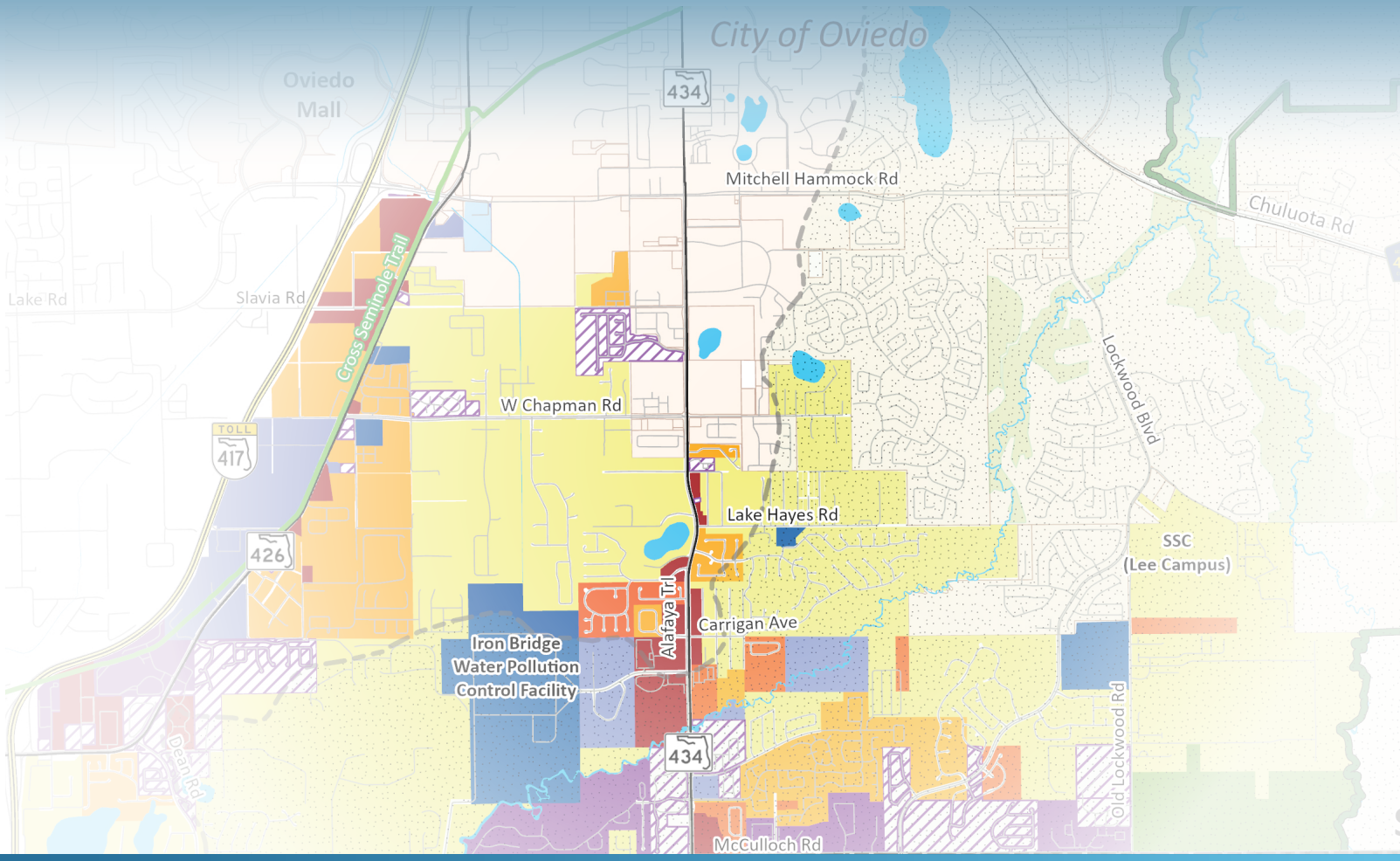
East Urban Area Study



Seminole County Public Works

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DRAFT

Prepared by:
Jacobs

SEMINOLE COUNTY
FLORIDA'S NATURAL CHOICE

SEMINOLE COUNTY 2045 TRANSPORTATION MOBILITY PLAN

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Acronyms and Abbreviations

ADA	Americans with Disabilities Act
ACS	American Community Survey
BEBR	Bureau of Economic and Business Research
C-V2X	cellular vehicle-to-everything
CAV	Connected and Automated Vehicles
CCTV	closed-circuit television
CDP	census designated place
CEI	construction engineering and inspection
CFRC	Central Florida Rail Corridor
CFRPM	Central Florida Regional Planning Model
CFX	Central Florida Expressway Authority
CIP	Capital Improvement Program
CR	County Road
DMS	Dynamic Message Sign
EUA	East Urban Area
EV	electric vehicle
F.S.	Florida Statute
FDOT	Florida Department of Transportation
FHWA	Federal Highway Administration
GIS	geographic information system
HIP-TR	high-intensity planned development transitional
IMC	intelligent moving camera
ITS	intelligent transportation systems
LOS	level of service
NEOCATS	North East Orange County Areawide Transportation Study
NHTSA	National Highway Traffic Safety Administration
PCI	Pavement Condition Index
Q/LOS	quality level of service
ROW	right-of-way
SIS	Strategic Intermodal System
SR	State Road
SSC	Seminole State College of Florida
SSOGis	State Safety Office Geographic Information System
TMP	Transportation Mobility Plan
TSMO	transportation systems management and operations

UCAC	Urban Corridors and Activity Centers
UCF	University of Central Florida
V/C	volume to capacity

1. Introduction

This East Urban Area (EUA) Study is a subset of the larger countywide *Seminole County 2045 Transportation Mobility Plan* (2045 Plan) and was initiated by Seminole County because of the area's potential for growth and nearby activity centers (University of Central Florida [UCF], Seminole State College [SSC], and Downtown Oviedo). The purpose of this study is to identify potential improvements to the transportation network within the EUA for improved connectivity and to accommodate future growth in the area, while meeting the vision of the surrounding communities.

The objective of this study is to evaluate the existing and future transportation network, as well as the existing social, cultural, natural, and physical environment in and around the EUA to determine the most appropriate improvements within the EUA through the year 2045. Analysis of the transportation network included safety, operational, and multimodal analyses to identify improvements that will enhance access and mobility for residents and visitors.

This study is guided by the five overarching goals established as part of the 2045 Plan, which include the following:

- Preserve and enhance the existing system's function and performance.
- Be consistent with the Florida Strategic Highway Safety Plan and Target Zero initiative and improve the region's ranking in Dangerous by Design (Smart Growth America 2022) by emphasizing bicycle and pedestrian safety improvement projects.
- Improve access to multimodal options to advance equity, access to all users, and public health.
- Support economic vitality, regional priorities, and the connectivity of the regional system for people and goods.
- Protect and preserve the environment and quality of life and promote energy conservation.

The county's transportation and planning staff, along with its Board of County Commissioners, were the lead stakeholders in the development of the countywide 2045 Plan. Additional input on local and regional priorities by partner agencies, including the Seminole County School Board, Seminole County Sheriff's Office, Seminole County Fire/Rescue, Florida Department of Transportation (FDOT), Central Florida Expressway Authority (CFX), Orange County, MetroPlan Orlando, City of Oviedo, Central Florida Regional Transportation Authority (LYNX), and UCF, also were considered during this study.

The EUA Study area is approximately 11 square miles and is defined by the City of Oviedo boundary to the north, the East Rural Charter Area boundary to the east, the Orange/Seminole County Line to the south, and State Road (SR) 417 to the west. Figure 1-1 presents the EUA Study boundary.

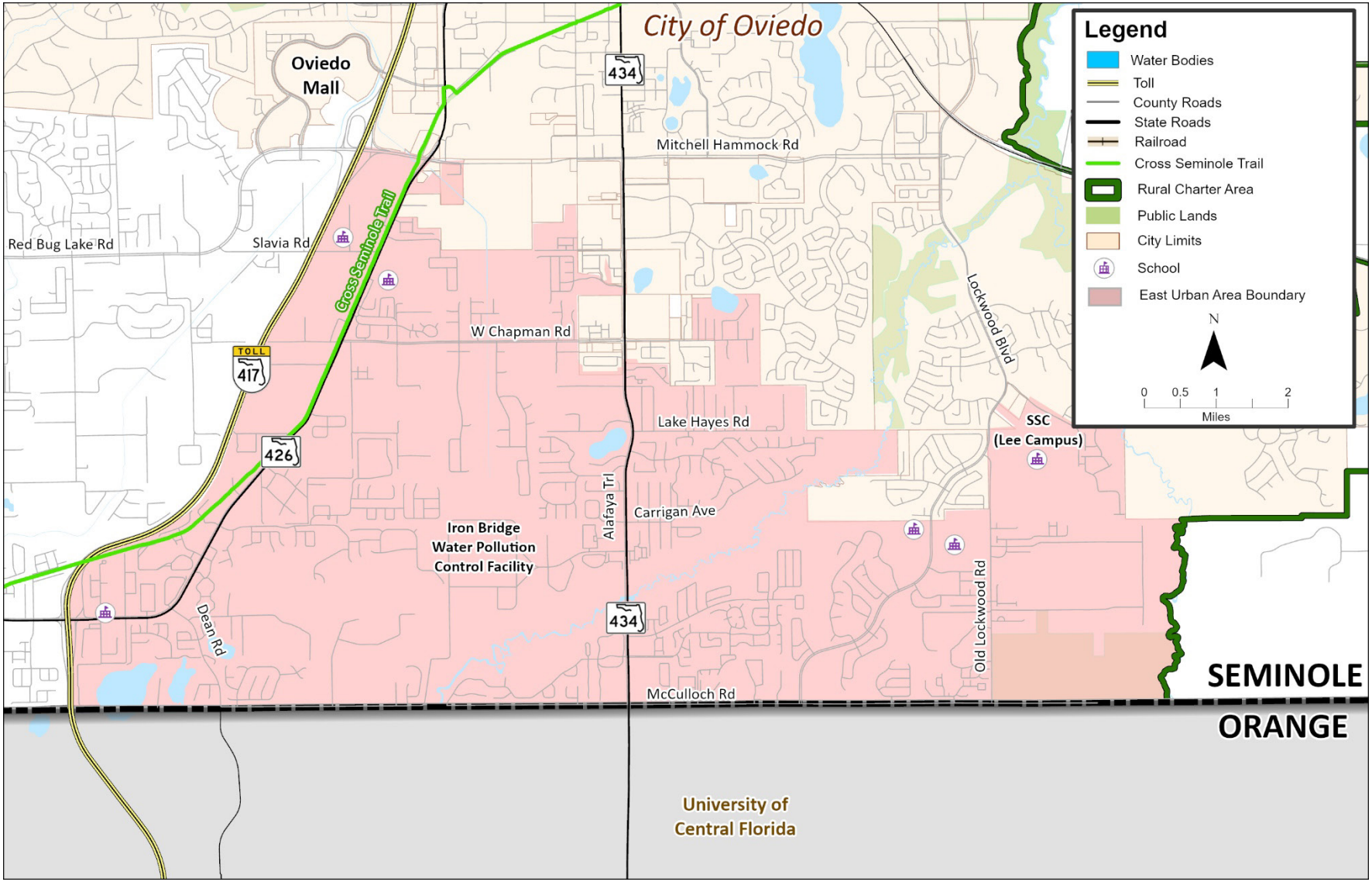


Figure 1-1. East Urban Area – Boundary Map

2. Existing Conditions

This section summarizes the existing conditions within the EUA, which includes consideration of land use, environmental constraints, population and demographics, mobility features, safety concerns, and intelligent transportation systems (ITS).

2.1 Land Use

This section highlights existing land use within the EUA, considering buildable (or vacant) lands and how current land uses are impacting the existing transportation network and mobility. Land uses were evaluated to identify general land use characteristics, urban and rural areas, urban corridors, and buildable lands. Additional considerations were given to current zoning designations, activity areas, and environmental constraints. Finally, the county's recently published *Envision Seminole 2045* report, which evaluated ways to protect wildlife, maintain rural places, grow walkable communities, support active lifestyles, and assess ways to be green, was leveraged for this EUA Study, as well as for the 2045 Plan, to help identify mobility needs for current and future residents.

The EUA primarily comprises single-family residential (38% of the area), while 25% of the area is designated as buildable (or vacant) lands. Of those buildable lands, nearly 8% (or 507 acres) is designated as vacant residential. Figure 2-1 summarizes the existing land uses in the EUA.

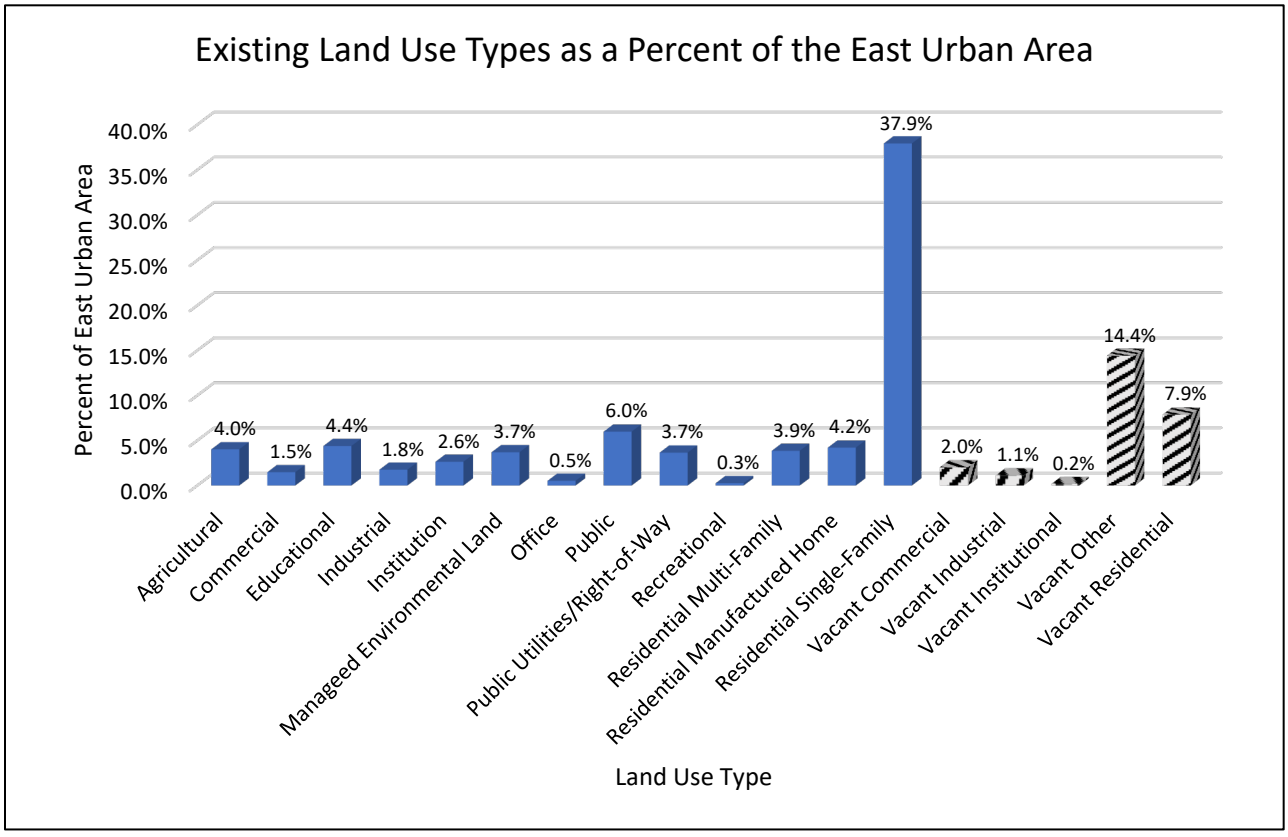


Figure 2-1. East Urban Area – Existing Land Uses

Residential land use within the EUA comprises a mix of rural estates, single-family subdivisions, and multi-family housing. Commercial and office land uses are concentrated along SR 434, SR 426, Mitchell Hammock Road, and Red Bug Lake Road. The Cross Seminole Trail runs through the western portion of the EUA near SR 426, connecting the area to the City of Oviedo and Orange County. The EUA also includes

six private and public schools (SSC-Lee Campus, The Master's Academy, Carillon Elementary School, St. Luke's Lutheran School, The Ecclesial School at St. Alban's, and Hagerty High School).

The Iron Bridge Water Pollution Control Facility is located within the central portion of the EUA and is operated and primarily owned by the City of Orlando. The Econlockhatchee River Corridor Protection Zone also is within the EUA and comprises 4,123 acres in the southeastern portion. This protection zone, as defined by *Seminole County's Comprehensive Plan* (FLU 1.10), is a special area established for the protection of floodplains, wetlands, native habitats, and rare upland habitats. Figure 2-2 presents a map of the existing land use in the EUA.

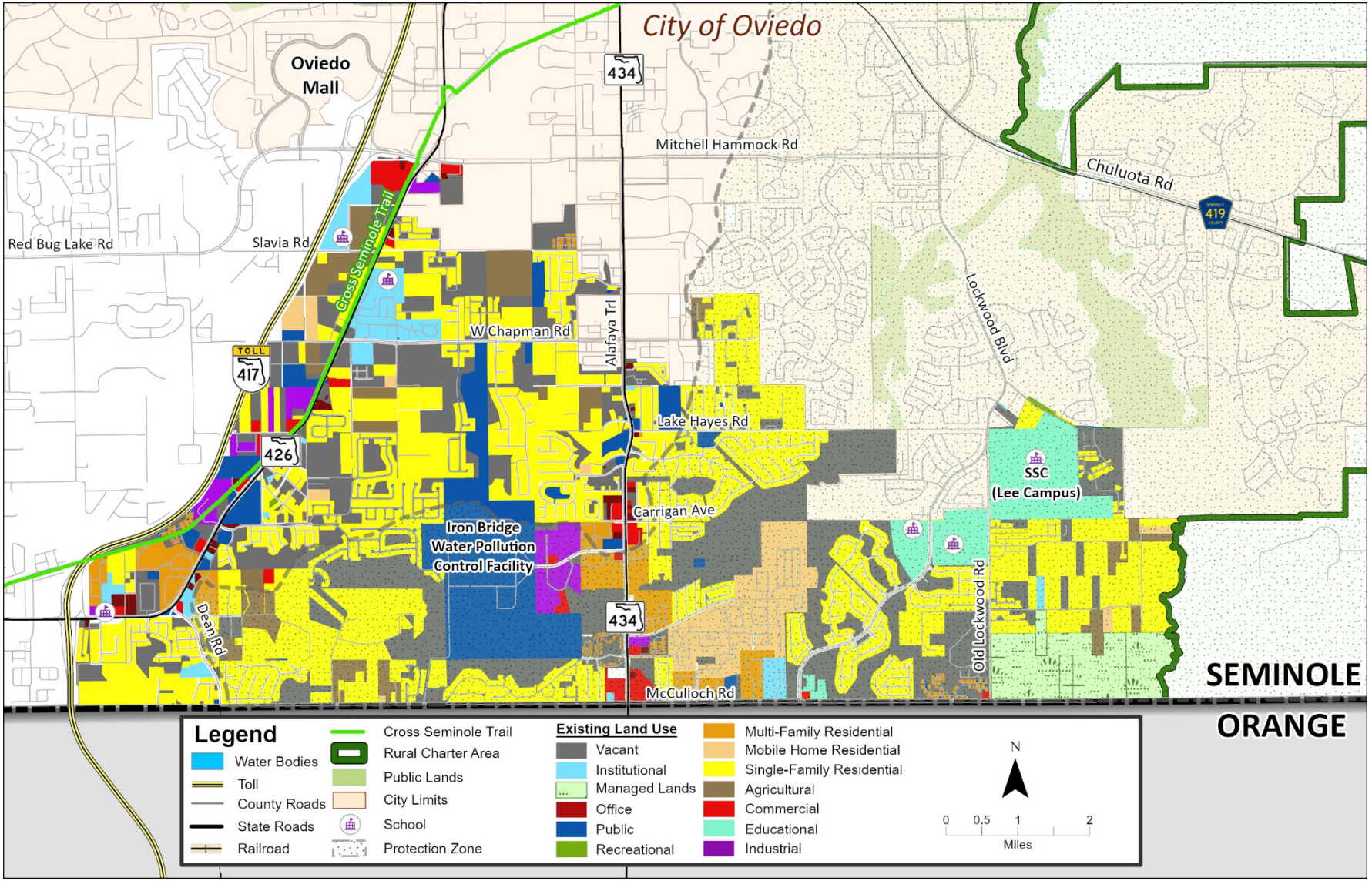


Figure 2-2. East Urban Area – Existing Land Use Map

2.2 Urban Corridors and Activity Centers

The Urban Corridors and Activity Centers (UCAC) overlay zone applies to unincorporated areas of the county within 0.25 mile from the right-of-way (ROW) of current and proposed major transit corridors and within 0.5 mile of major urban activity centers SunRail stations. Areas designated under the UCAC overlay are within the Dense Urban Land Area. The purpose of the overlay is to encourage infill and dense redevelopment patterns to create a denser walkable land use pattern that balances jobs and housing, as well as increases transportation mode choices. The only urban corridor overlay zone within the EUA is associated with SR 434. Although the EUA does not contain any urban centers, as defined by the *Seminole County Comprehensive Plan*, several activity centers are located within or directly adjacent to the area. Key activity centers considered for this EUA Study include the following:

- Downtown Oviedo
- Oviedo Mall
- SSC
- UCF

2.2.1 Downtown Oviedo

The City of Oviedo's downtown area is situated in and around the intersection of Mitchell Hammock Road and SR 434, which is slightly more than 1 mile north of the EUA boundary. The downtown area is host to several commercial, shopping, and retail facilities. This downtown area also includes the Oviedo on the Park recreational area, the Oviedo Amphitheatre and Cultural Center, as well as several multi-family housing complexes. The City of Oviedo is also working to update its Old Downtown Master Plan. The Old Downtown is located around the intersection of County Road (CR) 419, CR 426, and SR 434. The City's *Downtown Master Plan Vision Book* summarizes the proposed land uses and features envisioned for the Old Downtown area (Oviedo 2020). LYNX services Oviedo's downtown areas via a fixed route (Link 434) and a NeighborLink service route (Link 822).

2.2.2 Oviedo Mall

The Oviedo Mall is in the northwest quadrant of the SR 417 and Red Bug Lake Road intersection (just northwest of the EUA boundary). The Oviedo Mall is a major activity center and trip generator, providing retail, restaurants, and activities for visitors. The mall can be accessed via Red Bug Lake Road and Oviedo Mall Boulevard. Similar to the Oviedo downtown areas, LYNX offers transit services to and from the mall via a fixed route (Link 434) and a NeighborLink service route (Link 822).

2.2.3 Seminole State College

SSC's Robert and Jane Lee Campus at Oviedo is located within the EUA, east of Lockwood Boulevard. The 180-acre campus (or 147,000 square-feet) includes a 120-acre nature preserve and state-of-the-art classrooms for hosting academic classes. The campus was opened in 2001 and can accommodate up to 7,000 students (SSC 2023).[1]

[1] Seminole State College. 2023. Robert and Jane Lee Campus at Oviedo. Accessed October 2023. https://www.seminolestate.edu/oviedo

2.2.4 University of Central Florida

The UCF main campus is located approximately 0.25 mile from the southern Seminole County and EUA Boundary. The campus, which opened in 1968, features a 1,420-acre campus with state-of-the-art facilities has 800 acres of natural areas. UCF is one of the largest universities in the United States, with a total enrollment of more than 70,406 students (UCF 2021).

2.3 Natural Resource Constraints

Natural resource constraints are an important consideration when evaluating and considering improvements to the existing transportation network. Seminole County continues to preserve environmentally sensitive lands and natural resources for the protection and enjoyment of its residents and visitors through its Land Development Code. Therefore, it was important for this study to develop improvements that avoid and minimize impacts to environmentally sensitive lands to the greatest extent feasible. Within the EUA, natural resource constraints include the Little Econlockhatchee River, 238 acres of preserved lands, and approximately 1,769 acres of environmentally sensitive lands.

As mentioned in Section 2.1, a large portion of the Econlockhatchee River Corridor Protection Zone is within the EUA. New developments within the protection zone are regulated by the county to maintain the rural density and character through use of development setbacks, concentrating permitted development farthest from surface waters and wetlands, minimizing development impacts on water quantity and quality, and restricting open space areas to passive recreational uses only. A 550-foot development restriction zone is included as part of this protection zone, thereby limiting the amount of future development. In addition, no new roadway, rail, or utility crossings are allowed within the protection zone, unless certain conditions are met. These regulations and restrictions help to preserve the natural resources associated with the Econlockhatchee River, but also limit new east/west mobility connections. Figure 2-3 presents a map of natural resource constraints within the EUA.

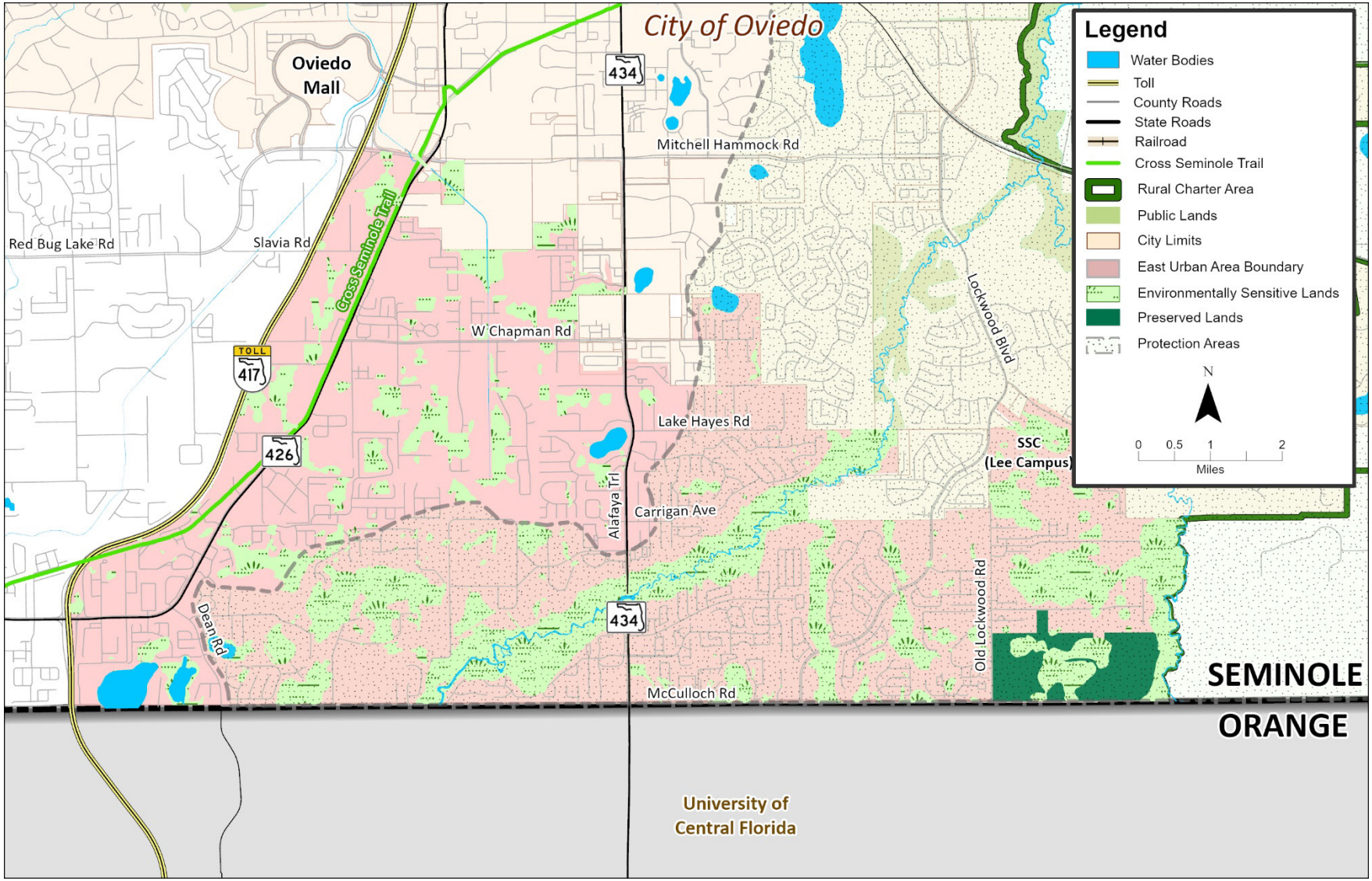


Figure 2-3. East Urban Area – Natural Resource Constraints

2.4 Demographics

The overall 2045 Plan relied on the University of Florida's Bureau of Economic and Business Research (BEBR n.d.) data to determine historical and projected population changes for the county. However, for this area, the U.S. Census Bureau's American Community Survey (ACS) census block group data were used to evaluate populations and demographics within the EUA.

Based on the U.S. Census Bureau 2018-2022 ACS data, the EUA may contain 12 block groups with a higher population density (persons per acre) than that of Seminole County's density. Ten block groups may include populations that have higher minority populations that the Seminole County minority rate of 38.5%, while eight block groups may include higher percentages of persons living in poverty than the poverty rate of 9% for the county.

Demographic data also show that the block groups within the EUA may have higher percentages of youth populations (17 years of age or younger) than populations 65 years of age or older. In addition, six block groups in the EUA may have a higher percentage of households without a vehicle as compared to the countywide average of 3.78%. These block groups with higher percentages of households without vehicles may indicate a need for more transportation options, such as enhanced transit connections and active transportation facilities, for residents in the EUA. The census block groups may not be representative of the specific neighborhoods and businesses within the EUA because many block groups extend outside of the EUA boundary (because of the large size of the block groups compared to the area boundary). Table 2-1 presents the block group census data.

Table 2-1. East Urban Area 2022 Census Data

Census Tract	Block Group	Area (acres)	% of Block in Study Area	Total Population	Density (Persons/ Acre)	% Minority	% Age 65 and Up	% Below Poverty	% Youth (age 17 and under)	% Disabled (age 20 to 64)	% of Households Without a Vehicle
21307	3	1285	9.99%	2363	1.84	22.85%	16.84%	2.29%	22.64%	4.49%	0.00%
21316	2	479	91.13%	2997	6.26	39.87%	3.70%	10.47%	16.78%	7.31%	0.00%
21320	3	890	36.65%	4283	4.81	48.54%	12.54%	0.02%	14.20%	9.12%	0.07%
21314	2	856	57.20%	2502	2.92	41.89%	25.50%	12.05%	30.38%	10.24%	12.69%
21315	1	373	98.26%	2391	6.40	49.77%	17.82%	43.58%	15.01%	11.47%	5.40%
21315	3	301	100.00%	2415	8.02	38.05%	18.92%	36.56%	6.05%	0.98%	2.39%
21316	1	1519	61.04%	1601	1.05	45.35%	16.49%	0.00%	22.42%	0.00%	1.23%
21317	1	584	100.00%	1704	2.92	28.52%	11.74%	5.93%	18.60%	3.09%	5.36%
21317	2	797	100.00%	2393	3.00	39.49%	10.28%	4.01%	27.46%	10.17%	4.47%
21317	3	1341	98.05%	4168	3.11	33.64%	8.11%	13.44%	19.58%	7.75%	4.32%
21318	1	527	44.97%	2331	4.43	48.13%	6.74%	0.39%	31.27%	3.53%	0.00%
21318	4	257	72.98%	2619	10.18	54.91%	9.05%	28.90%	22.83%	13.41%	0.00%
21320	2	448	99.98%	2207	4.93	56.77%	11.46%	15.18%	25.37%	4.01%	6.28%
21315	2	584	17.66%	2858	4.89	38.03%	13.05%	1.69%	21.76%	5.44%	1.00%
21318	3	1151	28.50%	1953	1.70	42.29%	15.51%	10.60%	25.91%	3.49%	0.00%
Seminole County		221,017	N/A	484,054	2.13	38.50%	16.40%	9.00%	22.62%	10.20%	3.78%

Shading indicates that the percentage is at or above the countywide percentage for that demographic.

Source: U.S. Census Bureau 2018-2022 American Community Survey (Published 12/2023)

2.4.1 Population

As mentioned previously, the U.S. Census Bureau's ACS census block group data were used to compare historical and existing populations within the EUA. The U.S. Census Bureau 2006-2010 ACS data show that the population within the EUA was approximately 38,830 in 2010, while 2018-2022 ACS data show the population declining to 38,785 in 2022. This change, albeit very small, results in a 0.12% decrease in population since 2010. This population decline is a stark difference when compared to the countywide population changes during the same period (2010-2022), which showed a 14.5% increase in population countywide. Table 2-2 summarizes the population changes for the EUA and Seminole County between 2010 and 2022.

Table 2-2. East Urban Area and Seminole County Population Change (2010-2022)

Area	2010 Population	2022 Population	Percentage Change
Seminole County	422,718	484,054	14.5%
East Urban Area	38,830	38,785	-0.12%

Source: U.S. Census Bureau 2006-2010 American Community Survey and 2018-2022 American Community Survey

2.4.2 Commute and Mode Characteristics

Employment inflow and outflow measures the number of residents working in the geographical area where they live or commuting to jobs located outside of their local area. For this EUA focused analysis, ***inflow*** measures the number of residents living outside of the EUA boundary and commuting into the EUA for work. ***Outflow*** measures the residents living within the EUA and traveling outside of the EUA for work. The U.S. Census Bureau's *On The Map* interactive tool was used to evaluate the inflow and outflow patterns for the EUA (U.S. Census Bureau n.d.).

According to the U.S. Census Bureau, only 2.1% of working-age people living in the EUA were also employed within the EUA in 2021, while 64.7% of residents that live in the EUA work outside of the EUA. As a comparison, countywide data for inflow and outflow patterns show 33.6% of workers living and working in Seminole County (U.S. Census Bureau n.d.). The large percentage of residents traveling outside the EUA and the county for work is likely the result of a greater number of employment opportunities in Orlando and other neighboring areas. In fact, a work destination analysis for residents in the EUA shows that more than 18% of residents in the EUA work in the Orlando area, while 11% work around the UCF area. Table 2-3 summarizes where residents living in the EUA work (U.S. Census Bureau n.d.).

Table 2-3. East Urban Area Residents – Employment Destinations

Employment Area	Percentage of Working Population
City of Orlando	18.8%
UCF CDP	11.0%
City of Sanford	5.2%
City of Oviedo	4.4%
City of Maitland	2.5%
City of Winter Park	2.5%
City of Altamonte Springs	2.1%
City of Jacksonville	2.0%

Employment Area	Percentage of Working Population
City of Lake Mary	1.8%
Alafaya CDP	1.8%
All Other Locations	47.9%

CDP = census designated place
Source: U.S. Census Bureau n.d.

Another key factor considered for commuting characteristics includes the relationship between employment destinations and travel time, as these can be an indicator of congestion, housing affordability, higher concentrations of employment, and existing transportation demand. Based on the U.S. Census Bureau's *On The Map* interactive tool, more than half of residents living within the EUA are traveling 24 miles or less for work, which is less than the statewide average of 27.9 miles. However, approximately 19% are traveling greater than 50 miles, with only 5.8% traveling between 25 and 50 miles. In addition, residents in the EUA are primarily traveling southwest and west toward adjacent cities and the Orlando area. Figure 2-4 and Table 2-4 summarize the direction and distances that EUA residents traveled to reach their employers in 2021.

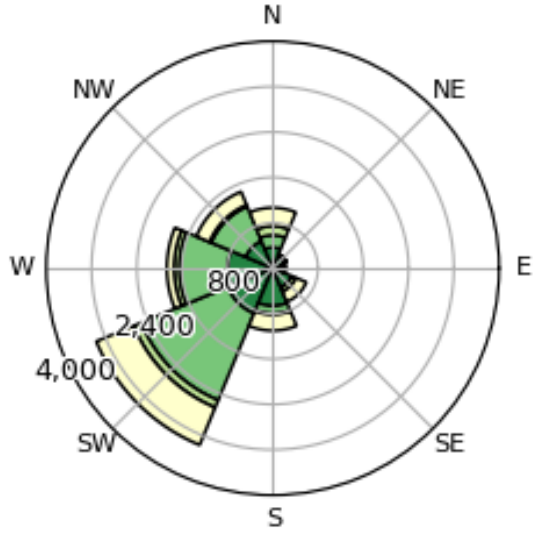


Figure 2-4. East Urban Area Residents – Travel Direction to Work

Source: U.S. Census Bureau n.d.

Table 2-4. East Urban Area Residents – Distance Traveled for Work

Distance Traveled	Percentage of Working Population
Less than 10 miles	39.6%
10 to 24 miles	35.5%
25 to 50 miles	5.8%
Greater than 50 miles	19.1%

Source: U.S. Census Bureau n.d.

As with the Florida and Seminole county commuting patterns, most of the residents within the EUA commute to work alone via single-occupancy vehicle (79.9%). Approximately 2.4% of EUA residents commute to work by walking, biking, or using public transportation. As a point of comparison, countywide workers who walk, bike, or use public transportation to commute to work was approximately 1.9% (U.S. Census Bureau 2022). The largest difference between the statewide and countywide commuting characteristics is that 17.0% of EUA residents work from home, which is higher than both statewide and countywide averages (7.8% and 9.7%, respectively). Table 2-5 summarizes the EUA, countywide, and statewide commute characteristics.

Table 2-5. East Urban Area, Seminole County, and State of Florida Commute Characteristics

Commuting to Work	Seminole County	East Urban Area	Florida
Car, Truck, or Van: Drove Alone	79.1%	79.9%	77.7%
Public Transportation (Excluding Taxicab)	0.7%	0.9%	1.6%
Walked	1.0%	1.2%	1.4%
Bicycle	0.2%	0.3%	0.6%
Other Means	1.5%	1.2%	1.7%
Worked at Home	9.7%	17.0%	7.8%

Source: U.S. Census Bureau 2018-2022 American Community Survey

2.5 Roadway Network and Conditions

This section describes the current roadway network within the EUA, including functional classification, ownership, and pavement conditions.

2.5.1 Functional Classification

Florida Statute (F.S.) 334.03(10) defines functional classification as the "…assignment of roads into systems according to the character of service they provide in relation to the total road network using procedures developed by the Federal Highway Administration." FDOT has legislative authority to functionally classify public roads per F.S. 334.044(11) and discusses classification in the *Manual of Uniform Minimum Standards for Design, Construction, and Maintenance for Streets and Highways* (commonly known as the "Florida Greenbook") (FDOT 2018).

The FDOT functional classification categories include arterial, collector, and local roads. These levels can be further subdivided into two additional designations. Urban and rural classifications consider the design differences and user expectations of the urban environment, such as enhanced multimodal opportunities for all users, additional parking, and more constrained conditions. Streets and highways may be classified as major or minor depending on traffic volume, trip length, and mobility (FDOT 2018).

FDOT assigned functional classifications for roadways in Seminole County. However, most local roadways are not officially classified. Figure 2-5 presents the FDOT Roadway Functional Classifications for roadways within the EUA.

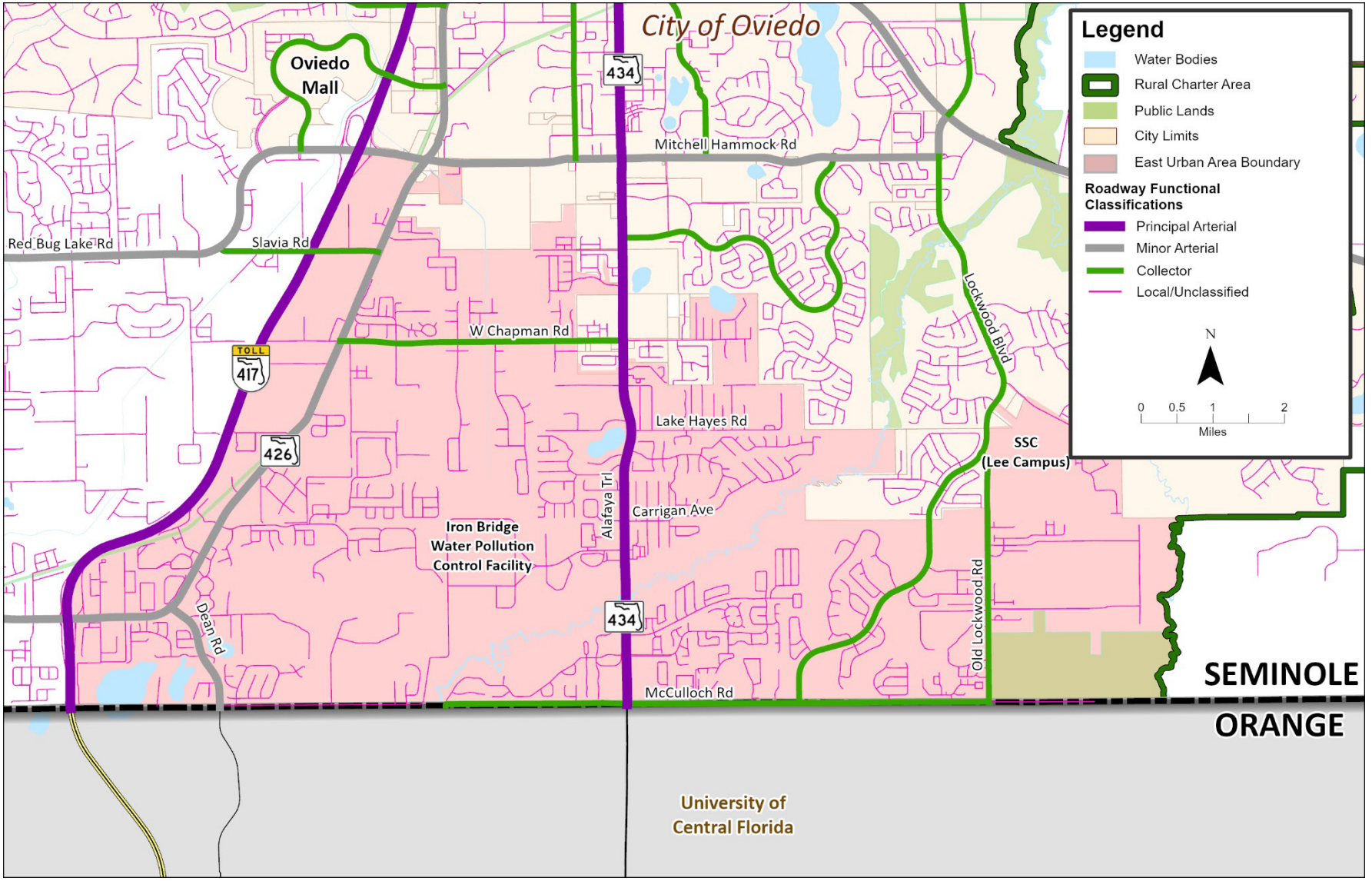


Figure 2-5. East Urban Area – Roadway Functional Classifications

2.5.2 Roadway Maintenance

The county maintains approximately 42.3 lane miles of roadways within the EUA (refer to Figure 2-7). Other roadways are either maintained by FDOT, land developers, or private residences. Pavement management data from the Seminole County Public Works Department were used to determine the distribution of Pavement Condition Index (PCI) scores throughout the EUA. For the approximately 42.3 miles maintained by the county, the average PCI score was 87 out of 100. Approximately 61.6% of the county's maintained roadways within the EUA have a PCI score of 90 or higher. Less than 5% of roadways were assigned a PCI score of 59 or lower. Approximately 1% of roadways did not have a PCI score assigned. Figure 2-6 presents the distribution of PCI scores for the county's entire roadway network.

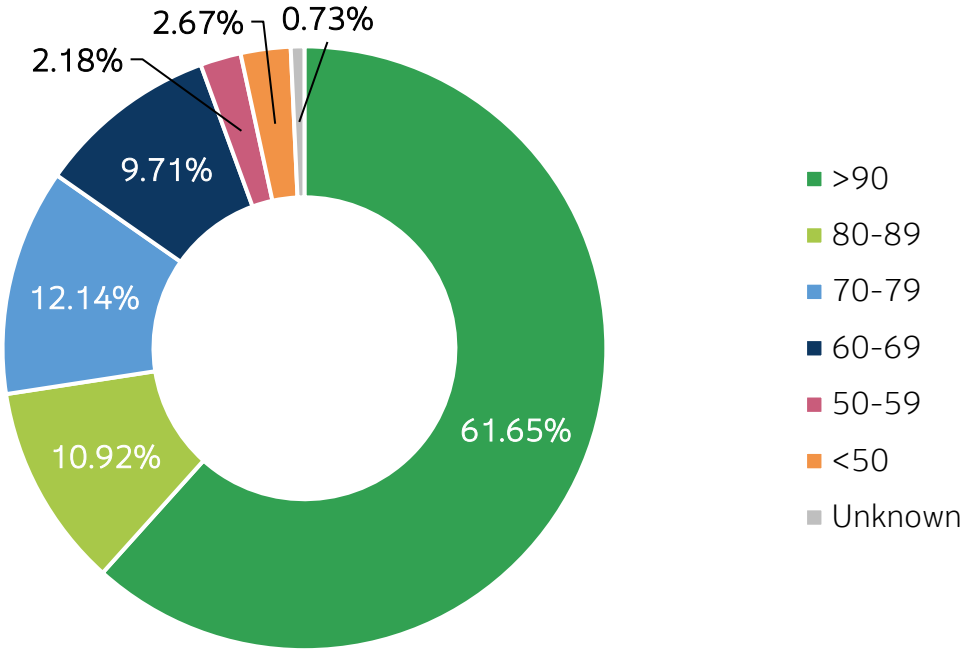


Figure 2-6. East Urban Area – Pavement Condition Index Scores

Pavement age is just one factor that affects pavement condition. Traffic volume, vehicle weight, pavement design, and drainage can all decrease pavement life. Seminole County continues to track the pavement conditions, ensuring that county roadways are adequately maintained.

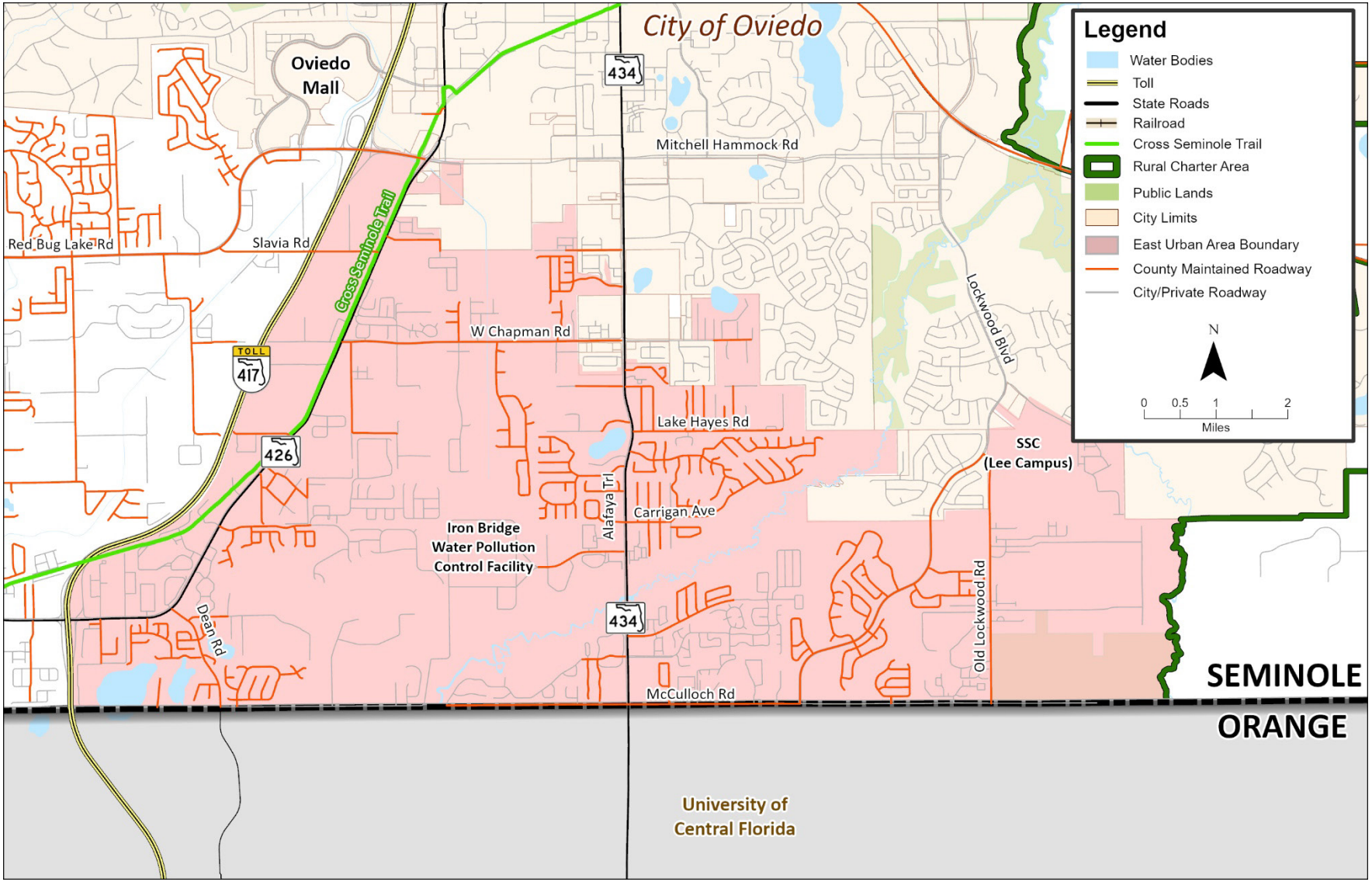


Figure 2-7. East Urban Area – Roadway Maintenance

2.5.3 Freight and Truck Routes

Florida designates routes serving statewide freight significance as Strategic Intermodal System (SIS) facilities. SIS facilities are designated by objective criteria and thresholds based on quantitative measures of transportation and economic activity that are determined by the state. These facilities move significant levels of people and goods and generally support major flows of interregional, interstate, and international travel and commerce. The state also designates Emerging SIS Facilities as those not yet meeting the established SIS criteria but that are expected to in the future. These facilities move lower levels of people and goods but demonstrate strong potential for future growth and development.

The Florida SIS Freight System is designated in the Central Florida Regional Freight Mobility Study (Cambridge Systematics, Inc., et al. 2014). The only SIS facility within the EUA is SR 417 (Seminole Expressway). The county does not own or maintain any designated freight routes. However, SR 417 and SR 434 within the EUA are part of the National Highway Freight Network (FHWA n.d. and 2020).

The difference between freight and truck routes is the agency that is authorized to make changes (such as mobility standards and construction changes) to the routes and its design standards. Federally designated truck routes need Federal Highway Administration (FHWA) approval while state freight routes need FDOT and local government approval. State freight routes have higher mobility standards than other state highways, but these mobility standards apply to freight routes only. The National Highway Freight Network also has its own federal standards that must be met.

2.5.4 Intermodal Connectors and Facilities

Intermodal Connectors are roadways that provide access between designated Intermodal Facilities and the National Highway System. There are no identified Intermodal Facilities and Intermodal Connectors to the National Highway System within the East Urban Area (FHWA n.d.).

The SIS facilities also include passenger rail stations; however, there are no passenger rail stations within the EUA.

2.6 Existing Traffic Analysis

This section summarizes the existing traffic analysis results using two different methodologies: *Travel Time and Delay Study* results and Seminole County Traffic Counts from 2022. The travel time and delay data were provided by the county in the form of a report that summarizes the 2022 conditions on a directional and peak hour basis (Luke Transportation Engineering Consultants 2022). The study analyzed data for a total of 342.6 miles of roadways in the county. Included in the total mileage were 8 state roads that totaled 134.4 miles and 74 county roads that totaled 208.2 miles. More details on the methodology from the *Travel Time and Delay Study* can be found in the *Existing Conditions & Future Traffic Forecast Technical Memorandum* completed as part of the 2045 Plan.

The second methodology for evaluating existing traffic conditions included a traffic-count-based analysis using traffic data available as part of the Traffic Counts geographic information system (GIS) layer that is available on the Seminole County website. The existing condition year for this traffic analysis is 2022. Further analysis of future years of 2030, 2035, and 2045 is discussed in Section 3.2.

Information from both analyses was used to identify roadway segments and intersections that are currently operating at a level of service (LOS) F. LOS helps define operating conditions of roadways and rates the quality of service a traveler on the facility typically experiences on a scale of "A" (highest quality, free-flow conditions) to "F" (lowest quality, congested conditions). The following sections summarize the roadway segments and intersections within the EUA with an existing (2022) traffic LOS above the threshold determined by FDOT or the county.

It is important to note that this analysis assumes that the effects of the COVID-19 pandemic have subsided, and 2022 traffic conditions are in line with what to expect moving forward.

2.6.1 Intersections

Based on the results from the *Travel Time and Delay Study*, four signalized intersections within the EUA were found to be operating at a LOS F in 2022. Of those intersection, three are county roads intersecting with state roads while one is a state road intersecting with a state limited access toll facility. Table 2-6 summarizes the intersections within the EUA with an LOS F in 2022.

Table 2-6. East Urban Area – Signalized Intersections with Existing (2022) LOS F

Roadway	Intersecting Roadway
McCulloch Rd.	SR 434
Red Bug Lake Rd. (westbound)	SR 417 (westbound ramps)
SR 426	Red Bug Lake Rd./Mitchell Hammock Rd.
SR 426	SR 417 (eastbound ramps)

2.6.2 Roadway Segments

The analysis reveals that one roadway segment within the EUA is over capacity by current county standards. The roadway segment from Lockwood Boulevard to Old Lockwood Road is maintained by Orange County; however, it is directly connected to Seminole County-maintained segments of the roadway and provides direct connectivity to Seminole County. No state roads within the EUA were observed as having an existing LOS F. Table 2-7 summarizes the roadway segment that has an existing (2022) LOS F. Figure 2-8 presents the volume-to-capacity (V/C) ratios for roadways within and around the EUA.

Table 2-7. East Urban Area – Roadways with Existing (2022) LOS F

Roadway	From	To	Exist. Lanes	County LOS	V/C Ratio	Project	Source
McCulloch Rd. (Orange County)	Lockwood Blvd.	Old Lockwood Rd.	2	F	1.06	None	Not Applicable

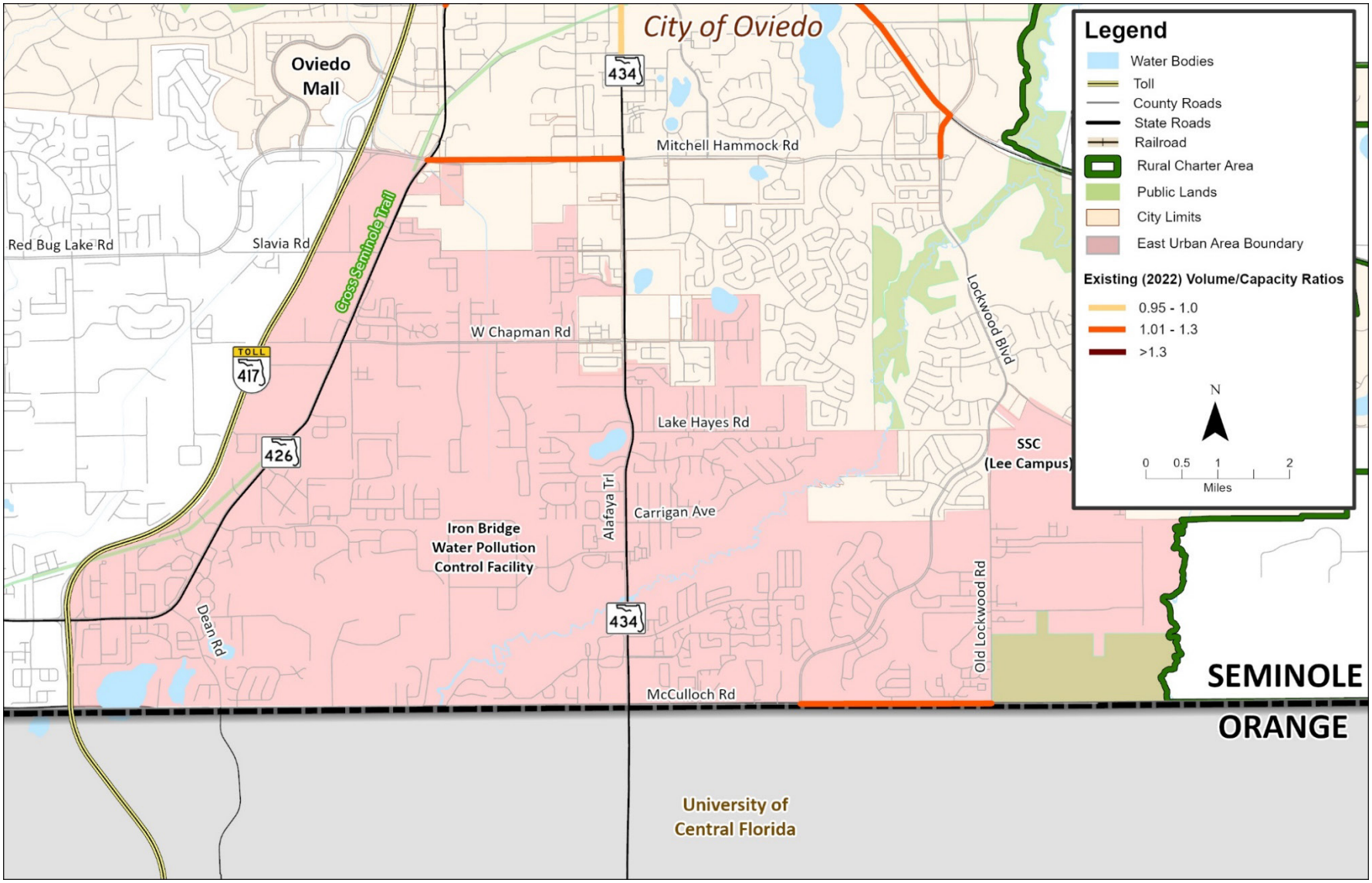


Figure 2-8. East Urban Area – Existing (2022) Volume-to-Capacity Ratios

2.7 Crash Analysis

This section summarizes the findings from the countywide crash analysis completed as part of the 2045 Plan and outlines high-crash locations identified within the EUA. As documented in the *Existing Conditions & Deficiencies Technical Memorandum,* a crash analysis covering 2016 to 2020 was conducted to identify high-crash locations throughout the county. A simplified high-crash analysis was performed for the centerline miles of state, county, and local roads. The methodology used to identify high-crash intersections was based on a 250-foot-wide buffer around the intersection point where two roadways crossed. Two primary characteristics of these intersections included being at-grade and having signalized traffic control. Intersections with more than 100 crashes over the 5-year period were identified as being high-crash locations. The following subsections summarize high-crash locations identified on state, county, and local roads within the EUA for vehicle-, bicycle-, and pedestrian-related crashes. These data then were used to identify improvements that enhance safety for all users.

2.7.1 State Road Crashes

Although state roads make up approximately 10% of the total centerline miles in Florida, they account for 62% of traffic fatalities (FDOT 2021). Based on the results from the countywide crash analysis, no intersections within the EUA were identified as high vehicle-only crash intersection locations. Despite no state roads meeting the 100 vehicle-only crash threshold within the EUA, two fatalities were recorded during the same 5-year period. One fatality occurred at the SR 434 and Beasley Road intersection and one fatality occurred at the SR 426 and SR 417 interchange.

Locations with more than five bicycle- or pedestrian-related crashes over the 5-year period were identified as being high bicycle and pedestrian crash locations. There were no intersections within the EUA that met the high bicycle and pedestrian crash threshold. One bicycle/pedestrian fatality was recorded along SR 434, just north of Riverwind Way.

2.7.2 Local/County Road Crashes

Locations with at least 100 vehicle-only crashes were used as a method to identify high-crash locations on local and county-maintained roadways. Although no locations within the EUA were identified as being high-crash locations, a concentration of crashes was observed at the McCulloch Road and SR 434 intersection. In addition, one fatality occurred at the Red Bug Lake Road and SR 417 interchange.

Crashes involving pedestrians or bicyclists are less frequent and more widely disbursed throughout Seminole County, which is also true for the EUA. Only one location with more than one bicycle/pedestrian-related crash was identified within the EUA. The McCulloch Road and SR 434 intersection had two bicycle-related crashes between 2016 and 2020. Neither accident resulted in fatalities. However, one pedestrian fatality was recorded at the Carrigan Avenue and SR 434 intersection, which was recorded as occurring at night. Crash occurrences and fatalities within the EUA are presented as heat maps in Appendix A.

2.8 Active Transportation

This section describes the existing active transportation infrastructure within the EUA. Active transportation is defined as any transportation mode that is non-motorized. For the purposes of Seminole County, the modes being discussed in this section include the pedestrian, bicycle, and trail network within the EUA.

2.8.1 Pedestrian

Pedestrian facilities (or sidewalks) are commonplace alongside major roadways and arterials but can be limited along side streets and within neighborhoods. Shared-use paths are also considered pedestrian facilities but are discussed further in Section 2.8.3.

Pedestrian infrastructure countywide is maintained by the same agency maintaining the adjacent roadway, apart from shared-use paths that are in FDOT ROW. The data collected for existing pedestrian facilities include sidewalk facilities in Seminole County's ROW, as well as pedestrian facilities within private subdivisions. Based on a review of existing pedestrian facilities, the county maintains approximately 68 miles of sidewalks within the EUA. The total sidewalk miles calculated included sections of roadways that have sidewalks on both sides, resulting in a greater number of sidewalk miles when compared to the total number of centerline miles maintained by the county.

As presented in Figure 2-9, not all county-maintained roadways within the EUA have sidewalks adjacent to them. Constructing new sidewalks adjacent to existing roadways with limited ROW often requires ROW donations from property owners. In some cases, property owners do not prefer to donate portions of their property for sidewalk construction, resulting in some roadways having incomplete sidewalks adjacent to the roadway. However, the county continues to actively track sidewalk gaps throughout the county, as well as coordinating with existing residences and developers to enhance existing facilities and complete gaps in the sidewalk network. The sidewalk maintenance program is also important to sustain accessibility and compliance with the Americans with Disabilities Act (ADA).

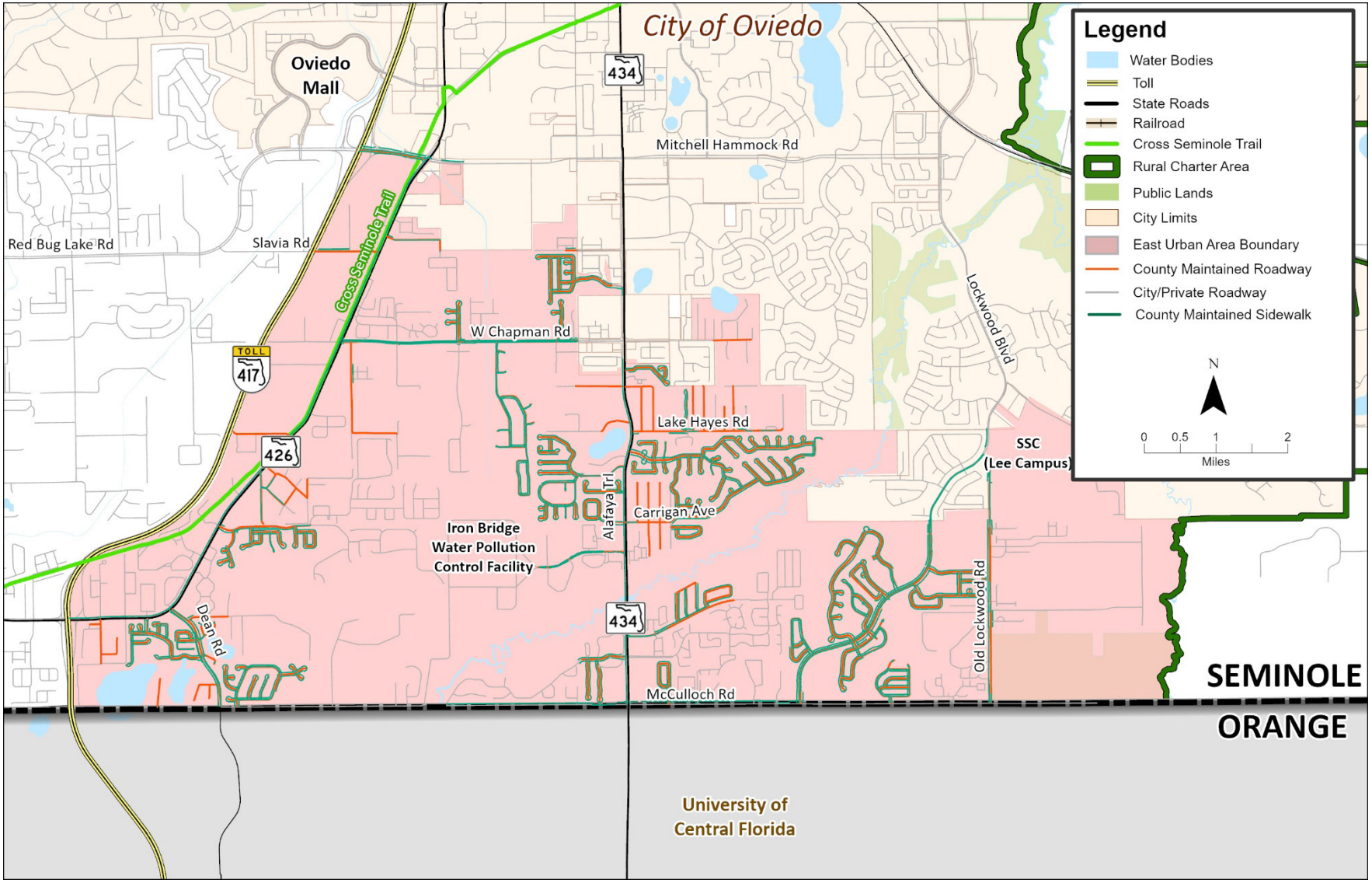


Figure 2-9. East Urban Area – Roadway Maintenance and Existing Sidewalks

2.8.2 Bicycle

Although newer county roadways have bicycle lanes, many older roadways or roadways within private subdivisions do not. As presented in Figure 2-11 bicycle lanes within the EUA are provided along SR 434, SR 426, Chapman Road, and Lockwood Boulevard. The county's extensive trail and pathway network (8- to 10-foot-wide sidewalk) provides an alternative to the traditional bicycle lane that shares the road with vehicular traffic. Shared-use and pathway facilities are described in more detail in the following section but, in general, they run parallel to roadways, separated by landscaping, offering a lower stress bicycling experience. Some bicyclists prefer to use the separated shared-use and pathway facilities because these can seem more comfortable for recreational or inexperienced bicyclists. In most cases, separated trails and pathway facilities are located along higher-capacity roadways.

2.8.3 Trail Network

Seminole County continues to transform its trail network. In 2021, the county updated its Trails Master Plan and now includes a distinct hierarchy of its trail network (S&ME 2021). According to the plan, the county has defined the following hierarchy that includes five types of trails:

- **Signature Trails:** Paved 12- to 14-foot-wide urban and unpaved rural multipurpose trails with countywide and regional connections
- **Pathways:** Paved 8- to 10-foot-wide urban and unpaved rural multipurpose trails for travel between and within cities and major activity centers; connect to Signature trails
- **Connectors:** Paved 8-foot-wide sidewalks (urban and rural) linking shorter distances, such as neighborhoods
- **Wilderness Trails:** Unpaved paths for pedestrian, mountain bike, and equestrian usage within and between preserved lands and natural greenways
- **Destination Trails:** Paved 12- to 14-foot-wide multipurpose trails with public gathering spaces that loop within a property and are connected to neighborhoods through other trails

For the purposes of transportation mobility, three trail types are relevant: Signature Trails, Pathways, and Connectors. These trails account for 249.3 miles of trail infrastructure, both paved and unpaved. Wilderness Trails and Destination Trails provide the community recreational opportunity and are crucial to the quality of life in the area; however, their integration into an active transportation mode is limited. The Econ River Wilderness Trail is the only Wilderness Trail within the EUA.

The Signature Trails provide connectivity across the county and the region, including the neighboring Volusia, Lake, and Orange Counties. Some characteristics of this trail type are dedicated ROWs, grade separation (over/under major roadways, highways, and intersections), shade, and a mile marker system. These trails do not always follow alongside a roadway ROW. The only Signature Trail within the EUA is the Cross Seminole Trail, which is in the western portion of the EUA.

The Pathways network has been developed to feed the Signature Trails. These also provide connectivity between the seven cities and major activity centers within the county. These trails are narrower than Signature Trails and use existing space within roadway ROW with at-grade crossings and typically have minimal shade protection. There are no designated Pathways within the EUA.

The Connectors network comprises 8-foot-wide paved sidewalks. These trails are intended to fill the gaps in pedestrian facilities between short-distance locations and neighborhoods. Connectors also join to the Pathways network and traditional sidewalks. These trails, like Pathways, use existing space within roadway ROW with at-grade crossings and typically have minimal shade protection. There are no existing Connectors within the EUA. However, new Connectors and Pathways within the EUA were proposed as part of the Trails Master Plan, which are discussed in more detail in Section 3.3.3. Figure 2-10 presents the existing trail network in and around the EUA.

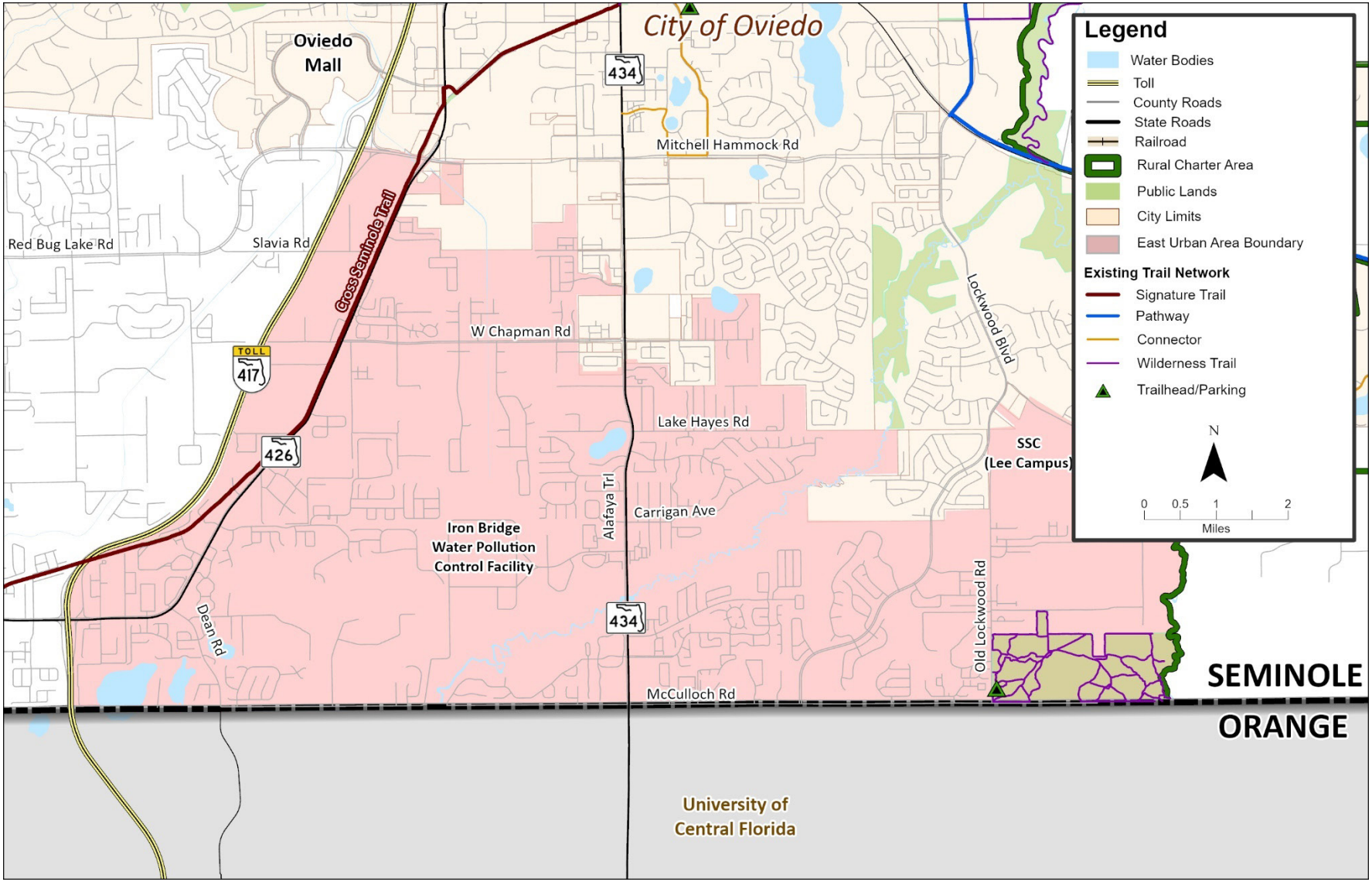


Figure 2-10. East Urban Area – Existing Trail Network

2.9 Transit

Public transportation is provided by two operators in Seminole County: Central Florida Regional Transit Authority (LYNX) and SunRail. Although, the SunRail network does not enter the EUA, LYNX offers traditional fixed-route bus service and NeighborLink flexible-route services within the EUA. The LYNX NeighborLink provides a flexible-route service within an established boundary that can either connect to a designated fixed route or directly to a destination station to provide connectivity to points of interest and multimodal options.

Within the EUA, LYNX services 14 bus stops via one fixed route (Link 434, SR 434 Crosstown) along SR 434 and Mitchell Hammock Road. In addition, LYNX provides the NeighborLink 822/Oviedo flexible-route service. The NeighborLink 822/Oviedo provides flexible transportation services to residents in the Oviedo and northern EUA area, with connections to the SSC-Lee Campus and the Oviedo Mall. This service provides transportation to anywhere within the NeighborLink 822/Oviedo boundary and operates weekdays and Saturdays from 6:20 a.m. to 7:30 p.m. LYNX also provides free transit service to all UCF students, faculty, and staff (LYNX n.d.). Figure 2-11 shows the overall multimodal network within and around the EUA.

In addition to LYNX transit services, UCF provides students with free shuttle service with 15 routes to 22 off-campus apartment complexes and Central Florida Research Park. Five of those routes provide connections to areas in the southern portion of the EUA. These five routes include stops at the Publix Super Market at the University Palms Shopping Center, Walmart Neighborhood Market, The Station Alafaya, Riverwind at Alafaya Trail, Tivoli Apartments of Orlando, Northgate Lakes, Northview, and Legacy Pointe at UCF (UCF 2023). All transit services within the EUA are operated in compliance with ADA requirements.

2.10 Commuter Rail, Intercity Passenger Rail, Auto Train, and Freight Rail

There is no rail service within the EUA boundary. The Aloma Spur runs from the Amtrak Auto Train facility in Sanford, traversing through areas of downtown approximately 7 miles south, terminating near Winter Springs, but it does not enter the EUA. The Central Florida Rail Corridor is the main rail line that runs through the county, servicing commuter rail, intercity passenger rail, and freight rail services. The Central Florida Rail Corridor (CFRC) does not enter the EUA.

SunRail operates on the CFRC north to south through the Urban Service Area; however, the service runs on the CFRC, which does not enter the EUA. Seminole County does not have long-distance, intercity-passenger-only rail service. Amtrak intercity passenger rail service runs through the county on the CFRC; however, the nearest passenger stations are DeLand in Volusia County and Winter Park in Orange County. There are currently four trains that operate in this manner in the county that terminate in New York and Miami. The Amtrak Auto Train serves the county with one station located in Sanford, outside of the EUA.

CSXT is the sole freight rail provider operating in Seminole County. CSXT is a Class I provider and operates on existing SIS railroad tracks located on both unincorporated county lands and municipal boundaries, including the Aloma Spur and CFRC, neither of which enter the EUA.

2.11 Navigable Waterways and Water Trails

Waterways provide transportation opportunities in Seminole County. By definition, navigable waters of the United States are those waters that are subject to the ebb and flow of the tide and are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce (CFR 1986). The St. Johns River is the only navigable waterway within county boundaries and does not enter the EUA. The EUA has no recreationally accessible river systems or Florida State Designated Paddling Trails.

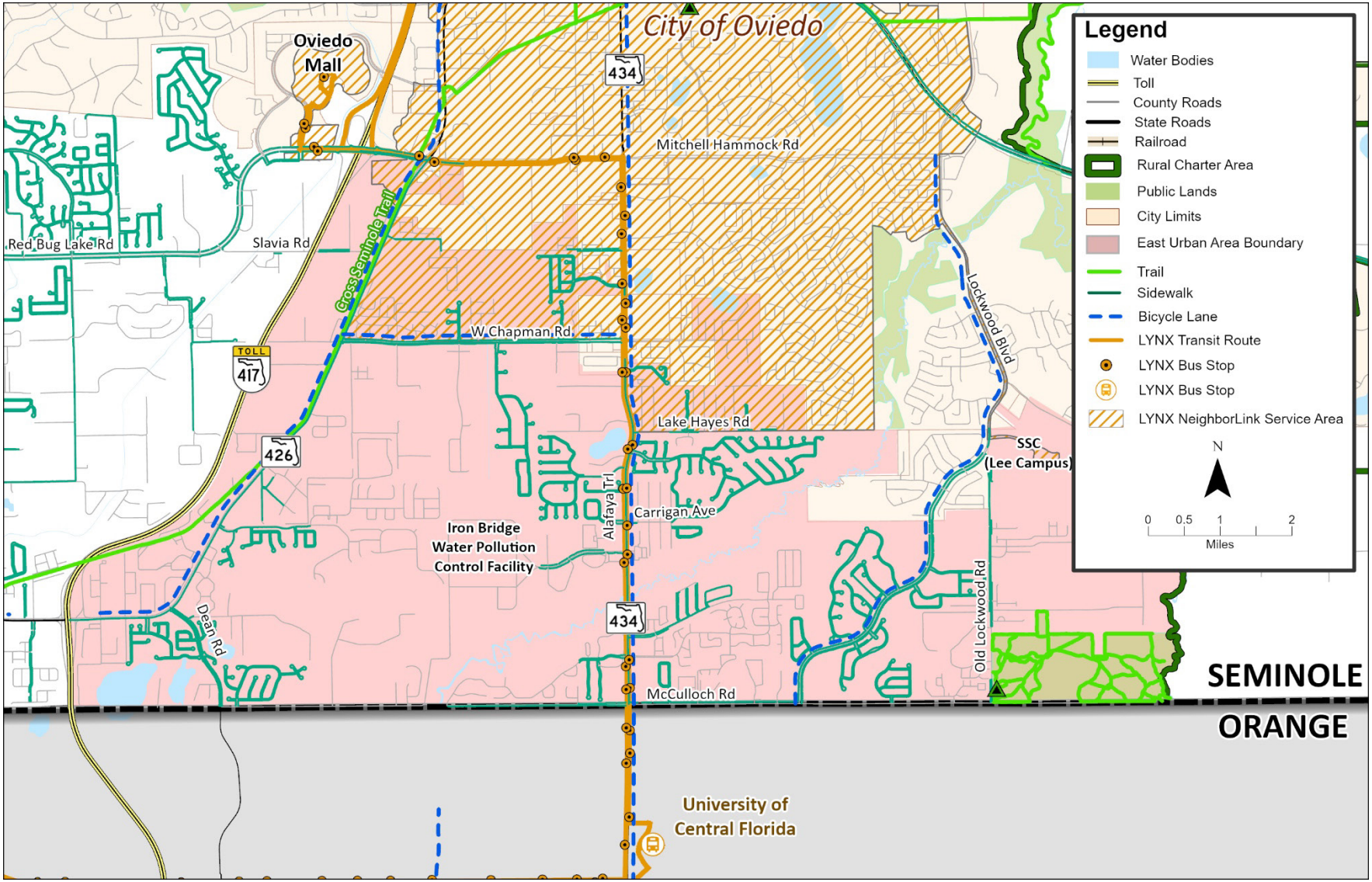


Figure 2-11. East Urban Area – Existing Multimodal Network

2.12 Surrounding Projects

This study considered ongoing and programmed improvements in and around the EUA. A review of transportation plans and relevant studies was performed for transportation improvements that may impact the EUA. Plans reviewed include the following:

- FDOT's 5-Year Work Program (fiscal years 2024–2028)
- Seminole County's Capital Improvement Program (CIP)
- *CFX Visioning + 2040 Master Plan* (CFX 2016)
- MetroPlan Orlando's *2045 Metropolitan Transportation Plan Cost Feasible Plan* (adopted December 9, 2020, revised March 9, 2022)
- Orange County's *North East Orange County Areawide Transportation Study* (NEOCATS)
- *City of Oviedo 10-Year Mobility Plan*

2.12.1 FDOT 5-Year Work Program

A buffer was applied to the EUA boundary to identify FDOT programmed improvements within 1 mile of the EUA that may impact transportation facilities. FDOT's 5-Year Work Program (adopted July 1, 2023; FDOT 2023) includes five programmed improvements along portions of SR 417 and SR 434. The widening of SR 417 from four to eight lanes (Financial Project Identification [FPID] No. 437545-1) is programmed for design/build in fiscal year 2024. In addition, wrong-way detection signs and closed-circuit television (CCTV) upgrades along SR 417 are funded for construction in 2024 and 2027, respectively. An all-electronic tolling conversion project along SR 417 from the Orange County Line to Interstate 4 (I-4) is planned but is not yet funded for construction.

South of the EUA boundary (in Orange County), a resurfacing project along SR 434 is programmed for construction in 2025. Table 2-8 summarizes FDOT's programmed improvements in and around the EUA.

Table 2-8. FDOT 5-Year Work Program Projects

FPID	Roadway	From	To	Description	Future Phase
417545-1	SR 417 (Seminole Expressway)	Orange/Seminole County Line	North of SR 434	Widen from four to eight lanes	Design/Build – Funded 2024
439901-3	SR 417 (Seminole Expressway)	Orange/Seminole County Line	I-4	Wrong-way detection signs - Zone 3	CST – Funded 2024
452086-2	SR 417 (Seminole Expressway) Northbound Off-Ramp	SR 417	Red Bug Lake Rd.	CCTV upgrades	CST – Funded 2027
437301-7	SR 417 (Seminole Expressway)	Orange/Seminole County Line	I-4	All-electronic tolling	PD&E – Funded 2024
448799-1	SR 434	Centaurus Drive	Seminole County Line	Resurfacing	CST – Funded 2025

PD&E = project development and environment
CST = construction

2.12.2 Seminole County Capital Improvement Program

According to Seminole County's 5-Year CIP (2022), there is one programmed improvement occurring within or directly adjacent to the EUA (Seminole County 2017). Capacity and bicycle/pedestrian improvements are programmed along Slavia Road from Red Bug Lake Road to SR 426. However, construction of this project is dependent on the completion of the SR 417 widening (FPID 417545-1) because the existing overpass at SR 417 and Slavia Road restricts widening. Table 2-9 summarizes the Seminole County CIP projects.

Table 2-9. Seminole County Capital Improvement Program Projects

CIP No.	Roadway	From	To	Description	Year CST Funded
01785146	Slavia Rd.	Red Bug Lake Rd.	SR 426	Add pedestrian/bicycle improvements and additional capacity needed by 2030	Future Years (after FPID 417545-1 is complete)

CIP = Capital Improvement Program

2.12.3 Central Florida Expressway Authority 2040 Master Plan

CFX's 2045 Master Plan was in development as of February 2024. Therefore, this study relied on the previously published *Visioning + 2040 Master Plan* (approved May 2016) to identify system expansion and roadway improvements that may affect the EUA transportation network. According to that plan, no improvements are planned within the EUA.

2.12.4 MetroPlan Orlando 2045 Metropolitan Transportation Plan

MetroPlan Orlando *2045 Metropolitan Transportation Plan Cost Feasible Plan* (adopted December 9, 2020, revised March 9, 2022) includes several funded and unfunded needs within and adjacent to the EUA. Table 2-10 summarizes the funded and unfunded cost feasible projects within and near the EUA.

Table 2-10. MetroPlan Orlando's Cost Feasible Projects Within and Adjacent to the EUA

MTP ID.	Roadway	From	To	Description	Future Phases
9103	Carrigan Ave.	SR 434	Division St.	Sidewalk	PE/CST/CEI – 2031/2035
4013	Mitchell Hammock Rd.	SR 426	Lockwood Blvd.	Complete Streets	PD&E/PE/ENV/CST/ CEI – 2036/2045
2199	SR 434	Smith St.	Mitchell Hammock Rd.	Complete Streets/ safety/ops	PD&E/PE/ROW/ENV /CST/CEI – 2036/2045
9138	Slavia Rd. Extension	SR 426	Dr. Edward Stoner Way	New 4-lane roadway	PD&E/PE/ROW/ENV – 2031/2035 CST/CEI – 2036/2045
2144	SR 434	Research Pkwy.	McCulloch Rd.	Complete Streets/ safety/ops	PD&E/PE/ROW/ENV – 2026/2030 CST/CEI – 2031/2035
7114	Dean Rd.	Winder Trl.	University Blvd.	Complete Streets/ safety/ops	PD&E/PE/ROW/ENV /CST/CEI – 2036/2045

MTP ID.	Roadway	From	To	Description	Future Phases
2245	SR 434	Multiple locations	N/A	Safety improvements	PE/ROW/ENV/CST /CEI - Unfunded
9144	McCulloch Rd.	Dean Rd.	Lockwood Blvd.	Complete Streets	PD&E/PE/ROW/ENV /CST /CEI - Unfunded
5044	Old Lockwood Rd.	E McCulloch Rd.	Seminole State College	Shared-use path	PE/ROW/ENV/CST /CEI - Unfunded
7529	N. Tanner Rd.	Lake Pickett Rd.	Orange/ Seminole County Line	Widen from 2 to 4 lanes	PD&E/PE/ROW/ENV /CST /CEI - Unfunded
5071	Little Econ Greenway	East of SR 436	Chuluota Rd.	Shared-use path	PE/ROW/ENV/CST /CEI - Unfunded
9133	Dean Rd.	SR 426	Orange/ Seminole County Line	Widen from 2 to 4 lanes	PD&E/PE/ROW/ENV /CST /CEI - Unfunded
7004	Dean Rd.	University Blvd.	Orange/ Seminole County Line	Widen from 2 to 4 lanes	PD&E/PE/ROW/ENV /CST /CEI - Unfunded
3170	Alafaya Woods Blvd.	SR 434	E. Mitchell Hammock Rd.	Operational/safety	PE/ROW/ENV/CST /CEI - Unfunded
5050	Red Bug Connector Trail	SR 434	Red Bug Lake Rd.	Shared-use path	PE/ROW/ENV/CST /CEI - Unfunded
5058	Red Bug Lake Rd.	SR 436	Cross Seminole Trail	Sidewalk	PE/CST/CEI – Unfunded
2032	SR 426/Aloma Ave.	Tuskawilla Rd.	SR 417	Operational/safety	PE/ROW/ENV/CST /CEI - Unfunded
2244	SR 426	Multiple locations	N/A	Safety improvements	PE/ROW/ENV/CST /CEI – Unfunded
9146	Red Bug Lake Rd.	SR 436	SR 426	Complete Streets	PD&E/PE/ROW/ENV /CST /CEI - Unfunded
5064	East Orange Trail	UCF	Seminole Ranch Conservation Area (Orange County)	Shared-use path	PE/ROW/ENV/CST /CEI – Unfunded

PE = preliminary engineering
ENV = environmental
CEI = construction engineering & inspection

2.12.5 NEOCATS

The *North East Orange County Areawide Transportation Study* (NEOCATS) was initiated by Orange County to identify future needs within the growing northeast area of Orange County. The NEOCATS boundary is defined by Seminole County to the north, CR 419/Chuluota Road to the east, SR 50/East Colonial Drive to the south, and Rouse Road to the west. The study involved conducting safety, operational, and multimodal analyses to identify needed transportation improvements within the NEOCATS boundary (Orange County 2022).

The study evaluated three alternatives: a No-Build Alternative and two Build Alternatives. The No-Build Alternative was based on the existing roadway configuration. Build Alternative 1 evaluated the transportation network based on programmed and planned improvements that would be in place by the year 2045. Build Alternative 2 consisted of programmed and planned improvements already in place by 2045, as well as additional improvements (or needs) identified to accommodate the anticipated travel demand in the NEOCATS study area through 2045.

Identified roadway improvements included as part of Build Alternative 2 included the following:

- CR 419 widening (two to four lanes), Lake Pickett Road to Seminole County Line
- Lake Pickett Road widening (two to four lanes), Percival Road to CR 419
- New east/west four-lane roadway between Rouse Road and Lake Pickett Road
- North Tanner Road widening (two to four lanes), Lake Pickett Road to McCulloch Road
- One additional lane (fourth lane) in the westbound direction on SR 50 between Lake Pickett Road and Woodbury Road
- Discovery Drive widening (two to four lanes), Ingenuity Drive to Research Parkway

Build Alternative 2 also included additional intersection improvements needed through 2045. In total, 37 intersections were identified for short-, mid-, and long-term improvements. As it relates to this EUA Study, four of those improvements were at intersections along McCulloch Road and included the following locations:

- SR 434 (Alafaya Trail) and McCulloch Road
- McCulloch Road and Lockwood Boulevard
- McCulloch Road and North Tanner Road
- McCulloch Road and Rouse Road

The NEOCATS study also identified several facilities that need bicycle and pedestrian improvements based on the existing sidewalk/bicycle lane gaps, as well as additional mid-block crossing opportunities. Within and around the EUA boundary, bicycle and pedestrian improvements included the following:

- New mid-block crossing at the Hestia Loop and Old Lockwood Road intersection
- Shared-use path on one side of Rouse Road from Jay Blanchard Trail to McCulloch Road
- Sidewalk on one side of Orion Boulevard from Gemini Boulevard to McCulloch Road

In total, the needs identified as part of Build Alternative 2 are anticipated to cost approximately $452 million (in 2021 dollars). Additionally, Build Alternative 2 is expected to have a benefit/cost ratio of 7.6 (relative to the No-Build Alternative).

2.12.6 City of Oviedo 10-Year Mobility Plan

The *City of Oviedo 10-Year Mobility Plan* was initiated by the City of Oviedo to develop a comprehensive list of capital improvement projects and programs that enhance mobility throughout the city over the next 10 years. The plan was still in development as of February 2024. A preliminary list of projects identified by the plan were presented to the City of Oviedo's City Council on May 3, 2021, for input (City of Oviedo n.d.). Although those projects were only preliminary, this EUA Study considered how those projects may affect the EUA transportation network. In addition, coordination with the City of Oviedo was conducted as part of the 2045 Plan.

3. Future Conditions

3.1 Future Land Use

According to Seminole County's Future Land Use GIS data, future land use within the central portion of the EUA is expected to remain similar to existing conditions. However, areas around the county's southern boundary, as well as land uses along SR 417, SR 434, and SR 426, are designated as medium-density residential, commercial/office, planned development, and high-intensity planned development transitional (HIP-TR) land uses (Seminole County n.d.). These areas are expected to support increased residential housing densities, provide more-robust employment opportunities, and minimize traffic congestion and community impacts associated with urban sprawl (Seminole County 2022a).

In addition, the Seminole Way Employment Corridor was identified by the county as an area to implement strategies to help attract specific industries to enhance economic growth. This economic target area follows SR 417 (Seminole Expressway) from I-4 in the northwest portion of the county to the Seminole/Orange County line in the southeast portion of the county. Target industries this corridor is intended to attract include "specific businesses offering high wage jobs by adopting specific recruitment and retention guidelines" (Seminole County 2022a).

The areas within the EUA designated as HIP-TR are expected to support land uses such as mixed use, commercial, office complexes, industrial parks, business parks, public and private schools, and medium- or high-density residential developments. As outlined in the *Envision Seminole 2045*, the HIP-TR areas along the southern EUA boundary offer potential for applied research and advanced technology industries to locate within this area based on its proximity to UCF. However, enhanced mobility infrastructure in this area would be needed to support these potential developments (Seminole County 2022b).

Further, the areas within the EUA designated as planned development account for approximately 8% of future land use in the EUA. Allowable land uses with these areas include mixed use, residential, nonresidential (office, commercial), public and private schools, attendant onsite parking facilities, utilities, transit infrastructure, and recreation areas.

Future land use within the EUA also includes the Econlockhatchee River Protection Area. It is important to note that no developments are permitted within the 550-foot development restriction zone of the Econlockhatchee River Protection Area except for the creation of wetlands or passive recreation areas, as outline in the *Seminole County Comprehensive Plan Future Land Use Element* (Seminole County 2022a). Figure 3-1 presents the future land use for the EUA.

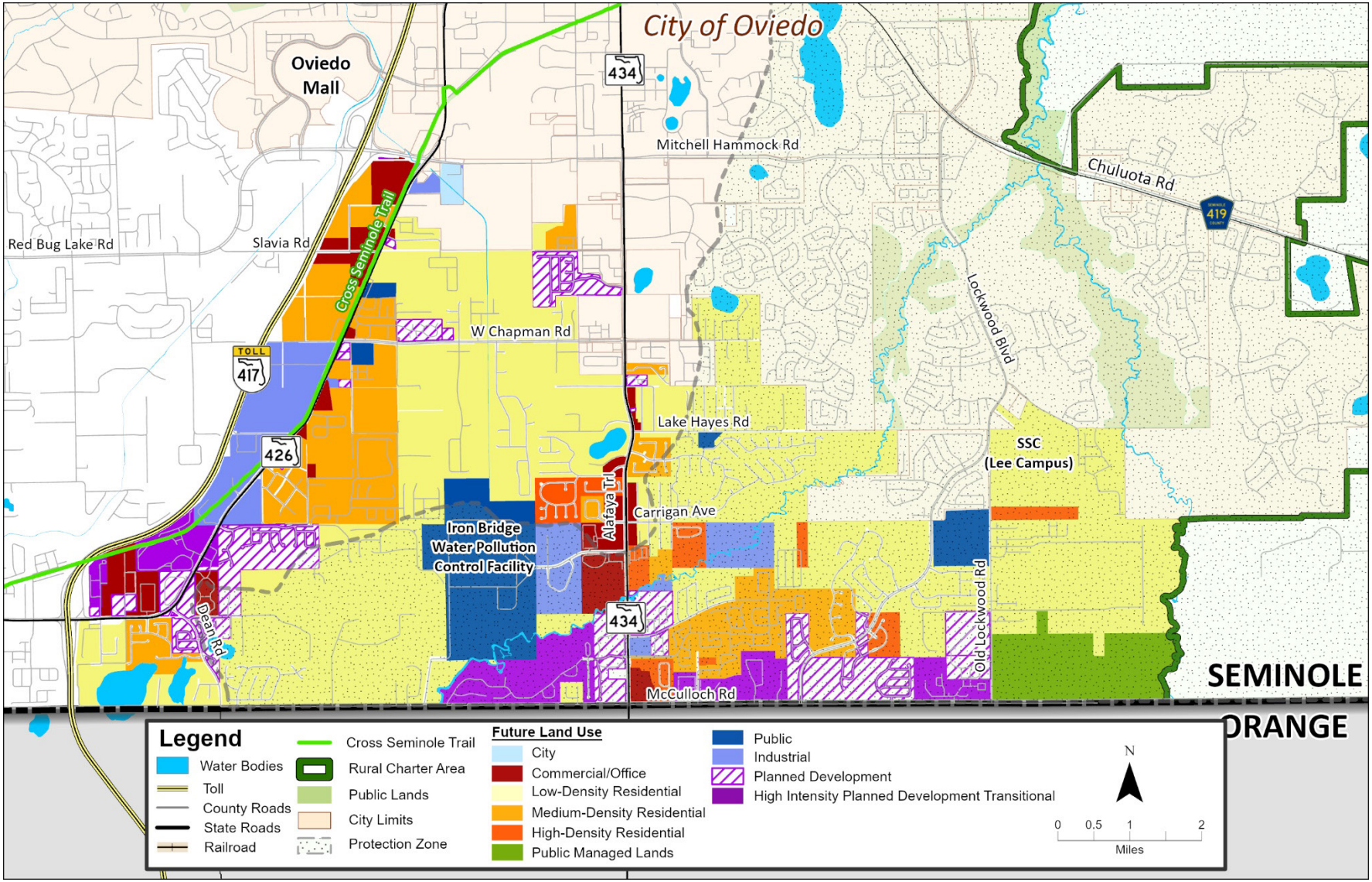


Figure 3-1. East Urban Area – Future Land Use

3.2 Future Traffic Capacity Analysis

Future roadway conditions for county- and state-maintained roadways were evaluated using the Central Florida Regional Planning Model (CFRPM). The CFRPM is an FDOT-provided resource used for traffic modeling within the nine-county FDOT District 5 area, which includes Seminole County. The model has a base year of 2015 and a horizon year of 2045, with interim horizons every 5 years. For the countywide analysis completed as part of the 2045 Plan, three interim scenarios for the years 2030, 2035, and 2045 were evaluated to understand the expected demand and traffic conditions throughout the county.

For this evaluation, the resulting future roadway LOS and V/C ratios were reviewed to identify potential improvements through the year 2045. The following sections summarize future traffic conditions within the EUA for each interim scenario (2030, 2035, and 2045). For more details on this future traffic analysis methodology and countywide results, refer to the *Existing Conditions & Future Traffic Forecast Technical Memorandum* completed as part of the 2045 Plan.

3.2.1 2030 Capacity Analysis

The analysis of the future traffic conditions revealed that within the EUA, four county-maintained roadway segments are expected to have an LOS F in the year 2030 based on current Seminole County standards. Although not inside the EUA boundary, Mitchell Hammock Road from SR 426 to SR 434 is expected to have an LOS F (or V/C ratio of 1.29) by 2030. Mitchell Hammock Road is maintained by the City of Oviedo. Table 3-1 summarizes the county-maintained roadway segments within the EUA with an expected LOS F by 2030.

Table 3-1. East Urban Area – LOS F and V/C Ratios for County Roads in 2030

Roadway	From	To	Exist. Lanes	County LOS	V/C Ratio
Dean Rd.	Orange County Line	SR 426	2	F	1.17
McCulloch Rd.	Lockwood Blvd.	Old Lockwood Blvd.	6	F	1.35
Red Bug Lake Rd.	SR 417	SR 426	6	F	1.04
Slavia Rd.	Red Bug Lake Rd.	SR 426	2	F	1.07

SR 426 from SR 417 to Dean Road is expected to have an LOS D and V/C ratio of 0.88 by 2030. Figure 3-2 presents the anticipated V/C ratios for roadways in and around the EUA in 2030.

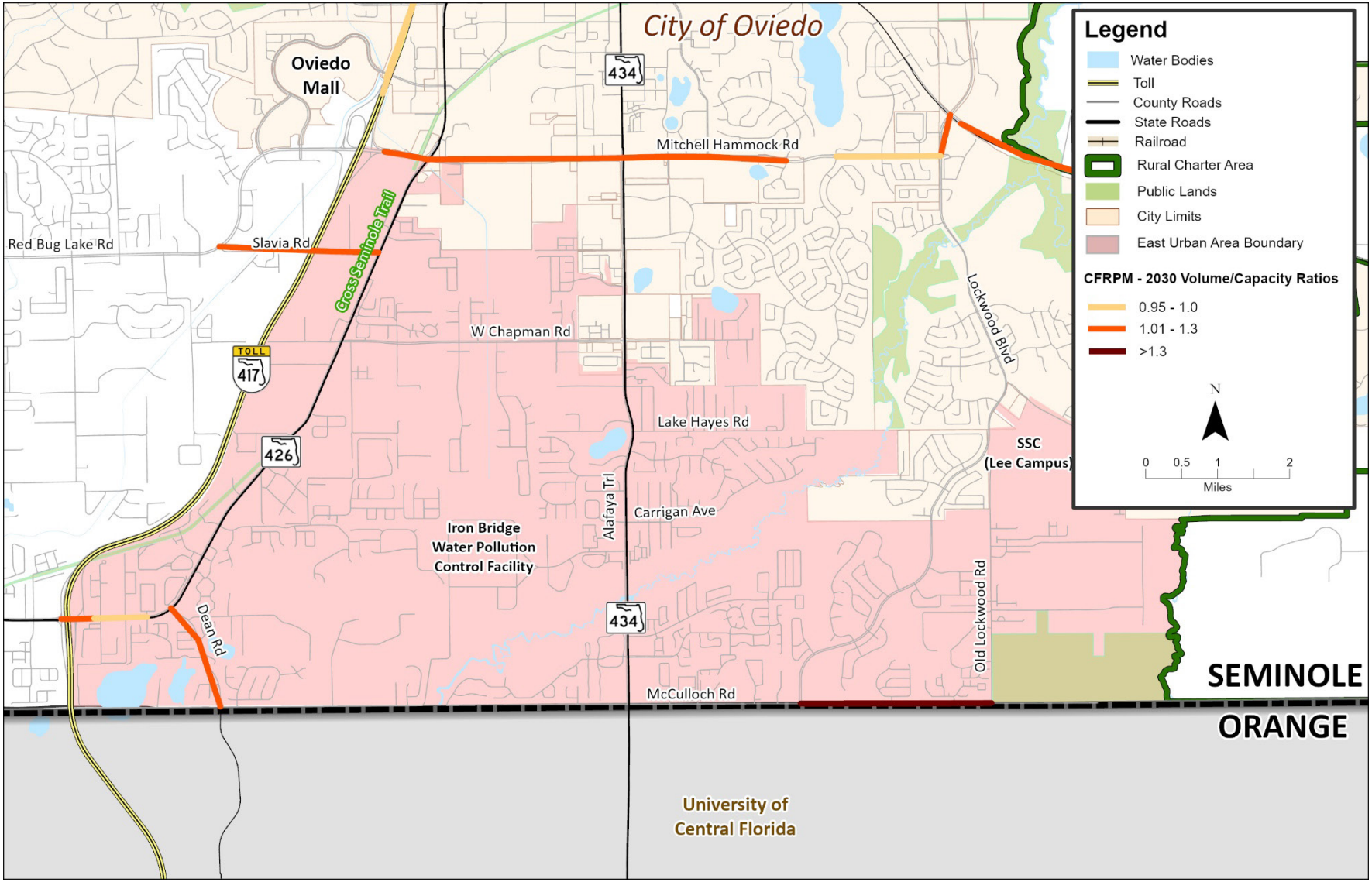


Figure 3-2. East Urban Area – Expected Volume to Capacity Ratios in 2030

3.2.2 2035 Capacity Analysis

By 2035, the same four county-maintained roadway segments identified from the 2030 capacity analysis are expected to continue to be over capacity in 2035. In addition, Mitchell Hammock Road (outside of the EUA) is expected to continue to have an LOS F (or V/C ratio of 1.35) by 2030. Table 3-2 summarizes the four roadway segments within the EUA with an expected LOS F by 2035.

Table 3-2. East Urban Area – LOS F and V/C Ratios for County Roads in 2035

Roadway	From	To	Exist. Lanes	County LOS	V/C Ratio
Dean Rd.	Orange County Line	SR 426	2	F	1.23
McCulloch Rd.	Lockwood Blvd.	Old Lockwood Blvd.	6	F	1.43
Red Bug Lake Rd.	SR 417	SR 426	6	F	1.10
Slavia Rd.	Red Bug Lake Rd.	SR 426	2	F	1.13

By 2035, SR 426 from SR 417 to Dean Road is expected to have an LOS E and V/C ratio of 0.93. Figure 3-3 presents the anticipated V/C ratios for roadways in and around the EUA in 2035.

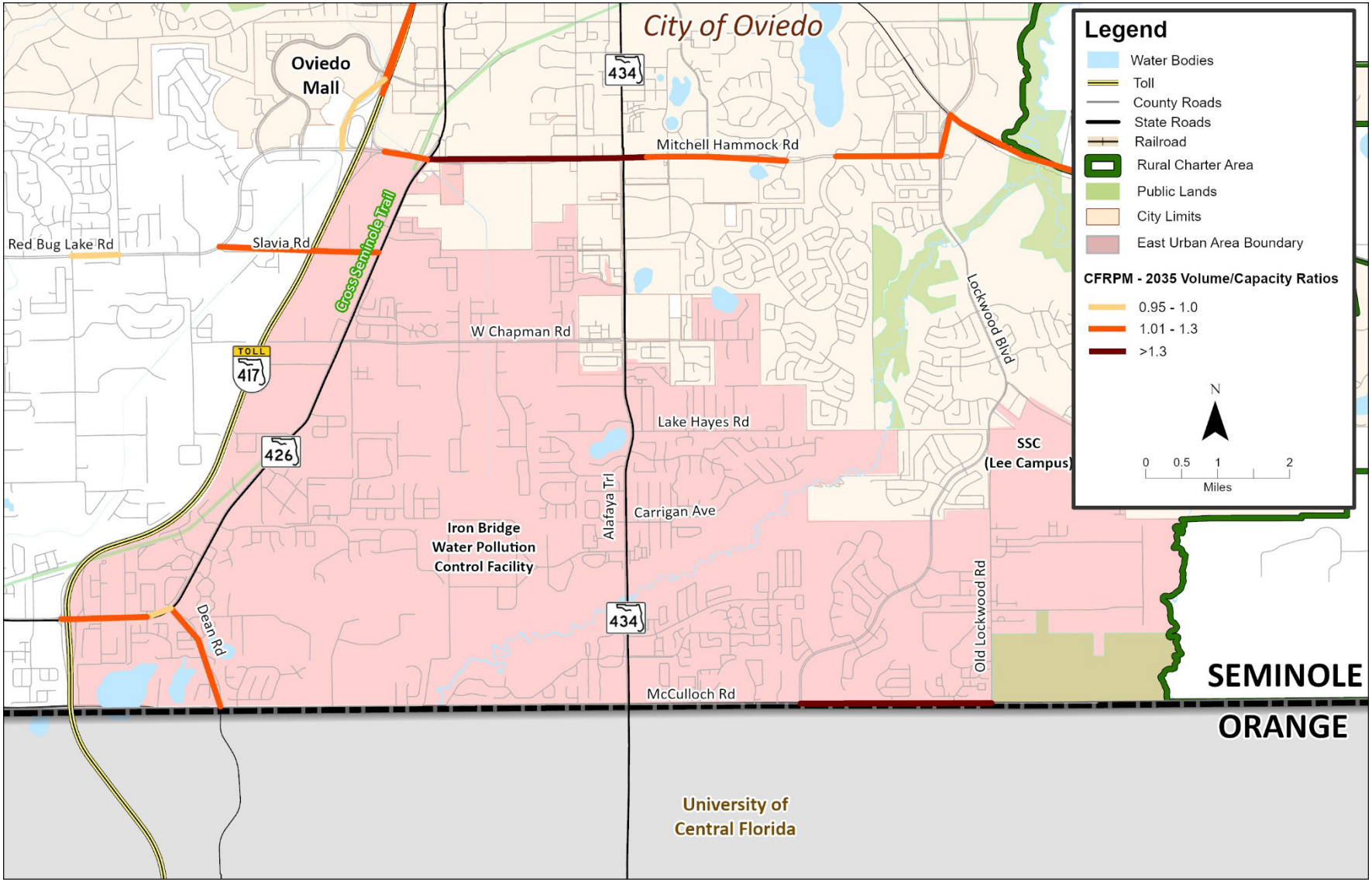


Figure 3-3. East Urban Area – Expected Volume to Capacity Ratios in 2035

3.2.3 2045 Capacity Analysis

By 2045, the number of county-maintained roadway segments within the EUA with an LOS F is expected to increase from four roadway segments to five, with portions of McCulloch Road between SR 434 and Lockwood Boulevard experiencing a V/C ratio of 1.01. As identified in the earlier time horizons of 2030 and 2035, Mitchell Hammock Road (outside the EUA) is expected to continue experiencing congestion in 2045. Table 3-3 summarizes the county-maintained roadway segments within the EUA with an expected LOS F by 2045. Figure 3-4 presents the anticipated V/C ratios for roadway in and around the EUA in 2045.

Table 3-3. East Urban Area – LOS F and V/C Ratios for County Roads in 2045

Roadway	From	To	Exist. Lanes	County LOS	V/C Ratio
Dean Rd.	Orange County Line	SR 426	2	F	1.36
McCulloch Rd.	SR 434	Lockwood Blvd.	4	F	1.01
McCulloch Rd.	Lockwood Blvd.	Old Lockwood Blvd.	6	F	1.58
Red Bug Lake Rd.	SR 417	SR 426	6	F	1.22
Slavia Rd.	Red Bug Lake Rd.	SR 426	2	F	1.25

The only state road within the EUA with an expected LOS F by 2045 is SR 426 from SR 417 to Dean Road. SR 417 from SR 426 to Red Bug Lake Road is not expected to be over capacity by 2045; this roadway segment is expected to have an LOS D with a V/C ratio of 1.00.

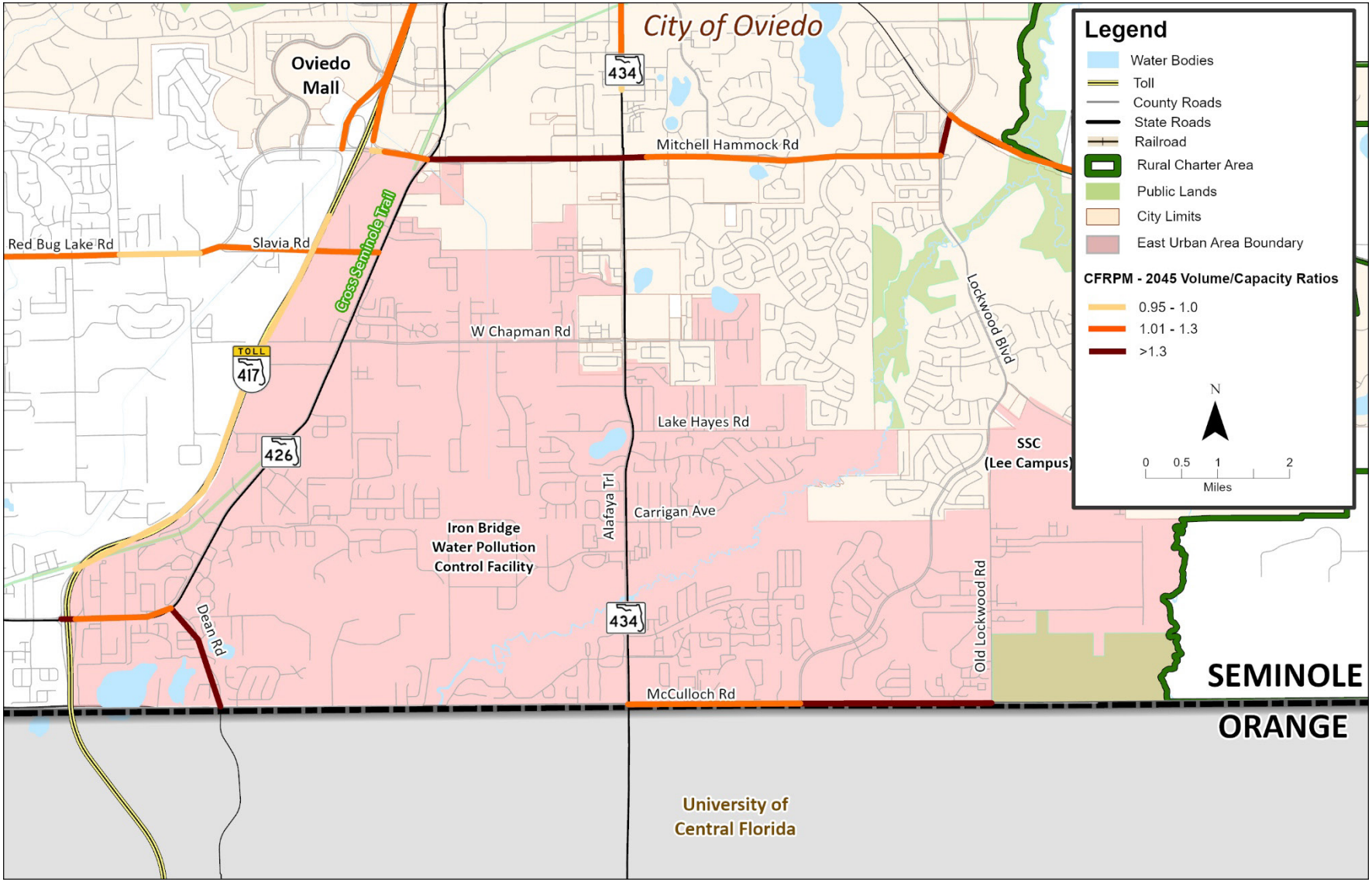


Figure 3-4. East Urban Area – Expected Volume to Capacity Ratios in 2045

3.3 Active Transportation

Separating vulnerable road users from high-speed vehicles, planning for higher-quality pedestrian environments, and completing the car-free transportation network are essential to fulfilling the 2045 Plan vision and meeting the goals and objectives of the plan. To that end, the primary aim of the 2045 Plan was to identify active transportation improvements to include. The two primary analyses were used for this effort, including a bicycle and pedestrian quality level of service (Q/LOS) analysis and a last-mile analysis around key transit hubs. The following sections summarize the analysis methodologies used and the results as they relate to the EUA.

3.3.1 Bicycle and Pedestrian Quality Level of Service

Bicycle and pedestrian planning and design is a constantly evolving practice, with more emphasis in recent years placed on safety, equity, sustainability, and public health. The methods used to define bicycle and pedestrian Q/LOS vary greatly among transportation agencies and are heavily dependent on the context of the area being planned for. Therefore, the bicycle and pedestrian Q/LOS analysis for the 2045 Plan builds on the Q/LOS methodology used for the *Seminole County 2040 Transportation Plan.*

3.3.1.1 Bicycle Quality Level of Service

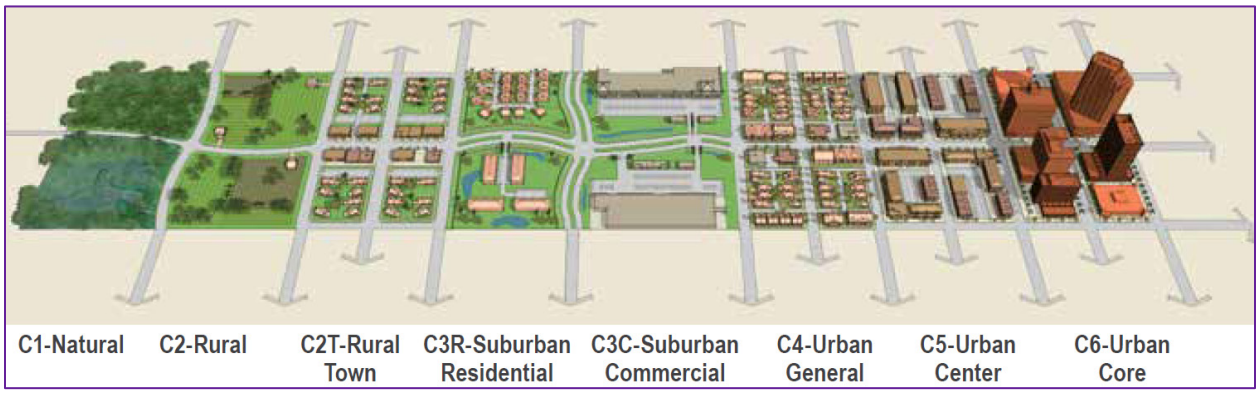
The *Seminole County Comprehensive Plan* (last amended April 26, 2022) defines Q/LOS as a measure of the user's perception of the quality of a transportation service and the traveler's satisfaction with that service. Bicycle Q/LOS is dependent upon the presence and type of designated bicycle infrastructure, motorized vehicle volume and speeds, and pavement condition (Seminole County 2022a).

FHWA's *Separated Bike Lane Planning Guide* conveys the importance of low-stress bicycle networks to attract users such as women, children, and seniors (FHWA 2015). The 2016 *MetroPlan Orlando Complete Streets Policy Report* suggests that, where possible, consideration should be given for facilities that separate bicyclists from vehicular traffic, such as through buffered bicycle lanes, separated bike lanes (two-way cycle tracks), and off-street trails or shared-use paths (MetroPlan Orlando 2016). The degrees of separation of bicycle facilities are shown on Figure 3-5. The method used for the 2045 Plan identified high-stress locations for all users and potential facilities where bicycle Q/LOS may be improved through transportation improvement projects such as lowering speeds, calming traffic, and increasing separation between motorized vehicles and bicyclists. By defining existing bicycle Q/LOS, roadway segments with the worst bicycle Q/LOS scores can be identified for further consideration for improvements. Additional analysis and engineering judgement is required to determine the most appropriate bicycle facility for each context. For more details on the methodology used, refer to the *Active Transportation Analysis Technical Memorandum* completed as part of the 2045 Plan.

Figure 3-5. Degrees of Bike Lane Separation (Source: FHWA 2015)

3.3.1.2 Pedestrian Quality Level of Service

The *Seminole County Comprehensive Plan* recognizes that user perception of pedestrian quality is dependent upon the presence of pedestrian infrastructure, street lighting, separation distance from motor vehicles, motorized vehicle speed and volume, and available crosswalks (Seminole County 2022a). The FDOT *Context Classification Guide* defines the use of the Context Classifications shown on Figure 3-6 (FDOT 2020). Existing Context Classification for Seminole County-maintained roadways was assigned using Seminole County's data and aerial imagery to use as a proxy for the pedestrian Q/LOS evaluation.



(Source: FDOT 2020)

Figure 3-6. FDOT Context Classifications

Roadway functional classification was used as a proxy for motorized volume and speed, which tend to decrease with a reduction in functional classification. By defining existing pedestrian Q/LOS, roadway segments with the worst pedestrian Q/LOS scores were identified for further consideration for improvements. Additional analysis and engineering judgement was required to determine the most appropriate pedestrian facility for each context. For more details on the methodology used, refer to the *Active Transportation Analysis Technical Memorandum* completed as part of the 2045 Plan.

3.3.1.3 Results

The bicycle and pedestrian Q/LOS analysis results were used to identify the roadways with poor bicycle and pedestrian Q/LOS that could benefit from multimodal improvements. Additional detail about gaps and existing pedestrian and bicycle infrastructure was noted during the desktop review to help define potential projects. The recommended projects could include the addition or improvement of sidewalk or bicycle facilities, lighting, landscaping, or other pedestrian improvements. The results of the bicycle and pedestrian Q/LOS analysis, as it relates to the EUA, are summarized in Appendix B.

3.3.2 Last-Mile Analysis

The last-mile connection, or sometimes referred to as first and last mile, is a term used to describe the beginning or end of an individual's trip. It often refers to transit trips, such as SunRail or LYNX. Transit services using a fixed route often require another travel mode to access the beginning and end destinations of a trip. Transit passengers often must complete the first and last portion of their trip by walking, biking, or other means, as presented in Figure 3-7. To meet Seminole County's mobility goal of providing "meaningful non-auto travel choices for county residents and workers," existing bicycle and pedestrian facilities surrounding key transit hubs in Seminole County were reviewed to identify active transportation improvements that enhance first and last mile connections (Seminole County 2022a).

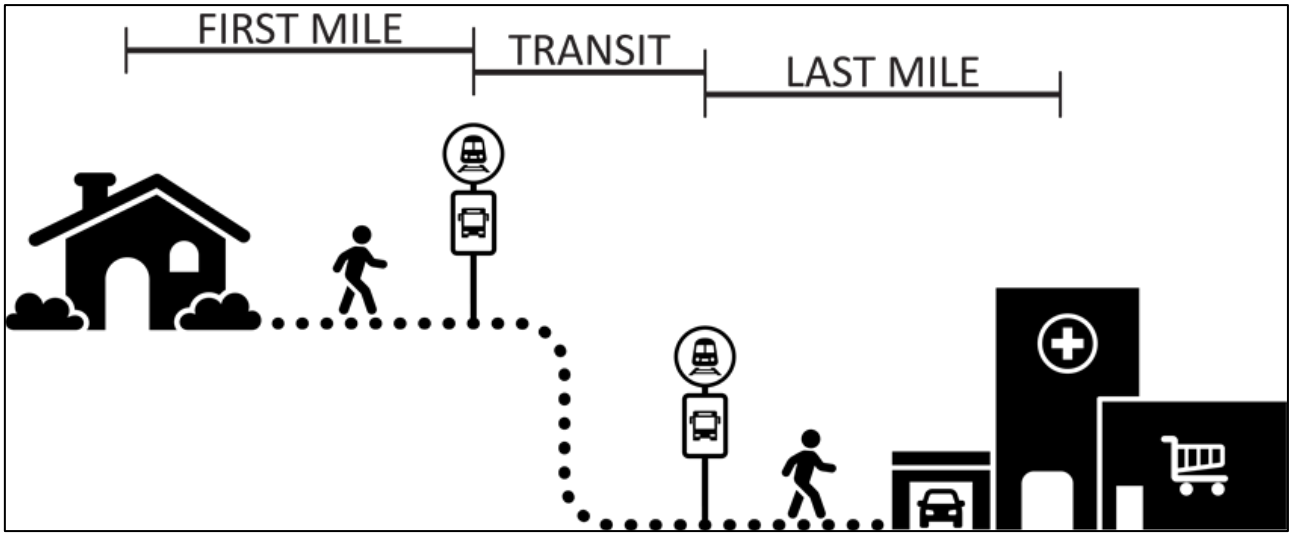


Figure 3-7. Depiction of First and Last Mile

As mentioned in Section 2.9, LYNX services 14 bus stops within the EUA via one fixed route (Link 434, SR 434 Crosstown) along SR 434 and Mitchell Hammock Road and provides the NeighborLink 822/Oviedo flexible-route service. LYNX also provides free transit service to all UCF students, faculty, and staff (LYNX n.d.). Further, LYNX operates two SuperStops (transfer stations) within Seminole County, as well as the UCF SuperStop located on the UCF Campus in Orange County, which is near the EUA.

3.3.2.1 Methodology

The 2045 Plan reviewed areas in which a pedestrian or bicycle may access key transit hubs in the county, also referred to as a walkshed or bikeshed. For this plan, the walkshed was defined as being within 0.5 mile (or a 10-minute walk) of a transit hub, while the bikeshed was defined as being within 3 miles (or a 10-minute bike ride) of a transit hub. Transit hubs included as part of this review are as follows:

SunRail Stations:

- Sanford
- Lake Mary
- Longwood
- Altamonte Springs

LYNX SuperStops:

- Sanford
- Fern Park
- UCF

Although located in Orange County, this plan also reviewed the 3-mile bikeshed for the LYNX UCF SuperStop because of its connection and influence on the EUA. Using GIS and aerial imagery, the existing

bicycle and pedestrian facilities within each access shed were reviewed to identify improvements to enhance access to and from transit hubs.

3.3.2.2 Results

The pedestrian and bicycle last-mile analysis results will be used to identify the facilities within a walkshed or bikeshed that could benefit from multimodal improvements. Additional detail about gaps and existing pedestrian and bicycle infrastructure was noted during the desktop review to help define potential improvements. The recommended improvements could include the addition or improvement of sidewalk or bicycle facilities, lighting, landscaping, or other pedestrian improvements. Additional analysis and engineering judgement is required to determine the most appropriate improvement for each context. These initial improvements do not represent the final recommendations for this plan, but instead show the potential improvements for further evaluation. For more details on the methodology and results from the last-mile analysis, refer to the *Active Transportation Analysis Technical Memorandum* completed as part of the 2045 Plan.

3.3.3 Trails Master Plan

As mentioned in Section 2.8.3, the county published its *Trails Master Plan* in 2021. The plan identified trail improvements throughout the county, which included a new hierarchy of trail types and improvements. These improvements were prioritized and included for evaluation as part of the 2045 Plan. For the purposes of transportation mobility, improvements to three trail types are relevant: Signature Trails, Pathways, and Connectors. Section 4.3 summarizes the identified improvements within the EUA from the *Trails Master Plan*.

3.4 Emerging Technologies

Emerging technologies can improve the safety and operations of the county's transportation system. New technologies such as connected and automated vehicles (CAV) and electric vehicles (EV) have the potential to dramatically change the way cities and counties are planned and developed. The applications of these systems can range from small, on-demand automated transport shuttles replacing underserved and underutilized traditional bus routes to large-scale transformations of vehicle ownership. The implication of improvements can be significant to multiple aspects of a jurisdiction's infrastructure, such as energy grids and parking infrastructure.

CAVs enable safe, interoperable networked wireless communications among vehicles, the infrastructure, and passengers' personal communications devices. A National Highway Traffic Safety Administration (NHTSA) study of connected vehicle technologies showed that they have the potential to reduce up to 80% of crashes where drivers are not impaired (NHTSA n.d.). Some benefits related to CAV implementation include crash elimination through crash-free driving and improved vehicle safety that allows a vehicle to monitor the environment continuously if there is a lapse in driver attention. There is also reduced energy consumption in at least three ways: more efficient driving; lighter, more fuel-efficient vehicles; and efficient infrastructure.

One CAV application that the county can consider implementing is an autonomous shuttle bus program to transport travelers between major activity hubs and major transit stops and commuter rail stations in the county and beyond. Partnerships with other entities can be explored as a joint venture or a public-private partnership. Potential stakeholders could include FDOT, the City of Oviedo, and the City of Altamonte Springs, which are all in the planning stage of this technology. The City of Orlando, in the Lake Nona area, has a similar program that can be replicated by the county through Beep (Lake Nona n.d.). It is important to note that implementing CAVs along major collectors or arterials is not currently feasible based on the reduced speed capabilities of CAVs. Implementing CAV applications and EV infrastructure are two ways that the county can consider improving mobility and enhancing the quality of life within the EUA.

4. Proposed Improvements

The goals and objectives of the 2045 Plan guided the development process by forming the basis for a decision-making framework through which needed improvements were evaluated based on how they meet the county's goals and vision. The goals and objectives also created the basis for project evaluation criteria and performance metrics. These elements were used as an evaluation tool to compare the relative benefits of each potential transportation improvement in relation to the five goals of the 2045 Plan. For more detailed information on the performance metrics and evaluation framework applied to improvements, refer to the *Evaluation Framework Technical Memorandum* developed as part of the 2045 Plan.

While all project types were given a generalized priority score based on these criteria, it is more significant to consider comparative rankings by project type. Additionally, holistic reviews and stakeholder input were used to further refine the initial rankings to help develop priorities for each project type. For example, roadways identified as being over capacity by 2030 should be prioritized over roadways that would not be over capacity until 2045, despite receiving a higher priority score. Projects also were separated by project type to avoid conflicting rankings or to avoid overlap with previously prioritized projects (for example, the 2021 *Trails Master Plan*). In addition, unfunded needs identified from regional transportation plans, such as MetroPlan Orlando's *2045 Metropolitan Transportation Plan Cost Feasible Plan*, were reevaluated as part of the 2045 Plan.

In total, 18 proposed projects were identified within the EUA based on the results from analyses, engineering judgement, the evaluation framework, and stakeholder input. The following sections summarize these improvements by project type. Figure 4-1 presents the all the proposed improvements within the EUA identified as part of this study.

4.1 Roadway Improvement Projects

Four roadway improvement projects were identified within the EUA as being needed by 2045 to address existing and future deficiencies. The Slavia Road Capacity Improvement Project was identified to address anticipated future traffic congestion. The planning, ROW, and design phases have already been completed by the county. However, construction of this project is dependent on the completion of the SR 417 widening (FPID 417545-1) because the existing SR 417 overpass at Slavia Road restricts widening Slavia Road. Therefore, this project was included in the overall project list as priority 3, with funding for construction and construction engineering and inspection (CEI).

Red Bug Lake Road from SR 417 to SR 426 was identified for the addition of auxiliary lanes to alleviate anticipated traffic congestion beginning as early as 2030. The existing pedestrian overpass near the Red Bug Lake Road and SR 426 intersection limits the addition of more than one lane in each direction because the existing pedestrian bridge piers are near the roadway. This project may require relocating the existing sidewalk near the bridge piers to behind the bridge piers. The exact constraints and configuration will be confirmed during future planning and design phases.

Because of the anticipated traffic growth and limited east/west connectivity within the EUA, an Arterial Connectivity Study was included in the list of roadway improvements to identify a potential roadway connection between SR 426 and SR 434.

Lastly, a capacity improvement on Dean Road from SR 426 to the Orange/Seminole County Line was included in the list of roadway improvements to address future traffic conditions along the corridor. The Orange County-maintained portion of Dean Road also was identified for widening as part of MetroPlan Orlando's *Metropolitan Transportation Plan Cost Feasible Plan* (adopted December 9, 2020, revised March 9, 2022). Therefore, this project will require coordination with Orange County to ensure proper roadway transitions between Seminole County and Orange County. Table 4-1 summarizes the roadway improvements identified within the EUA.

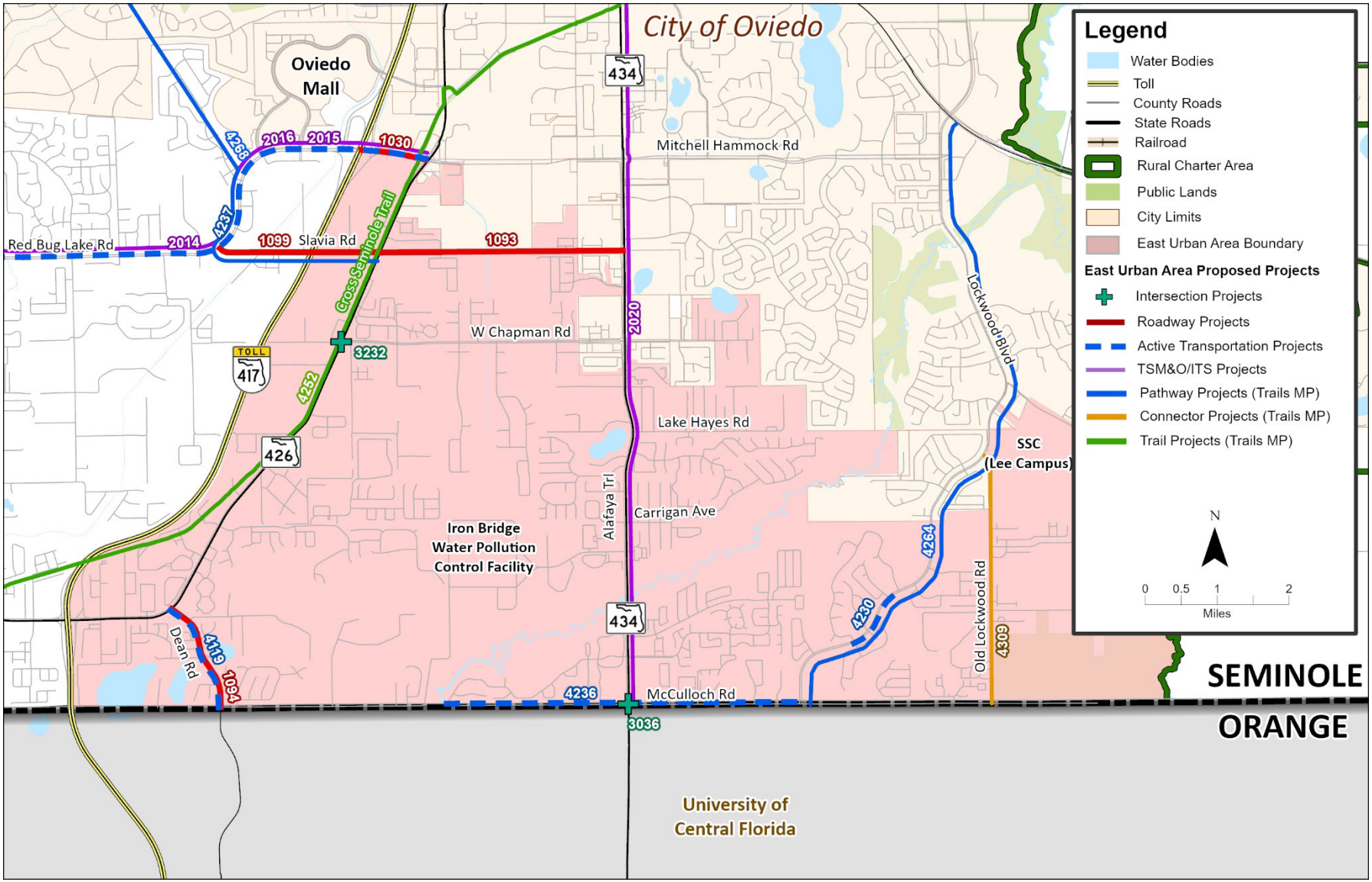


Figure 4-1. East Urban Area – Proposed Projects

Table 4-1. East Urban Area – Identified Roadway Improvement Projects

2045 TMP Project No.	Roadway Priority No.	Project Name	From	To	Description
1099	4	Slavia Road Capacity Improvements	Red Bug Lake Rd.	SR 426	This project includes capacity improvements for Slavia Road while enhancing bicycle and pedestrian facilities and improving drainage.
1030	6	Red Bug Lake Rd Capacity Improvements	SR 417	SR 426	This project includes widening Red Bug Lake Road to provide auxiliary lanes between SR 417 and SR 426.
1093	11	Arterial Connectivity Study (SR 426 to SR 434)	Orange County Line	SR 426	Study to identify alternative roadway connections from SR 426 to SR 434 to accommodate traffic growth in the area.
1094	24	Dean Road Capacity Improvements	SR 426	SR 434	Widening Dean Road from 2 to 4 lanes from the Orange County Line to SR 426, needed by 2030. Design and ROW reported as completed.

4.2 Intersection Improvement Projects

Two intersection improvement projects were identified as needed within the EUA. The first improvement is at the intersection of McCulloch Road and SR 434, which includes extending the eastbound left-turn lanes, making median modifications, and performing minor roadway realignment. As part of the *Travel Time and Delay Study,* this intersection was identified as having an LOS F. This intersection also was noted to have a higher concentration of crashes when compared to other intersections within the EUA. This project is expected to alleviate the existing congestion at the intersection, while also improving safety conditions for bicyclists, pedestrians, and motorized vehicles.

Through coordination with Seminole County's Traffic Engineering staff, the Chapman Road and SR 426 intersection also was identified as an improvement project to alleviate existing traffic congestion at the intersection by adding a westbound right-turn lane. Table 4-2 summarizes the intersection improvement projects identified within the EUA.

Table 4-2. East Urban Area –Identified Intersection Improvement Projects

2045 TMP Project No.	Intersection Priority No.	Project Name	Intersecting Roadway	Description
3036	6	McCulloch Rd. at SR 434 Intersection Improvements	SR 434	Intersection improvements at McCulloch Rd. and SR 434, including extending the eastbound left-turn lanes, median modifications, and minor roadway realignment along McCulloch Rd. Potential to be a joint project with Orange County.

2045 TMP Project No.	Intersection Priority No.	Project Name	Intersecting Roadway	Description
3232	11	Chapman Rd. at SR 426 Intersection Improvements	SR 426	Intersection improvements at Chapman Rd. and SR 426, including adding a 515-foot westbound right-turn lane.

4.3 Active Transportation and Trails Master Plan Projects

Active transportation improvements identified within the EUA were based on the bicycle and pedestrian Q/LOS analyses, last-mile analysis, crash analysis, and stakeholder input. Four active transportation improvement projects were identified within the EUA.

The McCulloch Road Multi-Use Pathway Project was included to address the bicycle Q/LOS deficiencies along the corridor and to improve safety for bicyclists and pedestrians by reducing conflicts with motorized vehicles. Because there are no designated bicycle lanes, bicyclists must use the existing sidewalk on the north side or the 10-foot-wide pathway along the south side of the roadway. However, considering the existing residential developments, student housing, and future planned developments north of McCulloch Road, a new 10-foot-wide pathway is being proposed along the north side of the roadway. This new pathway would provide a multi-use facility for bicyclists and pedestrians to support trips along the corridor, including trips to and from UCF.

The Red Bug Lake Road Pathway Project from Winter Park Drive to the Cross Seminole Trail is being proposed to address the bicycle Q/LOS deficiencies along the corridor. Because there are no designated bicycle lanes along this segment of Red Bug Lake Road, the new pathway would provide an off-street facility for bicyclists. In addition, this project provides expanded bicycle and pedestrian facilities along the corridor without the need to reconstruct the roadway.

The Lockwood Boulevard Mid-Block Crossing Project was identified to enhance safety for bicycle and pedestrian users along the corridor. The crash data analysis revealed two pedestrian-related crashes that occurred in 2019 and 2020 within this segment of Lockwood Boulevard. Because improving bicycle and pedestrian safety remains one of the county's top priorities, this project will help to reduce traffic speeds, shorten crossing distances, and enhance driver awareness of the crossing, thereby reducing pedestrian- and bicycle-related incidents. Additionally, this crossing improvement supports safer access to and from the Carillon Elementary School and Hagerty High School located approximately 0.25 mile north of the proposed crossing location. This crossing may include a pedestrian refuge island and advance warnings, such as a rectangular rapid-flashing beacon or pedestrian hybrid beacon. These improvements would be in addition to high-visibility marked crosswalks, lighting, and crossing warning signs.

The Dean Road Bicycle Improvements Project was identified as a need because of the lack of designated bicycle lanes along the corridor (also referred to as bicycle Q/LOS deficiencies). Depending on timing of implementation, these improvements could be incorporated as part of the Dean Road Capacity Project noted in Section 4.1. These bicycle improvements could be accomplished through use of on-street buffered bicycle lanes or an off-street pathway, depending on the posted roadway speed, daily volumes, and roadway configuration. If this project proceeds before the capacity project, there will be a need to coordinate with Orange County for connectivity. Table 4-3 summarizes the proposed active transportation improvements within the EUA.

Table 4-3. East Urban Area – Identified Active Transportation Improvement Projects

2045 TMP Project No.	Bike/Ped Priority No.	Project Name	From	To	Description
4236	1	McCulloch Rd. Multi-Use Pathway	Rouse Rd.	Lockwood Blvd.	Construction of a 10-foot-wide multi-use pathway along the north side of McCulloch Rd. from Rouse Rd. to Lockwood Blvd., to improve bicycle Q/LOS F. Note, Seminole County maintenance is from Rouse Rd. to Lockwood Blvd.
4230	10	Lockwood Blvd. Mid-Block Crossing	East of Sterling Lake Circle	N/A	Project includes installation of a mid-block crossing on Lockwood Blvd. between Sterling Lake Circle and Carillon Park Drive. Requires minor reconfiguration of median and turn lanes to accommodate crossing, as well as milling and resurfacing.
4119	48	Dean Rd. Bicycle Improvements	Orange County Line	SR 426	Bicycle improvements on Dean Rd. between the Orange County Line and SR 426 to address the inadequate Q/LOS for bicycles on the corridor.

As mentioned previously, the county published its *Trails Master Plan* in 2021. That plan identified trail improvements throughout the county, which included a new hierarchy of trail types and improvements. These improvements were prioritized and included for evaluation as part of the 2045 Plan. Table 4-4 summarizes the trail improvements within the EUA from the *Trails Master Plan*.

Table 4-4. East Urban Area – Seminole County Trails Master Plan Improvement Projects

2045 TMP Project No.	Trail Priority No.	Trail Name	From	To	Description
4252	25	Cross Seminole Trail (S2)	Orange County Line	Volusia County Line	This project includes upgrades to north section and restoration of urban tree canopy (where applicable). Includes development of a new trail head at Lake Monroe Wayside Park as a Tier 3 location. Safety improvements include SR 46 crossing enhancements, refined crossing on CR 427 (Ronald Reagan Blvd.), and specialized signalization at Green Way Blvd.
4264	27	City of Oviedo Twin Rivers Pathway (P9)	McCulloch Rd.	Ashland Trail	This project includes extension of the City of Oviedo Twin Rivers Pathway, which will be built as an 8-foot-wide concrete path. Safety improvements include adding shade trees to the trail (where applicable), adding rest areas, and implementing a wayfinding package to identify the corridor alignment.

2045 TMP Project No.	Trail Priority No.	Trail Name	From	To	Description
4237	33	Red Bug Lake Rd. Pathway	Winter Park Dr.	Cross Seminole Trail at Red Bug Lake Rd.	Construction of an 8- to 10-foot-wide multi-use pathway along the north side of Red Bug Lake Rd. from Winter Park Dr. to the Cross Seminole Trail to improve Bike Q/LOS F on Red Bug Lake Rd.
4309	39	Econ Wilderness Area Connector (C38)	McCulloch Rd.	Lockwood Blvd.	This project includes improvements to the Econ Wilderness Area Connector. Work on the travel corridor includes extending the trail along Old Lockwood Blvd. from McCulloch Rd. to Lockwood Blvd. Safety improvements include adding shade trees (where applicable) and implementing a wayfinding package to identify the corridor alignment.
4268	51	Howell Creek Pathway (P13)	Cross Seminole Trail	SR 426/ Cross Seminole Trail	This project would build the Howell Creek Pathway as an 8-foot-wide concrete path for 2.4 miles and a 14-foot-wide asphalt path for 2.3 miles. The segment is along various roadways. Shade trees, rest areas, and wayfinding signage may be included as part of the project.

4.4 ITS and TSM&O Projects

The county has one of the most robust ITS infrastructures in the state. The county should continue installation of these and other new emerging technologies to create a smart transportation system. This will include the expansion of fiber optic cable communication, CCTV cameras, arterial dynamic message signs (DMSs), vehicle detection systems, and smart traffic signals. To that end, several transportation systems management and operations (TSMO) and ITS improvements were identified as part of the 2045 Plan. Table 4-5 summarizes the TSMO and ITS improvements proposed within the EUA.

Table 4-5. East Urban Area – TSMO and ITS Identified Improvements

2045 TMP Project No.	TSMO and ITS Priority No.	Project Name	From	To	Description
2014	17	Red Bug Lake Rd. CCTV Installations	Red Bug Lake Rd.	N/A	CCTV installations on Red Bug Lake Rd. corridor, 16.
2015	18	Red Bug Lake Rd. C-V2X Installations	Red Bug Lake Rd.	N/A	C-V2X installations on Red Bug Lake Rd. corridor, 15.
2016	19	Red Bug Lake Rd. IMC Installations	Red Bug Lake Rd.	N/A	IMC camera installations on Red Bug Lake Rd. corridor, 16.
2020	23	SR 434 C-V2X Installations	SR 434	N/A	C-V2X installations on SR 434 corridor, 15.

C-V2X = cellular vehicle-to-everything
IMC = intelligent moving camera

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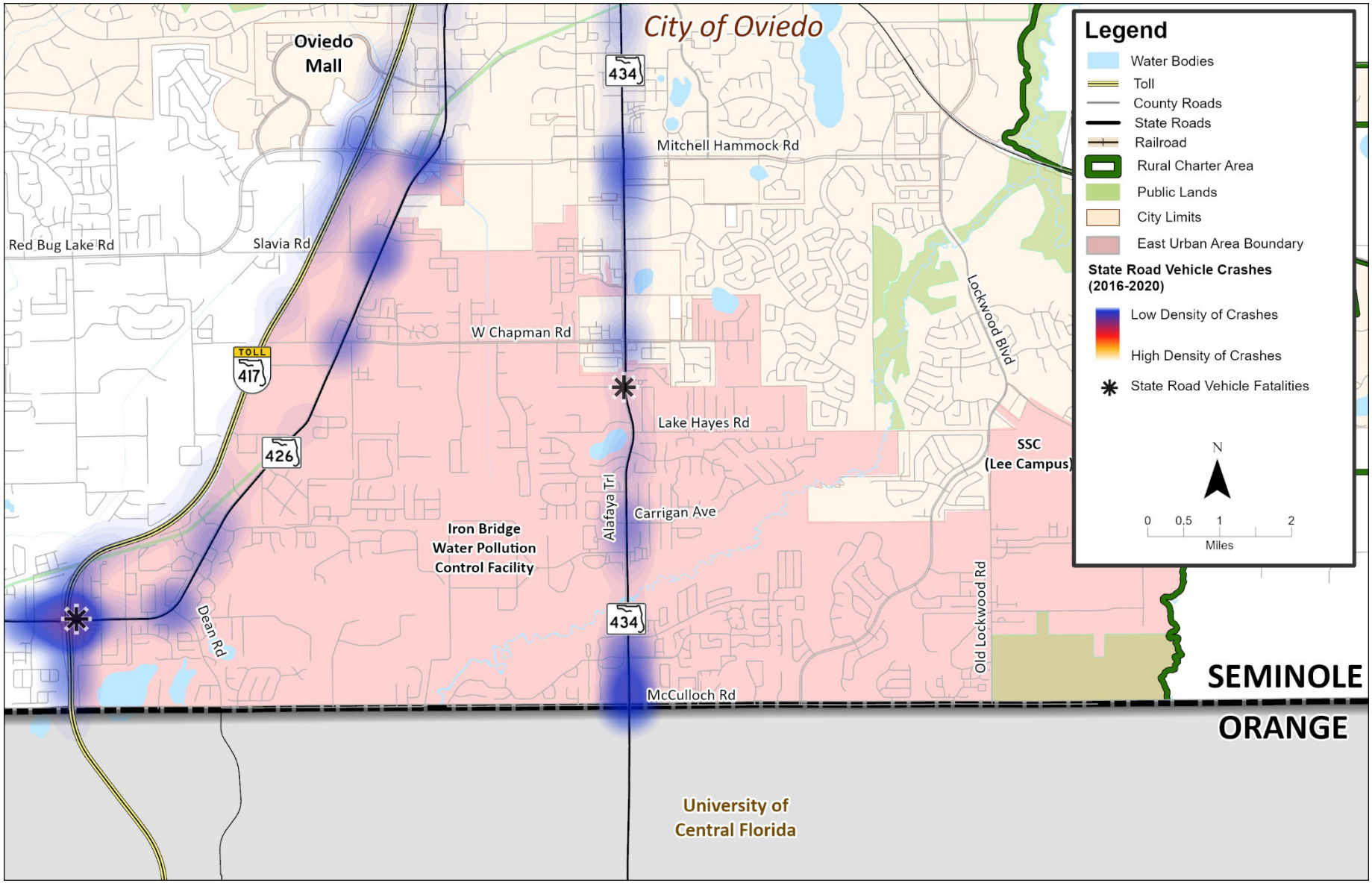
Appendix A.
East Urban Area Crash Heat Maps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Oviedo Mall
434
Mitchell Hammock Rd
Red Bug Lake Rd
Slavia Rd
W Chapman Rd
TOLL
417
426
Lake Hayes Rd
Lockwood Blvd
SSC (Lee Campus)
Alafaya Trl
Carrigan Ave
Iron Bridge Water Pollution Control Facility
Dean Rd
434
Old Lockwood Rd
McCulloch Rd
SEMINOLE
ORANGE
University of Central Florida
Legend
Water Bodies
Toll
County Roads
State Roads
Railroad
Rural Charter Area
Public Lands
City Limits
East Urban Area Boundary
State Road Vehicle Crashes (2016-2020)
Low Density of Crashes
High Density of Crashes
State Road Vehicle Fatalities
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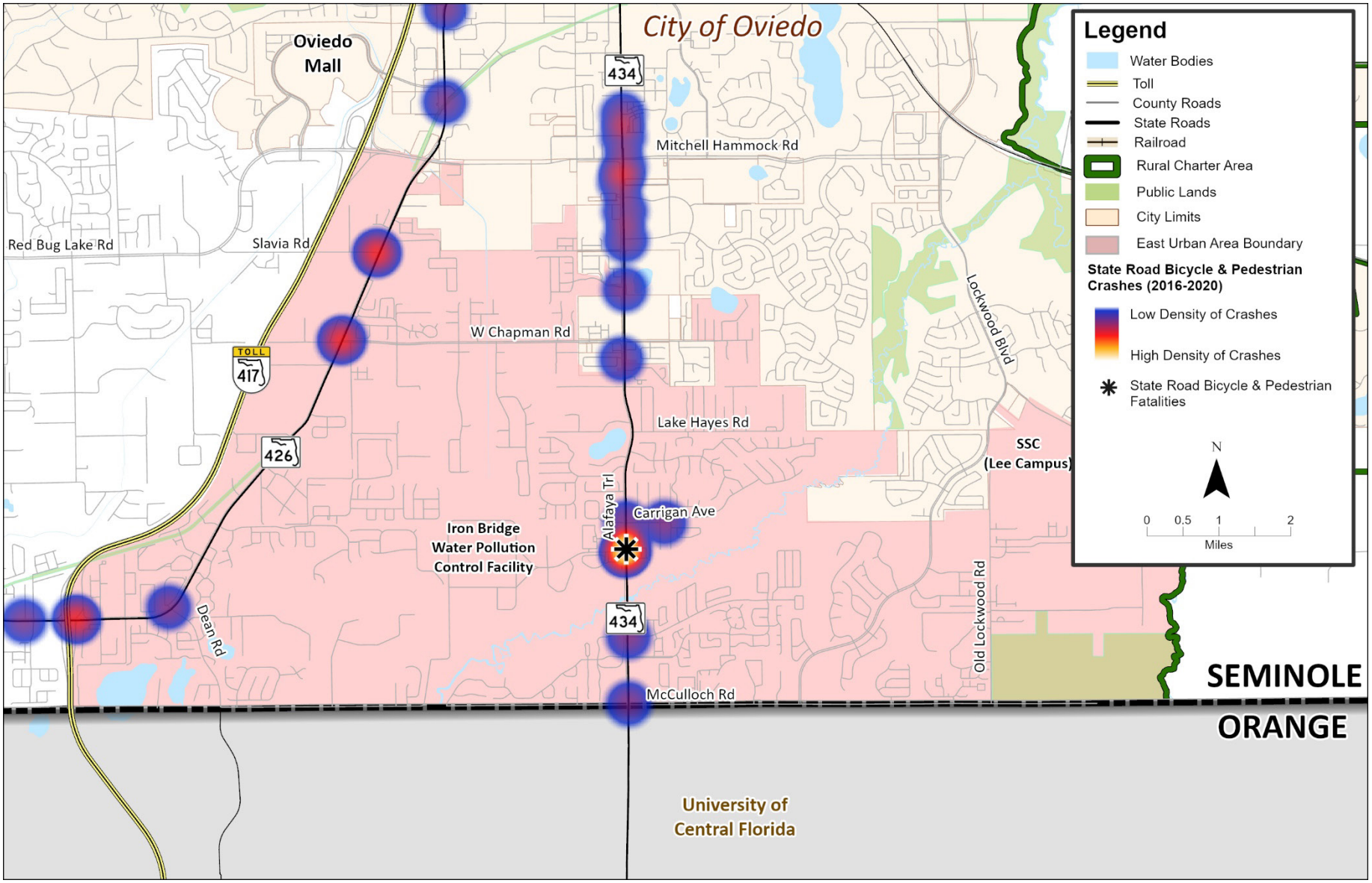
0 0.5 1 2
Miles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High Density of Crashes
State Road Bicycle & Pedestrian Fatalities
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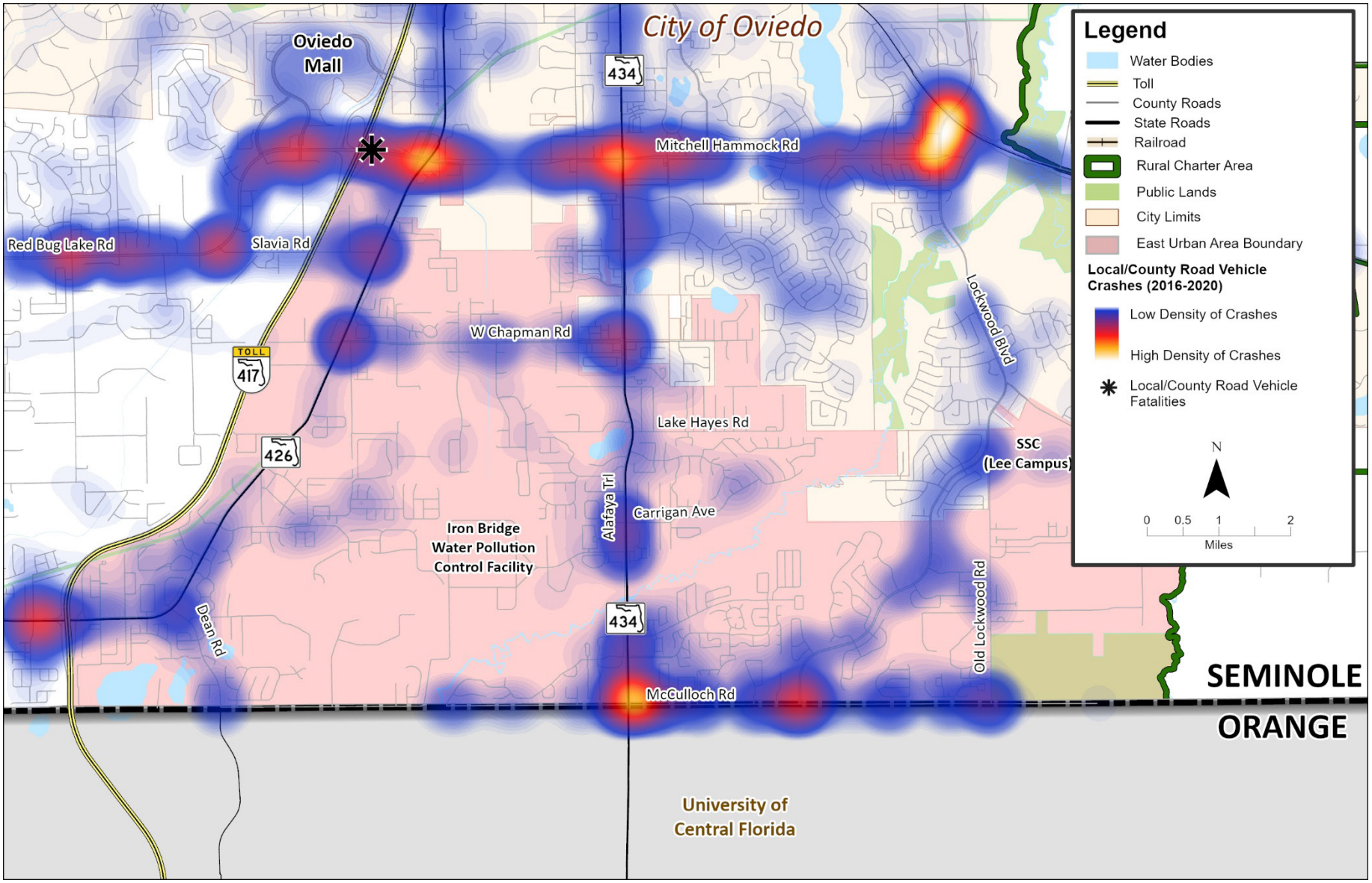
0 0.5 1 2
Miles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High Density of Crashes
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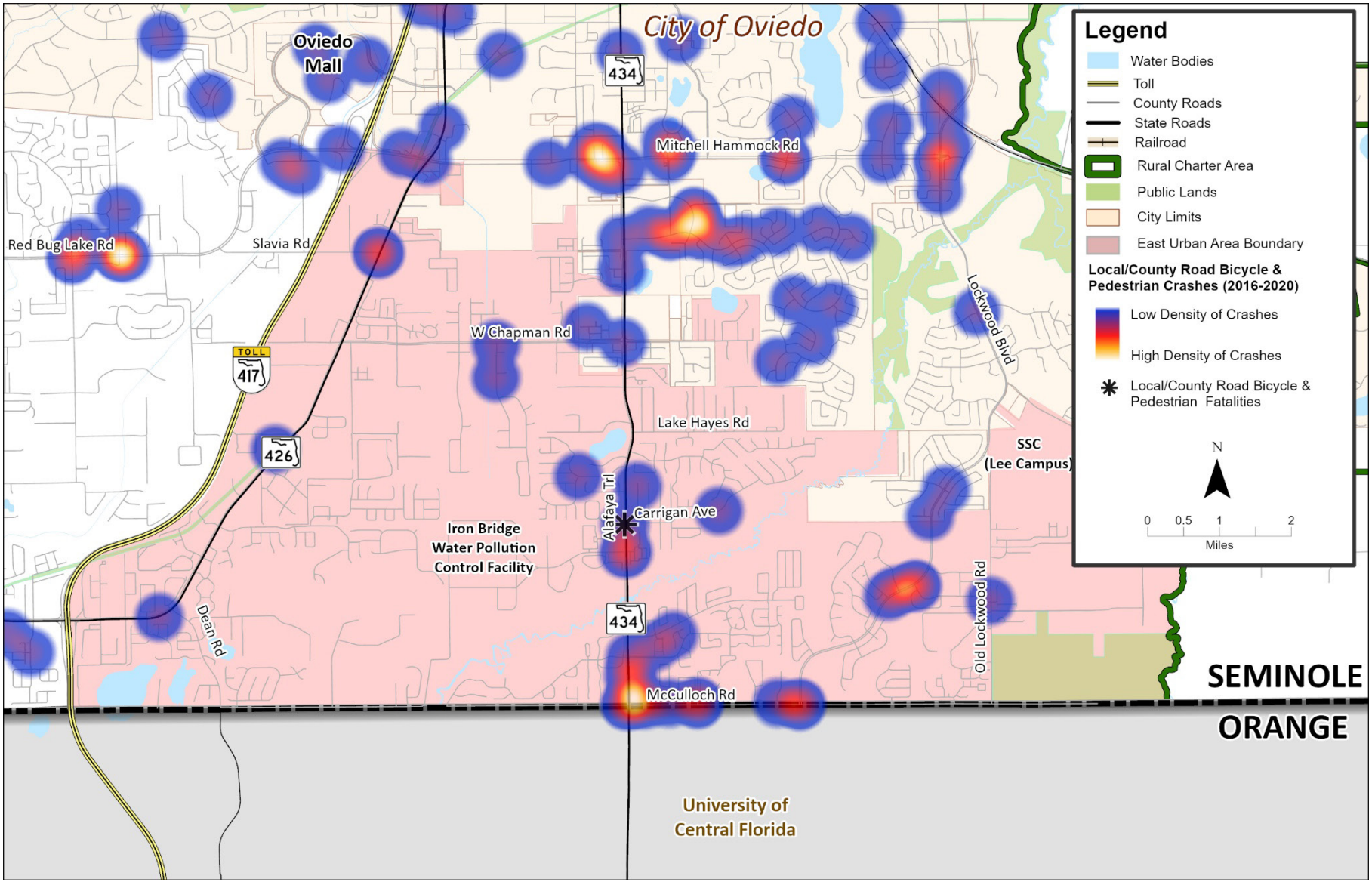
0 0.5 1 2
Miles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East Urban Area Boundary
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Low Density of Crashes
High Density of Crashes
Local/County Road Bicycle & Pedestrian Fatalities
N
0 0.5 1 2
Miles

Appendix B.
East Urban Area Q/LOS Analysis Results

Appendix B. EUA Q/LOS Analysis Results

#	Roadway	From-to	Posted Speed	Land Use	Road Type	Existing Bike Facility	Existing Ped Facility	Ped Gaps	Bike Gaps	2045 Projected AADT	2045 Projected Roadway LOS	2045 Projected Bicycle Q/LOS	2045 Projected Pedestrian Q/LOS
1	Chapman Road	SR 426 to SR 434	40	C2T	Collector	Bike Lane	Throughway	N	N	34,942	C	D	B
2	Dean Road	Orange County Line to SR 426	40	C3R	Arterial	None	Throughway	N	N	22,906	E+10%	D	C
3	Lockwood Boulevard	McCulloch Road to Oviedo City Limits	35	C3R	Collector	Bike Lane	Throughway	N	N	23,195	D	C	B
4	Lockwood Boulevard	Oviedo City Limits to Mitchell Hammock Road	35	C3R	Collector	Bike Lane	Throughway	N	N	23,975	D	C	B
5	Lockwood Boulevard	Mitchell Hammock Road to CR 419	35	C3R	Collector	None	Throughway	N	N	44,292	E+10%	F	B
6	Lockwood Boulevard	CR 419 to CR 426	45	C2	Collector	None	Throughway + Landscape	N	N	9,000	C	C	A
7	McCulloch Road	SR 434 to Lockwood Boulevard	45	C3R	Collector	None	Throughway	N	N	38,164	E+10%	F	B
8	McCulloch Road	Lockwood Boulevard to Old Lockwood	45	C3R	Collector	None	Throughway	N	N	26,577	E+10%	F	B
9	Mitchell Hammock Road (City of Oviedo)	SR 426 to SR 434	45	C2	Arterial	None	Throughway	N	N	56,847	E+10%	F	B
10	Mitchell Hammock Road (City of Oviedo)	SR 434 to Alafaya Woods Boulevard	45	C3R	Arterial	None	Throughway	N	N	47,695	E+10%	F	C
11	Mitchell Hammock Road (City of Oviedo)	Alafaya Woods Boulevard to Lockwood Road	45	C3R	Arterial	None	Throughway	N	N	42,480	E+10%	F	C

#	Roadway	From-to	Posted Speed	Land Use	Road Type	Existing Bike Facility	Existing Ped Facility	Ped Gaps	Bike Gaps	2045 Projected AADT	2045 Projected Roadway LOS	2045 Projected Bicycle Q/LOS	2045 Projected Pedestrian Q/LOS
12	Red Bug Lake Road	SR 436 to Eagle Circle	45	C3R	Arterial	None	Throughway	N	N	51,628	E+10%	F	C
13	Red Bug Lake Road	Eagle Circle to Tuskawilla Road	45	C3R	Arterial	Bike Lane	Throughway	N	Y	47,240	E+10%	F	C
14	Red Bug Lake Road	Tuskawilla Road to Rising Sun Boulevard	45	C3R	Arterial	None	Throughway	N	N	57,649	E	F	C
15	Red Bug Lake Road	Rising Sun Boulevard to Slavia Road	45	C3C	Arterial	None	Throughway	N	N	56,620	D	F	C
16	Red Bug Lake Road	Slavia Road to SR 417 (Seminole Expressway)	45	C3C	Arterial	None	Throughway	N	N	45,234	C	F	C
17	Red Bug Lake Road	SR 417 (Seminole Expressway) to SR 426	45	C3C	Arterial	None	Throughway	N	N	76,246	E+10%	F	C
18	Slavia Road	Red Bug Lake Road to SR 426	40	C3R	Collector	None	Throughway (one side)	Y	N	21,054	E+10%	F	C