity Center zone; and the Kissimmee SunRail Station sits within an Urban/Office zone. The primary FLU zone along the I-4 portion of the corridor is also an Activity Center.

Figure 16: Zoning Categories within the Sunshine Corridor

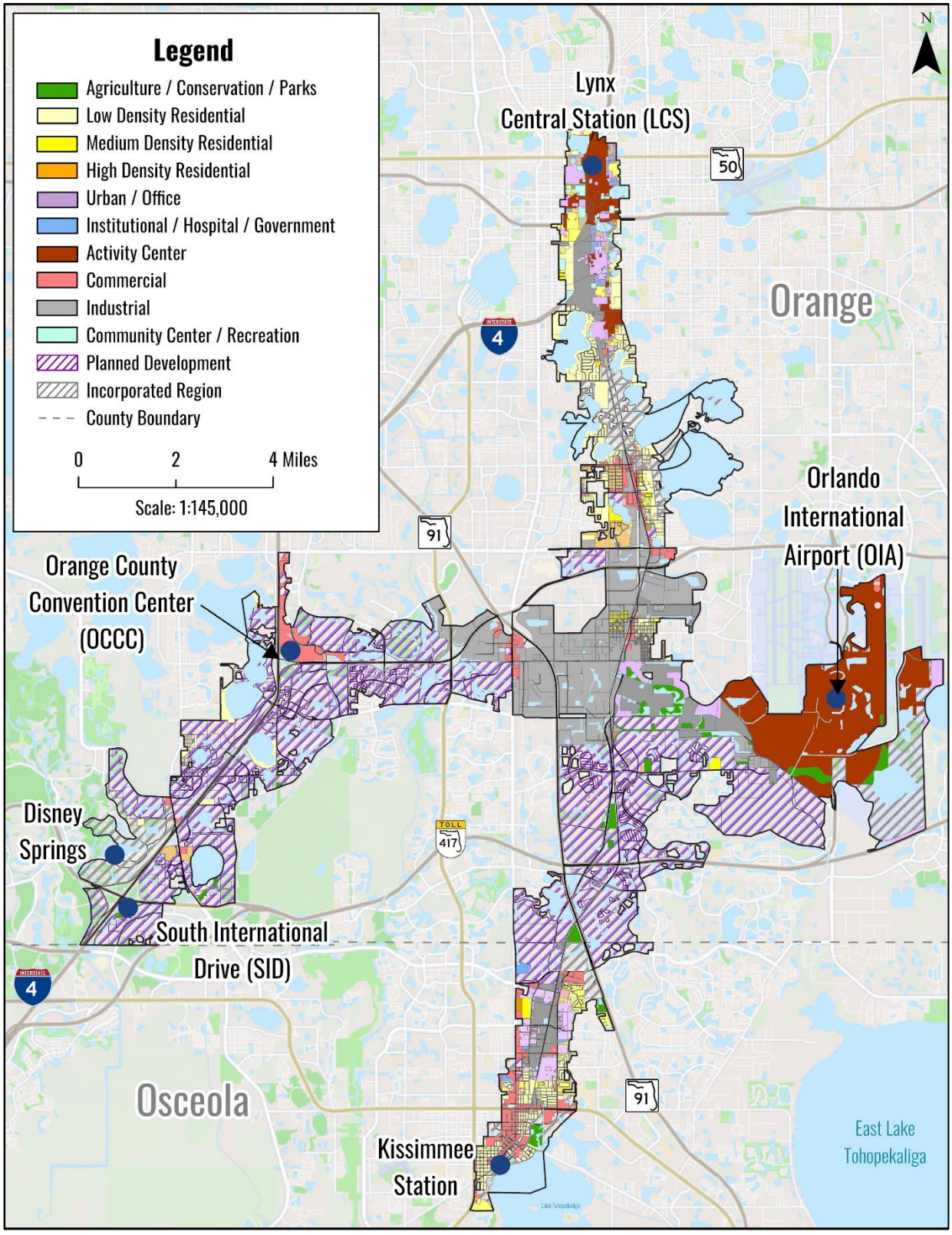
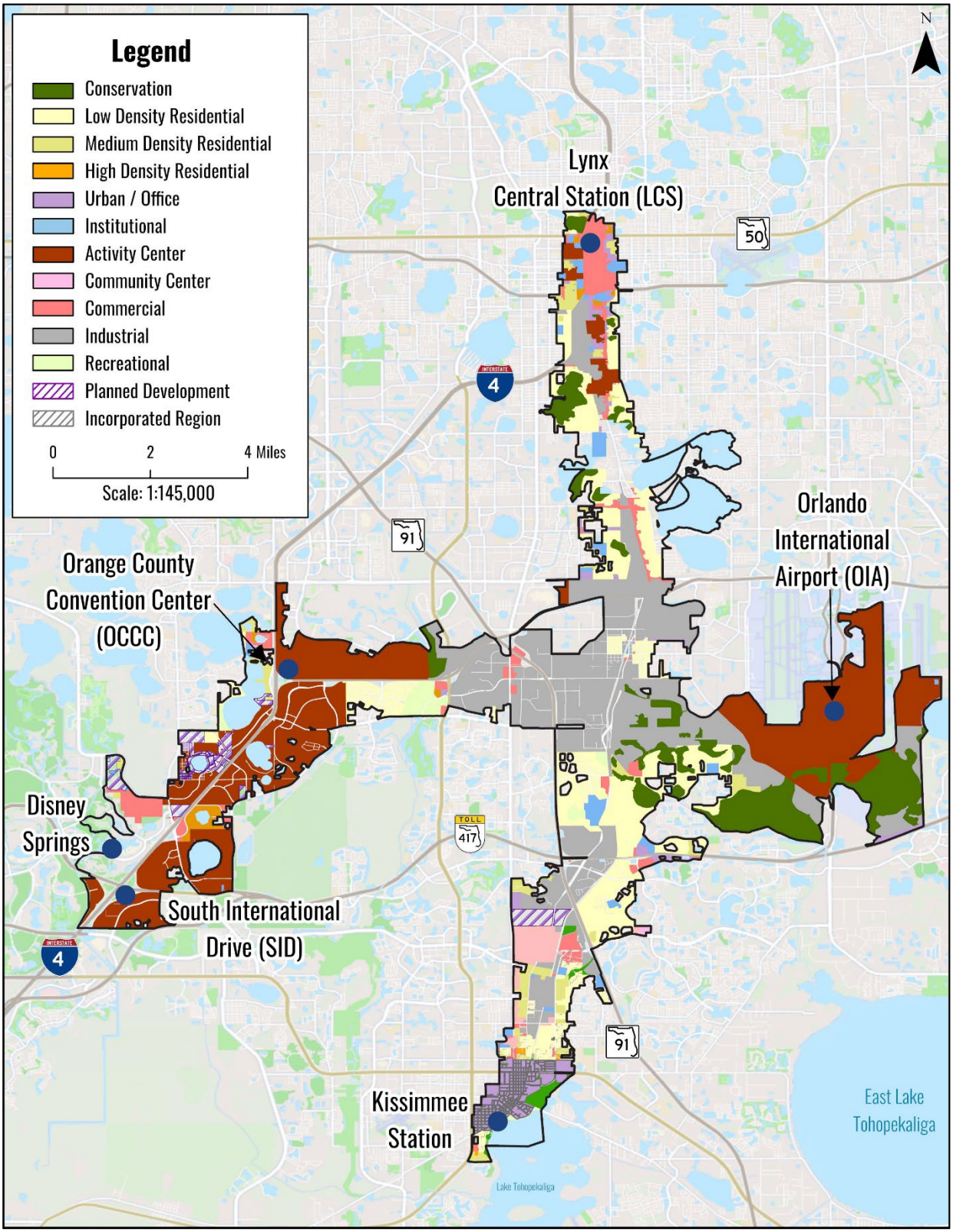


Figure 17: Future Land Use Categories within the Sunshine Corridor



5.1.1 Planned / Proposed Infrastructure

A Development of Regional Impact (DRI) is defined in section 380.06, Florida Statutes (F.S.)[36] as "any development which, because of its character, magnitude, or location, would have a substantial effect upon the health, safety, or welfare of citizens of more than one county." In 1972, Florida adopted the DRI Program, which created a process to identify and mitigate the effects of large developments. In 2015, statutory changes affected the review process for this program.

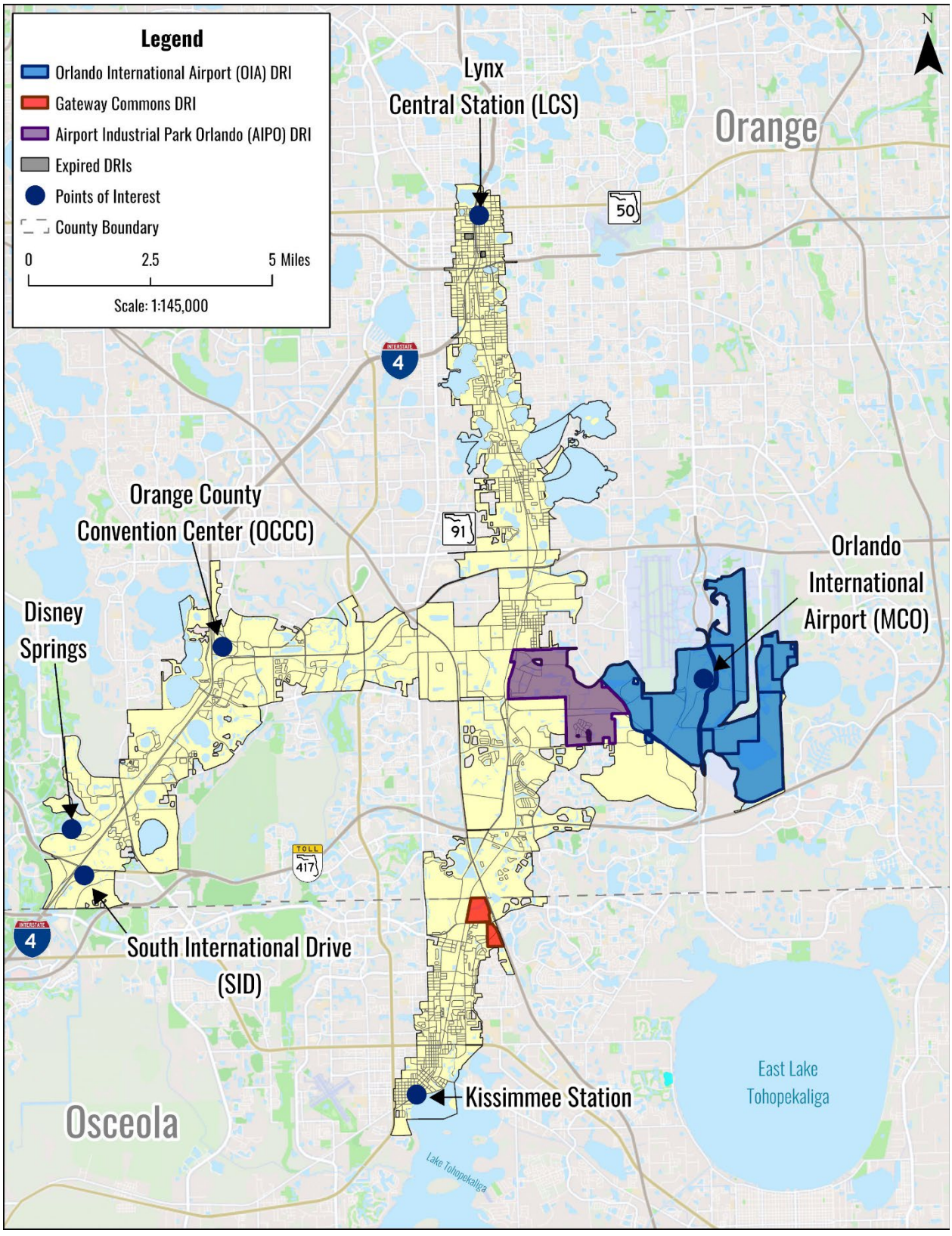
Though the process has changed, DRI designation still exists until it either expires or is rescinded. When rescinded, the development still exists as built, but is no longer bound to the DRI development order. Documentation on each DRI can be found on the Florida Department of Commerce Developments of Regional Impact Repository online.[37] **Figure 18** depicts Census Block Groups with designated Developments of Regional Impact. Active DRIs within the project area include the following: Airport Industrial Park DRI (City of Orlando), Orlando International Airport DRI (Orange County), and Gateway Commons DRI (City of Kissimmee).

Active Developments of Regional Impact

The Airport Industrial Park Orlando (AIPO) DRI, located in the City of Orlando adjacent to the Orlando International Airport DRI, was first approved in December 1981 covering 2.62 square miles within Orange County. After the original development order was issued, 1.89 square miles of the DRI were annexed by the City of Orlando, with the remaining 0.73 square miles being located within Orange County. The DRI for the annexed portion in the City of Orlando was approved in July 1991. The Orlando International Airport DRI, located in Orange County, was approved in February 1978, and covers 21.88 square miles. The Gateway Commons DRI, located within City of Kissimmee jurisdiction along the Florida Turnpike, was approved in August 1991 and currently covers 0.31 square miles. Gateway Commons is a mixed-use development with retail and industrial uses.

[36] The Florida Senate. (2023). **2013 Statues: 380.06 Developments of Regional Impact.**
[37] Florida Department of Commerce. (2023). **Developments of Regional Impact Repository**.

Figure 18: Developments of Regional Impact within the Sunshine Corridor



5.1.2 Economic Development Opportunities

In 2008, Orange County adopted its Infill Master Plan in an effort to promote infill development and redevelopment. In 2009, this plan was updated to include an analysis of recent foreclosures, available commercial properties, and businesses in the area. A subsequent update included a neighborhood district evaluation to assess future land use designations and zoning districts.

Figure 19 depicts community redevelopment areas (CRA) and community development districts (CDD) within the Sunshine Corridor study area.

The Orlando Downtown Redevelopment Area is located at the northernmost part of the project area, covering 2.6 square miles. The Downtown Community Redevelopment Agency was established in 1980 to "reduce and eliminate slum and blight conditions within various areas of the City of Orlando."[38]

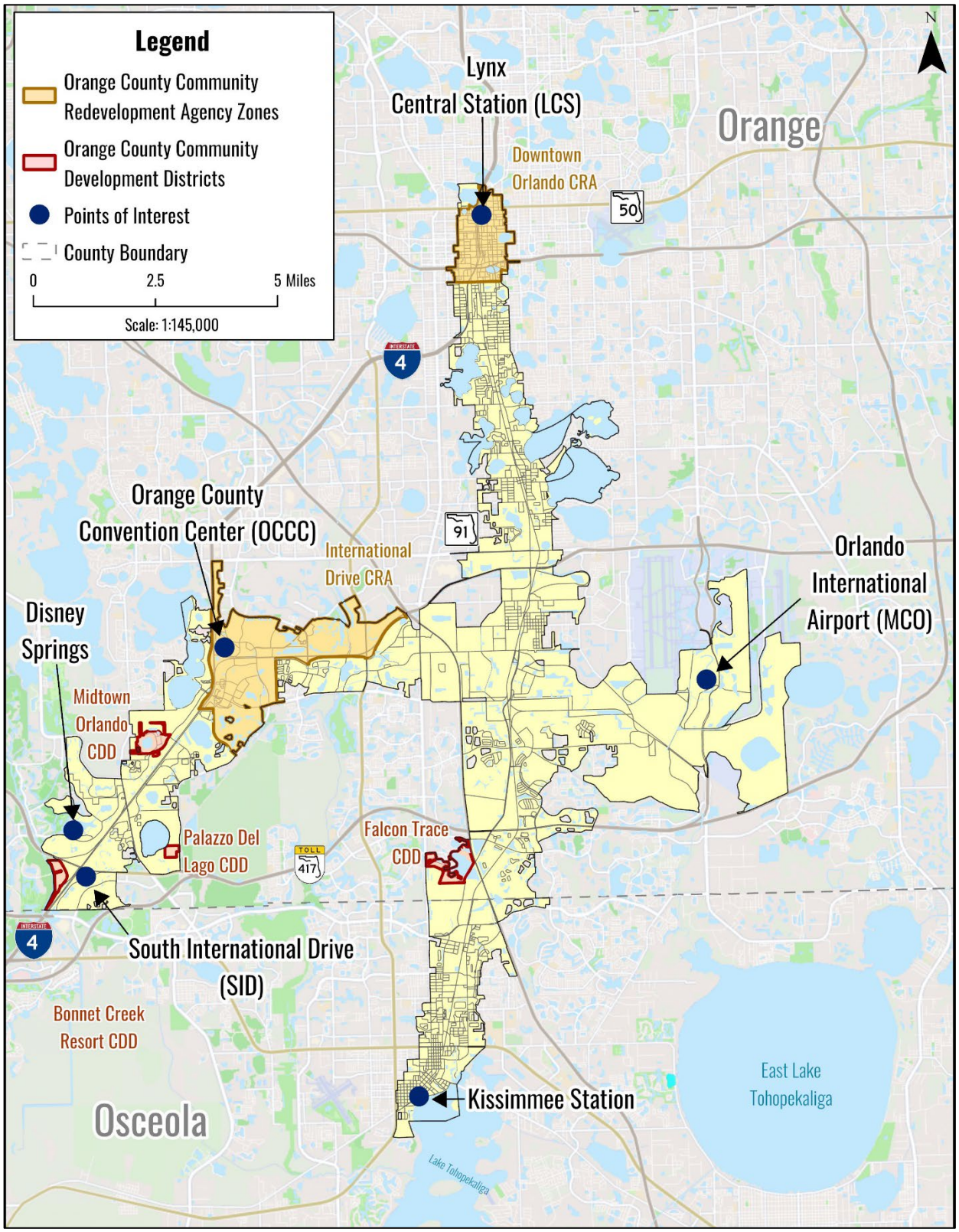
The International Drive Community Redevelopment Area is located near the Orange County Convention Center off I-4, with a total area covering 11.43 square miles.[39]

The Midtown Orlando Community Development District, located southwest of the International Drive CRA in Orange County, covers 171 acres and was established in August 2008. The Palazzo Del Lago Community Development District, located south of the Midtown Orlando CDD in Orange County, covers 41 acres and was established in October 2006. The Bonnet Creek Resort Community Development District is located south of Disney Springs. It was created in July 2000 and covers 459 acres.

The Shingle Creek Transit and Utility Community Development District was approved in October 2023, covering 719 acres south of Sand Lake Road, west of John Young Parkway, and north of State Road 528.[40] It was established to streamline district growth and development, by creating a governing body for the designated Shingle Creek area. It is anticipated that the establishment of this district will provide $174 million for infrastructure, linking commuter rail to a new theme park expected to open in 2025. It will allow for the financing, construction, operation, ownership, and maintenance of the proposed rail station at the Orange County Convention Center (OCCC).[41] See Orange County Ordinance 2023-40 for additional information regarding the establishment of this district.[42]

[38] Downtown Orlando. (2023). **Downtown Community Redevelopment Agency**. Orlando Downtown Development Board / Community Redevelopment Agency.
[39] International Drive Community Redevelopment Agency. (2023). **International Drive Community Redevelopment Agency**. Orange County Government, Florida.
[40] Shingle Creek Transit and Utility Community Development District. (2023). **Shingle Creek Transit and Utility Community Development District**. Orange County, Florida.
[41] Carter, Ashley. (2023). *Spectrum News 13*. **Orange County Approves Special District Tied to Universal's Epic Universe, Proposed SunRail Expansion**.
[42] Orange County, Florida. (2023). **Orange County Ordinance 2023-40**.

Figure 19: Community Redevelopment Efforts within the Sunshine Corridor



5.2 Future System Needs

This section identifies the safety and operational characteristics of the transportation network, highlighting deficiencies that must be addressed to adequately serve travel demand in the region.

5.2.1 Safety

Signal4 Analytics provided the crash history from 2018 to 2022 for Lake, Orange, Osceola, Polk, Seminole, and Volusia Counties. Focusing on high-severity crashes, the fatal crash history is illustrated in **Figure 20** while the serious injury crash history is in **Figure 21.** Serious injury crashes have been trending downward in all counties. However, the number of fatal crashes in 2022 was 18% higher than in 2018, indicating an upward trend for fatalities.

Orange County has the highest number both fatal and serious injury crashes, followed by Volusia and Polk Counties. The Florida Department of Transportation's FY 2022 Highway Safety Plan indicates that Orange County is ranked #1 in the Distracted Driving, Teen Driver, and Work Zone safety emphasis areas. Additionally, the city of Orlando is ranked #1 in six out of nine safety emphasis areas for Florida cities with a population of 75,000 people or more. The existing transportation network is not providing adequate safety for the traveling public, especially in Orange County and the metropolitan Orlando area. These trends will continue to worsen as the area grows and experiences more congestion and driver frustration. The increasing rate of visitors to Central Florida's theme parks and attractions also increases driving risk as unfamiliar drivers struggle to navigate the oversaturated transportation network.

Figure 20: Five Year Fatal Crash History by County

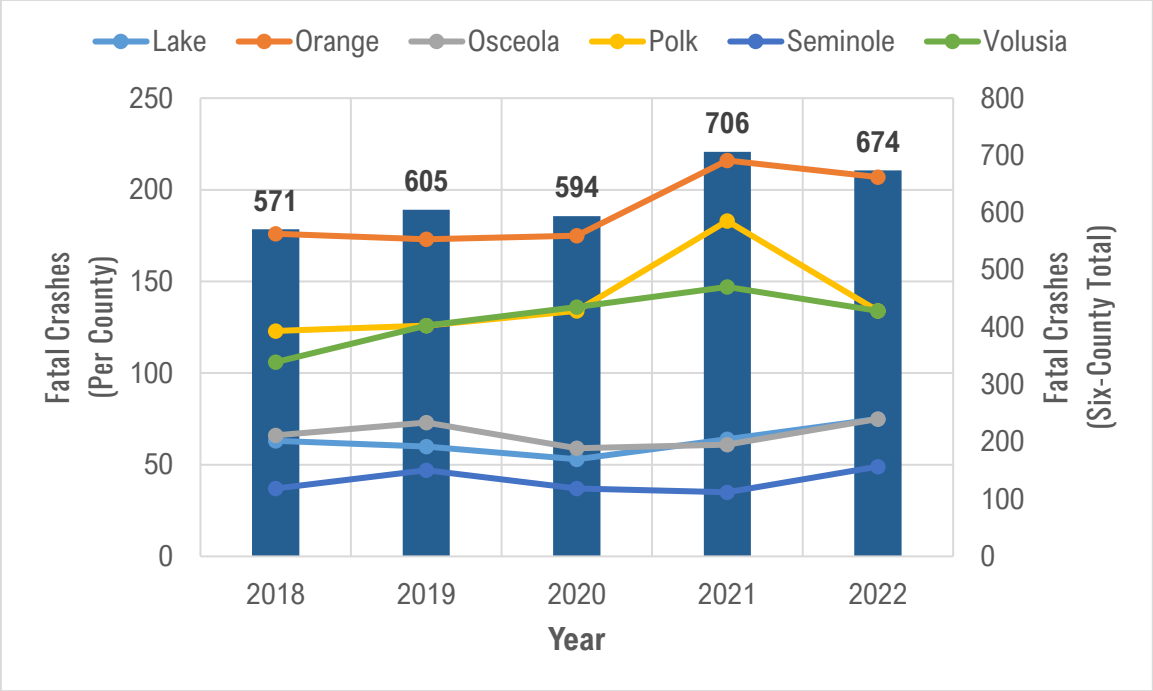
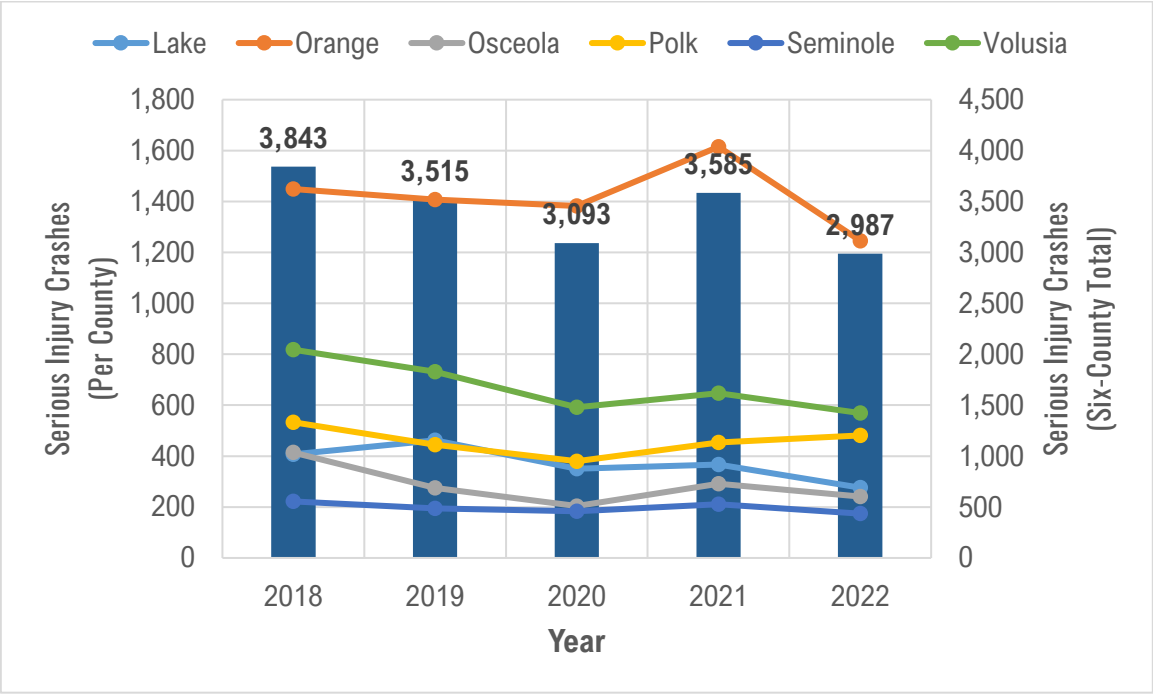


Figure 21: Five Year Serious Injury Crash History by County



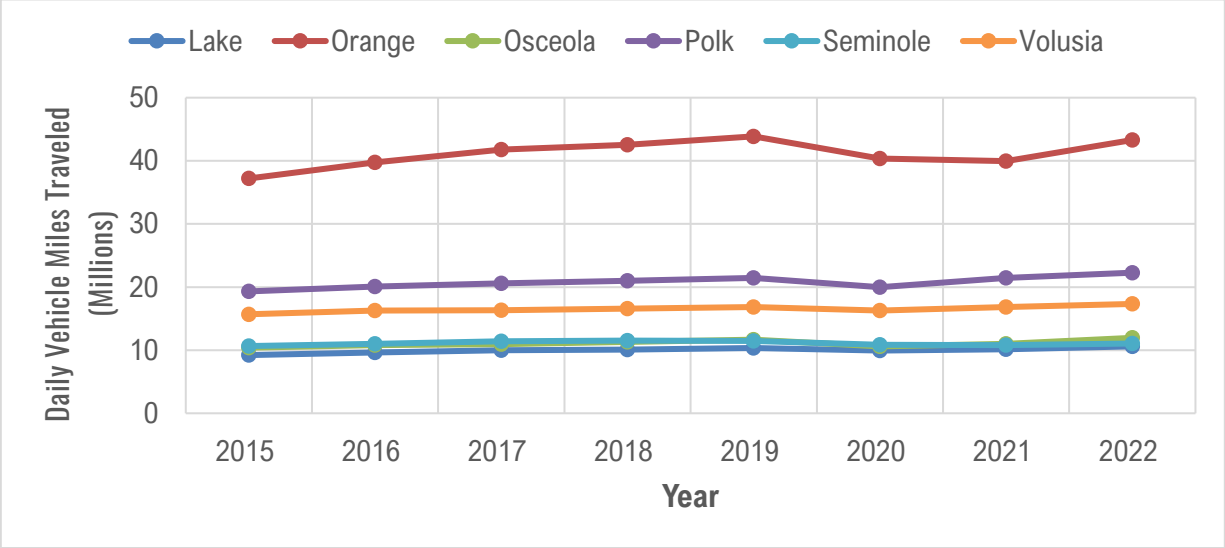
5.2.2 Operations

The Central Florida transportation network consists of several key corridors to serve the demands of residents, workers, and regional/national visitors. These key corridors are:

- Interstate 4
- SR-408 (toll facility)
- SR-417 (toll facility)
- SR-429 (toll facility)
- SR-528 (toll facility)
- Florida's Turnpike (toll facility)

The rapid growth in population, employment, and tourism has resulted in increased pressure on the supporting transportation network. This is evidenced by the trend in daily vehicle miles traveled (DVMT) shown in **Figure 22.** The DVMT is a measure of the total transportation demand within each county reported annually by the Florida Department of Transportation. From 2015 to 2019, the DVMT per county grew at an average rate of 2-4% per year. While traffic demands decreased in 2020 during the height of the pandemic, they have rebounded to reach pre-pandemic levels once again. From 2021 to 2022, growth ranged from 2-9% with the highest growth seen in Orange and Osceola Counties. Based on this historical trend, it is anticipated that traffic demands will continue to increase, especially in consideration of new attractions such as Universal's Epic Universe which is expected to open in Spring of 2025.

Figure 22: Historical Daily Vehicle Miles Traveled (DVMT), 2015 to 2022



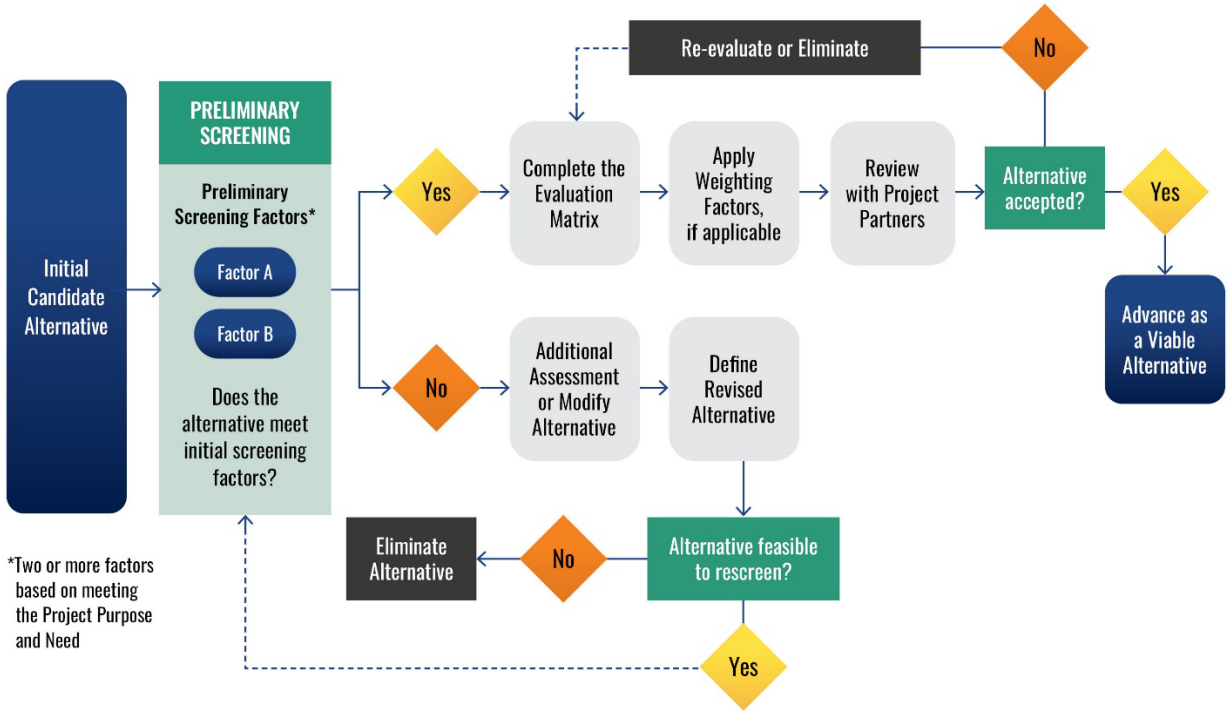
Source: FDOT Transportation Data and Analytics, Reports of Highway Mileage and Travel (DVMT)

6 Evaluation of Alternatives

A goal of the TCAR process is to identify potential alternatives and evaluate them based on the project needs and objectives, including their ability to meet the purpose of the overall project.

The Sunshine Corridor TCAR Study Alternatives Evaluation process (**Figure 23**) involves a multi-level screening analysis. At the start of the TCAR Study process, the initial alternatives were identified and developed with input from FDOT, stakeholders, and prior studies. The next step, Preliminary Screening, used two or more factors to conduct a high-level assessment of the alternative modal options. Factors are based on project purpose and need. Alternatives that meet the requirements of this initial screening are then advanced as viable alternatives for the final step of the alternatives analysis which encompasses a more detailed assessment of the alternative's ability to meet the project objectives and to align with FTA review criteria.

Figure 23: TCAR Study Evaluation Process



6.1 Study Alternatives

Four alternative modes (**Figure 24)** were chosen for the analysis. Modes under consideration include:

1. Enhanced Local Bus
2. Bus Rapid Transit
3. Commuter Rail
4. Trackless Tram

These modes were identified as potential options to serve the Sunshine Corridor defined activity centers which include:

- Downtown Orlando
- Orlando International Airport
- Area Theme Parks, Attractions, and other Tourism Destinations (including the Orange County Convention Center, Universal, Disney, SeaWorld, the I-Drive Entertainment District, and hotels and other surrounding businesses)

An overview of each mode is contained in the following sections. Additional details of the service plans can be found in the *Alternatives Development Technical Memorandum*.

Figure 24: Sunshine Corridor TCAR Alternative Modes

6.1.1 Enhanced Local Bus

Enhanced local bus is very similar to traditional bus transit but with limited stops to provide more direct, frequent service, expanded hours of operation, and some amenities aimed at increasing efficiency and reliability including traffic signal prioritization and queue jump lanes.[43] Enhanced local bus operates in mixed traffic and covers similar route distances as traditional fixed route bus transit. Enhanced local bus may also be called express buses, accelerated bus, or fast bus. It is also similar to traditional transit in that it serves core customers, or those transit riders who depend on or are inclined to take transit if it serves their needs.

[43] Lehigh and Northampton Transportation Authority. (n.d.). **5 Benefits of Enhanced Bus Service (EBS).**

In many cases, the goal of enhanced bus is to efficiently connect residential and employments areas that are separated by relatively long distances with minimal stops in between. However, enhanced bus is sometimes the precursor to Bus Rapid Transit (BRT), allowing service providers to demonstrate transit potential by implementing a higher quality service on a selected route. Enhanced bus deploys improvements that meet passenger's needs without the full financial investment requisite for a BRT system. Some of these include off-board ticket purchases, automated timetables displaying bus arrival, and limited stops conducive to a more predictable travel experience. Some other infrastructure elements may include branded stops with shelters, electronic timetables, raised sidewalk platforms, and cashless fare payments.

In keeping with the goal of utilizing enhanced bus to connect commuters across longer distances more efficiently, this study focused on increasing frequency and span of service on the existing or planned express routes that serve four major destinations:

- LYNX Central Station in downtown Orlando,
- the Destination Parkway Superstop which is located near the Orange County Convention Center (OCCC), SeaWorld, and several resorts and area attractions,
- the Disney Springs Transfer Center serving Disney Springs,
- and the Intermodal Terminal at Orlando International Airport (MCO).

Proposed Service Details

The goal of enhanced bus is to provide improved services for traditional transit customers, particularly commuters. To meet these needs, suggestions for the two routes with proposed enhancements include a span of service that starts earlier and ends later to better accommodate shift workers, increased frequency, and digital signage to provide up to date arrival and departure information at key transit hubs.

Routes

This analysis includes three routes (**Figure 25**):

- SR 528 Commuter Express Service (a new route)
- Route 350 (an existing express route with proposed enhancements)
- Route 51 (an existing local bus included for discussion)

One new route was outlined for this study based on planned transit improvements, the SR 528 Commuter Express Service. This proposed route, as described in the 2022 Orange County Transportation Initiative, connects MCO and the Destination Parkway Transit Center.

Enhancements are suggested for Route 350, an existing express route that connects downtown Orlando via LYNX Central Station to the Destination Parkway Transit Center and then the Disney Springs Transit Center. The connection from downtown Orlando to MCO is provided by traditional local bus service via Route 51; no enhancements are suggested for this connection; it is included for reference. These routes are further described in the following section, and a map of the Enhanced Bus Alternative is provided in **Figure 25.**

SR 528 COMMUTER EXPRESS

The SR 528 Commuter Express Service is a proposed 13.5-mile express route designed to create a direct connection between MCO and the Destination Parkway Transit Center. It is the current suggested connection for Orange County.[44] The route begins at MCO, heading north to SR 528, a limited-access tolled freeway also known as the Beachline Expressway, traveling on SR 528 in mixed traffic for the majority of the route (around 9.5 miles) and ending at the Destination Parkway Transit Center. MCO and the Destination Parkway Transit Center are the only stops on the express route, providing a direct connection between the airport and a major employment and entertainment area. The route is a priority project in the 2022 Orange County Transportation Initiative. Additionally, the route was previously considered as a fully separated rapid transit route. While the express route appears to have been prioritized over rapid transit on SR 528, this option is used for the BRT Alternative outlined later in this report. The route would require eight (8) new buses, will operate with 20-minute headways every day from 4:30 am to 1:30 am, and will cost approximately $4.22/year to operate.

ROUTE 350 SERVICE ENHANCEMENTS

Route 350, or the Orlando/Destination Parkway/Disney Express, is an existing LYNX express route that serves three points of interest for this project: LYNX Central Station, the Destination Parkway Transit Center, and the Disney Springs Transfer Center. After leaving LYNX Central Station in downtown Orlando, it follows I-4 with nonstop service along the interstate until it reaches the Destination Parkway Transit Center. Currently, 14 stop pairs between the Destination Parkway Transit Center and the Disney Springs Transit Center provide access to SeaWorld and other employment and tourism attractions in the OCCC and International Drive area. The suggested service improvements include increasing frequency for all service times from 30 to 20 minutes, beginning service at 4:30 am, and extending evening service until 1:30 am. This will result in an average annual operating cost of $3.68 M (compared to $2.42 M) and the need for two additional vehicles for a total of 7 buses. As there were no recommendations to remove stops, the travel time would remain the same as the existing service. According to Google Maps, travel time between LYNX Central Station and the Destination Parkway Superstop is approximately 20 minutes on an average weekday during the AM peak period.

ROUTE 51

It should be noted that while no express bus route is planned for the connection between MCO and LYNX Central Station, Route 51 provides access with 60-minute headways. The runtime from LYNX Central to MCO is about 90-100 minutes, assuming ideal traffic conditions. According to Google Maps, the trip from LYNX Central Station to MCO takes approximately 50-60 minutes on a standard weekday morning during the AM peak period. This route was included for discussion purposes because it runs on similar streets as the route currently suggested for premium transit service between downtown and MCO, but it was not enhanced or improved upon.

Table 6 summarizes the operational changes proposed for the enhanced bus system. The existing services refer to Route 350 and Route 51 and the proposed routes refer to Route 350 and the SR 528 Commuter Express Service (no changes were proposed for Route 51).

[44] Orange County Government. (2022). **Orange County Transportation Initiative**.

Figure 25: Proposed Enhanced Bus Routes

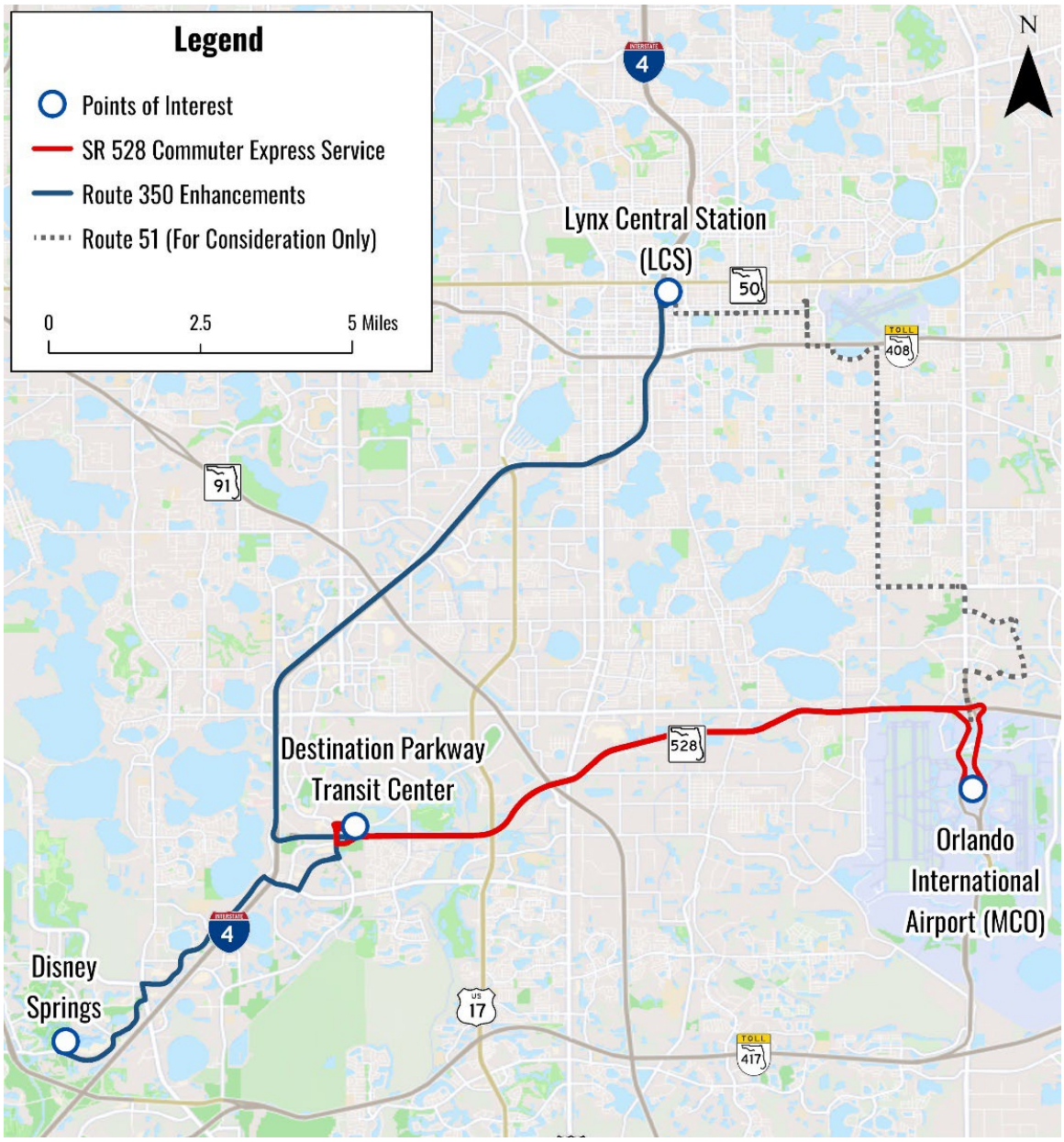


Table 6: Comparison of Existing and Proposed Service

	Span of Service	Operating Days	Frequency (min)
Existing	Every Day, 5:15 am – 1:00 am	365	30-60
Proposed Enhanced Service	Every Day, 4:30 am – 1:30 am	365	20

6.1.2 Bus Rapid Transit

Bus Rapid Transit (BRT) is premium transit similar to traditional fixed-route bus with improvements designed to increase comfort, efficiency, frequency, and reliability. Characteristics can include dedicated and/or separated bus lanes, off-board fare collection, traffic signal priority or preemption, level boarding, queue jumps, and short headway bidirectional services. BRT buses frequently also include stops and buses with improved amenities and separate branding to distinguish the BRT service.

BRT operations are conducive to a higher passenger capacity compared to standard bus, but less passenger capacity than light or commuter rail systems. While the combination of premium improvements varies, BRT is frequently associated with dedicated bus lanes. Dedicated lanes can be implemented for all or a portion of the BRT route and include center-running lanes, curbside lanes, and business access and transit (BAT) lanes which allow for regular vehicles to enter the lane at specific points to make right turns.

The goal of bus rapid transit is to provide premium transit that is comfortable and attractive for customers. Services and amenities are designed to appeal to core transit customers as well as occasional riders, non-commuter customers, and area visitors. In order to accommodate those needs, BRT needs to be fast, frequent, and reliable and it also should provide premium amenities at stations, stops, and on vehicles. It also needs to be readily accessible via mobile application and with digital payment systems as well as traditional fare collection.

Proposed Service Details

This analysis focused on utilizing planned BRT corridors, using the LYNX SR 426 Transit Corridor Study (2019) and the Orange County Transportation Initiative (2022). The system and service expansion scenarios for years 2026 and 2040 include:

- Opening (2026) – Buildout and opening of BRT service:
  - Between Orlando International Airport and LYNX Central Station (ACS), and
  - Between the Destination Parkway Transit Center and LYNX Central Station (DSCS Phase I), and
  - Between MCO and the Destination Parkway Transit Center (SR 528)
  - Buildout and opening of BRT service on SR 528 (MCO-OCCC)

- Horizon (2040) – Expansion of BRT service:
  - Expansion of BRT service between LYNX Central Station and the Disney Springs Transit Center (DSTC-OCCC)

Table 7: Summary of Existing and Proposed Services

	Span of Service	Operating Days	Frequency (min)
Existing	Every Day, 5:15 am – 1:00 am	365	N/A
Proposed Enhanced Service	Every Day, 4:30 am – 1:30 am	365	15

Routes

MCO TO LYNX CENTRAL STATION CORRIDOR

This route is based on the BRT route from the SR 436 Transit Corridor Study[45], it has been redesigned to accommodate a stop at the LYNX Central Station rather than extending north to Altamonte Springs.

The first corridor is the MCO to LYNX Central Station Corridor (MCO-LCS), which consists of:

- Colonial Drive (Florida State Route 50) between Interstate 4 (the approximate location of the LYNX Central Station) and Semoran Boulevard
- Semoran Boulevard (Florida State Route 436) between Colonial Drive and the Orlando International Airport

Existing services in the corridor include:

- Route 28 (E. Colonial Dr./Azalea Park)
- Route 29 (E. Colonial Dr./Goldenrod Road)
- Route 436S (S.R. 436/Fernwood/Orlando Int'l Airport)

DISNEY SPRINGS/UNIVERSAL TO LYNX CENTRAL STATION CORRIDOR (PHASE I & II)

This route was based on existing fixed route service, largely on arterials that could potentially accommodate dedicated bus lanes.

The second corridor is the **Disney Springs to Central Station Corridor** (DSCS-LCS), consisting of two phases. The first phase is Orange County Convention Center to Central Station Corridor (DSCS-LCS Phase 1), and the second extends the first phase corridor to Disney Springs (DSCS-LCS Phase 2). The route includes the following corridors:

- DSCS-LCS Phase 1
  - Orange Blossom Trail (US Route 441) between Colonial Drive and Sand Lake Road
  - Sand Lake Road (Florida State Route 482) between Orange Blossom Trail and John Young Parkway
  - John Young Parkway (Florida State Route 423) between Sand Lake Road and Destination Parkway
  - Destination Parkway between John Young Parkway and International Drive
- DSCS-LCS Phase 2
  - International Drive between Destination Parkway and Central Florida Parkway
  - Central Florida Parkway between International Drive and Palm Parkway
  - Palm Parkway between Central Florida Parkway and Apopka Vineland Road
  - Apopka Vineland Road (Florida State Route 535) between Palm Parkway and Hotel Plaza Boulevard
  - Hotel Plaza Boulevard between Apopka Vineland Road and Buena Vista Drive
  - Buena Vista Drive between Hotel Plaza Boulevard and Disney Springs

[45] LYNX. (n.d.). **SR 436 Transit Corridor Study.**

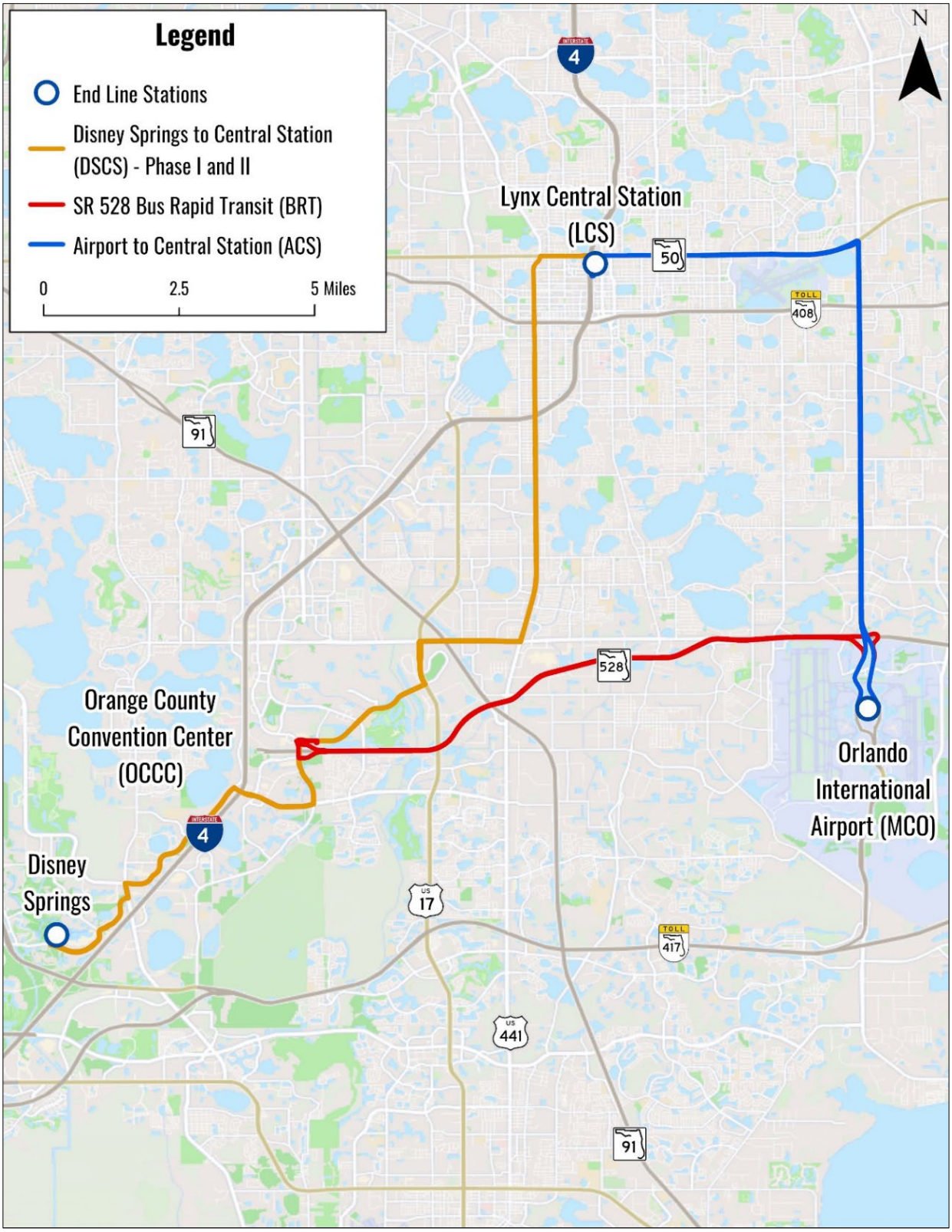
Existing services in those combined corridors include:

- Route 8 (W. Oak Ridge Road/Int'l Drive)
- Route 37 (Pine Hills/Florida Mall)
- Route 57 (John Young Parkway)
- Route 107 (S. US 441 [Orange Blossom Trail]/Apopka)
- Route 111 (SeaWorld/Orlando Int'l Airport)
- Route 350 (Destination Pkwy/SeaWorld/Disney Express)
- Route 441 (S. US 441 [Orange Blossom Trail])

ORLANDO INTERNATIONAL AIRPORT TO ORANGE COUNTY CONVENTION CENTER (ACC)

The third corridor is the Orlando International Airport to the Orange County Convention Center via the Destination Parkway Transit Center. This is a new route, and, as mentioned in Section 2.2, it is the same as the SR 528 Commuter Express Service except that it includes separate dedicated lanes on SR 528 and other BRT amenities such as signal priority.

Figure 26: Proposed BRT Routes



6.1.3 Commuter Rail

Commuter Rail is passenger rail service designed for local and regional travel that operates between central commercial districts and outlying areas and aims to connect local populations to employment and services. Commuter rail operates with regular daily schedules and frequently shares track with freight services and intercity rail. Benefits of commuter rail include operating in the right-of-way that is separated from the roadway, thus providing premium transit while eliminating the need to take travel lanes or contribute to congestion. It is a high-capacity service capable of providing cost-effective, efficient transportation while avoiding local traffic congestion and mitigating the risk of crashes.

Existing Services

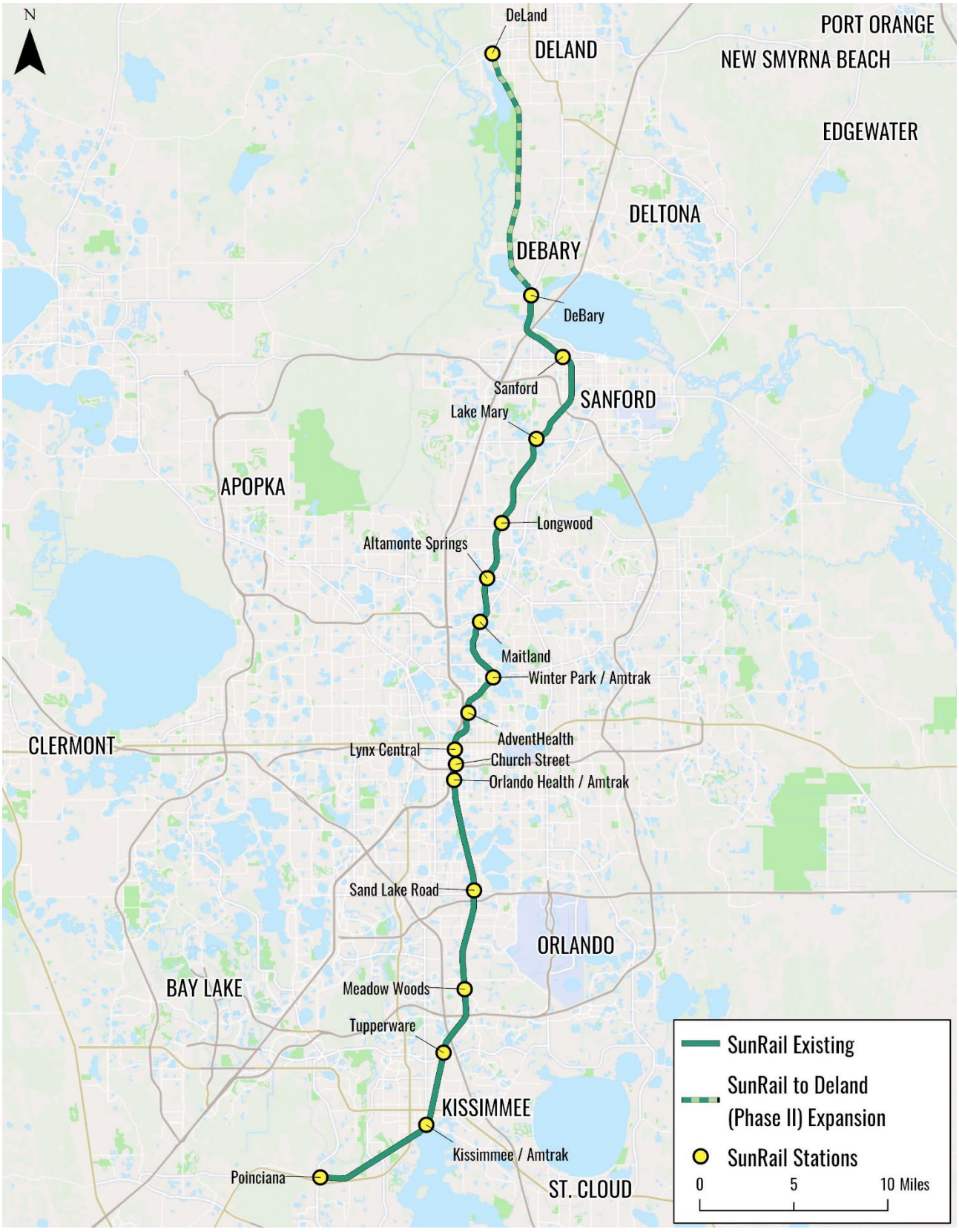
The existing 49-mile SunRail corridor serves 16 stations in Volusia, Seminole, Orange, and Osceola counties. Service operates Monday to Friday, from 5:00 AM to approximately 11:00 PM. There is no SunRail service on weekends or certain holidays. SunRail operates 20 Northbound trains and 20 Southbound trains each weekday. A trip from DeBary Station (northern terminus) to Poinciana (southern terminus) takes approximately 90 minutes.

Morning peak service operates at 30-minute headways from 5:00 AM until 9:00 AM. Midday service operates with less frequent headways - between one hour to 90 minutes - from 9:00 AM until approximately 3:00 PM. Evening peak service begins at 3:00 PM with 30-minute headways until approximately 6:30 PM. After 6:30 PM, headways are between 60 and 90 minutes. The last southbound train leaves DeBary Station at 8:10 PM, and the last northbound train departs Poinciana Station at 9:55 PM. Existing stations include:

- DeBary Station
- Sanford Station
- Lake Mary Station
- Longwood Station
- Altamonte Springs Station
- Maitland Station
- Winter Park / Amtrak Station
- AdventHealth Station
- LYNX Central Station
- Church Street Station
- Orlando Health / Amtrak Station
- Sand Lake Road Station
- Meadow Woods Station
- Tupperware Station
- Kissimmee / Amtrak Station
- Poinciana Station

Phase 2 North is a planned extension to SunRail that will connect the existing service from DeBary Station to Deland. The new service includes DeLand Amtrak Station.

Figure 27: SunRail North-South Rail Corridor

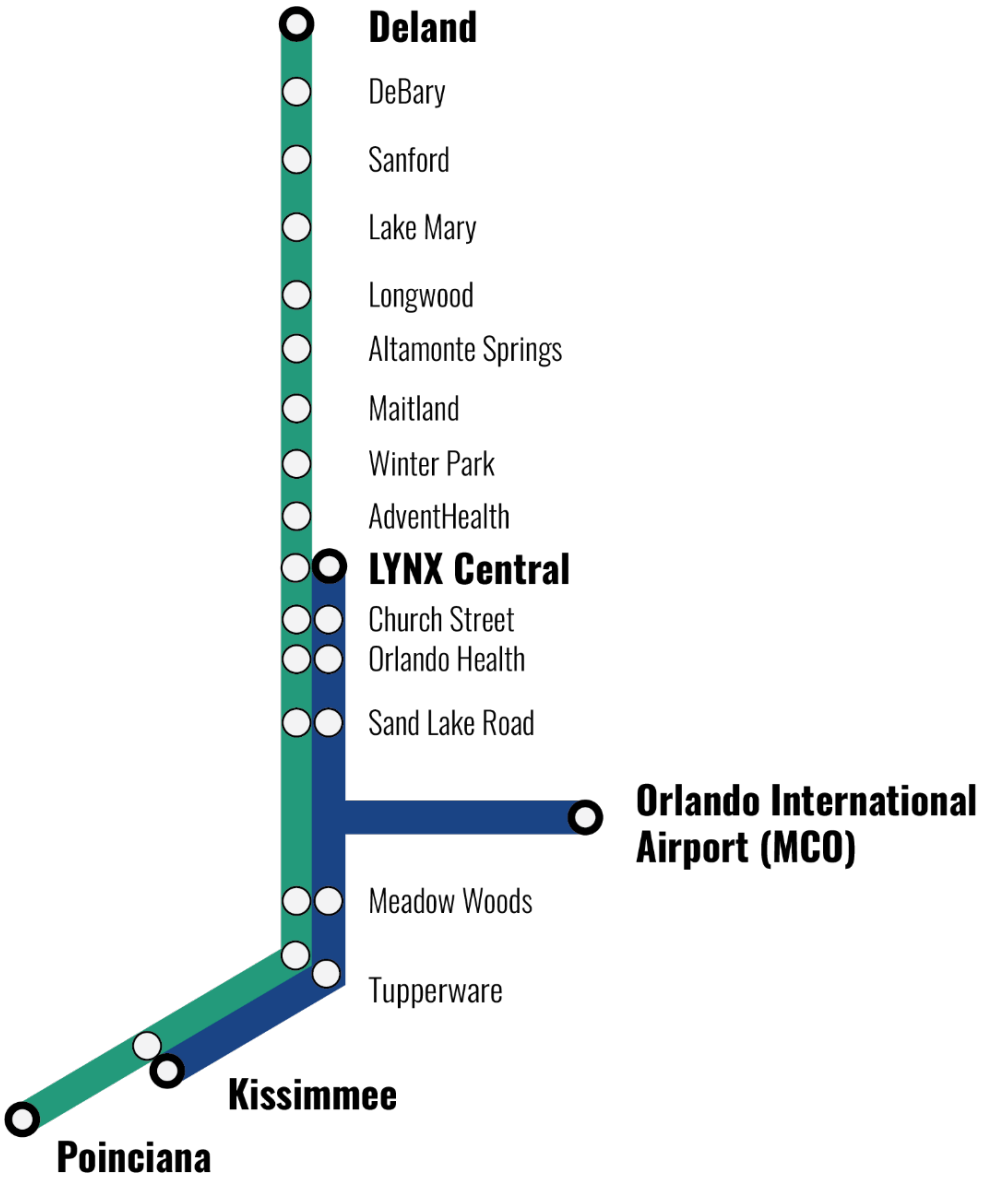


Proposed Commuter Rail Alternative

The Sunshine Corridor, a proposed multimodal rail corridor, includes five commuter rail options that make up the commuter rail alternative for this study. Future phases of the Sunshine Corridor study will determine the best combination of options and phasing of implementation based on available funding and investment.

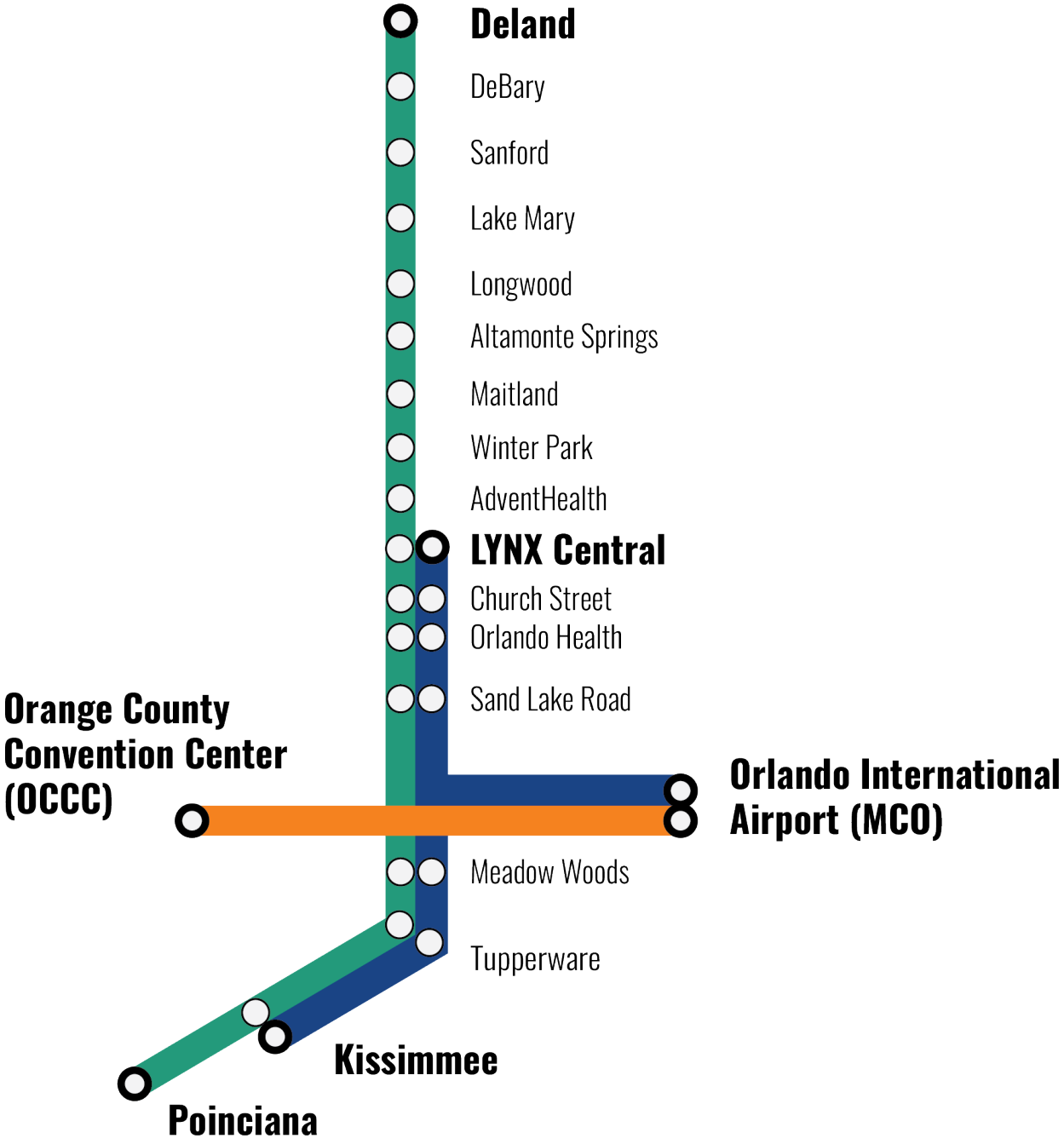
***Option 3A*:** This option, developed from existing SunRail Phase 3 plans, follows the existing SunRail north-south corridor from the Kissimmee Station (Southern Limit) to the LYNX Central Station (Northern Limit) and connects the existing SunRail mainline to MCO via the existing Orlando Utility Commission (OUS) track. Option 3A could be built independently of the other options to provide airport access from the existing SunRail corridor. This option includes a new track but would be built solely in existing right of way.

Figure 28: Sunshine Corridor Commuter Rail Option 3A with Existing SunRail



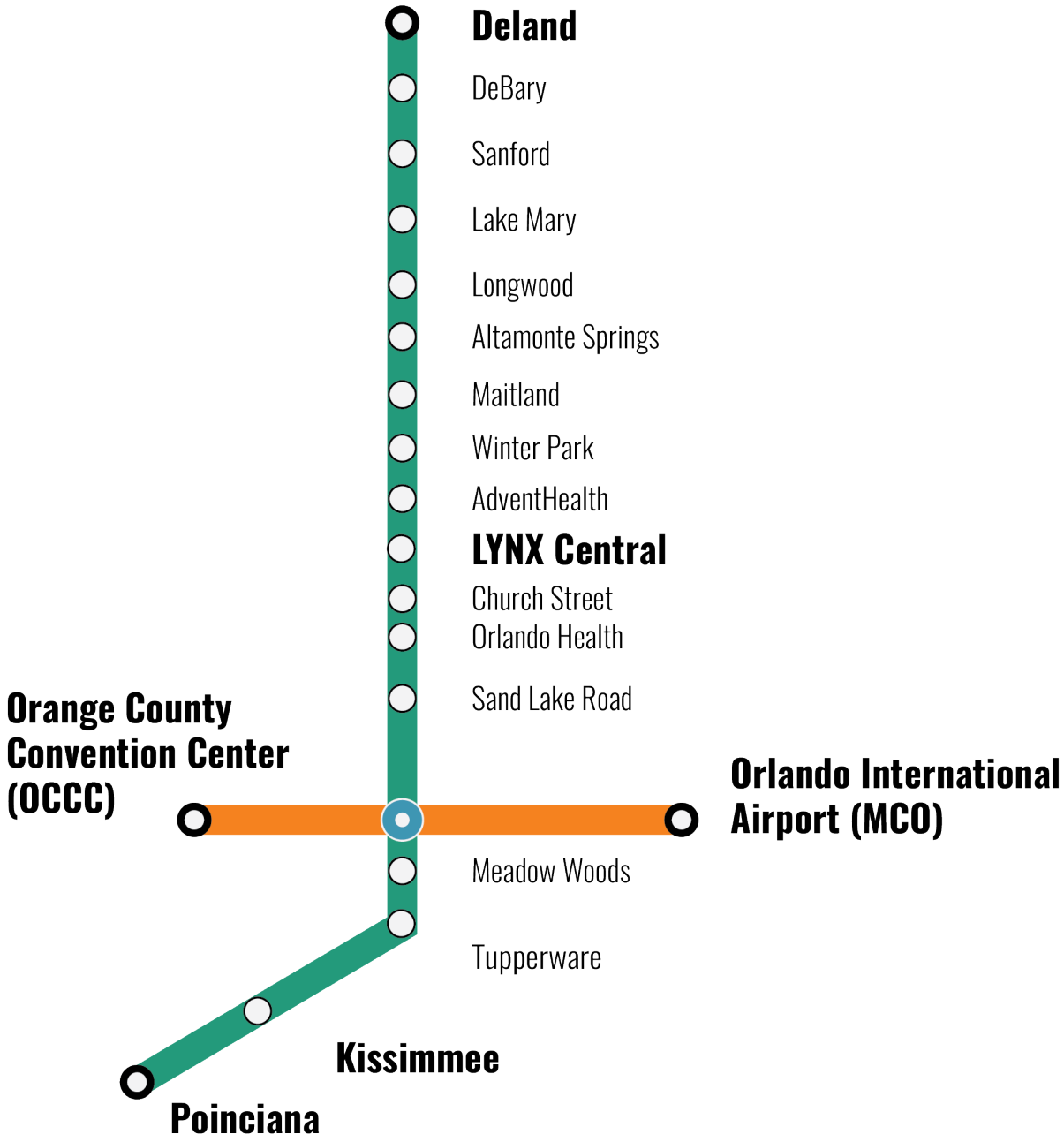
***Option 3B*:** This line of service will run east-west from MCO to the OCCC and provide connections from the airport to the Convention Center as well as Universal Parks and Resorts, including future planned workforce housing and the new Universal Epic theme park as well as other hotels, restaurants, and businesses in the area. This option would require new track and infrastructure as well as the acquisition and development of new right of way and a new station.

Figure 29: Sunshine Corridor Option 3A and 3B with Existing SunRail



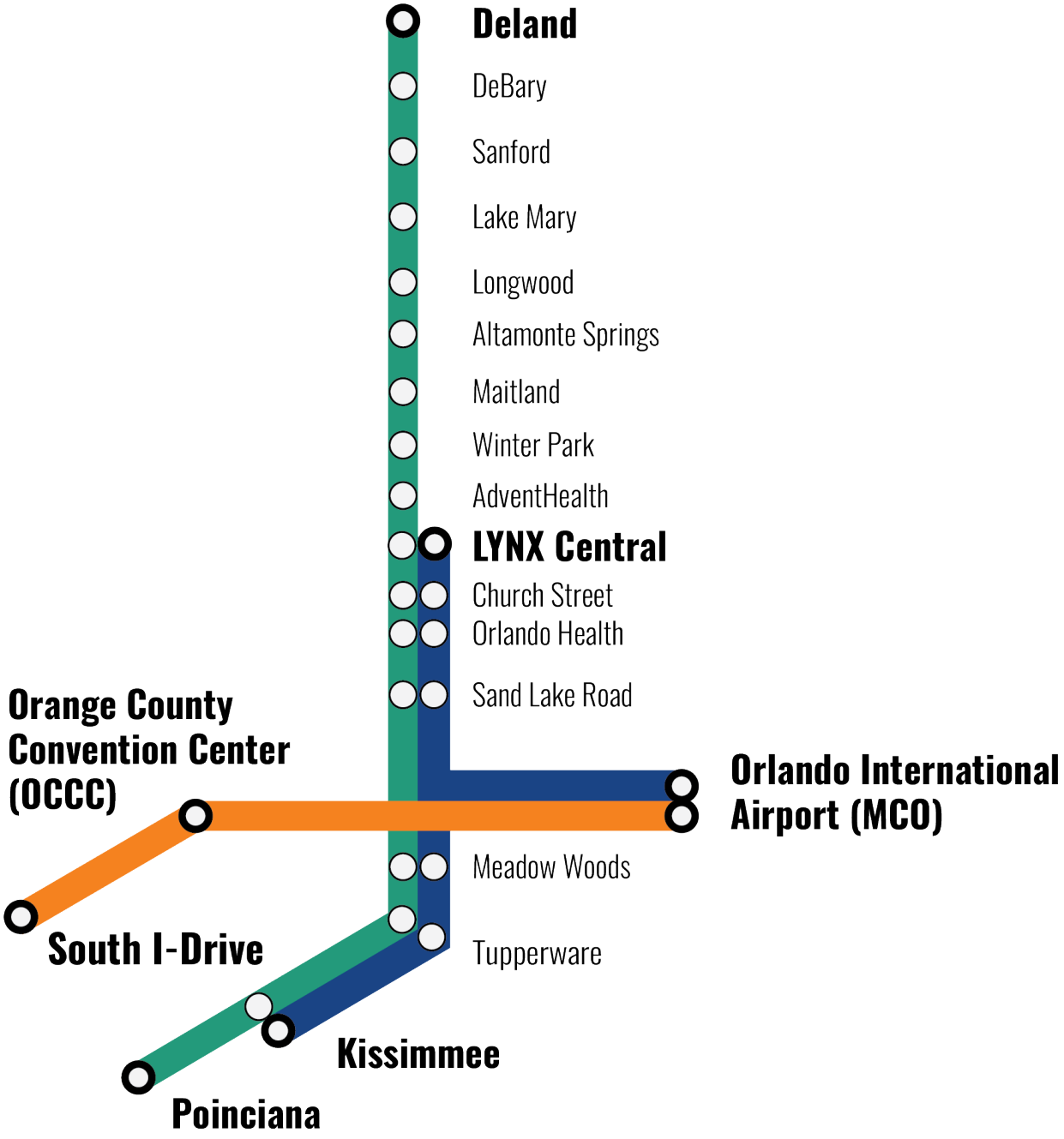
Option 3BT: An alternative to Option 3B, Option 3BT runs from MCO to the OCCC. However, it includes an interchange station at the intersection of the existing SunRail north-south corridor to allow passengers to transfer between the existing SunRail north-south corridor and the Sunshine Corridor. Depending on project phasing, 3A may not be recommended if this option is chosen. If Option 3A is not constructed, passengers must transfer at the interchange station to connect to the airport. In addition to the track, infrastructure, station, and right-of-way requirements in Option 3B, Option 3BT would also require the construction of a new interchange station, additional train sets, and operational costs to incorporate the new mainline stop into existing SunRail operations.

Figure 30: Option 3BT and Existing SunRail



Option 3C: Option 3C is an extension of the Sunshine Corridor, beginning at the future OCCC Station and ending near Interstate 4 and SID, which provides access to the I-Drive Entertainment District. Option 3C is dependent on the construction of Option 3B or 3BT. This option would require new track and infrastructure as well as the acquisition and development of new right of way and a new station.

Figure 31: Option 3C and Existing SunRail



Option 3D (Optional Extension): This option consists of a short extension of track connecting the SID Station to Disney Springs on the opposite side of Interstate 4. This option could either be constructed in addition to or instead of the SID station proposed in Option 3C.

Figure 32: Option 3D and Existing SunRail

Table 8: Summary of Existing and Proposed Services

	Span of Service	Est. Operating Days	Peak Frequency (min)
Existing	Monday – Friday, 5:00 am – 11:30 pm	255	30
Proposed Enhanced Service	Every Day, 24 Hours/Day	359	15

6.1.4 Trackless Tram

A Trackless Tram System (TTS), also known as Autonomous Rail Rapid Transit (ART), is a developing mode of transit that involves battery-powered, rubber-tired transit vehicles operating in dedicated right-of-way, like Bus Rapid Transit, but with stabilization and vehicle designs that are similar in appearance and ride quality to electric trams or light rail vehicles. The first Trackless Tram system was developed in China in 2016.[46]

Vehicles

Trackless Trams are biarticulated vehicles with three carriages and are about 100 feet long. They operate on rubber tires and are powered by on-board lithium-ion batteries. Their maximum operating speed is approximately 43 miles per hour. Trackless Tram carriages are low-floor with multiple entry doors, like the configuration of light rail vehicles, and they have a capacity of 250 to 300 passengers.[47] The typical turning radius of the vehicle is about 50 feet, slightly larger than the 40 to 45 feet needed for 60-foot articulated buses commonly used in BRT systems, but less than the average light rail vehicle turning radius of 82 feet.[48] Vehicles are stabilized using low-set axles and hydraulic systems that limit sway and bounce, providing a smoother ride than typical buses.[49]

Vehicles are considerably heavier than articulated buses or light rail vehicles due to carrying large lithium-ion batteries on board. The vehicle typically weighs 56 tons when fully loaded with passengers, while an articulated bus typically weighs about 28 tons.[50] On-board lithium-ion batteries can be recharged quickly at platform-style overhead charging stations during operations and at the end of a line. Deep recharges are needed overnight at a vehicle storage depot. The vehicle's regenerative braking system also converts momentum into battery-stored energy.[51]

TTS are equipped with a built-in guidance system, which uses LiDAR optical technology to offer autonomously guided operation, however, all systems currently have vehicle operators on board.[52]

CRRC Corporation Limited (CRRC) is the sole manufacturer of Trackless Tram vehicles. CRRC is a Chinese state-owned company and one of the world's largest suppliers of rail transit vehicles.[53] Limited public information is available on vehicle costs. Vehicles used in pilot projects in Zhuzhou, China, and Stirling, Australia, were reported to cost approximately $2.2 million each.[54,55]

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[46] Newman, P., Hargroves, K., Davies-Slate, S., Conley, D., Verschuer, M., Mouritz, M. and Yangka, D. (2019). The Trackless Tram: Is It the Transit and City Shaping Catalyst We Have Been Waiting for? Journal of Transportation Technologies, 9, 31-55. **https://doi.org/10.4236/jtts.2019.91003**
[47] Ibid.
[48] National Association of City Transportation Officials. (2016). **Transit Street Design Guide**.
[49] Newman, P., Hargroves, K., Davies-Slate, S., Conley, D., Verschuer, M., Mouritz, M. and Yangka, D. (2019). The Trackless Tram: Is It the Transit and City Shaping Catalyst We Have Been Waiting for? Journal of Transportation Technologies, 9, 31-55. **https://doi.org/10.4236/jtts.2019.91003**
[50] Reynolds, J., Pham, D., and Currie, G. (2021). **Do Trackless trams need stronger roads? – the "weight" of evidence.** Australasian Transport Research Forum 2021 Proceedings
[51] Newman, P., Hargroves, K., Davies-Slate, S., Conley, D., Verschuer, M., Mouritz, M. and Yangka, D. (2019). The Trackless Tram: Is It the Transit and City Shaping Catalyst We Have Been Waiting for? Journal of Transportation Technologies, 9, 31-55. **https://doi.org/10.4236/jtts.2019.91003**
[52] Ibid.
[53] CRRC Zhuzhou Institute Co., LTD (2024) **Autonomousrail Rapid Transit (ART) Industry**
[54] China Daily (2017). **Chinese rail maker develops smart bus.**
[55] Dietsch, Jake. (2023). **City of Stirling begins trials of trackless trams with dream route from Glendalough to Scarborough Beach. The West Australian.**

Operations and Infrastructure Requirements

Figure 33: Trackless Tram

TTS are intended to operate in dedicated lanes (**Figure 33**) with specialized painted pavement markings, including a painted guideline, to assist the vehicle in navigating autonomously using LiDAR technology, however no vehicles are currently operated autonomously.[56]

Recommended station spacing is approximately ¼ to ½ mile apart, similar to BRT or light rail systems. Trackless Trams use modular stations that include ticketing machines, shelters, seating, and recharging facilities. Stations would be similar in design and cost to those used in light rail or BRT systems. A cost unique to TTS is specialized charging infrastructure. High-capacity charging infrastructure is required at stations, line termini, and storage depots to support battery-powered vehicles.[57]

Trackless Trams offer flexibility in routing over light rail systems and reduced construction costs, as they do not require rails or fixed guideways. They can also be diverted around roadway blockages or obstructions.[58] Proponents of Trackless Trams cite the relatively limited infrastructure requirements and routing flexibility as the major benefit of this system over light rail, estimating that constructing a Trackless Tram system may be one-third of the cost per kilometer of constructing a light rail system in an urban environment.[59]

Despite not requiring roadway excavation for tracks, the heavy weight of Trackless Tram vehicles will likely require rebuilding or reinforcing existing roadways to manage the additional load. A 2021 study modeled the potential impacts of Trackless Tram vehicles on standard roadways in Australia. The study concluded that a Trackless Tram vehicle operating in its own lane at a medium service frequency is "likely to substantially increase the loading that a road pavement might be subject to over its design life compared to typical traffic roads." The study authors recommended that in most instances roadways will need to be rebuilt or reinforced to accommodate Trackless Tram vehicles. The study also investigated roadway conditions in Zhuzhou, China, where the first Trackless Tram system was developed in 2016. Three years after implementation, 'rutting' or permanent depressions were observed in the roadway along the route. The roadway was not reinforced before the TTS began operation.[60]

[56] Newman, P., Hargroves, K., Davies-Slate, S., Conley, D., Verschuer, M., Mouritz, M. and Yangka, D. (2019) The Trackless Tram: Is It the Transit and City Shaping Catalyst We Have Been Waiting for? Journal of Transportation Technologies, 9, 31-55. https://doi.org/10.4236/jtts.2019.91003
[57] Ibid.
[58] Ibid.
[59] Newman, P., Mouritz,M., Davies-Slate, S., Jones, E., Hargroves, K., Sharma, R. and Adams, D. (2018). Delivering Integrated Transit, Land Development and Finance – a Guide and Manual: with Application to Trackless Trams. Sustainable Built Environment National Research Centre (SBEnrc), Australia.
[60] Reynolds, J., Pham, D., and Currie, G. (2021) Do Trackless trams need stronger roads? – the "weight" of evidence Australasian Transport Research Forum 2021 Proceedings

Example Systems

There are very few examples of Trackless Tram systems in operation. Currently, the only active TTS systems are in China, including a 4-mile route in the city of Zhuzhou and others in the cities of Suzhou, Yibin, and Harbin.[61] Trackless Tram systems were tested in Doha, Qatar in advance of the 2022 World Cup, but the system was not implemented. Abu Dhabi, United Arab Emirates, and Kuching City, Malaysia were testing Trackless Tram technology in 2023.[62] The City of Stirling, Australia, is currently pursuing a pilot of Trackless Tram along a 4.3-mile route in partnership with tram manufacturer CRRC. Notably, this demonstration project uses magnetic nails embedded in the roadway to aid in navigation.[63]

Risk Considerations

Potential risks associated with implementing TTS include uncertainty around construction, operations, and maintenance costs as well as operational and procurement challenges. Due to the limited number of Trackless Tram systems in operation, there is minimal data on capital construction costs, charging infrastructure needs and other operational requirements. This is a relatively new technology that has not been tested in North or South America.

The costs associated with maintaining dedicated lanes with signal priority and painted guideways would likely be on the same order of magnitude of a BRT system, however, TTS also includes the additional costs of proprietary vehicles, high-capacity battery charging infrastructure at stations and depots, and pavement reinforcement or reconstruction along the route to support its heavy vehicles.

Operational challenges include securing the dedicated right-of-way required for support vehicles using LiDAR navigation systems. Vehicle drivers would be required as Trackless Trams are not yet able to operate autonomously, even within dedicated lanes. Additionally, operating biarticulated vehicles that require large turn radii may be challenging in Central Florida's highly urbanized environment.

There is not enough information available on this technology at this time to develop an operations plan.

Table 9: TCAR Study Alternatives Summary

Alternative	Description	Planning Sources	Local Example
Enhanced Bus	Traditional bus service with limited stops and some premium amenities.	Existing LYNX system and the Orange County Transportation Initiative (2022)	Route 350 Commuter Express
Bus Rapid Transit	Premium bus transit with dedicated lanes, TSP, level-boarding and other service, vehicle, and station amenities.	Existing LYNX system, the Orange County Transportation Initiative (2022), and SR 436 Transit Corridor Study	LYNX LYMMO
Commuter Rail	Passenger rail service that serves regional transportation needs with premium transit service.	SunRail existing services, SunRail Extension to OIA PD&E Study (2018), ongoing draft	SunRail

[61] CRRC Zhuzhou Institute Co., LTD (2024) Autonomousrail Rapid Transit (ART) Industry
[62] Buch, E. (2023) ART: Another rail-less tramway in China. **Urban Transport Magazine.**
[63] City of Stirling (2023) Trackless Tram trial underway.

Alternative	Description	Planning Sources	Local Example
		technical analysis, and the Orange County Transportation Initiative (2022)	
Trackless Tram	High-capacity, rubber-tire transit designed to operate autonomously in a dedicated right-of-way.	Multiple research sources	N/A

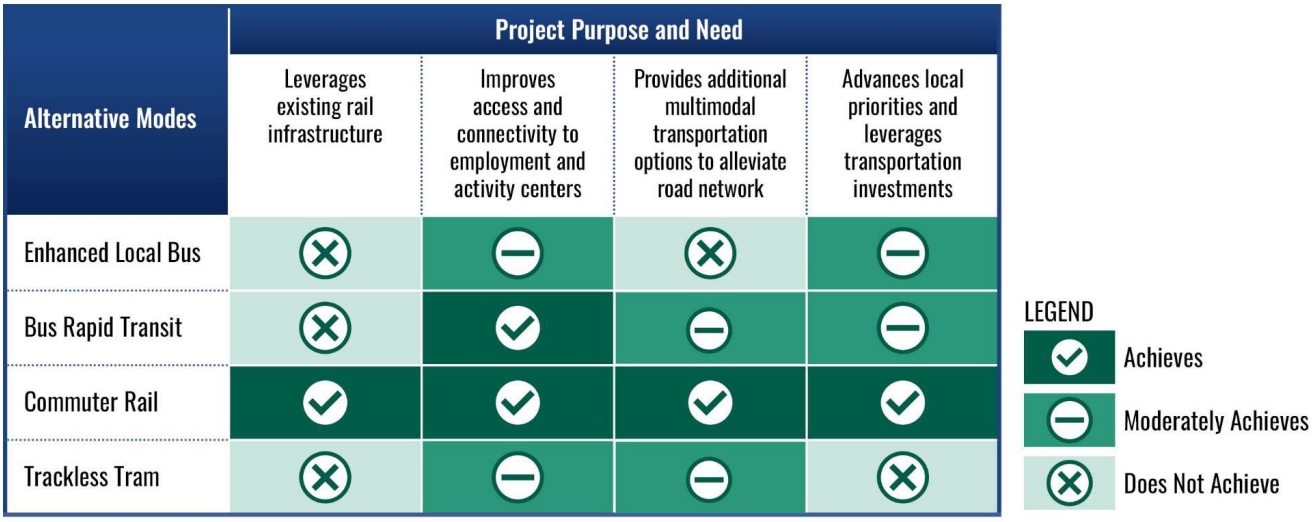
6.2 Alternatives Screening

The first step in the two-step screening process it a qualitative analysis of the modes and their ability to meet the project purpose and needs. This analysis was based on details from the operation plans, estimated infrastructure needs and other investments, local initiatives, and planning priorities. Four parameters were developed from the purpose and need:

- Leverages existing rail infrastructure
- Improves access and connectivity to employment and activity centers
- Provides new multimodal options that alleviate pressure on the existing road network
- Advances local transportation priorities and leverages investments

The results of the preliminary screening are shown in **Figure 34** and are described in the following sections.

Figure 34: TCAR Alternatives Analysis Screening Results



6.2.1 Enhanced Local Bus

Leverages Existing Rail Infrastructure

Enhanced local bus service is solely focused on improving existing bus operations. This alternative does not meet the purpose of the Sunshine Corridor project which is focused on leveraging existing rail infrastructure to expand premium transit service options.

Improve Access and Connectivity

Access to employment and activity centers defined by the project is moderately effective with the enhanced local bus option. Local enhanced bus options between downtown Orlando and the OCCC/Disney Springs increase frequency but do not provide new access as it depends on existing routes and stops and there are no recommendations for service between downtown Orlando and the Orlando International Airport. However, there is one new enhanced local bus route proposed, which is recommended in the Orange County 2022 Transportation initiative – a new route on SR 528, a limited access freeway. The service will improve the local bus service between the airport and the convention center area with a direct connection that will operate in mixed traffic.

Road Capacity

Enhanced local bus does not directly alleviate road capacity issues. This alternative would result in an increased number of buses operating on the roadway, although it would likely be a minimal increase. If enhanced bus service is successful in attracting new riders, it can result in fewer single occupancy vehicles on roadways. Enhanced bus service is targeted at local commuters and would not necessarily include amenities that would accommodate tourists, particularly vehicles with room for baggage. As this mode is unlikely to promote a large-scale shift in tourist travel from single occupant vehicles to transit, this alternative would not meaningfully help to relieve road capacity issues.

Local Priorities & Transportation Investment

Enhanced local bus addresses some transit priorities noted in the Orange County 2022 Transportation Initiative. More frequent local bus service would improve the connection between the Orlando International Airport and the Orange County Convention Center. Current Orange County planning studies assume the implementation of SunRail commuter rail service between downtown Orlando and the Orlando International Airport, and therefore do not recommend new traditional transit investment in that connection.

Conclusions

Preliminary screening resulted in the removal of the Express Bus Alternative from our consideration for the subsequent alternative evaluation. Enhanced local bus is a valuable local priority that can be used to improve transit service quality, frequency, and reliability without the costs associated with other premium transit options. These services can connect with commuter rail service, expanding its reach and effectiveness and should be considered as complimentary to commuter rail expansion. However, it does not meet the project purpose and needs, and it would not likely result in an increase in the market served.

6.2.2 Bus Rapid Transit

Leverages Existing Rail Infrastructure

Bus Rapid Transit (BRT) typically operates within existing roadway right-of-way (ROW). It does not meet the purpose of the Sunshine Corridor project which is focused on leveraging existing rail infrastructure to expand premium transit service options.

Improve Access and Connectivity

BRT increases access to employment and activity centers with frequent, limited stop service between downtown and the airport, OCCC/Destination Parkway, and Disney Springs. It has the potential to reach new markets by attracting local choice riders and tourists as a premium transit choice if it is successfully marketed, proven reliable, and if the necessary investments are made to provide quality amenities and service.

Road Capacity

BRT requires extensive infrastructure investment. This alternative will involve creating dedicated transit lanes via lane repurposing on high volume arterials, therefore reducing roadway capacity. Without access to dedicated lanes, transit vehicles are subject to existing traffic congestion and associated delays, making it difficult to provide reliable service. BRT does have potential to reduce the number of single occupancy vehicle trips if successful, alleviating congestion.

Local Priorities & Transportation Investment

Bus Rapid Transit addresses some local transit priorities noted in the Orange County 2022 Transportation Initiative and the LYNX SR 436 BRT Study (2019). The LYNX LYMMO service in downtown Orlando is an example of existing Bus Rapid Transit. Developed in 1997[64], LYMMO routes operate in dedicated lanes that include transit signal priority.

Conclusions

Bus rapid transit was removed from consideration for the next phase of evaluation as a result of the preliminary screening. BRT could appeal to non-traditional transit riders; however, it is less likely to attract area visitors. While bus rapid transit can be an attractive and efficient transit alternative, it will require significant capital investment and lane repurposing on several high-capacity arterial corridors which can be highly challenging to accomplish.

6.2.3 Commuter Rail

Leverages Existing Rail Infrastructure

Commuter rail does leverage existing and planned rail infrastructure. Commuter rail connects to the existing North-South SunRail corridor and uses the Orlando International Airport Intermodal Center as well as existing rail infrastructure and facilities.

[64] LYMMO History / Timeline. (2024). https://www.golynx.com/plan-trip/riding-lynx/lymmo/lymmo-history.stml. LYNX.

Improve Access and Connectivity

Commuter rail provides new connections between downtown Orlando and Kissimmee to the airport via rail and to the OCCC, South I-Drive, and Disney Springs. It will also connect these locations to the existing SunRail north-south corridor. Commuter rail is poised to connect to both air travel and intercity rail travel, providing valuable modal connections and access for new groups that would otherwise not have the opportunity to use transit for their trips.

Road Capacity

Commuter rail operates on facilities that are separate from roadways and will not require use of road capacity. A transit alternative that operates on an entirely separate right-of-way would help to alleviate existing roadway capacity issues.

Local Priorities & Transportation Investment

SunRail expansion is a local public and private sector priority. The commuter rail connection to MCO (Option 3A) is presumed in the Orange County 2022 Transportation Initiative. Public engagement for this TCAR study showed overwhelming support for expanding commuter rail. Commuter rail incorporates local priorities and provides an opportunity to leverage promised investment from both Brightline and local private partners to provide a portion of capital and operations & maintenance costs.

Conclusions

Commuter rail was chosen as a viable option and was advanced to the next phase of evaluation. It was the only option to meet the purpose and needs as described for this project.

6.2.4 Trackless Tram

Leverages Existing Rail Infrastructure

Trackless Tram would operate on dedicated lanes within the right-of-way of existing roadways. It does not meet the purpose of the Sunshine Corridor project which is focused on leveraging existing rail infrastructure to expand premium transit service options.

Improve Access and Connectivity

Access to employment and activity centers defined by the project is only moderately effective with the trackless tram option. Trackless tram would have similar routes as existing local bus service, but it is unlikely that operations would be feasible on SR 528. Due to the current limitations of the technology and extensive infrastructure requirements, of the four options, it would provide the most limited access to the project activity centers and employment.

Road Capacity

Trackless tram will require extensive dedicated infrastructure. This will involve creating dedicated lanes via lane repurposing for all new services – there is no option to run trackless tram in mixed traffic. Due to this limitation, trackless tram is not a viable option to alleviate existing congestion on the roadway network.

Local Priorities & Transportation Investment

Trackless tram is an untested mode of transportation in North America. It requires new technology and right-of-way to implement as well as costly vehicles. This mode does not provide substantial benefits when compared to existing premium transit options. In addition, vehicles and technology would have to be acquired from overseas manufacturers, further complicating procurement. This could lead to additional issues with product support and maintenance.

Conclusions

Preliminary screening resulted in the removal of the Trackless Tram Alternative from consideration for the subsequent alternative evaluation. It does not meet the project purpose and need and is an unproven technology that requires extensive infrastructure investment. Trackless tram could be considered in the future; however, it is recommended to start with a small corridor in a high-density area.

7 Recommended Alternative

Commuter rail was identified as the recommended alterative and was further developed as per the study evaluation factors (**Table 10**). There were several reasons for this:

- Commuter rail was the only option to meet all preliminary screening criteria
- Public support was determined through engagement efforts
- Commuter rail leverages planned investment in infrastructure and service
- Commuter rail is included in local and regional planning and visioning

Table 10: Commuter Rail Evaluation Factors

Factor	Description
Ridership Estimates	Ridership modeling was completed for all five Options using the FTA-approved STOPS modeling using four key travel markets: Central Florida commuters, air passengers, attraction attendees, and inter-city rail riders.
Costs	Rough order of magnitude cost estimates were developed for Options A-D. These considered construction costs (infrastructure and capital improvements), annual operations and maintenance costs, and right-of-way land acquisitions and easements costs.
Infrastructure Requirements	An inventory of required infrastructure was developed based on concept-level design for each of the options. These will be finalized in the next phase of study.
Safety	The level of safety was determined by the number of conflicts at intersections, entrances, and at-grade rail crossings.
Mobility & Connectivity	Connectivity to bus, BRT routes, shuttles, micromobility, and other passenger rail services was examined at a local and regional level by the number of connections, different options, and routes offered per day.
Land Use & Economic Development	Rail's land use was considered by the number of acres that are impacted either in close proximity to or directly in residential communities/neighborhoods. Support for economic development was three-fold: Job access, affordable housing access, and encouraging transit-oriented development.
Environmental Considerations	An environmental scan was conducted to identify potential effects and create a preliminary list of required permitting.

7.1 Travel Demand Forecasting

A travel demand forecasting analysis was conducted to develop ridership estimates for the commuter rail options identified to expand existing SunRail service to MCO, the OCCC, South I-Drive, and the Disney Springs area. This analysis was prepared as a supplementary study to the Sunshine Corridor TCAR Study.

7.1.1 Methodology

The five commuter rail options were evaluated using the FTA's Simplified Trips on Project Software (STOPS) for modeling ridership using transit to go to work and non-work trips. A summary of the rail operating conditions assumed for each option is shown in **Table 12**. All service options are assumed to operate 24-hours including the existing North-South SunRail service. The SunRail Northern Expansion to DeLand (scheduled to open in Summer 2024) was assumed to be in operation for these forecasts.

Four key travel markets were assumed to use the commuter rail services in the analysis:

- Commuters, comprising Central Florida residents making work and non-work trips on the SunRail system;
- Air passengers, comprising Central Florida residents and visitors traveling between MCO and their destination;
- Attraction attendees, comprising Central Florida residents and visitors traveling to/from selected theme park and their origin; and
- Inter-city rail riders, who use SunRail to connect with Brightline's service to MCO and potential destinations west of MCO.

The STOPS model baseline used 2019 (pre-pandemic) population, employment, and SunRail ridership levels and early-2020 LYNX services, which was consistent with FTA guidance at the time for their Capital Investment Grant program. One or more high-frequency LYNX circulators was assumed for last mile connections. Air passenger and attractions models were developed for this effort. Brightline intercity rail passenger estimates were not available. More information on the ridership models can be found in the *Existing and Future Conditions Technical Memorandum*. One-way end-to-end travel times for each option are shown in **Table 11**.

Table 11: Sunshine Corridor Option Travel Times

Option Link	One-way Travel Time
North/South SunRail	1 hour 40 minutes
MCO from LYNX Central Station	28 minutes
MCO from Kissimmee Station	21 minutes
MCO to OCCC Station	14 minutes
MCO to South I-Drive Station	24 minutes
MCO to Disney Springs Station	25 minutes

For Options 3A, 3B, 3C, and 3D, SunRail riders must make connections at the MCO Intermodal Center. For Option 3BT, which provides an interchange station at the intersection of the North-South and East-West lines, ridership was modeled from MCO to the OCCC, and it is assumed that Option 3A is not implemented.

Table 12: Assumed for Services for STOPS Model

Options	North/South SunRail (Poinciana to DeLand)	MCO Direct Connections from LYNX Central Station and Kissimmee	East-West SunRail Service
3A	30-min frequency in the AM/PM peak; 60-min frequency all other times	15-min frequency in midday; 30-min frequency all other times	None
3A+3B	30-min frequency in the AM/PM peak; 60-min frequency all other times	15-min frequency in midday; 30-min frequency all other times	MCO to OCCC; 15-min frequency all day
3BT	30-min frequency in the AM/PM peak; 60-min frequency all other times	None	MCO to OCCC; 15-min frequency all day
3A+3B+3C	30-min frequency in the AM/PM peak; 60-min frequency all other times	15-min frequency in midday; 30-min frequency all other times	MCO to South I-Drive; 15-min frequency all day
3A+3B+3D	30-min frequency in the AM/PM peak; 60-min frequency all other times	15-min frequency in midday; 30-min frequency all other times	MCO to Disney Springs; 15-min frequency all day

7.1.2 Ridership Estimates

Preliminary ridership estimates, provided in **Table 13** were generated for an estimated opening year of 2026 and horizon year of 2040. The estimates reflect ridership on all lines. Commuters comprised the majority of the ridership (75 – 85%) and air passenger and attraction-based travel comprised 10-15% each.

Table 13: Total Annual SunRail Boardings for the Sunshine Corridor Commuter Rail Options

Options	Service Limits	Total System Annual Ridership Opening Year 2026	Total System Annual Ridership Horizon Year 2040
3A	Existing SunRail to MCO	3,700,000	5,200,000
3A+3B	Existing SunRail to MCO to OCCC	4,400,000	6,400,000
3BT	MCO to OCCC	4,900,000	6,700,000
3A+3B+3C	Existing SunRail to MCO to OCCC to South I-Drive	5,400,000	7,900,000

Options	Service Limits	Total System Annual Ridership Opening Year 2026	Total System Annual Ridership Horizon Year 2040
3A+3B+3D	Existing SunRail to MCO to OCCC to Disney Springs	6,400,000	9,400,000

7.1.3 Conclusions

When comparing weekday services, the SunRail service provided by each alternative is at least triple the existing SunRail service. There are several factors that explain this:

1. All five options are assumed to operate 7-day/week service. SunRail currently operates on weekdays only (there are approximately 250-255 non-holiday weekdays per year).
2. The options represent a 100-150% increase in service, in terms of train-miles and train-hours.
3. Ridership reflects 2026 and 2040 projected population and employment growth.
4. Ridership estimates reflect riders using the entire system. For example, a rider traveling from to MCO from LYNX Central Station and then transferring to the East-West line constitutes two boardings.
5. Visitors and air passengers have a greater opportunity to use the Sunshine Corridor than the existing SunRail service which does not provide any connections to MCO currently.
6. All options assume the SunRail DeLand Station to be in service. This station is currently under construction with an estimated opening date in Summer of 2024.

The STOPS commuter model was baselined using pre-pandemic conditions. Like many transit services, SunRail continues to build back to pre-pandemic ridership numbers. For example, the most recent report to the National Transit Database (NTD) from 2022, showed SunRail's annual unlinked trips that year were 868,700[65] and, according to SunRail operating statistics, annual ridership for July 2022 – June 2023 was approximately 1,011,958.[66]

As the Sunshine Corridor ridership work was being finalized in late May of 2023, the FTA released guidance requiring ridership be baselined to post-pandemic conditions. Future study phases for the Sunshine Corridor will utilize the most current transit ridership and demographic data available.

In addition, the air travel and attractions models will need to be updated to reflect the most up-to-date information. For example, at the time that modeling was completed, Brightline service to MCO had not been implemented. And a new theme park, Universal Epic Universe, was still under construction. This project will also include workforce housing, as well as new ancillary businesses to support additional tourism and employment opportunities. The 20-acre residential site has transferred ownership from Universal Parks and Resorts to a non-profit established by the company, Housing for Tomorrow, and will be developed by Wendover Housing Partners.[67] It is therefore expected that future ridership models will result in higher estimates for the same time periods.

7.2 Costs

[65] National Transit Database. (2023). Central Florida Commuter Rail. Federal Transit Administration.
[66] SunRail Train Information. (2023). Train Information | SunRail.
[67] Housing Finance. (2021). Universal Picks Developer to Build Major Affordable Housing Development. Affordable Housing Finance.

High-level preliminary capital and estimated annual operation and maintenance (O&M) costs were developed for the Sunshine Corridor Options 3A, 3B, and 3C/3D, based on concept-level design. An estimate for the 3BT proposed interchange station was provided to the Department by an external partner, however, other costs for the option have not been estimated. All costs as summarized in **Table 14** are subject to change and will be reevaluated in future phases of study.

Capital costs provided represent costs for construction of each option individually and include estimated costs of construction, right of way acquisition, and trainsets. Estimated annual O&M costs for option 3A include costs associated with increased frequency and headways on the existing SunRail North-South line. Estimated annual O&M costs for 3C include costs for 3B and 3C. A separate technical memorandum defining the assumptions and calculations used to prepare these estimates will be published separately from the Sunshine Corridor TCAR study.

Table 14: Preliminary Cost Estimates

Commuter Rail Connection Options		Estimated Capital Costs	Estimated Annual O&M Costs	Notes
3A	Existing SunRail to MCO	< $400 M	$41.5 M	The existing North-South has $66.6 M annual operating cost; O&M Incremental to N-S O&M and includes increased frequency and headways on the N-S line.
3B	OCCC to MCO	$1.75 B - $2.4 B	$23.2 M	O&M costs are for 3B only.
3BT	OCCC to MCO with Interchange Station to connect to North-South SunRail Line	$29 M - $39 M* (*station only)	To be developed by others	This option is Alternative to 3B with transfer station at the existing N-S SunRail line versus at MCO; assumes Option 3A is not constructed. Station Cost provided by others.
3C	South I-Drive to OCCC	$1.22 B - $1.74 B	$32.8 M	O&M costs are for 3B + 3C.
3D	Disney Springs to South I-Drive	$173 M - $247 M	$33.0 M	O&M costs are for 3B + 3C + 3D. Capital cost includes the cost of an additional train set ($16 M) to operate to Disney Springs.

7.3 Infrastructure Requirements

A set of preliminary infrastructure needs were developed separately from this study based on concept-level design and were used to inform the cost capital cost estimates described in the previous section. A summary of these is

located in **Table 15**. A more complete list of infrastructure requirements will be determined in the project development phase, following surveying, design, research, and value engineering evaluations.

Table 15: Preliminary Infrastructure Requirements

Option Segments	Crossings (elevated v. at-grade)	Rolling Stock (2-Car Stadler DMU, 268 ft)	Track Miles	Length (mi)
3A (Existing SunRail to MCO)	At-Grade: • Brightline VMF • Canal Road • Boggy Creek • 5 Private Crossings Elevated: • MCO Entrance	5 additional trains + 2 spares	41.2	20.6
3B (MCO to OCCC)	At-Grade: • Canal Road • Boggy Creek Road • Wetherbee Road • 5 Private Crossings Elevated: • MCO Entrance • Orange Avenue • Strates Spur • Airport Spur • CFRC Mainline Elevated Guideway: • West of US-441 to Universal	4 additional trains + 2 spares	22.2	11.1
3C (OCCC to South I-Drive)	No Crossings, 97% grade separated	1 additional train	34.4	17.2
3D (OCCC to Disney)	No Crossings, completely grade separated	1 additional train	35.0	17.5

7.4 Safety

The safety of transit is characterized by rider safety, having components of onboard safety and first mile/last mile (FMLM) safety. In this context, “safety” refers to traffic safety rather than passenger security. In comparison to passenger vehicle travel, public transit poses a relatively low risk to riders once onboard the vehicle.

The first metric used is the number of conflicts, or the number of locations where transit vehicles cross paths with passenger vehicles. This is a commonly applied surrogate safety measure that translates to the potential for crashes. A summary of conflicts and the crash potential of commuter rail is in **Table 16**. The number of conflicts is the number of at-grade crossings. However, the number of conflicts alone does not characterize the crash potential. Signalized intersections, while considered only one conflict, have a higher crash potential due to the number of

individual conflict points. For example, a transit vehicle traveling through or turning left at an intersection will encounter up to eight separate conflict points. Conversely, an at-grade crossing presents only two individual conflict points for the transit vehicle.

In addition to the number of conflicts, operating characteristics contribute to the conflict severity. Commuter rail operates in dedicated right-of-way with gate-controlled at-grade crossings. Therefore, there is minimal crash potential associated with the commuter rail.

Table 16: Conflict Assessment and Crash Potential

Number of Conflicts	Type	Traffic Conditions	Transit Priority	Crash Potential per Conflict
48	At-Grade Crossings	Dedicated ROW	Yes	Low

The five-year crash history (2019-2023) was also evaluated. Crash data was obtained from the Federal Railroad Administration Safety & Data Reporting system and is summarized in **Table 17**. Commuter rail will largely be new construction; therefore, a complete crash history cannot be identified. However, Option 3A includes the existing SunRail corridor from LYNX Central Station to Kissimmee Station. During the five-year timeframe considered, a total of 13 crashes occurred across the 39 existing at-grade crossings along this section. The result is 0.33 crashes per crossing, or 0.07 crashes per crossing per year. While the number of crashes is low, the severity is higher with fatal and serious injury crashes accounting for 54% of the total. There will be approximately nine additional at-grade crossings along the Option 3B section, however, five of those crossings are at-grade private crossings that will have minimal crash probability. Therefore, only four crossings were considered to increase the likelihood of crashes. Options 3C and 3D will be completely grade-separated. Based on this, an estimate of less than 1 additional crash may occur per year on the Option 3B segment.

Table 17: Crash History Summary

Section	Length (mi)	2019-2023 Crash History		
		Total	Fatal / Serious Injury	Crashes per Mile
Phase 3A	20.6	13	7	0.63
Phase 3B*	11.1	1	-	0.12
Phase 3C*	17.2	0	-	-
Phase 3D*	17.5	0	-	-
Total	50.3	19	7	-

**Potential crashes estimated based on number of at-grade crossings*

In summary, commuter rail is expected to be a safer mode of travel in comparison to passenger vehicle travel. Commuter rail has a low crash potential based on the number of conflicts and operating characteristics. The crash history along the existing SunRail corridor is also relatively low. Crashes that do occur at at-grade crossings tend to be higher in severity, although these crashes are preventable through education and compliance with controlled crossings. We recommend that four-barrier gated crossings be implemented at all public at-grade crossings to increase safety. The design of crossings will be finalized in a later phase of study.

7.5 Mobility & Connectivity

As part of the TCAR study, an examination of current transportation networks and existing and future needs was conducted, including a transit market analysis. The concentration of employment and tourism makes access to and within the study area a critical need for those who work at MCO, theme parks, hotels, shops, restaurants and other supporting businesses. The Sunshine Corridor provides an opportunity to create new transit connections, develop new modes, attract new local riders as well as visitors, and provide shorter transit travel times for commuters. More details can be found in the *Existing and Future Conditions Technical Memorandum*.

New Transit Connections

Currently there is no SunRail commuter rail connection to MCO or the area attractions included in this study. The activity centers served by the Sunshine Corridor include some of the area's highest employment centers and, as major new investments such as Universal's Epic Universe are constructed, the area will continue to grow as a critical employment center further necessitating a need for affordable, efficient transportation options in the area. The Sunshine Corridor will also provide connections to area public and private transportation systems including existing and planned LYNX bus, express bus, and BRT services.

New Modes

The Sunshine Corridor provides an opportunity to connect commuter rail to air travel and intercity rail at the MCO Intermodal Center. These options will provide new mode choices to potential riders who would otherwise not have an opportunity to use transit for their trips.

Reduced Transit Times

For commuters who currently take transit, travel times could be significantly reduced. **Table 18** shows a comparison of one-way travel times between proposed stops and the associated times using existing bus transit.

Table 18: Comparison of Transit Travel Times

Options	From/To	Proposed Rail Travel Time	Current Travel Time (2024)
3A	Downtown Orlando to MCO	28 min	35 min* - 47 min
	Downtown Kissimmee to MCO	21 min	37 min
3A+3B	Downtown Orlando to MCO	28 min	35 min* - 47 min
	Downtown Kissimmee to MCO	21 min	37 min
	OCCC to MCO	14 min	41 min
3BT	Downtown Orlando to MCO	29 min*	35 min* - 47 min
	Downtown Kissimmee to MCO	27 min*	37 min
	OCCC to MCO	16 min	41 min
3A+3B+3C / 3A+3B+3D	Downtown Orlando to MCO	28 min	35 min* - 47 min
	Downtown Kissimmee to MCO	21 min	37 min
	South I-Drive or Disney Springs to MCO	24-25 min	70 min^

**Does not include transfer time; ^Several private transit options are available as alternatives to transit*

7.6 Land Use & Economic Development

During the Sunshine Corridor TCAR process, study area current and future land use was examined, and an assessment of the corridor's future conditions and need was conducted. The Sunshine Corridor will support economic growth by encouraging commercial development at and around stations and by providing connections to area employment via transit. Transit-oriented development (TOD) around commuter rail stations is a major aim for commuter rail service development that has been found to encourage growth of knowledge, office, and healthcare economic groups.[68] In addition, the proposed Sunshine Corridor alignment and station locations support regional visioning, the Orange County's Infill Master Plan, and investment in the Airport Industrial Park Orlando and Gateway Commons active Developments of Regional Impact. More details can be found in the *Existing and Future Conditions Technical Memorandum*.

7.7 Environmental Considerations

The Sunshine Corridor TCAR Study included a high-level environmental scan reviewing soils, land use, wetlands and waters, and protected species within the study area. As the area is highly developed, planned construction is generally expected to be less impactful, however, a more detailed examination is necessary. The result of the environmental scan was a list of potential permit requirements and a database of relevant environmental and land use data to complement the next phase of study, which will also require field investigations and ETDM screening. Further information can be found in the *Environmental Scan Technical Memorandum*.

8 Public and Stakeholder Engagement

Public involvement is an important aspect of any transportation improvement project. It is essential to ensure that the community is aware of transportation investments and how the proposed project improvements are designed to support the community and enhance the overall quality of life for all. This section of the report provides an overview of the public involvement and stakeholder participation activities conducted throughout the study process to engage stakeholders, share project information, gather feedback, and build an understanding of the Sunshine Corridor project and TCAR Study process.

8.1 Public Involvement Plan

The public outreach and stakeholder engagement activities for the Sunshine Corridor TCAR Study were guided by the Public Involvement Plan (PIP) developed at the commencement of the study. The public and stakeholder engagement strategy also took into consideration the ongoing dialogue among local and state agency leaders, and other project partners, regarding the development of the Sunshine Corridor.

The Sunshine Corridor TCAR Study PIP is a living document that identifies outreach techniques, communication tools, and best practices for public involvement and community engagement. It also outlines recommended strategies for gathering and documenting stakeholder feedback. The Sunshine Corridor TCAR Study PIP establishes

[68] Nelson, Arthur C (2017). Commuter Rail Transit and Economic Development. https://ppms.trec.pdx.edu/media/project_files/Commuter_Rail_Transit_and_Economic_Development_xeRs4uw.pdf.

the basis for the outreach strategy and defines the primary public engagement activities conducted to align with the needs and interests of the stakeholders and communities affected by the proposed transportation improvements. The PIP is contained in the *Public Engagement Technical Memorandum*.

8.2 Project Communications and Coordination

8.2.1 Stakeholder Identification

Understanding the diverse and multiple audiences that may be interested in or affected by the project is an important step in identifying the communication tools and techniques that best serve this specific project.

Upon commencement of the study, a comprehensive database of potential stakeholders in the project study area was developed. The Stakeholder Database includes government agencies, planning and civic organizations, neighborhoods, and individuals who may be affected by or have an interest in the proposed transportation improvements. **Figure 35** depicts the various stakeholder groups considered in the development of the PIP. The Stakeholder Database contains approximately 300 stakeholders, including agency representatives, elected officials, and public participants.

Figure 35: Stakeholder Groups

8.2.2 Sunshine Corridor Working Group

During the initial Sunshine Corridor project planning, before the commencement of the TCAR Study, a group of stakeholders was assembled to provide input on the study processes that would be used to develop and evaluate the Sunshine Corridor project. This group, known as the Sunshine Corridor Working Group, represents nearly 13 organizations, which have an interest and/or role in the development of the Sunshine Corridor project. The working group was organized to review project materials and provide feedback regarding the best path forward for developing and implementing the Sunshine Corridor project. The agencies and local partners were provided with a virtual platform to share ideas,

Figure 36: Brightline Maintenance Facility - Sunshine Corridor Working Group Bus Tour (August 2022)

questions, and concerns while discussing benefits and/or possible challenges within the proposed project as expressed by constituents, staff, or industry subject matter experts.

The Sunshine Corridor Working Group has been meeting virtually, initially bi-monthly, then monthly, since May 2022, to share project updates, discuss project corridor conditions, review project components such as potential ridership, estimated costs, potential grant funding programs, and other related projects and coordination. Approximately 70 people to date have participated in at least one, or more, of the 33 Sunshine Corridor Working Group meetings in any of the three sub-groups: the Technical Working Group, Policy Working Group, or the Steering Committee.

The Sunshine Corridor Working Group held two in-person meetings which included a bus tour of the Sunshine Corridor proposed project area in August 2022. The tour culminated with a tour of the new Brightline intercity passenger rail maintenance facility. The second meeting was conducted as a work session in November 2022.

The agencies and organizations, either directly or through consultant support, which have participated to date as part of the Sunshine Corridor Working Group, include the following.

- Brightline
- City of Orlando
- Disney
- FDOT Central Office
- FDOT Districts 5 and 7
- Florida East Coast Railroad
- Greater Orlando Airport Authority
- Orange County Convention Center
- Orange County
- Osceola County
- Seminole County
- SunRail
- Universal Orlando Parks and Resorts
- Volusia County

8.2.3 Project Communications and Coordination

A variety of outreach tools and collateral were utilized to engage the public and share information about the TCAR Study. An identity for the project was established with project branding, a logo, and a project website. Using consistent project branding aids in recognizing project information, especially as project materials are distributed throughout the community. The project logo is shown in **Figure 37.**

Figure 37: Sunshine Corridor Project Logo

Multiple forms of communication and engagement were considered as part of the TCAR Study public and stakeholder engagement strategy as shown in **Figure 39**. A project handout, shown in **Figure 38**, containing an overview of the project study, was developed, and distributed at the public events. Additionally, a list of Frequently Asked Questions (FAQs) was developed and is accessible through the project website/StoryMap, described in the following section.

Figure 39: Public and Stakeholder Outreach Strategy

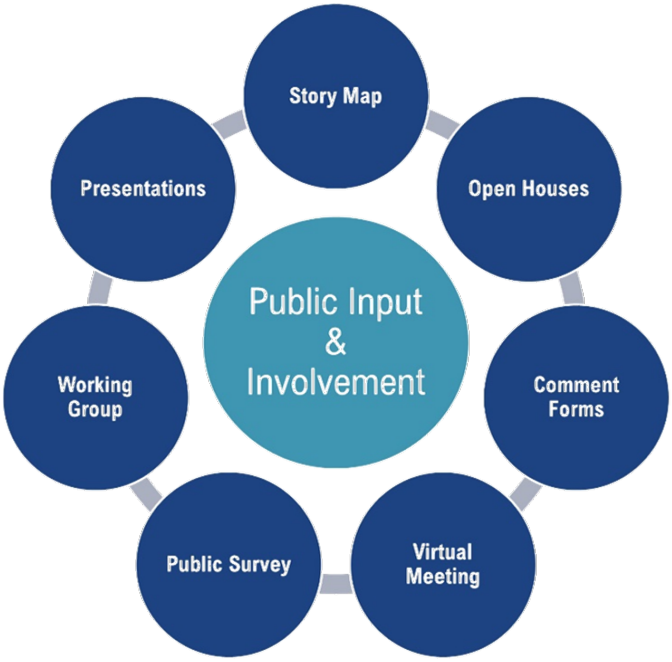
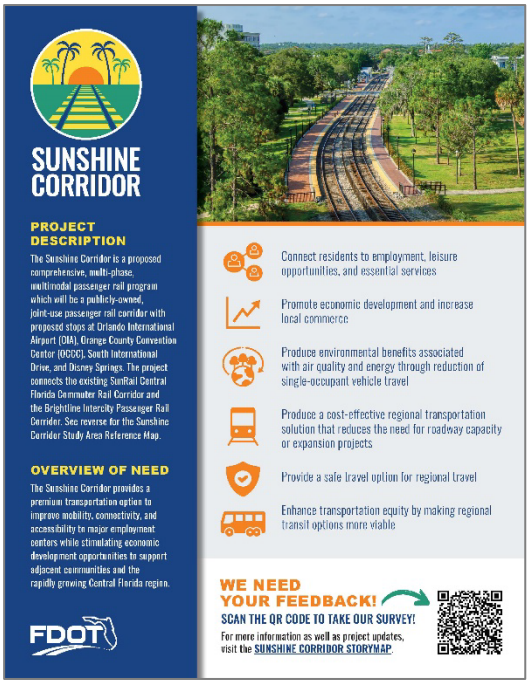


Figure 38: TCAR Study Project Flyer



Agency Coordination

Through the Sunshine Corridor Working Group, various components of the Sunshine Corridor project development and TCAR Study process were reviewed and vetted with local and state agency representations and public officials. Periodic project updates to the Orange County Commission, the City of Orlando, and the Central Florida Commuter Rail Commission (CFCRC), were delivered by the FDOT project management team and project consultant team throughout the study process. Additionally, project team members also coordinated with LYNX (Central Florida Regional Transportation Agency) executive leadership and transit planning staff to review the local bus network and connectivity with the proposed SunRail expansion.

At the commencement of the TCAR Study, the project team, in collaboration with the Sunshine Corridor Working Group, developed a Sunshine Corridor Project White Paper, which was shared with the Federal Transit Administration (FTA) as an update on the project development and local dialogue surrounding the expansion of commuter rail in the region.

8.3 Public Engagement Activities

8.3.1 Project StoryMap/Website

The project StoryMap, accessible at **Central Florida Sunshine Corridor**, was developed early in the study process to share project background information, purpose, and need, and to present project development activities as the project study advanced.

Figure 40: Image of Sunshine Corridor StoryMap Content Page

8.3.2 Survey

To expand opportunities for gathering public input on the proposed project, an online survey was launched. The online survey, developed through the SurveyMonkey tool, collected information on topics about an individual's awareness of the Sunshine Corridor project, knowledge, use of SunRail, and overall support of the expansion of SunRail commuter rail service. The survey contained 20 questions, many with multiple choice options, to simplify the survey and reduce the time it takes to complete the survey.

The survey, available through a QR code, could be taken on any mobile device, laptop, or computer. Paper copies of the survey, in both English and Spanish, were also available at in-person public events. Several questions about demographic information were included in the survey to better understand the composition of survey respondents. The option to provide contact information was also included for future notification about the project.

A link to the survey was printed on a bookmark which was created as an additional communication tool (**Figure 41**). The bookmark contained general project information and was provided to attendees at public events. Highlights of the survey responses are presented in Section 8.4.1, with more detailed results included as part of the *Public Engagement Technical Memorandum*.

Figure 41: TCAR Study Bookmark

8.3.3 Presentations

Building off the monthly and bi-monthly presentations to the Sunshine Corridor Working Group, Orange County Commission, and CFCRC officials, the FDOT project management team and project staff also conducted presentations for FDOT senior and Central Office leadership, various organizations, and local government stakeholder groups. Several examples of the presentations are included in project files and appendices of the *Public Engagement Technical Memorandum*. Presentations were provided for:

- MetroPlan
- City of Orlando
- I-4 Corridor Conference

8.3.4 Public Meetings

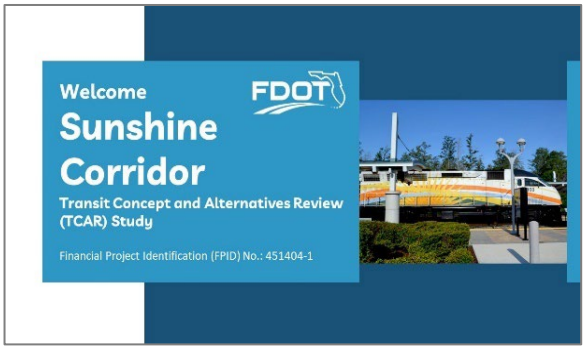
The TCAR Study public engagement included formal public meetings held in an Open House format. Three in-person public Open Houses were conducted in the evening on December 5, 6, and 7, 2023. A virtual Open House, utilizing the same presentation, was conducted simultaneously on December 6, 2023. The three Open Houses were conducted at various locations along the proposed project corridor from the Orlando International Airport (MCO) to the Orange County Convention Center to the Disney Springs area. A summary of meeting attendance and public participation is shown in **Table 19**.

Figure 42: Example Presentation

Meeting notifications were sent to approximately 60 elected officials, and government and agency representatives. Additionally, the meeting notice was included in the Florida Administrative Record (FAR) and published in the Orlando Sentinel on November 26, 2023. The meetings were also noticed on the FDOT CFLRoads website **www.cflroads.com**. The Open House format included:

- **Welcome/Sign-In Area** – Arrival area where attendees were asked to sign and were provided a brochure and bookmark
- **Presentation Area** – A narrated, continuous looping presentation video with highlights of project purpose, need, and overall study components
- **Project Corridor Graphic Board Displays** – Proposed corridor map, survey/comment instructions
- **Comment/Survey Area** – An opportunity for participants to provide written comments or take a survey online or via a paper copy

Figure 43: Public Meeting Presentation Title Slide Image



Many of the meeting attendees voiced overwhelming support for the Sunshine Corridor projects and the proposed expansion of SunRail. A summary of the public feedback and images of the project displays, the presentation, and other materials provided at the Open Houses are included in **t**he appendices of the *Public Engagement Technical Memorandum*.

Table 19: Public Open Houses

Date	Location	Number of Attendees	Number of Surveys Collected	Number of Comment Forms Collected
December 5, 2023 5:30 – 7:30 pm	Taft Community Center Orange Avenue/MCO Area	53	14	12
December 6, 2023 5:30 – 7:30 pm	Holiday Inn & Suites, International Drive	36	20	22
December 6, 2023 5:30 – 7:30 pm	Virtual (GotoWebinar)	68	N/A	N/A
December 7, 2023 5:30 – 7:30 pm	Delta Hotels by Marriott, Lake Buena Vista	28	8	6

Figure 45: Sunshine Corridor Public Open House Images (December 5 - 7, 2023)

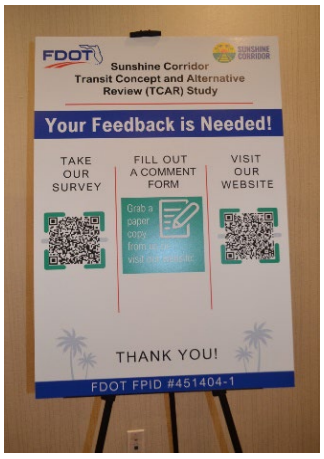
8.4 Summary of Community and Stakeholder Feedback

Over 330 people to date have participated in discussing the development of the Sunshine Corridor project through the TCAR Study public and stakeholder engagement activities. This includes:

- Approximately 70 people involved through the Sunshine Corridor Working Group
- 185 participants through the in-person and virtual Open House events
- 83 online comments through the FDOT CFLRoads website
- 122 survey respondents
- 40 comment forms

Highlights and a summary of the feedback received through the survey, and the online and in-person stakeholder engagement opportunities are discussed in the following sections.

Figure 44: Public Engagement Survey Board



8.4.1 Summary of Survey Responses

Figure 46: December 6, 2023, Open House

The public opinion survey contained 20 questions, with most of the questions structured with multiple-choice response options. The survey was developed to gather feedback about SunRail and the proposed expansion of SunRail through the Sunshine Corridor project. The survey also asked questions regarding general travel and mobility preferences throughout the Orlando area. As of December 30, 2023, 122 surveys were completed which includes 79 online surveys and 43 printed surveys received at the public meetings. Of the surveys received, below are the highlights of the feedback.

- 90% of respondents were familiar with the Sunshine Corridor Study
- For those familiar with the SunRail commuter rail:
  - 11.5 % are regular SunRail customers
  - 43% are familiar with SunRail but have never used it
  - 43% are familiar with SunRail and have used the service on occasion
- 50% of respondents who have ridden SunRail, use it primarily for traveling to/from entertainment venues
- 70.4% of the respondents who do not use SunRail indicate that it is because SunRail does not provide service to the areas they need to go
- **98% of survey respondents support the expansion of SunRail**

A follow-up question regarding the support of the commuter rail expansion asked respondents about preferred locations for the service expansion. The results are shown in **Table 20.** Respondents were able to select more than one response. Expansion to Orlando International Airport (MCO) was the most favored location. Additional highlights of the survey include:

- Of the survey respondents, 35% were in the 25 – 34 age group, followed by 18 – 24 age group (20%), and 45-54 age group (18%)
- 46.3% of the respondents currently live near a SunRail station
- 54 survey respondents responded to the question: *"Do you have any questions about the Sunshine Corridor project?*

Table 20: Sunshine Corridor Survey Responses - Desired Destinations

Answer Choices	Responses	
Orlando International Airport (MCO)	90.4%	104
Orange County Convention Center	81.7%	94
South International Drive	71.3%	82
Disney Springs	78.3%	90
Other	27.8%	32

8.4.2 Summary of Comments Received

In addition to completing a survey, members of the community and public meeting participants were able to submit comments through the FDOT CFLRoads website www.cflroads.com, or by filling out a comment form at one of the in-person Open Houses.

CFL Roads Website/Email

Approximately 83 comments, suggestions, or questions, were sent to the FDOT through the online CFLRoads website **www.cflroads.com**. The following is an overview of the comments received.

- 70 comments (84.2%) were in support of the SunRail expansion
- Most comments were specifically supportive of rail expansion to the Orange County Convention Center/I-Drive/Universal area with a general preference for the SR 528 alignment, avoiding Hunter's Creek Community and other residential neighborhoods
- Many viewed that the proposed corridor and stops would greatly benefit tourists and the local workforce, as well as promote development and benefit the local economy
- Some expressed that they would like to see expanded hours/days of service and additional stops in residential neighborhoods for increased use and access
- Participants also asked questions about funding or other project components, such as station construction.

Comments and inquiries received through the CFLRoads website receive a response from the FDOT project manager. A sample of the questions from the comments include the following:

- *Are there plans for adding a stop in Taft so that local residents can benefit without having to travel outside of the neighborhood?*
- *Can you provide more information on what potential impact this will have on Taft?*
- *Will there be a station where the east/west and the north/south tracks intersect?*
- *Which SunRail stop is the intersection between the new line and the existing SunRail line?*
- *Are there plans in the future to connect SunRail or Light Rail to the UCF area?*
- *Have you considered taking it to Lake Nona or the upcoming Sunbridge development?*

Comment Forms

A total of 40 comment forms were collected at the in-person public Open Houses held in December. Highlights of the comments include:

- 80% of comments provided were in support of the expansion of SunRail and the Sunshine Corridor project
- Some expressed that they would like to see expanded hours/days of service and increased frequency, as well as additional stops at entertainment and dining hotspots and residential neighborhoods for increased use and access
- There is also a desire for more development and walkable access around stations, as well as offering connections to other transportation, such as LYNX and Brightline
- Questions and concerns were mostly focused on funding, costs, and timeline for construction.

A copy of the comment form and an expanded summary of the comments received are included in the *Public Engagement Technical Memorandum*.

8.4.3 Media and Chronicle of Articles

Public conversations surrounding rail expansion in Central Florida have been ongoing for over a decade. The recent expansion of Brightline intercity passenger rail from Miami to Orlando has heightened awareness and interest regarding passenger rail for residents, visitors, and commuters. During the Sunshine Corridor TCAR Study, several articles have been written by local media related to the Sunshine Corridor project. A list of articles captured by the project team is provided in the *Public Engagement Technical Memorandum*.

During the public meetings in December 2023, several local news media were present at the Open House at Taft Community Center on December 5. Additionally, Telemundo interviewed the FDOT Project Manager at the Open House on December 6, 2023. An article was also printed in La Prensa, Florida Central publication. A video was produced by the FDOT and marketing consultant team to capture the highlights of public feedback received during the public Open House events in December. The video can be viewed **here**.

Figure 48: FDOT Community Engagement Video Image

Figure 47: Print Media - La Prensa December 2023

Glossary

Access Rate
It is the percentage of residents in each Block Group that shows an above-average propensity to use transit (transit propensity), found by taking all data inputs from a transit propensity analysis and averaging the data points.

Affordable Housing
As defined by the federal government's Department of Housing and Urban Development, affordable housing is housing where the occupant pays no more than 30 percent of the occupant's gross income for housing costs, including utilities.

American Community Survey (ACS)
This survey, conducted by the United States Census Bureau, releases new data every year, providing population, occupation, educational attainment, and housing estimates about the United States' communities.

Bus Rapid Transit (BRT)
Often a lower cost alternative to light rail, bus rapid transit are fixed route systems that operate on a fixed guideway for at least 50 percent of the service and are branded as a separate service. Other characteristics of BRT include defined passenger stations designed to accommodate the low-floor vehicles or level-platform boarding, traffic signal priority (TSP) or preemption, short bidirectional headways for a most weekdays and weekend days, and typically utilizing off-board fare collection.

Census Block
Census blocks are the smallest geographic area that the United States Census Bureau releases data for, created to capture population potential. Blocks are self-contained statistical areas bounded by visible features, such as roads, streams, parks, and railroad tracks, as well as by nonvisible boundaries, such as property lines and city, township, school district, and county limits. Part of the decennial census, blocks are the basis for all tabulated data from that census.

Central Florida Regional Transportation Authority (CFRTA)
Formed in May 1972 under a different name, the CFRTA operates LYNX a public transportation system that provides services for Orange, Seminole, and Osceola counties, with small portions of Lake and Polk counties being served as well. Services include fixed route bus service, bus rapid transit bus service, a fare free downtown circulator (LYMMO), vanpool, paratransit, flex service, and roadside assistance.

Community Development District (CDD)
Created in accordance with chapter 190 of the Florida Statutes, community development districts are created to serve its community's long-term specific needs. They are empowered to plan, finance, construct, operate and maintain the entire community's infrastructure and services.

Commuter Rail
An electric or diesel propelled urban passenger train service enabling local travel by connecting a central city or urbanized area to outlying areas. The rail service is generally characterized by multi-trip tickets, specified fares station-to-station, employment practices, having relatively long distances between stops, and only 1-2 stations within the central business district.

Consists (Train)
This computer-generated document kept at point of origin and transmitted to the next station in advance of the train's arrival consists of a list of the train makeup in standing order, the number of passenger and freight cars, commodities, and a summary of the train including tonnage and train length.

Deadhead
The miles and hours that a vehicle travels when out of revenue service which includes: 1) Leaving or returning to the garage or yard facility; 2) Changing routes; 3) When there is no expectation of carrying revenue passengers.

Demand
The number of persons or vehicles desiring to use a mode or facility.

Efficient Transportation Decision Making (ETDM)
An FDOT initiative established to improve and streamline the environmental review and permitting process by involving resource protection agencies and concerned communities from the first step of planning. Agency interaction continues throughout the life of the project, leading to better quality decisions and an improved linkage of transportation decisions with social, land use, and ecosystem preservation decisions.

Environmental Assessment (EA)
An environmental assessment is a document that must be submitted for approval by the U.S. Environmental Protection Agency (EPA) and the U.S. Department of Transportation (USDOT) for transportation projects in which the significance of the environmental impact is not clearly established. An EA is required for all projects for which a Categorical Exclusion or Environmental Impact Statement is not applicable. A Finding of No Significant Impact (FONSI) will be issued if it is determined by the agency that the action will not have significant environmental impacts.

Environmental Impact Statement (EIS)
A document that must be submitted for approval by the U.S. EPA and the US DOT for transportation projects that significantly affect the human environment defined by CEQ (Council on Environmental Quality) regulations. The type of actions which would normally require an EIS are: 1) a new controlled access freeway; 2) a highway project of four or more lanes on new location; 3) new construction or extension or fixed rail transit facilities; 4) and new construction or extension of a separate roadway for buses or high-occupancy vehicles not located within an existing highway facility.

Daily Vehicle Miles Traveled (DVMT)
The daily vehicle miles traveled is a measure of the total transportation demand within each county reported annually by the Florida Department of Transportation.

Developments of Regional Impact (DRI)
Determined by the development's character, magnitude, or location, regional impact is defined as having a substantial effect upon the health, safety, or welfare of the citizens in more than one county.

First-Mile-Last-Mile (FMLM)
First-mile-last-mile is the distance a commuter has to travel from a transit stop to their final destination, or vice versa. The FMLM problem is the extra time and hassle commuters face when they're going from home to a transit station and then from the station at the other end of the trip to a final destination.

Fixed Guideway
A form of transit consisting of vehicles that can operate only on a guideway constructed for a specific purpose (e.g., rapid rail, light rail). Federal usage in funding legislation also includes exclusive right-of-way bus operations, trolley coaches and ferryboats as "fixed guideway transit."

Fixed-Route Bus
Bus service provided on a repetitive, fixed schedule operating along a specific route with vehicles stopping to pick up and deliver passengers to specific locations, with each route trip serving the same origins and destinations.

Headway
The duration or time interval between vehicles in a transit system moving in the same direction on a particular route.

High-Speed Rail (HSR) The definition of high-speed rail varies depending on context and purpose. According to Britannica, high-speed rail uses an integrated system of specialized rolling stock and dedicated tracks to deliver rail service that generally travels between 120 mile per hour and 221 miles per hour. .

Interchange Station
Interchange stations enables a direct connection to another service, using the same ticket.

Intercity Rail
Rail service relating to the connection between any two or more cities. Such connections may be within a region (see intraregional) or between two regions if the cities are in different regions (see interregional).

Intermodal
Two or more modes of transportation.

Light Rail
Light rail typically uses an electric railway with a light volume traffic capacity compared to heavy rail (HR), and is characterized by: 1) Passenger rail cars operating 1 – 2 car trains) on fixed rails in shared or exclusive right-of-way (ROW); 2) Low or high platforms for passengers; and 3) Vehicle power is drawn from an overhead electric line via a trolley or a pantograph.

Micromobility
Micromobility as defined by the Federal Highway Administration (FHWA) is any small, low-speed, human- or electric-powered transportation device, which includes bicycles and scooters, and other small, lightweight, wheeled conveyances. Other definitions focus primarily on powered devices that are characterized as partially or fully motorized, low-speed (typically less than 30 miles [48 kilometers] per hour), and small size (typically less than 500 pounds [230 kilograms] and less than 3 feet [1 meter] wide).

Multimodal Transportation
The use of more than one mode to serve transportation needs in a given area. More than one travel mode including potentially the four highway modes (auto/truck, bicycle, bus/transit, and pedestrian), aviation, rail, and seaports.

National Environmental Policy Act (NEPA)
The National Environmental Policy Act of 1969 (NEPA), established a national environmental policy requiring that any project using federal funding or requiring federal approval, including transportation projects, examine the effects of proposed and alternative choices on the environment before a federal decision is made.

National Transit Database (NTD)
The National Transit Database (NTD) records the financial, operating, and asset condition of transit systems, providing public information and statistics on the industry across the nation. The NTD is designed to support local, state, and regional planning efforts and help governments and other decision-makers make multi-year comparisons and perform trend analyses.

Off-Peak Service
The service hours during periods of the day when traffic congestion and ridership is lower, and in response, less transit service is scheduled.

Operations and Maintenance (O&M)
Planning for, and executing, activities, such as operating the system, monitoring system performance, making repairs, hiring and training operators, testing the system after any changes are made, and tuning the system.

Paratransit
Forms of transportation service that are more flexible and personalized than conventional fixed route, fixed schedule service; often utilized to accommodate the elderly and disabled passengers unable to use the fixed route service. This type of passenger transportation typically refers to wheelchair-accessible, demand response vehicles.

Passenger Rail
Passenger rail transports passengers instead of cargo or freight, with trains operating on fixed schedules and typically stopping at stations or other designated facilities for passengers to board and deboard.

Peak Service Hour(s)
The hour(s) in which the greatest amount of travel occurs (typically considered 5:00-6:00 p.m. on a weekday); (2) The hour in which the greatest amount of travel occurs for a mode.

Project Development and Environment (PD&E)
Florida Department of Transportation's process for design and environmental assessment of transportation projects. A Project Development and Environment (PD&E) Study is conducted to meet the requirements of the National Environmental Policy Act (NEPA), during which the location and conceptual design of feasible build alternatives are determined based on social, economic, and environmental effects.

Public Involvement Plan (PIP)
The process by which public concerns, needs, and values are solicited and incorporated into decision-making.

Rail Alignment
The route of which train track is constructed and the train travels on a horizontal plane, expressed as 'tangent' or 'curve.'

Rail Spur or Spur Track
Providing access to industrial or commercial areas, this stub track deviates from the other tracks, usually ending in a dead end within an industry area.

Rail Wye
A triangular joining of three rail lines in an arrangement of tracks in the form of a "Y", used for turning engines, cars, and trains.

Record of Decision (ROD)
A record of agreement that a proposed project meets all applicable requirements of the National Environmental Policy Act (NEPA), as issued by the designated lead agency.

Right-of-Way (ROW)
A general term denoting land, property, or interest therein, usually in a strip, acquired for or devoted to transportation purposes.

Service Area
Service area measures transit service access based on population served and area coverage (square miles). Service area boundaries and populations served for most transit services are determined by transit agencies.

Sunshine Corridor (SC)
The Sunshine Corridor is a comprehensive multi-modal passenger rail improvement program connecting Central Florida along a new east-west corridor between East Orange County and Tampa, Florida. The program is designed to address the mobility, economic, environmental and safety needs of Central Florida, one of the fastest growing populations in the country.

Total Potential Riders
Total potential riders are determined by combining the transit access rate with the total working population.

Trackless Tram
Also referred to as Autonomous Rail Rapid Transit (ART), trackless tram operates via remote sensing light detection technology. Electric, rubber-tire vehicles that resemble light rail rely on a painted track applied to a dedicated transit lane. This relatively new mode of transportation has been implemented in China and Australia.

Train Mile(s)
The miles that trains are scheduled to or actually travel while in revenue service (actual train revenue miles) as well as deadhead miles.

Transit Concept and Alternatives Review (TCAR)
A streamlined planning and environmental screening process that compares transit project alternatives, potential costs, funding options, community benefits, economic development, and mobility for users of a proposed project. It also considers high level environmental effects of the alternatives. Advancing transit projects that maximize existing funding sources and have the greatest potential return on investment is paramount to the preservation and growth of an effective transportation system.

Transit Hub
Transit hubs offer convenient access to multiple modes of public transit at a single location.

Transit Oriented Development (TOD)
Transit oriented development is the intersection of two areas: dense, walkable communities with mixed-use development located near transit amenities. Community partnerships fostered by public transportation can help to support affordable housing development near public transit, leading to more equitable communities.

Transit Propensity
Transit propensity is the estimation of likely transit demand based on which demographic indicators are most closely associated with transit use.

Transit Station
A facility with platform for passengers to board/deboard transit. It may or may not include additional assets such as stairs, elevators, escalators, passenger controls (e.g., faregates or turnstiles), canopies, wind shelters, lighting, signs, and buildings with a waiting room, ticket office or machines, restrooms, or concessions.

Transit Stop
A transit stop typically does not have the same amenities as a transit station. It is a transit waiting area, generally designated by signage and public right-of-way around the transit stop.

Transportation Corridor
Any land designated by the state, a county, or a municipality which is between two geographics points and which area is used or is suitable for the movement of people and goods by one or more modes of transportation, including areas necessary for management of access and securing applicable approvals and permits.

Transportation Disadvantaged
Those persons who, because of disability, income status or age, are unable to transport themselves or to purchase transportation services.

Transportation Network Companies (TNCs)
Transportation Network Companies, or ride share services, are companies that use online-enabled platforms to connect passengers with drivers using their personal, non-commercial vehicles. Examples are companies such as Lyft and Uber.

Travel Time
The total time spent from one point to another.

United States Census
The United States census, conducted by the Census Bureau, is mandated by the Constitution. Multiple surveys are conducted periodically to provide comprehensive statistics about the nation.

Unlinked Passenger Trips (UPT)
No matter how many vehicles a passenger uses to travel from their point origin to destination, passengers are counted each time they board a public transportation vehicle. The total number of passengers that board public transportation vehicles amount to the total UPT.

Upzone
An upzone is an alteration to a community's zoning code to allow new capacity for development.

Vanpool (VP)
Vanpools operate as a ridesharing arrangement, using vans, small buses, and other vehicles to provide transportation to a group of individuals between their homes to a regular destination within the same geographical area. They are considered high occupancy vehicles (HOV) as they are able to transport seven passengers, including the driver.

Volume-to-Capacity (V/C) Ratio

Volume-to-capacity ratio is the ratio of demand to capacity. It compares the traffic demand of a segment to its available capacity based on the number of lanes and functional classification of the roadway. A lower v/c ratio indicates excess capacity with minimal congestion and travel speeds that are near free flow conditions.

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FINAL REPORT
Transit Concept and Alternatives Review (TCAR)