



CITY OF
ORLANDO

BICYCLE BELTWAY

DOWNTOWN GAP STUDY

FINAL REPORT | APRIL 2020





EXECUTIVE SUMMARY

Orlando's Bicycle Beltway is a proposed 8.5 mile loop trail that will serve the ever increasing population of Downtown Orlando and **provide an alternative transportation network to accommodate cyclists of all ages.** The purpose of this study is to develop an alignment that connects the Downtown Connector Trail to Gertrude's Walk.

The **Defining Success** phase of the study identified a preferred subarea within the overall study area based on best practices, project goals and objectives, and subarea characteristics. The **Alternatives Assessment** phase of the study identified a preferred alignment and facility types from alternatives within the preferred subarea. Finally, the **Concept Development** phase of the study developed a sketch-level concept plan including proposed typical sections and intersection treatments.

Based on public input, Project Visioning Team input, and the cumulative assessment, **Alternative B: Pine St.** is the recommended alignment to advance into final design.

Special thanks to the public and Project Visioning Team members for their input. Visioning Team members included representatives from the City of Orlando's Planning, Public Works, DDB/CRA, Parking, Parks, Police, and Fire Departments among others, as well as local property owners and partner agencies.

TABLE OF CONTENTS

REPORT CHAPTERS

1

INTRODUCTION

PAGES 1 - 22

2

DEFINING SUCCESS

PAGES 23 - 48

3

CORRIDOR SELECTION

PAGES 49 - 62

4

PRELIMINARY DESIGN STRATEGIES

PAGES 63 - 68

5

ALTERNATIVES ASSESSMENT

PAGES 69 - 80





CHAPTER 1

INTRODUCTION

INTRODUCTION

STUDY BACKGROUND



Orlando Bicycle Beltway Map

THE BICYCLE BELTWAY

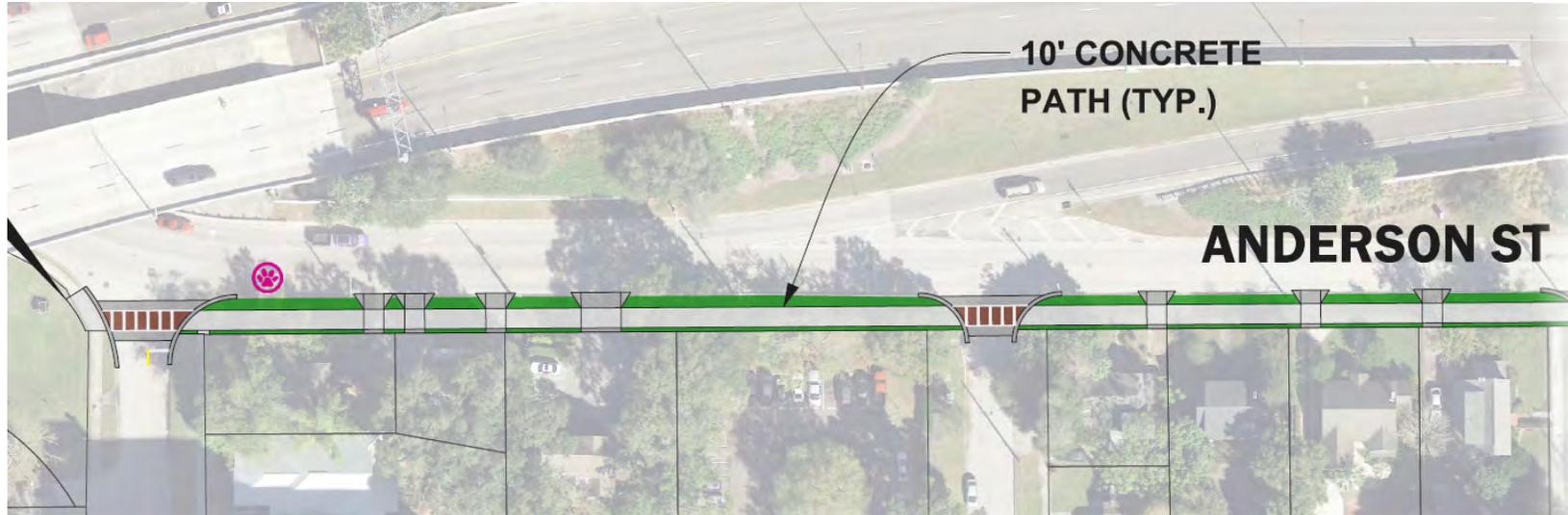
Orlando's Bicycle Beltway is a proposed 8.5 mile loop trail that will serve the ever increasing population of Downtown Orlando and provide an alternative transportation network to accommodate cyclists of all ages. Five projects identified along the beltway fill gaps in the existing trail network and will ultimately connect the regional trail system with the Central Business District.

Although the connection between the planned Downtown Connector Trail and Gertrude's Walk (constructed) is shown as the segment labeled Gertrude's Walk Phase 3 on the Bicycle Beltway Map, the Downtown Gap Study will evaluate additional alternatives to this route.



INTRODUCTION

STUDY BACKGROUND



Downtown Connector Trail (Planned)

THE DOWNTOWN CONNECTOR TRAIL

The Downtown Connector Trail (estimated to start construction in 2020) will be a 10' shared use path located on the south side of Anderson Street from Lake Underhill Road to Delaney Avenue. This 2.5 mile trail is the **longest segment of the bicycle beltway**, and will connect the Lake Cherokee, Lake Como and Lake Davis neighborhoods just south of Orlando's Central Business District to the Lake Underhill Path, which consistently ranks as one of the busiest trails in the city.



INTRODUCTION

STUDY BACKGROUND



Gertrude's Walk



Colonial Bicycle/Pedestrian Overpass

GERTRUDE'S WALK

Gertrude's Walk is an existing shared use path trail segment beginning at Jefferson Street and continuing north along the west side of the SunRail right of way (ROW). Future Bicycle Beltway projects will connect this existing segment to LYNX Central Station and the Colonial Bicycle/Pedestrian Overpass, providing a connection to the Orlando Urban Trail north of the Central Business District.



INTRODUCTION

STUDY OVERVIEW



DOWNTOWN GAP STUDY

STUDY PURPOSE

The purpose of this study is to develop an alignment that connects the Downtown Connector Trail to Gertrude's Walk with a bike facility that can be used by people of all ages and abilities.

STUDY AREA

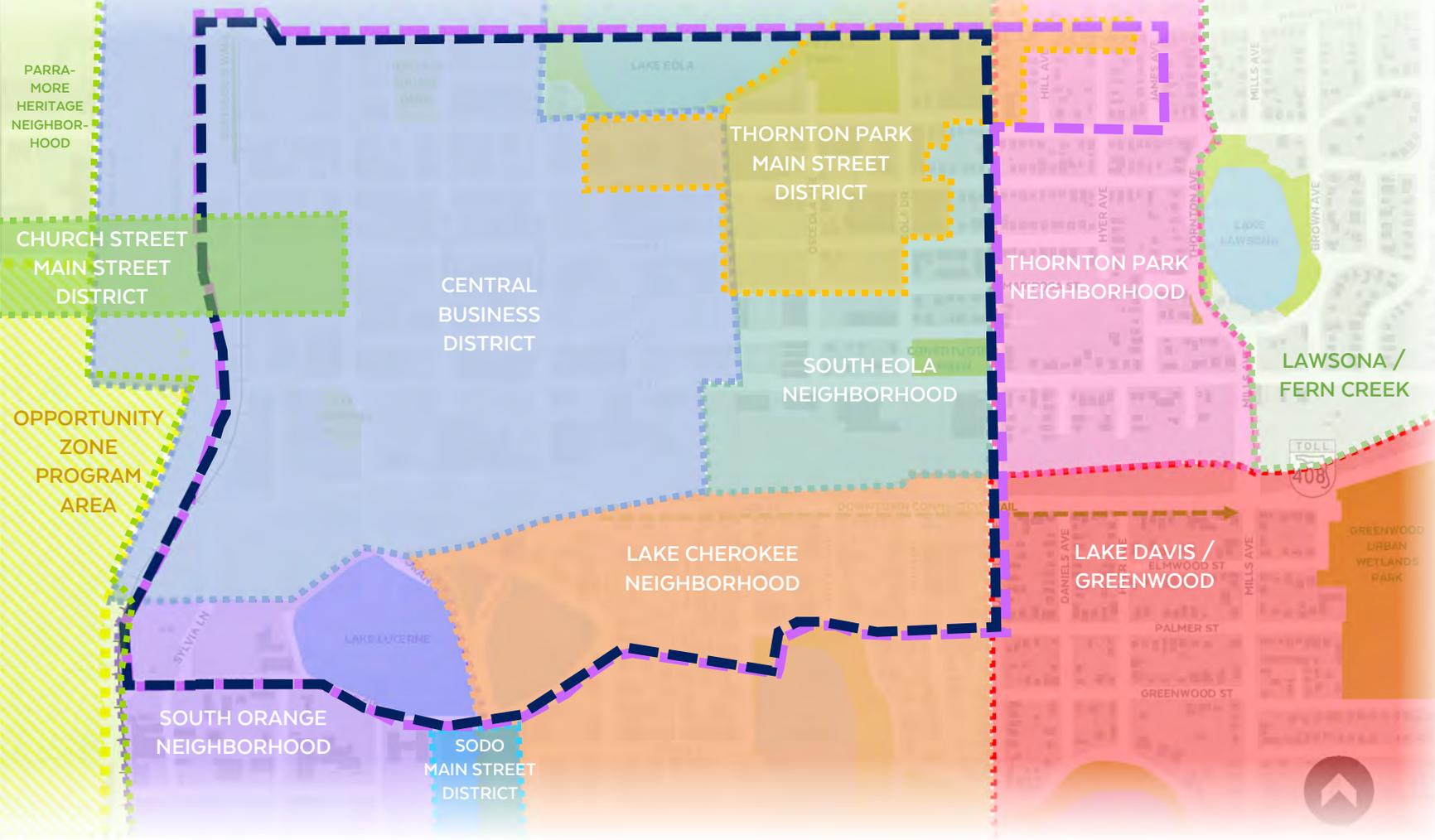
The study area is bounded by Interstate 4 (I-4) to the west, Washington Street to the north, Mills Avenue and Thornton Avenue to the east, and Palmer Street, Agnes Street, Lucerne Circle, and America Street to the south.

The recommended alignment does not need to connect to the existing termini of these two trails.



INTRODUCTION

STUDY OVERVIEW



NEIGHBORHOODS & SPECIAL DISTRICTS

The study area is within the Downtown Orlando Community Redevelopment Area, the Downtown Development Board Area, and the Orlando Economic Enhancement District, and includes the heart of the Central Business District as well as several residential neighborhoods and Main Street Districts.

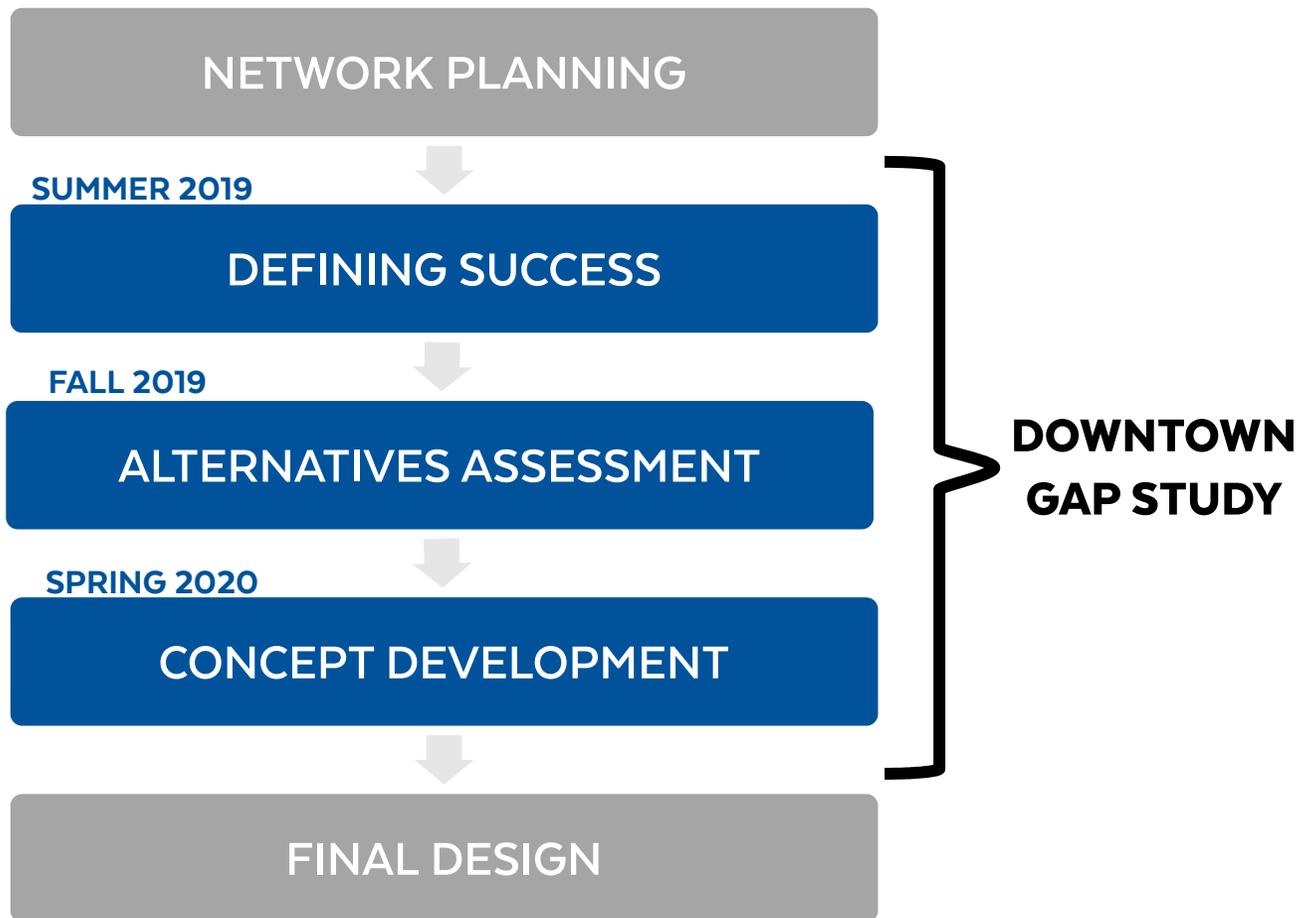
 DOWNTOWN ORLANDO
COMMUNITY REDEVELOPMENT AREA

 DOWNTOWN DEVELOPMENT
BOARD AREA



INTRODUCTION

STUDY OVERVIEW



STUDY SCHEDULE

The study schedule was approximately 9 months and consisted of three phases. The study concluded with a feasible concept that can move forward into final design.

DEFINING SUCCESS

The initial phase of the study identified a preferred subarea within the overall study area based on best practices, project goals and objectives, and subarea characteristics.

ALTERNATIVES ASSESSMENT

The second phase of the study identified a preferred alignment and facility types from three alternatives within the preferred subarea.

CONCEPT DEVELOPMENT

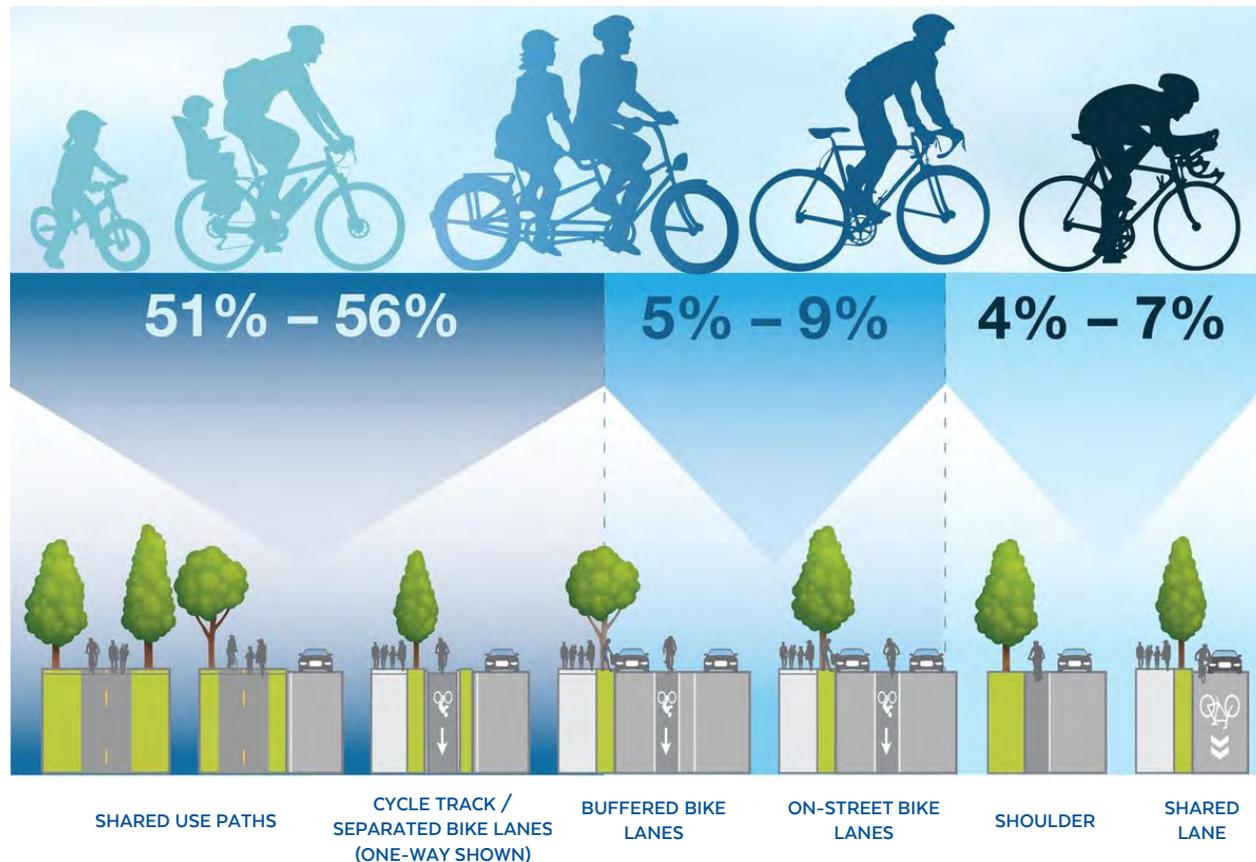
The final phase of the study developed a sketch-level concept plan including proposed typical sections and intersection treatments.



INTRODUCTION

SEPARATED BIKE FACILITIES

WHICH FACILITIES WILL MAKE RIDERS FEEL SAFER?



NOTE: Percentages represent the level of comfort that people feel bicycling, according to peer-reviewed surveys as recently as 2016.

SOURCE: Adapted from the FHWA Bikeway Selection Guide: https://safety.fhwa.dot.gov/ped_bike/tools_solve/docs/fhwasa18077.pdf

FHWA guidance indicates that the majority of potential bicyclists would feel safest using bike facilities that are more separated from vehicular traffic (e.g. cycle tracks or shared use paths).

CYCLE TRACKS

Cycle tracks (i.e. separated bike lanes) provide exclusive space for bicyclists along or within a roadway that is physically separated from motor vehicles and pedestrians by vertical elements, such as curbs, bollards, posts, planters, or raised from the street to the sidewalk level or an intermediate level.

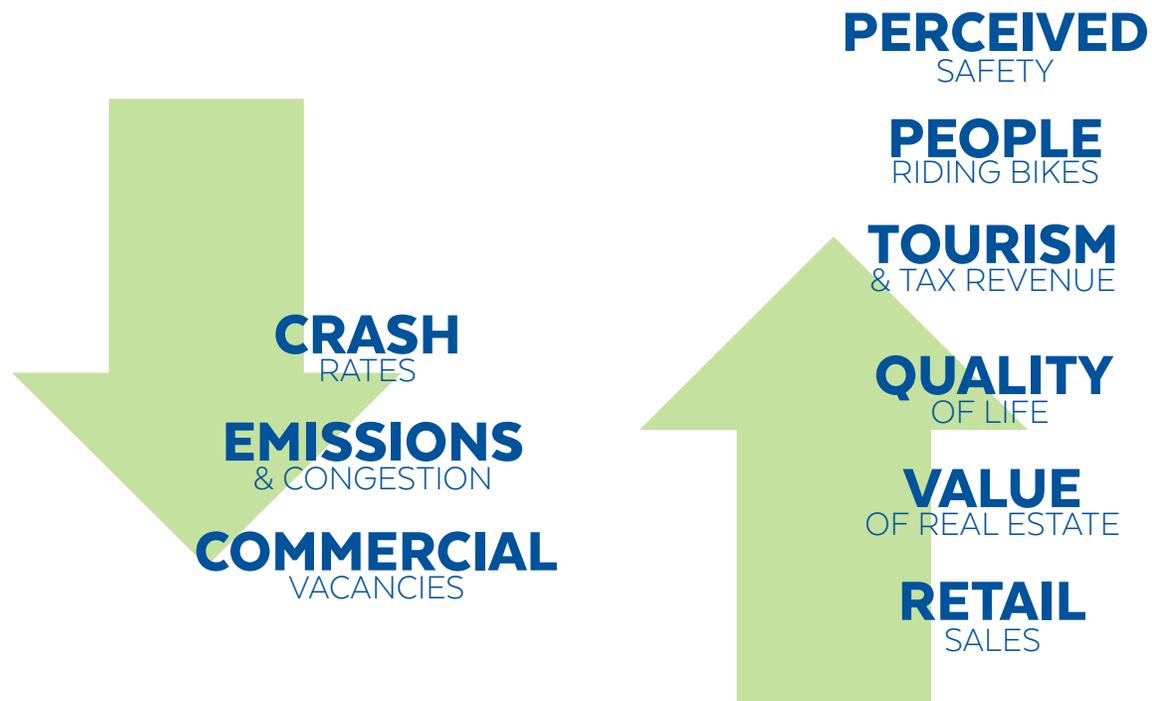
SHARED USE PATHS

Unlike other types of bike facilities, shared use paths are designed to support and encourage use by both pedestrians and bicyclists. Shared use paths can be adjacent to roadways or along an independent alignment. Shared use paths are more commonly used in suburban and rural contexts where there are fewer potential pedestrian and bicyclist conflicts.



INTRODUCTION

SEPARATED BIKE FACILITIES



BENEFITS

Implementing separated bike facilities has been found to increase ridership by more than 75% (Monsere et al, 2014), which creates health benefits from higher levels of physical activity, reduced motor vehicle emissions, and fewer cars on the road. Streets with separated bike facilities are found to be safer for both bicyclists (in part due to the “safety in numbers” phenomenon) and drivers (Marshall et al, 2018).

Communities that have invested in separated bike facilities have also experienced increased business activity, property values, and tax revenues (Clifton et al, 2012), with the majority of business owners supportive of the projects after implementation.



INTRODUCTION

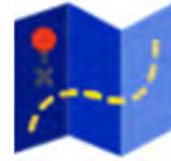
SEPARATED BIKE FACILITIES



500+
cycle tracks
constructed in the U.S.
since 2000

9

cycle tracks
constructed in
Florida



250+
cycle tracks
currently planned
in the U.S.

8

cycle tracks
currently planned
in Florida
(as of April 10, 2020)

**includes one and two-way*

SEPARATED BIKE FACILITIES IN THE U.S.

While there may be concerns with reallocating roadway space for separated bike facilities, experience suggests that negative effects are likely to be minor. Cities across the United States are pushing for more separated bike facilities, recognizing that the benefits are far greater than potential costs.





INTRODUCTION

SEPARATED BIKE FACILITIES



PEER CITY EXAMPLES

To better understand best practices for separated bike facilities, five projects implemented in peer cities were reviewed.



INTRODUCTION

SEPARATED BIKE FACILITIES



DALLAS, TEXAS

KATY TRAIL

The 3.5 mi. Katy Trail is located in between the Uptown and Oak Lawn neighborhoods, just north of downtown Dallas and one of the densest areas of the city. Future phases of the Katy Trail are planned to connect to east Dallas and other nearby trail systems.

Dallas categorizes their trails by different primary purposes. The Katy Trail is one of the city's *major linear trails*, meant to serve transportation purposes and connect parks, greenbelts, schools, neighborhoods, employment centers, entertainment districts, and transit centers. Other trail types include *major loop trails* and *neighborhood trails*, which provide recreation and exercise opportunities wholly within community parks, and *major nature trails*, which are unpaved trails in natural settings.



INTRODUCTION

SEPARATED BIKE FACILITIES



Katy Trail

DALLAS, TEXAS

KATY TRAIL

The Katy Trail is a 12' concrete shared use path with segments having an adjacent 8' rubberized jogging track.

Developed along a former Union Pacific rail corridor ROW (also known as the Katy Rail Line), the corridor was originally acquired by the city of Dallas in 1993 with the intent to be used as a public transit line. Instead, the corridor became one of the nation's first "rails-to-trails" projects in 2000, in part due to the support of private partners and trail advocacy groups.

Dallas has continued to prioritize urban trail investments as a way to promote the use of alternative modes of transportation, improve air quality, and boost tourism.



INTRODUCTION

SEPARATED BIKE FACILITIES



INDIANAPOLIS, INDIANA

INDIANAPOLIS CULTURAL TRAIL

The 8 mi. Indianapolis Cultural Trail was developed as a public-private partnership for the purpose of connecting the Central Business District with the city's historic neighborhoods and the city's six cultural districts. The Trail connects every significant arts, cultural, heritage, sports, and entertainment venue in downtown Indianapolis.

Since the project completion in 2013, the city has highlighted the trail as an important public space that connects residents and visitors to local restaurants, attractions, and hotels, as well as with the local art community through eight art installations featured along the trail.



INTRODUCTION

SEPARATED BIKE FACILITIES



Indianapolis Cultural Trail

INDIANAPOLIS, INDIANA INDIANAPOLIS CULTURAL TRAIL

The Indianapolis Cultural Trail is designed as a side path (sidewalk level). Separated spaces for pedestrians and bicycles are delineated along high volume segments, while other segments are designed for shared use.

The Cultural Trail was built within the existing ROW through a combination of reduction in lane widths, removal of on-street parking, and lane elimination along different project segments.

A 2015 study by the Indiana University Public Policy Institute estimated that the project has had a \$1 billion impact on the local economy (based on increases in assessed property values within approximately one block of the project between 2008 and 2014).



INTRODUCTION

SEPARATED BIKE FACILITIES



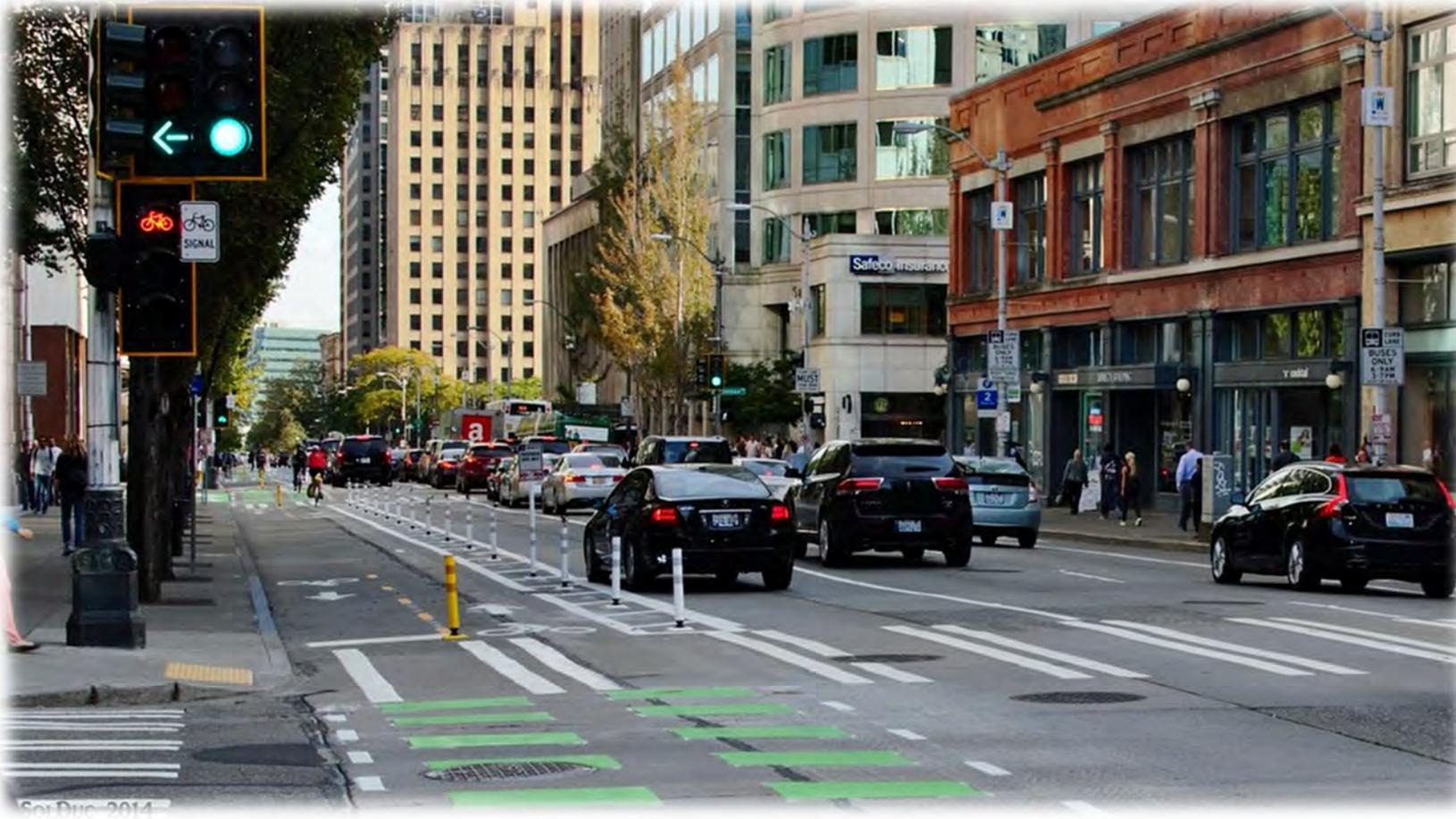
SEATTLE, WASHINGTON SECOND AVENUE CYCLE TRACK

The Second Avenue Cycle Track was the city's first separated bike lane when it opened as a demonstration project in 2014, and was also the first piece of the city's Center City Bike Network to be completed. The cycle track runs through the Central Business District and connects to other existing and planned separated bike lanes in downtown.



INTRODUCTION

SEPARATED BIKE FACILITIES



Second Avenue Cycle Track

SEATTLE, WASHINGTON **SECOND AVENUE CYCLE TRACK**

The Second Avenue Cycle Track is a street-level, two-way cycle track. The project upgraded an existing on-street bike lane and converted one lane from a three lane one-way street to accommodate the cycle track. Bicycle ridership is up 415% since construction.



INTRODUCTION

SEPARATED BIKE FACILITIES



ST. PAUL, MINNESOTA

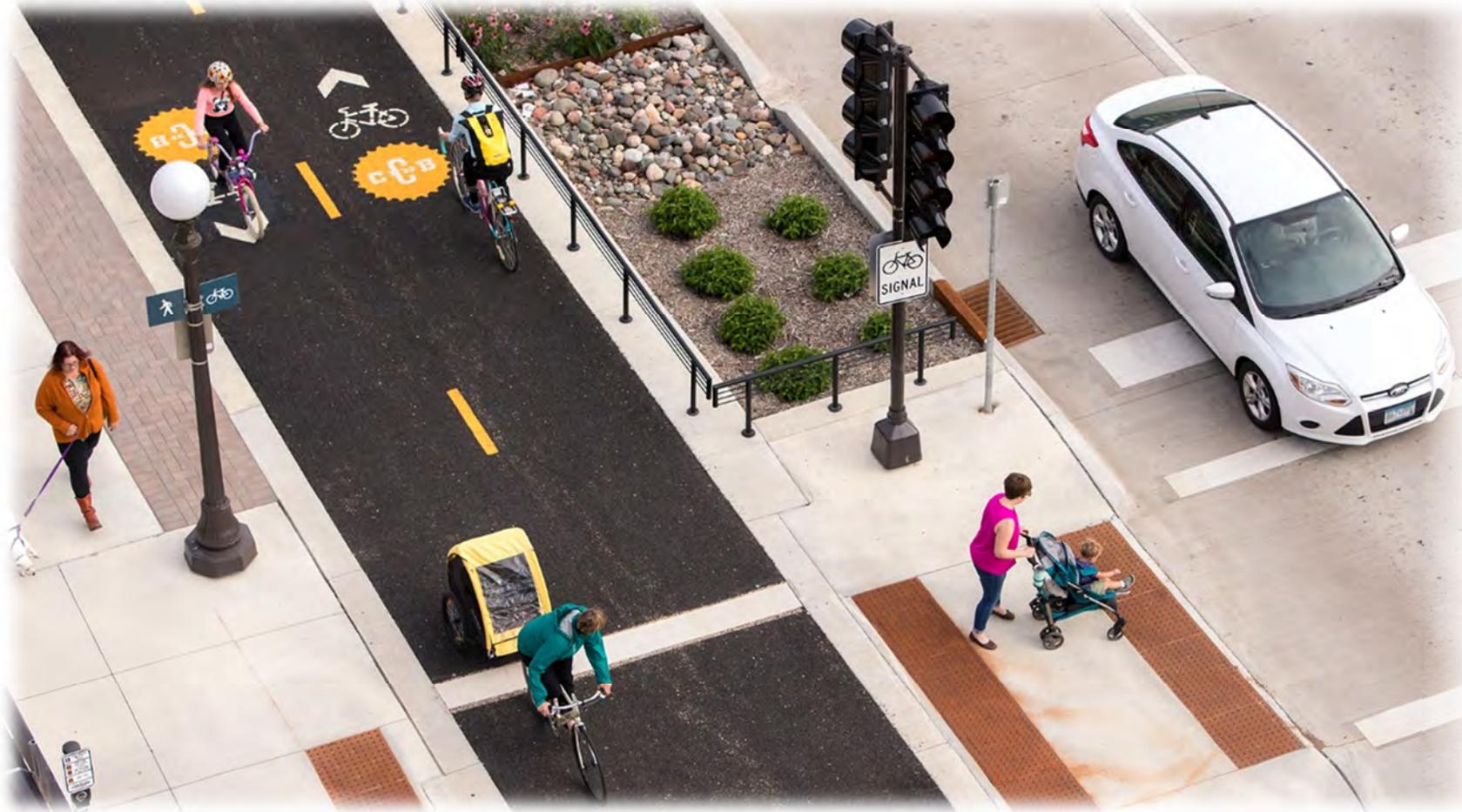
JACKSON STREET CYCLE TRACK

Completed in 2017, the Jackson Street Cycle Track connects the Gateway State Trail and the Samuel Morgan Regional Trail through Downtown St. Paul. It is the first segment of the Capital City Bikeway, a network of high-quality bike facilities planned in downtown St. Paul.



INTRODUCTION

SEPARATED BIKE FACILITIES



Jackson Street Cycle Track

ST. PAUL, MINNESOTA **JACKSON STREET CYCLE TRACK**

This project reallocated space by converting one lane of parallel parking and an on-street bike lane along Jackson Street into a sidewalk-level cycle track. Branding and wayfinding signage help to designate the cycle track route. The project design includes sustainable pavement and porous asphalt, which helps collect stormwater runoff.



INTRODUCTION

SEPARATED BIKE FACILITIES



The East-West Green Spine Cycle Track

TAMPA, FLORIDA

EAST-WEST GREEN SPINE

The downtown segment (phase 1) of the East-West Green Spine is a two-way cycle track with portions at street-level and other portions at sidewalk-level.

This segment was implemented in conjunction with the Tyler Street and Cass Street two-way conversion project and in partnership with the developer of the Residences at Riverwalk. Cass Street (previously three eastbound lanes with a parallel parking/turn lane) was modified to be a divided two lane, two-way street with a separated two-way cycle track. The project required changes in access management, on-street parking, utilities, and signalization.



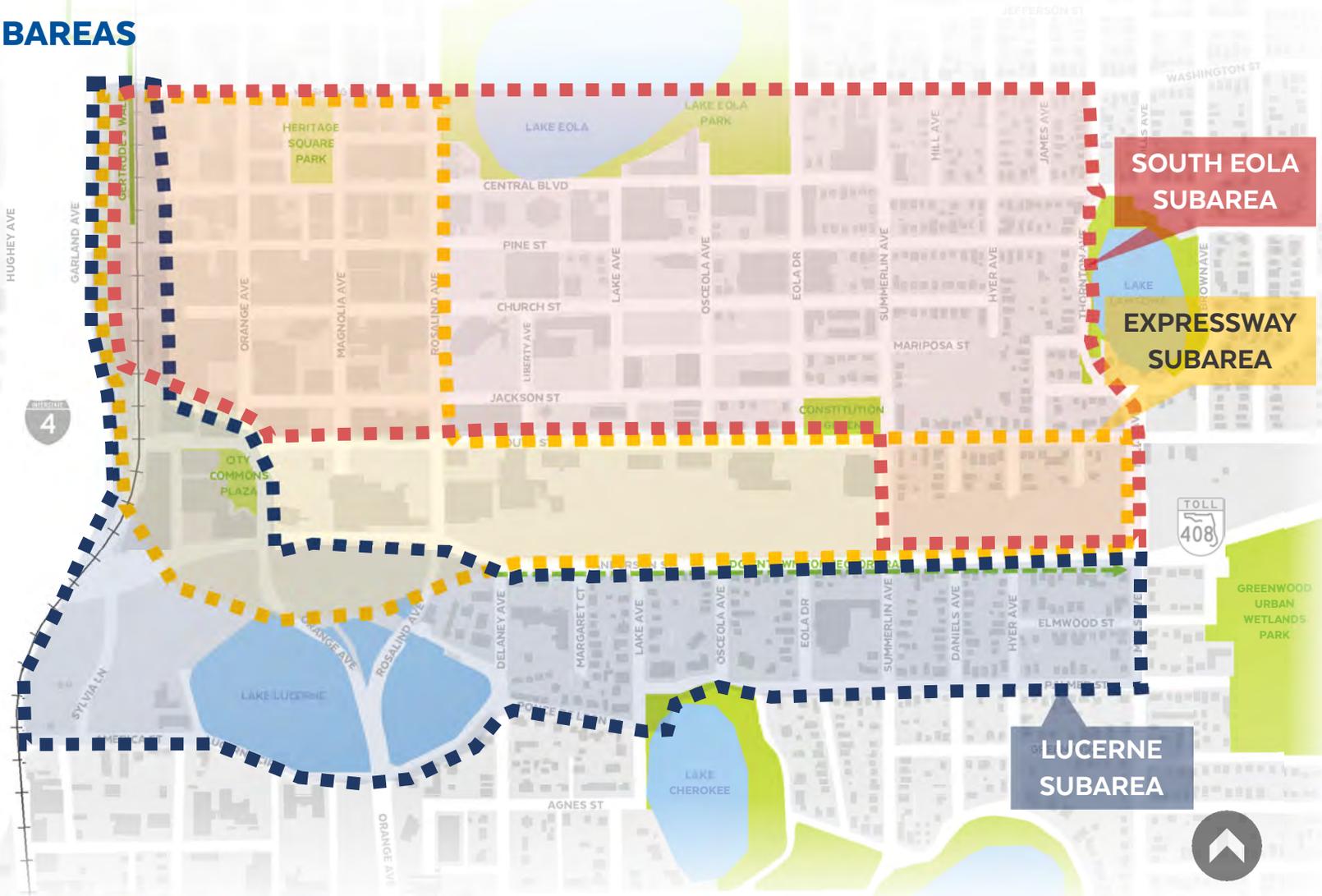


CHAPTER 2

DEFINING SUCCESS

DEFINING SUCCESS

SUBAREAS



THREE SUBAREAS

The overall study area was divided into three subareas and screened based on identified project goals and objectives and stakeholder and public feedback.

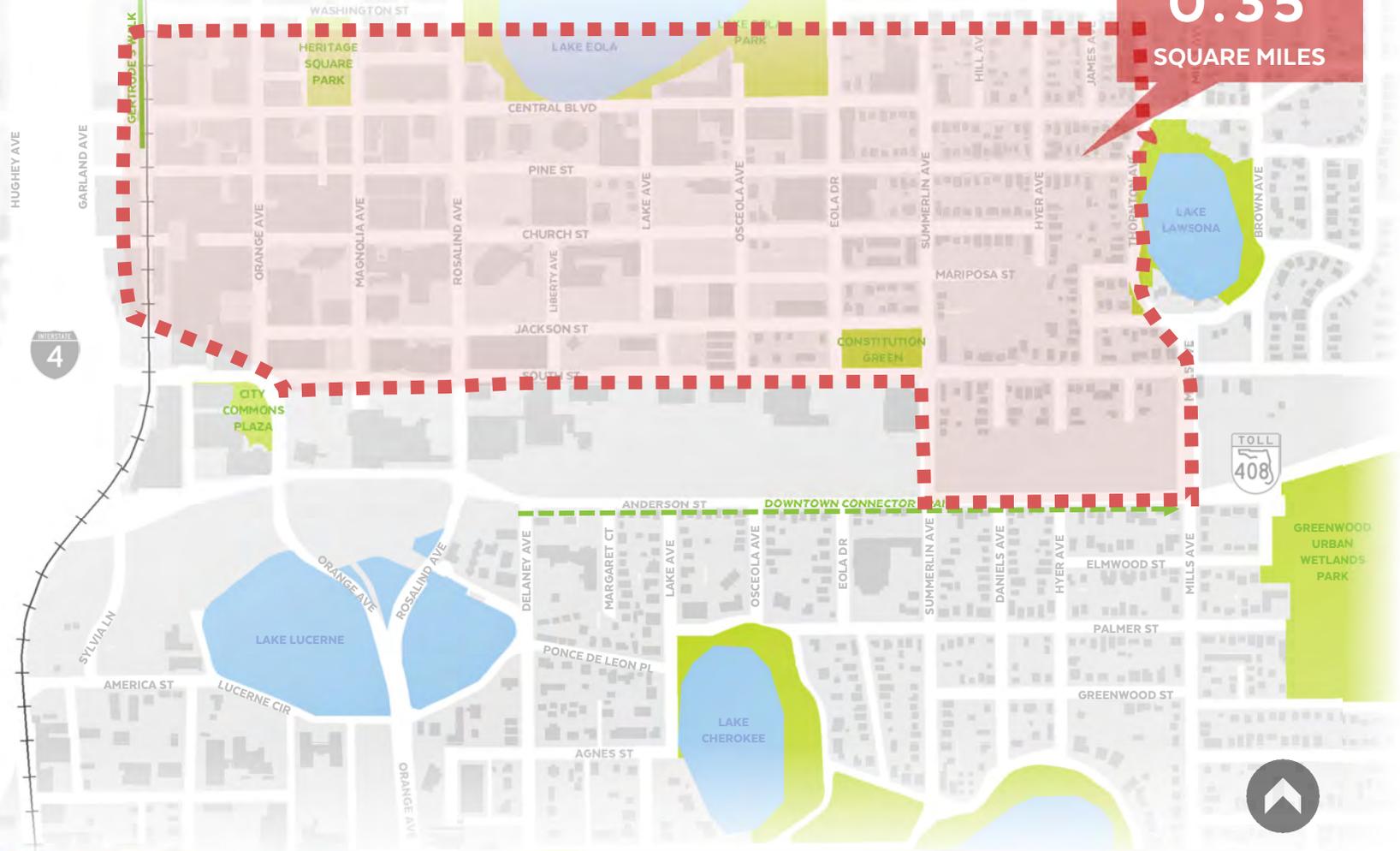
KEY CONSIDERATIONS

- Where to connect neighborhoods north and south of State Road (SR) 408 (East-West Expressway)
- Whether the alignment should traverse through the heart of the Central Business District



DEFINING SUCCESS

SUBAREAS



SOUTH EOLA
0.35
SQUARE MILES

SOUTH EOLA SUBAREA

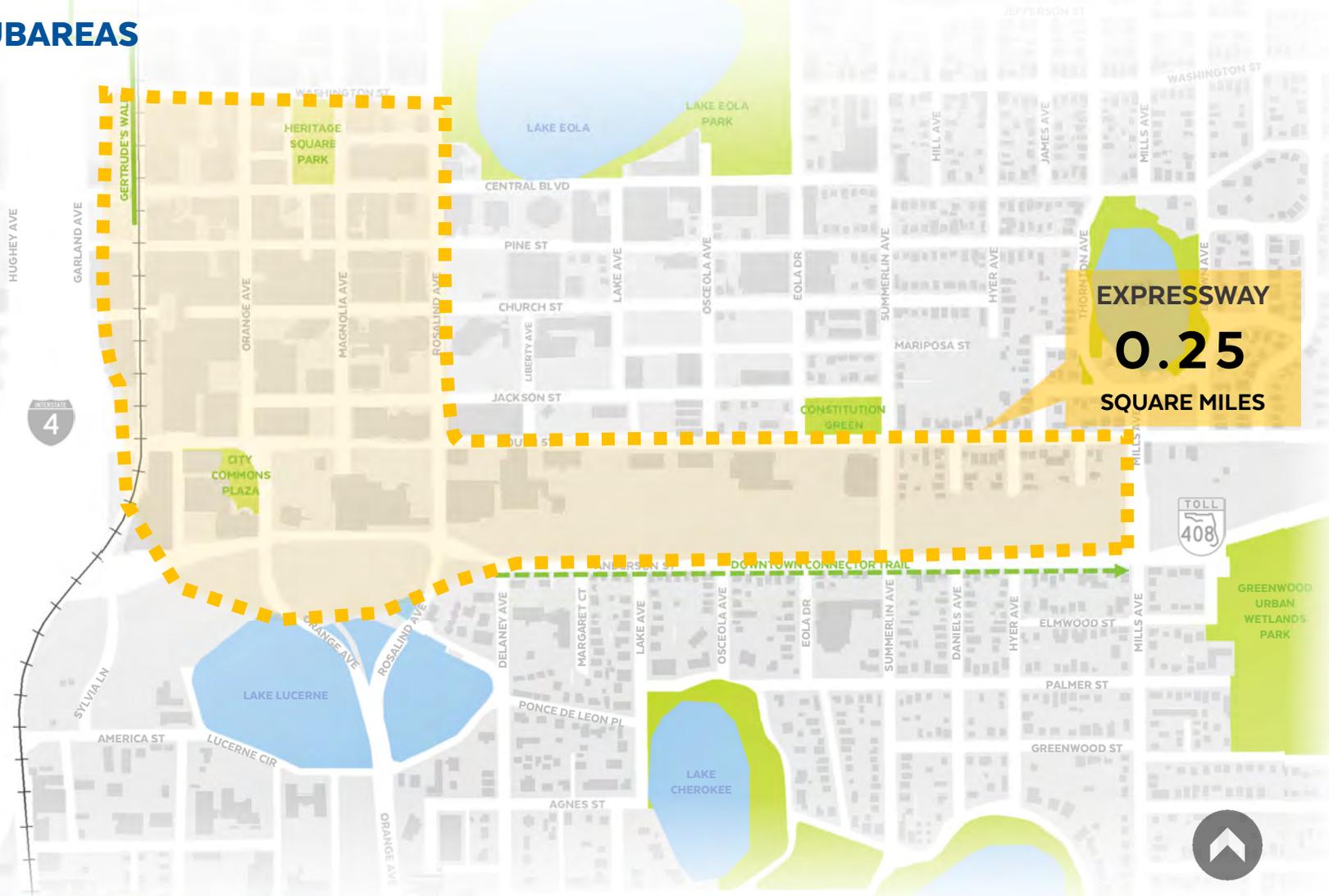
An alignment through the South Eola Subarea would connect to the Downtown Connector Trail on Summerlin Avenue or Mills Avenue through the South Eola and Thornton Park neighborhoods.

This subarea provides opportunities to either avoid or include the heart of the Central Business District.



DEFINING SUCCESS

SUBAREAS



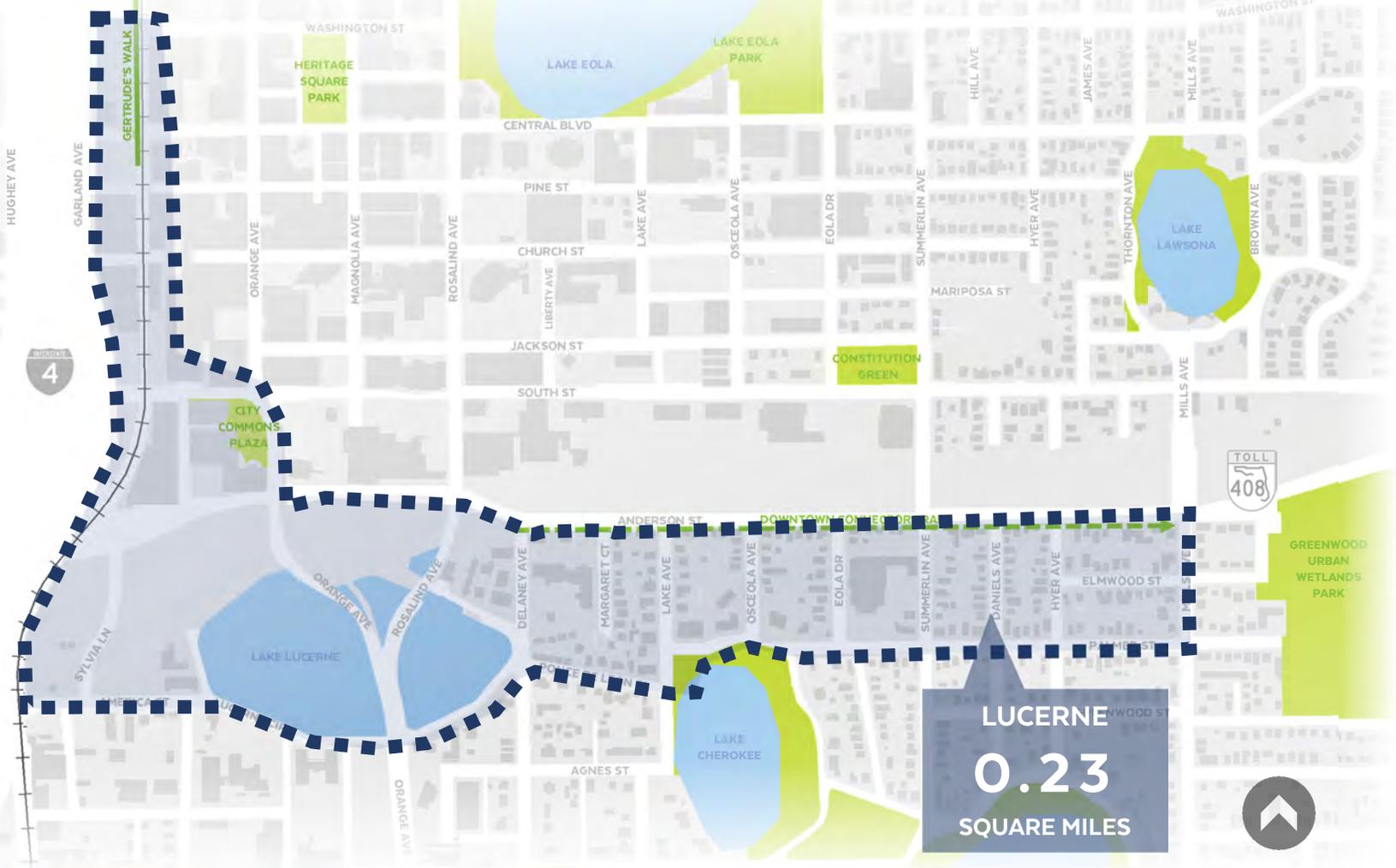
EXPRESSWAY SUBAREA

The Expressway Subarea accommodates the previously identified conceptual alignment along SR 408, but extends east to include more opportunities for a facility within the heart of the Central Business District.



DEFINING SUCCESS

SUBAREAS



LUCERNE SUBAREA

Like the Expressway Subarea, the Lucerne Subarea also accommodates the previously identified conceptual alignment north of SR 408, but extends to the south through the Lake Cherokee Neighborhood and around Lake Lucerne.





DEFINING SUCCESS

GOALS & OBJECTIVES

53%

of survey respondents chose creating
& maintaining a connected, low-
stress bikeway network

linking key destinations

as the most important goal out of the
five goals for the Orlando Bike Plan

*Based on 225 responses to the 2019 Orlando
Bicycle Plan Update Survey question "Which
of the following goals of the Bike Plan
Update do you feel is most important?"*

WHAT IS IMPORTANT TO ORLANDO RESIDENTS?

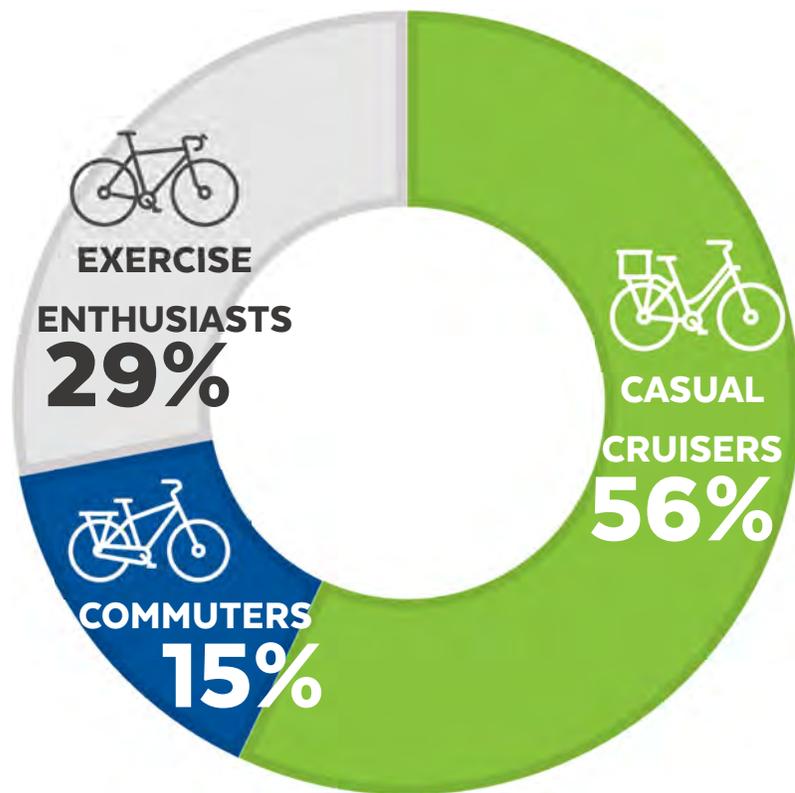
The City of Orlando is currently updating its citywide bicycle master plan. As part of this effort, an online survey was conducted between March and April 2019 to gain feedback from members of the public on their current bicycling habits and the key goals and objectives that the city should focus on in the future.

Survey responses indicated a strong preference for future investments to focus on providing more separated bike facilities and on connecting the bike network with key destinations so that bicycling can be a viable and convenient transportation option.



DEFINING SUCCESS

GOALS & OBJECTIVES



Results based on 205 responses to the 2019 Orlando Bicycle Plan Update Survey question “What is Your Primary Purpose For Bicycling?”

Casual commuters defined as those who chose “recreation / leisure” or “travel for shopping / entertainment”;

Commuters defined as those who chose “commuting to / from work or school”; Exercise enthusiasts defined as those who chose “health”;

Respondents who chose “Other” were excluded from results.

TYPES OF CYCLISTS

Differing purposes, along with the idea of “key destinations”, was used to divide cyclists into three types for this study: exercise enthusiasts, commuters, and casual cruisers.

EXERCISE ENTHUSIASTS: Exercise enthusiasts are bicycling for health and exercise rather than a means of transportation. The primary objective for these cyclists is to minimize conflicts & delays to the greater bikeway network.

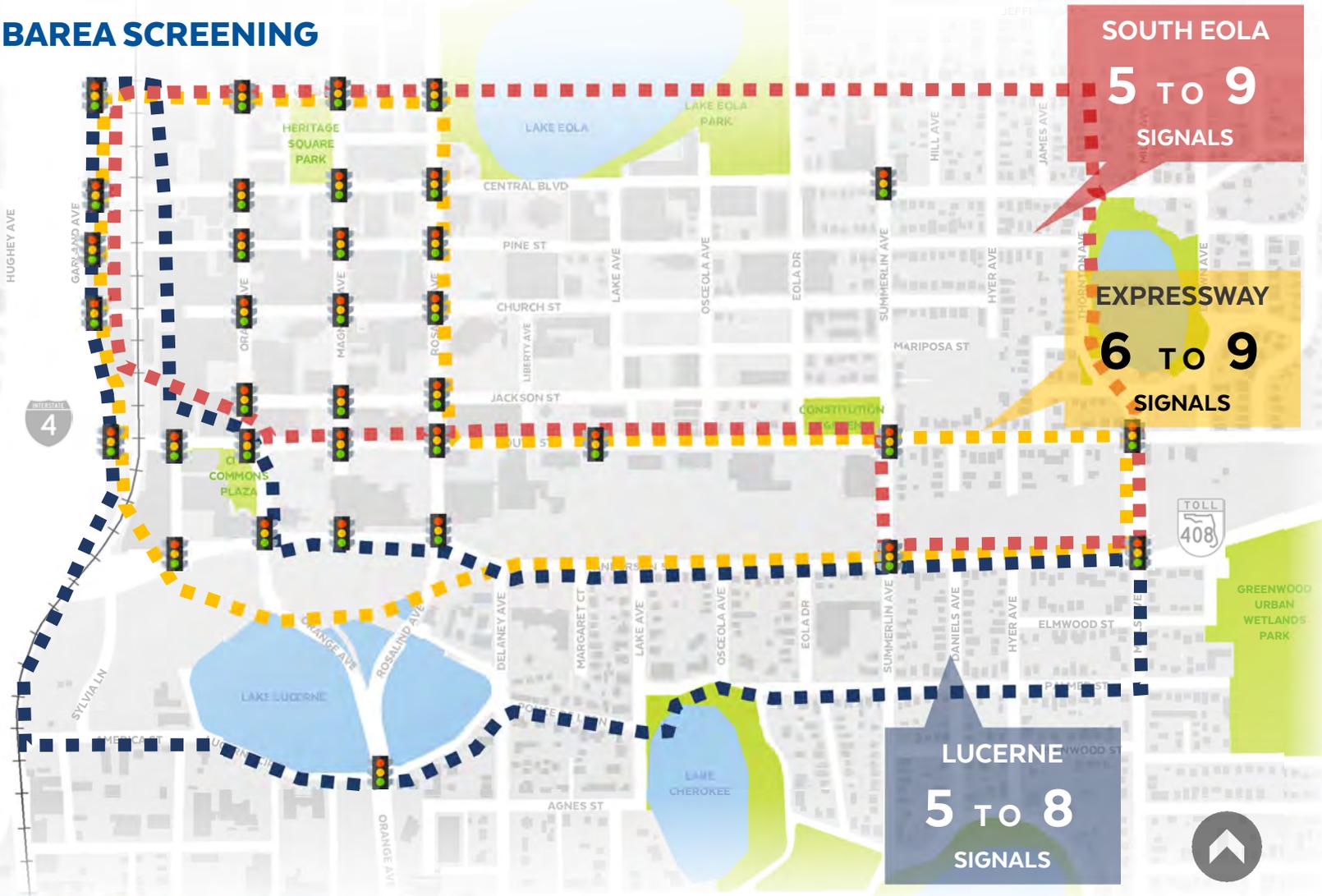
COMMUTERS: Commuters use bicycles as a means of transportation between their home and work or school. For commuters, households, jobs, & civic uses should be connected through the most comfortable and direct route.

CASUAL CRUISERS: Casual cruisers would like to use bicycles for transportation to recreation, leisure, shopping, and entertainment destinations.



DEFINING SUCCESS

SUBAREA SCREENING



SIGNALIZED INTERSECTIONS

At this stage of the study, no alternative routes were determined. However, an estimate of the range of potential signalized intersection crossings were estimated to compare relative anticipated bicyclist delay.

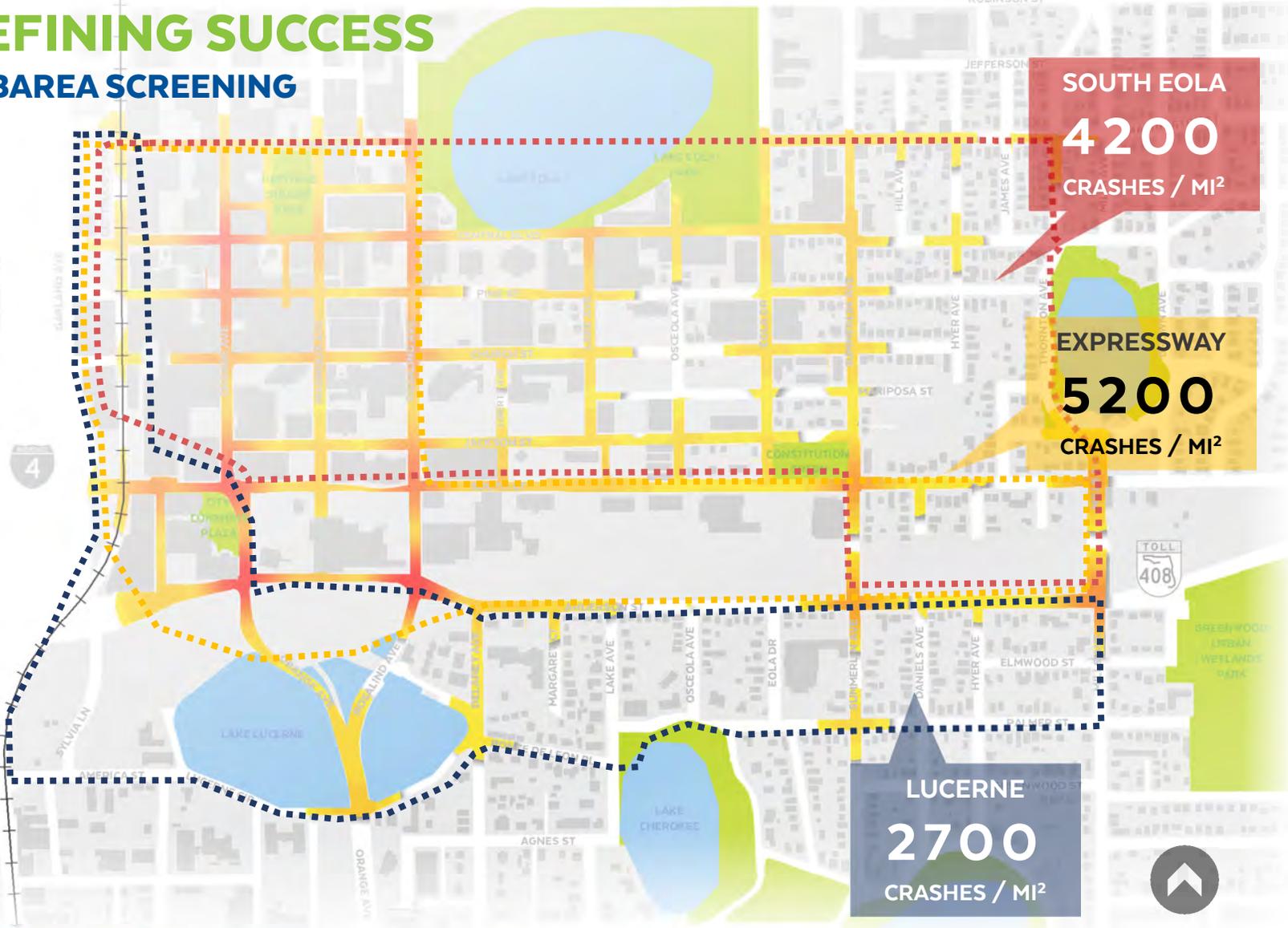
LEGEND

 SIGNALIZED INTERSECTION



DEFINING SUCCESS

SUBAREA SCREENING



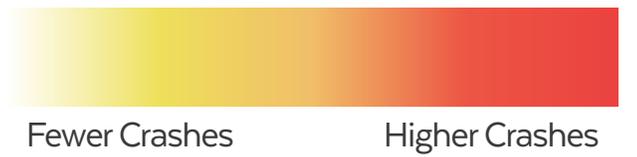
EXERCISE ENTHUSIASTS



VEHICULAR CONFLICTS

For the purposes of this study, the density of all crashes over the past five years was used to represent the relative exposure of bicyclists to vehicular traffic and conflicts. Although all cyclists tend to avoid routes that have higher potential for conflicts, this study assumes “Exercise Enthusiasts” would be less willing to tolerate areas with more traffic and potential delays.

LEGEND



Source: Signal Four Analytics 5-Year Crash Reports, 2014 - 2018 (all crash types)

LUCERNE
2700
CRASHES / MI²

MI² = Square Miles





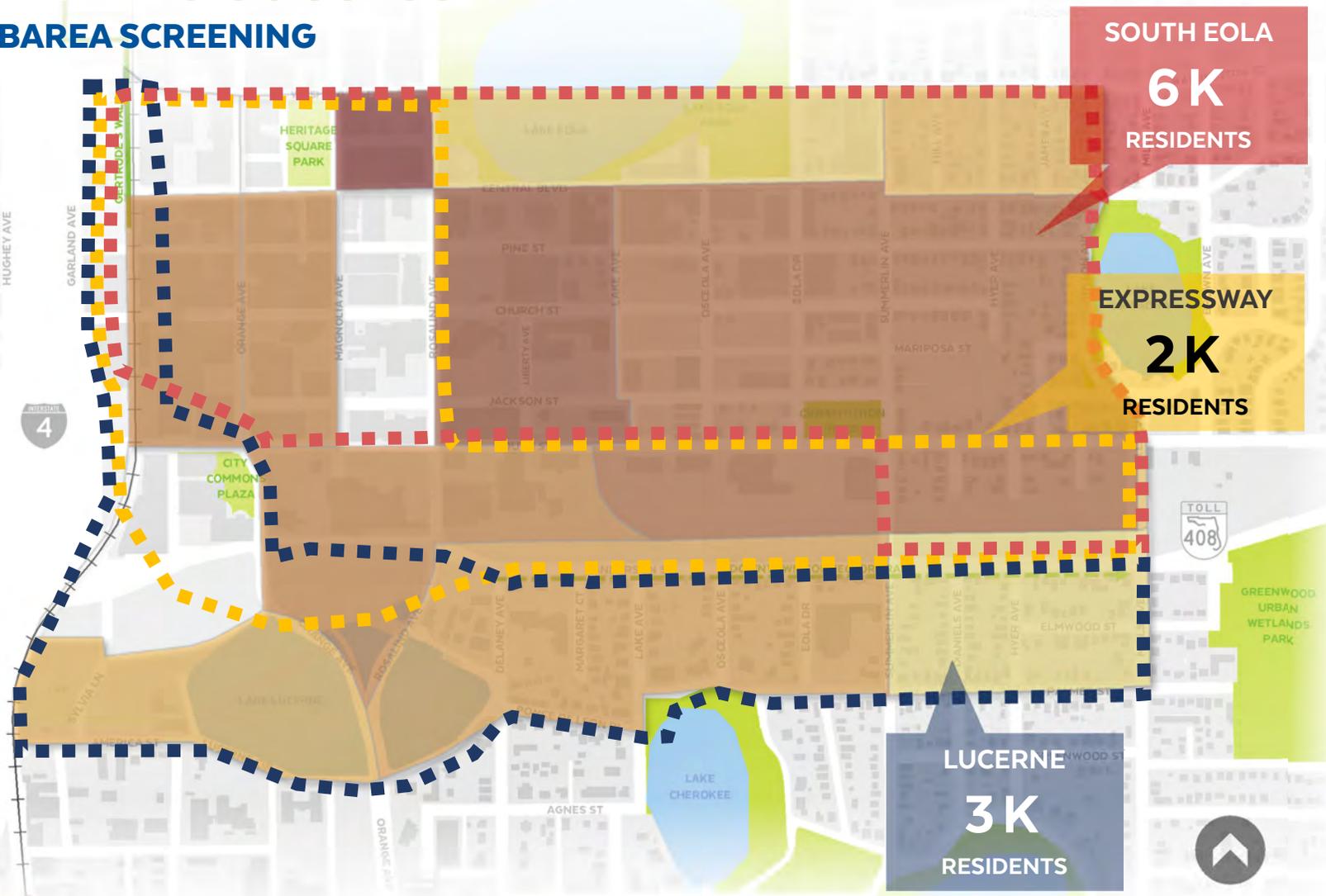
	SIGNALIZED INTERSECTIONS (RANGE OF POTENTIAL SIGNALS)	VEHICULAR CONFLICTS (CRASHES / MI ²)	RATING
SOUTH EOLA	5 TO 9	4200	
EXPRESSWAY	6 TO 9	5200	
LUCERNE	5 TO 8	2700	





DEFINING SUCCESS

SUBAREA SCREENING



POPULATION

For the purposes of this study, population data was deemed as most applicable in the evaluation of how desirable subareas are for the “Commuter” bicyclist.

LEGEND

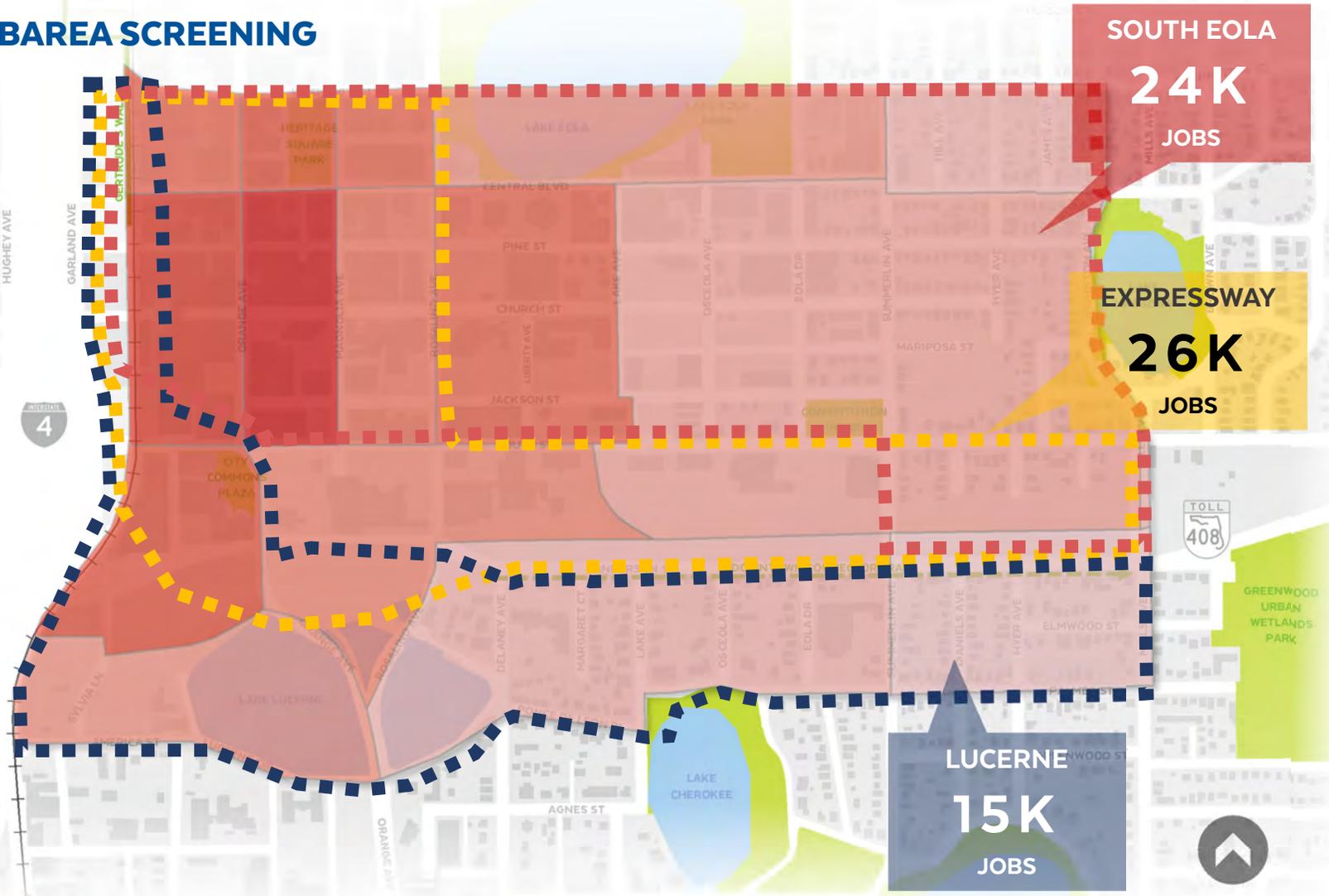


Source: City of Orlando 2013 Transportation Analysis Zone (TAZ) (extrapolated to 2019)



DEFINING SUCCESS

SUBAREA SCREENING



EMPLOYMENT

For the purposes of this study, employment data was deemed as most applicable in the evaluation of how desirable subareas are for the “Commuter” bicyclist.

LEGEND

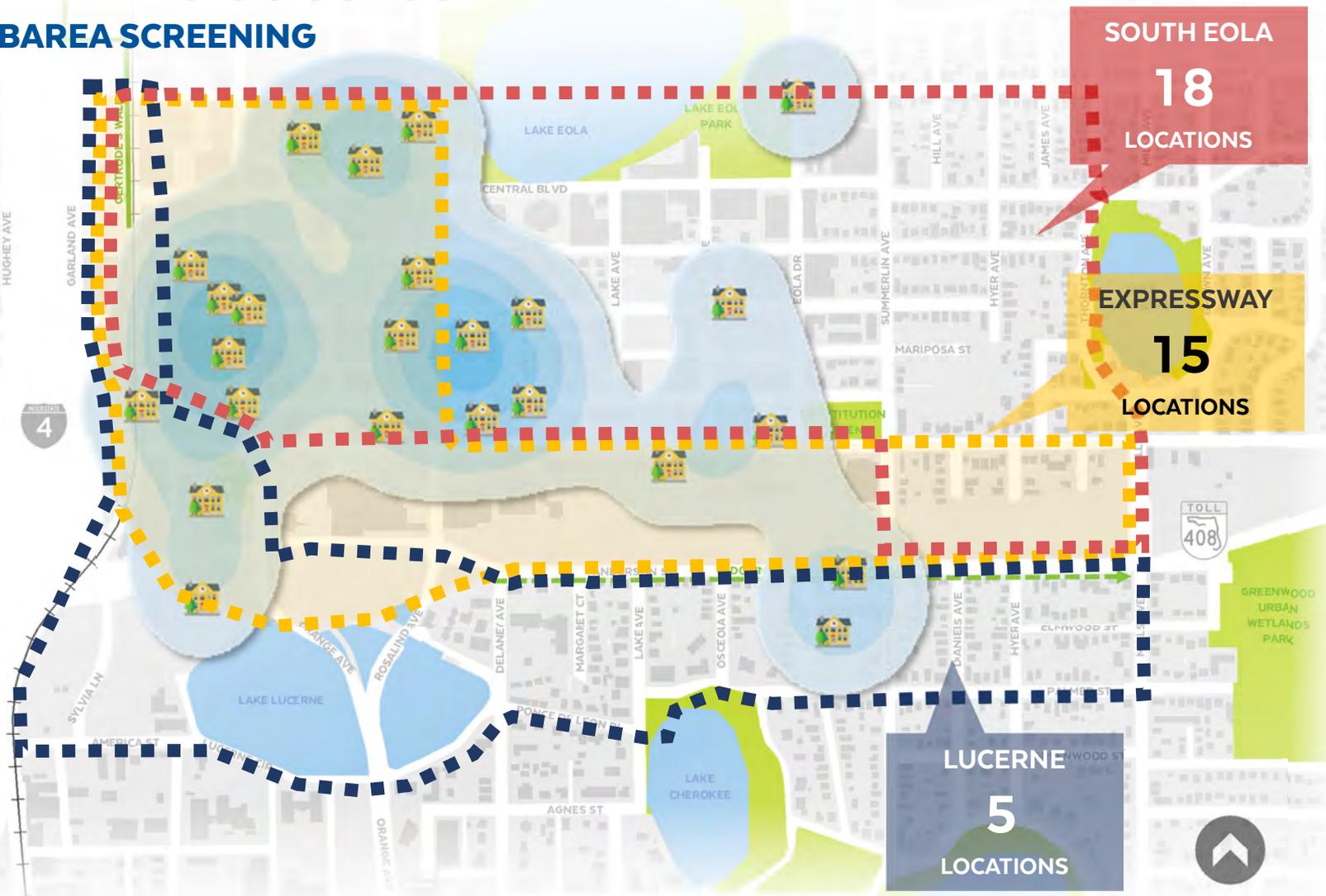


Source: City of Orlando 2013 Transportation Analysis Zone (TAZ) (extrapolated to 2019)



DEFINING SUCCESS

SUBAREA SCREENING



INSTITUTIONAL

Institutional destinations include locations such as government buildings, schools, and religious institutions.

For the purposes of this study, institutional destinations density data was deemed as most applicable in the evaluation of how desirable subareas are for the “Commuter” bicyclist destined for work or school.

LEGEND



Source: City of Orlando Business Tax Receipts



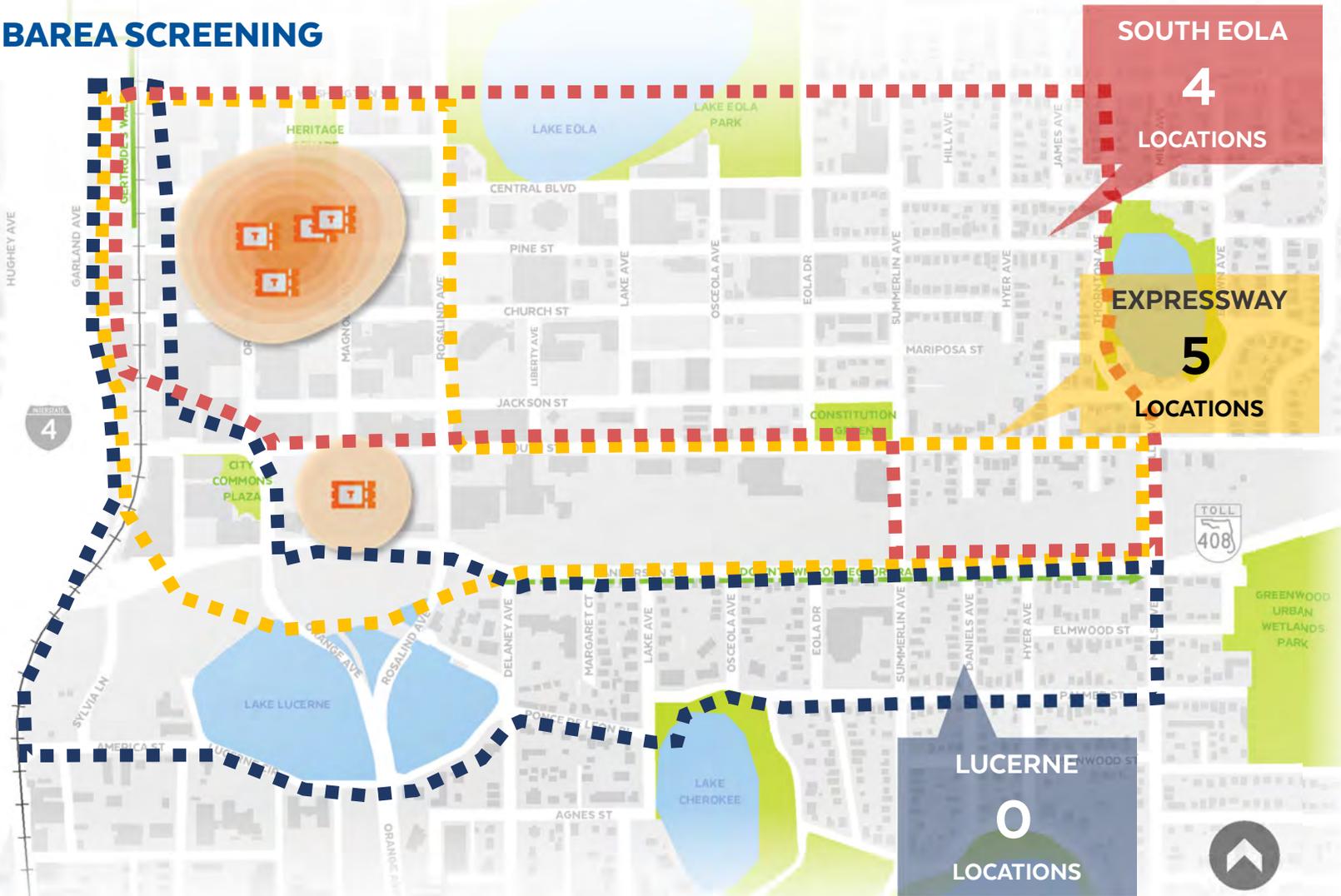
DEFINING SUCCESS

SUBAREA SCREENING



	POPULATION (RESIDENTS)	EMPLOYMENT (JOBS)	INSTITUTIONAL (NUMBER OF LOCATIONS)	RATING
SOUTH EOLA	6K	24K	18	
EXPRESSWAY	2K	26K	15	
LUCERNE	3K	15K	5	





ARTS & ENTERTAINMENT

Arts and entertainment destinations include locations such as theaters, concert halls, and art galleries.

For the purposes of this study, arts and entertainment destinations density data was deemed as most applicable in the evaluation of how desirable subareas are for the “Casual Cruiser” bicyclist.

LEGEND



Source: City of Orlando Business Tax Receipts



DEFINING SUCCESS

SUBAREA SCREENING



DINING

Dining locations include all restaurants.

For the purposes of this study, dining density data was deemed as most applicable in the evaluation of how desirable subareas are for the “Casual Cruiser” bicyclist.

LEGEND

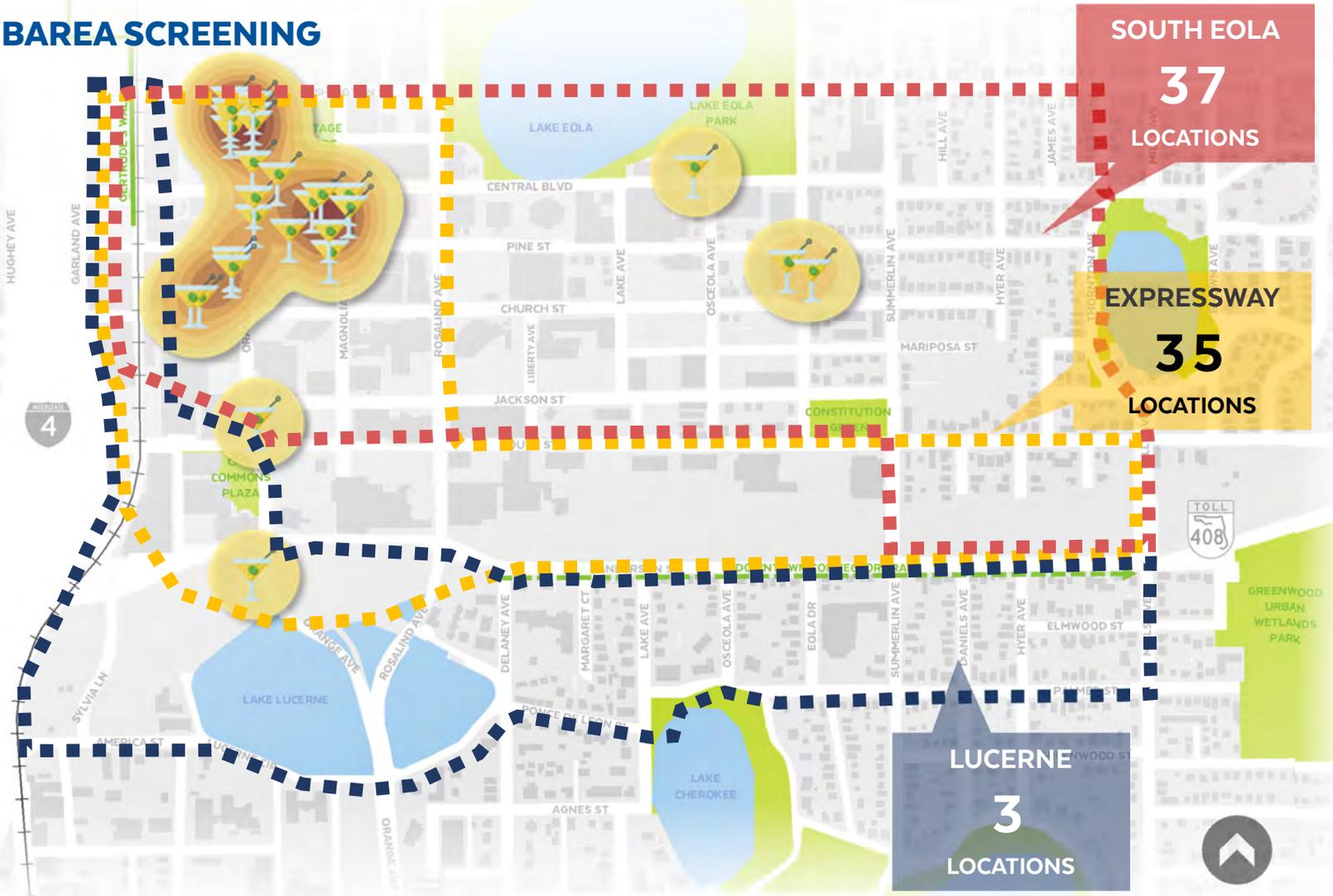


Source: City of Orlando Business Tax Receipts





SUBAREA SCREENING



BARS & NIGHTLIFE

Bars and nightlife destinations include bars and clubs. Locations which also serve food are included in the dining category.

For the purposes of this study, bars and nightlife density data was deemed as most applicable in the evaluation of how desirable subareas are for the “Casual Cruiser” bicyclist.

LEGEND

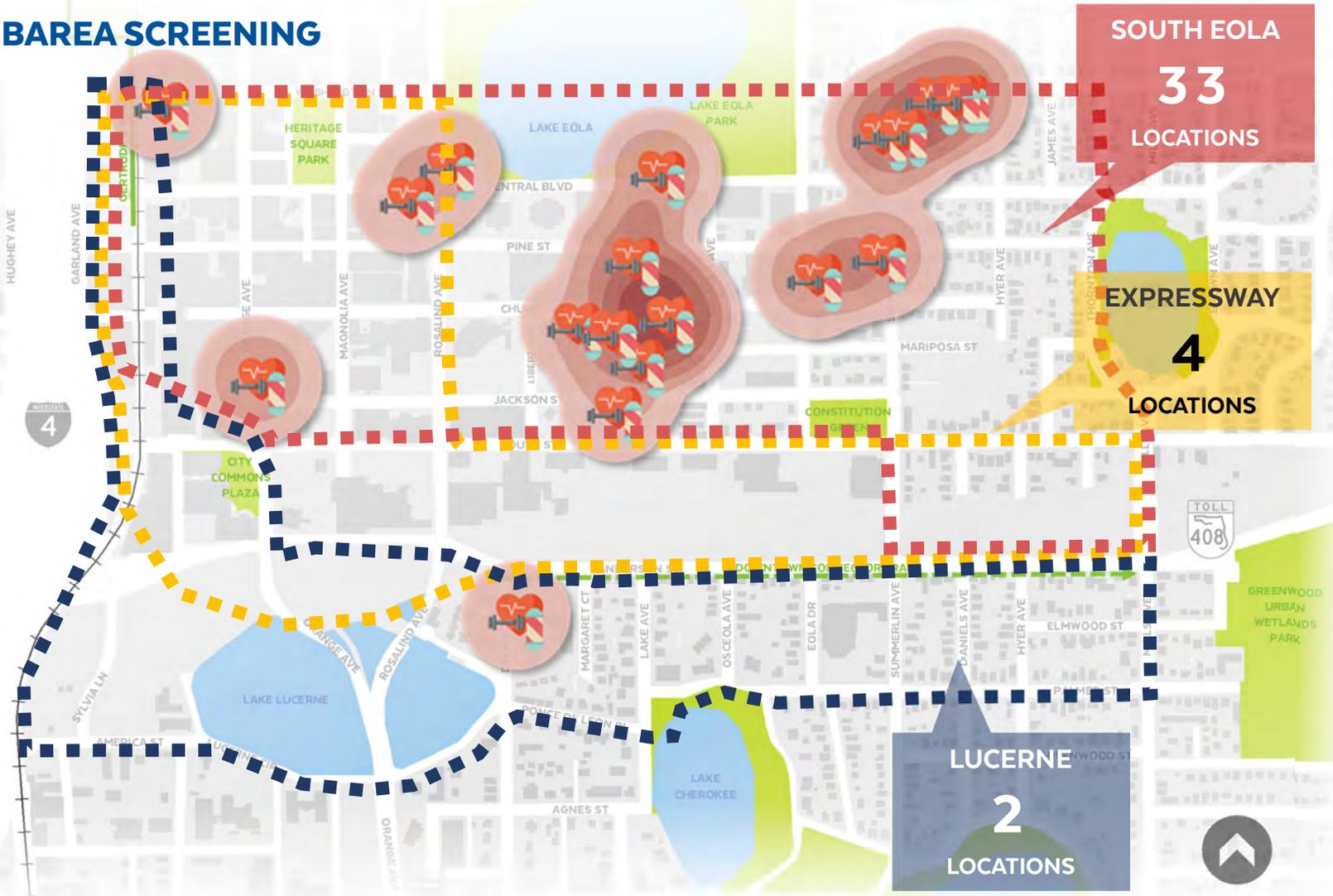


Source: City of Orlando Business Tax Receipts



DEFINING SUCCESS

SUBAREA SCREENING



HEALTH & WELLNESS

Health and wellness locations include places such as barbers, beauty salons, spas, and gyms.

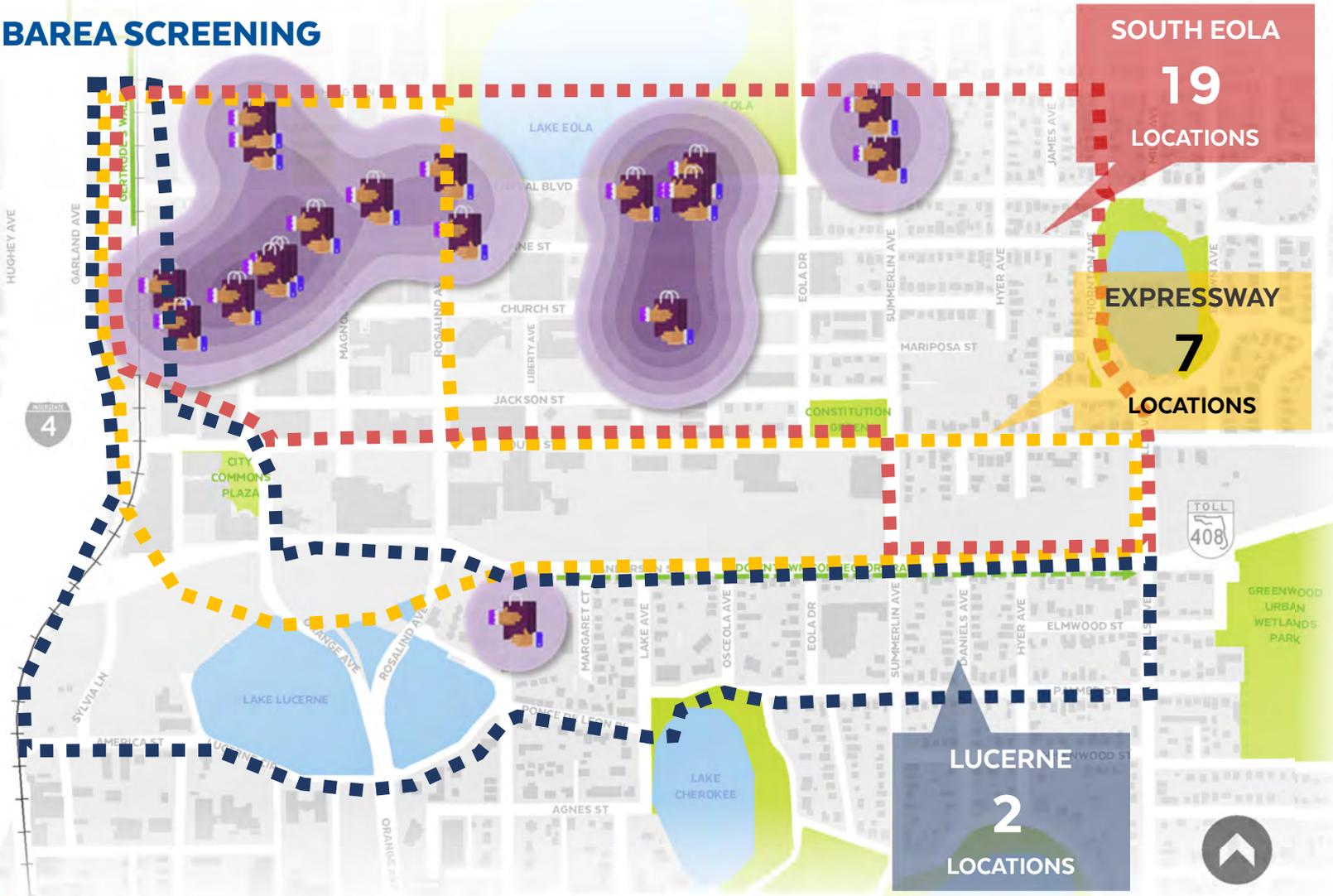
For the purposes of this study, health and wellness density data was deemed as most applicable in the evaluation of how desirable subareas are for the “Casual Cruiser” bicyclist.

LEGEND



Source: City of Orlando Business Tax Receipts





SHOPPING & RETAIL

Shopping and retail include locations such as grocery, convenience, and retail stores.

For the purposes of this study, shopping and retail density data was deemed as most applicable in the evaluation of how desirable subareas are for the “Casual Cruiser” bicyclist.

LEGEND



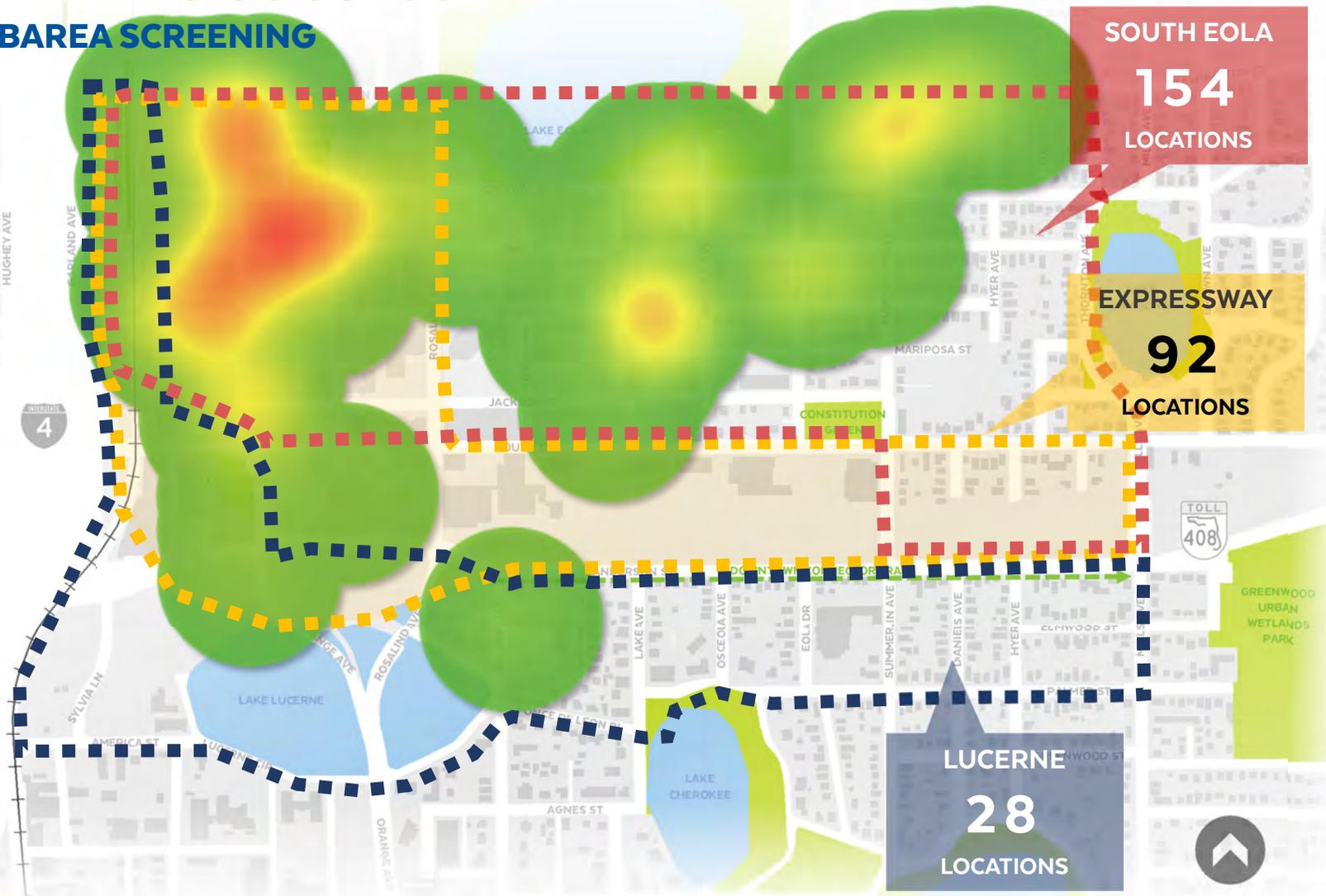
Source: City of Orlando Business Tax Receipts



DEFINING SUCCESS

SUBAREA SCREENING

CASUAL CRUISERS



LEISURE (COMBINATION)

Leisure destinations is a combination of all arts and entertainment, dining, bars and nightlife, health and wellness, and shopping and retail locations.

For the purposes of this study, leisure destination density data was deemed as most applicable in the evaluation of how desirable subareas are for the “Casual Cruiser” bicyclist.

LEGEND



Source: City of Orlando Business Tax Receipts



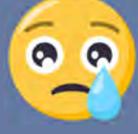
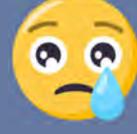
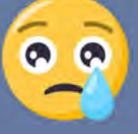


	LEISURE (NUMBER OF LOCATIONS)	RATING
SOUTH EOLA	154	
EXPRESSWAY	92	
LUCERNE	28	



DEFINING SUCCESS

SUBAREA SCREENING

	 EXERCISE ENTHUSIASTS	 COMMUTERS	 CASUAL CRUISERS	OVERALL RATING
	29%	15%	56%	
SOUTH EOLA				
EXPRESSWAY				
LUCERNE				



DEFINING SUCCESS

STAKEHOLDER & PUBLIC FEEDBACK



The Project Visioning Team (PVT) had their first meeting on Friday, June 21, 2019 at the Discover Downtown building from 10:00 am to 12:00 pm. Members invited consisted of City of Orlando staff, local agency representatives, bicycle advocates, and local business and property owners located within the study subareas. The meeting generated a variety of questions and comments about the Downtown Gap Study subareas, in addition to questions and comments regarding outside projects.

Ultimately, the PVT agreed with the recommendation that the South Eola subarea was the best location to proceed with for the next phase of the project.



DEFINING SUCCESS

STAKEHOLDER & PUBLIC FEEDBACK



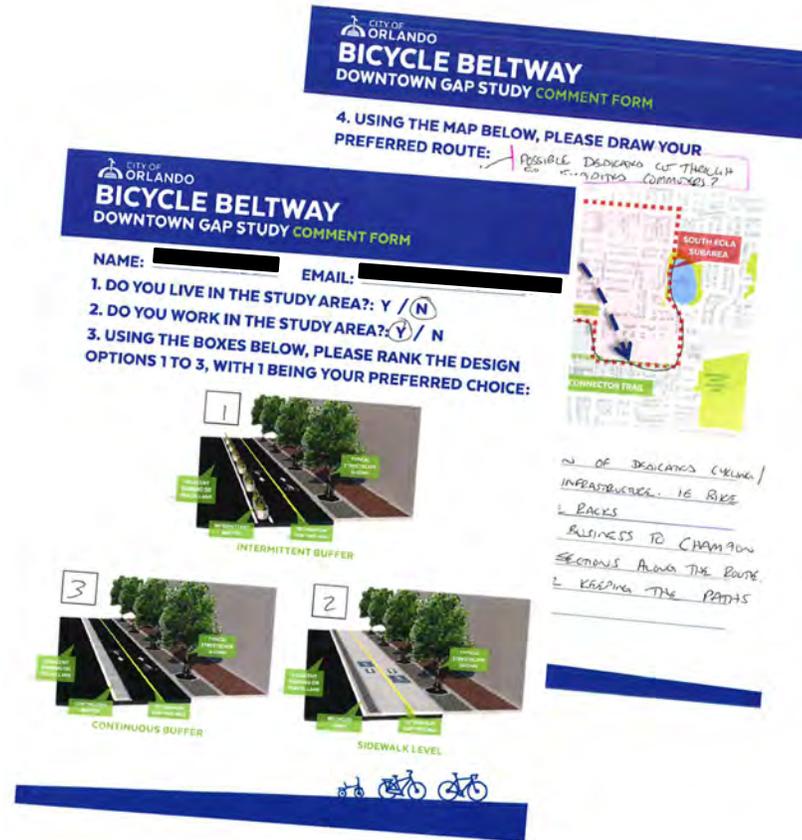
37+

people attended the first public meeting



27

people who completed comment forms



The first public meeting was held on Friday, July 12, 2019 at the Discover Downtown building between 11:00 am and 2:00 pm. This meeting reviewed general information about the Downtown Gap Study as well as the Orlando Bicycle Beltway project via a fact sheet that attendees were able to take with them.

In addition to the fact sheet, attendees were encouraged to complete a comment form where they were able to rank their favorite type of cycle track, draw their own preferred bicycle route on the South Eola subarea map, and leave additional comments about the project they may have had.





CHAPTER 3

CORRIDOR SELECTION

CORRIDOR SELECTION

KEY PRINCIPLES



CONNECTIVITY

Route connects the overall bike network



DIRECTNESS

Bicycling distances and stops are minimized



WAYFINDING

Route is easy to follow



LIVABILITY

Route directs bicyclists through greenspaces and promotes economic prosperity



SAFETY

Conflicts with motor vehicles are limited



FEASIBILITY

Route is feasible within the existing ROW, and limits impacts to parking, freight, transit, and other potential conflicts

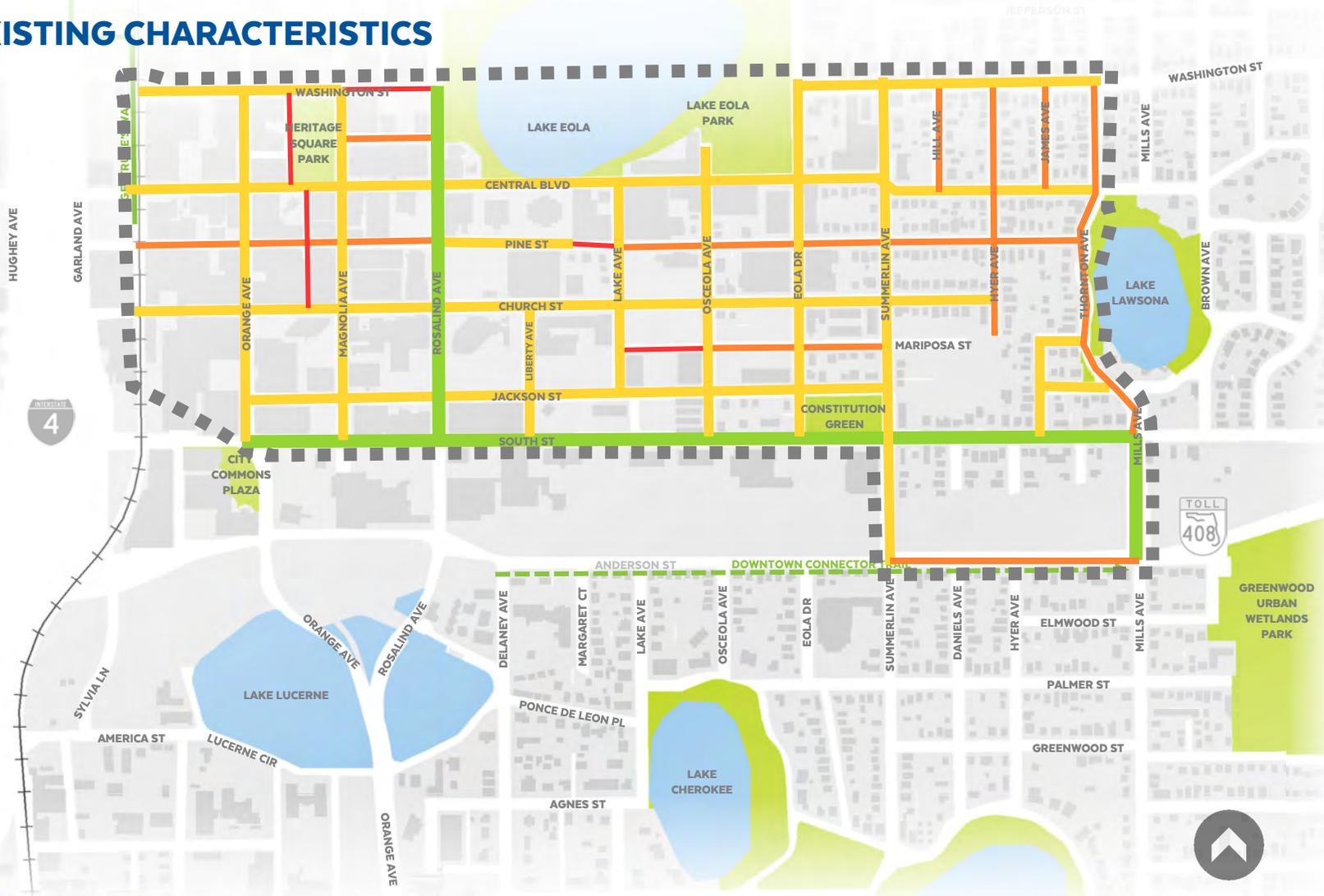
The second Project Visioning Team (PVT) meeting was held on Friday, July 26, 2019 at the Discover Downtown building between 10:00 am and 12:00 pm. The PVT members reviewed key principles of corridor selection (left) and existing characteristics of the corridors within the South Eola subarea that could influence corridor selection, such as existing ROW, on-street parking, freight zones, intersection controls, and posted speeds. The key principles were adapted from guidance from the 2019 FHWA Bikeway Selection Guide.

Following the first half of the presentation, attendees were asked to draw their preferred bicycle route, taking into consideration the corridor characteristics and key principles.



CORRIDOR SELECTION

EXISTING CHARACTERISTICS



MINIMUM RIGHT-OF-WAY WIDTHS

The goal of this study is to develop an alignment that can fit within the existing right-of-way (ROW). The ROW varies for each corridor within the study area and can even vary from block to block. A ROW of 60' is most common within the study area.

LEGEND



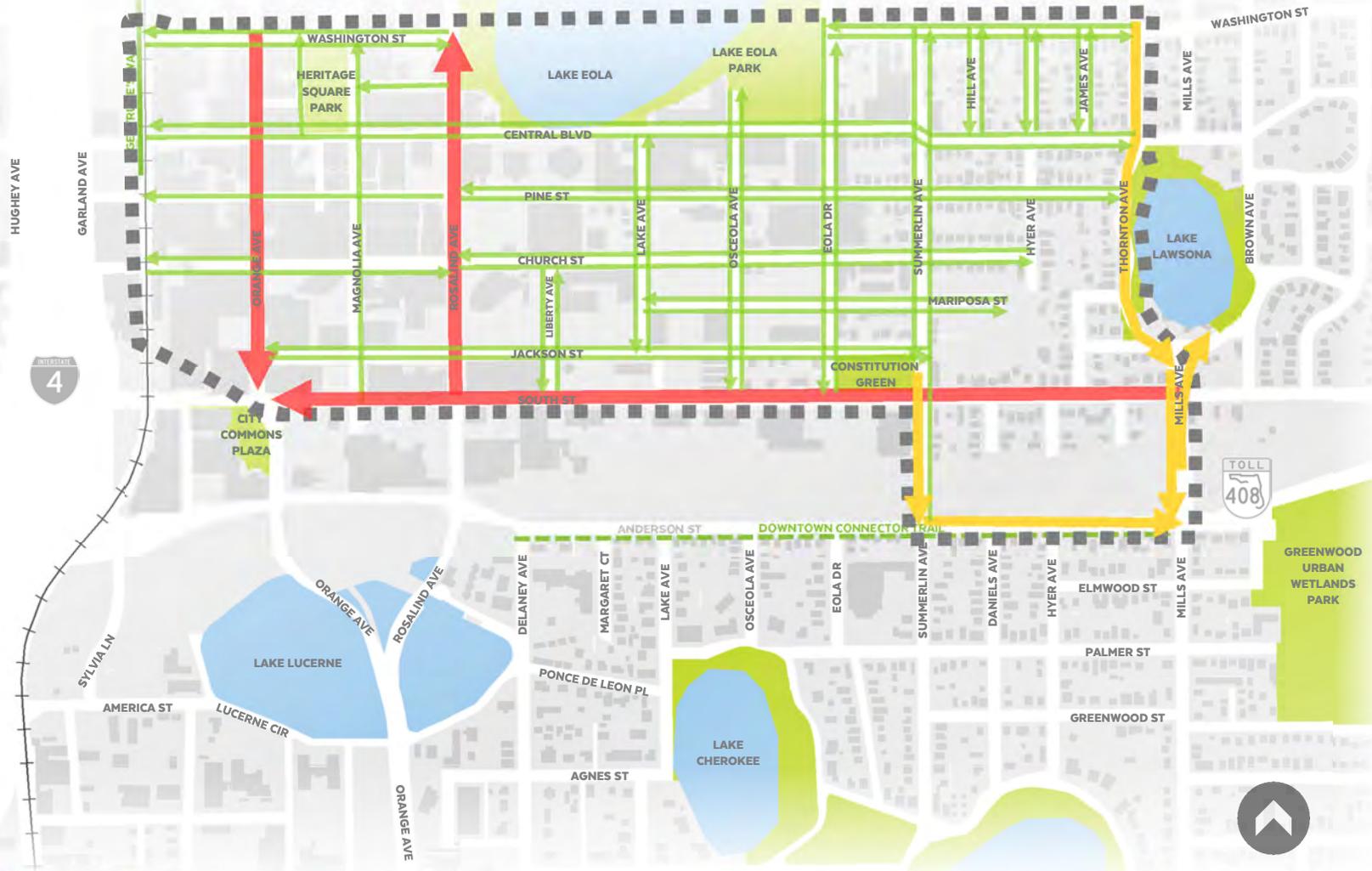
Less ROW

More ROW



CORRIDOR SELECTION

EXISTING CHARACTERISTICS



NUMBER & DIRECTION OF TRAVEL LANES

The city currently has three sets of “one-way pairs” in the downtown area. These include Orange Avenue (southbound) and Rosalind Avenue (northbound), Anderson Street (eastbound) and South Street (westbound), and portions of Church Street (eastbound) and Pine Street (westbound). In addition, Magnolia Avenue has one-lane northbound and a dedicated LYMMO bus rapid transit line.

LEGEND



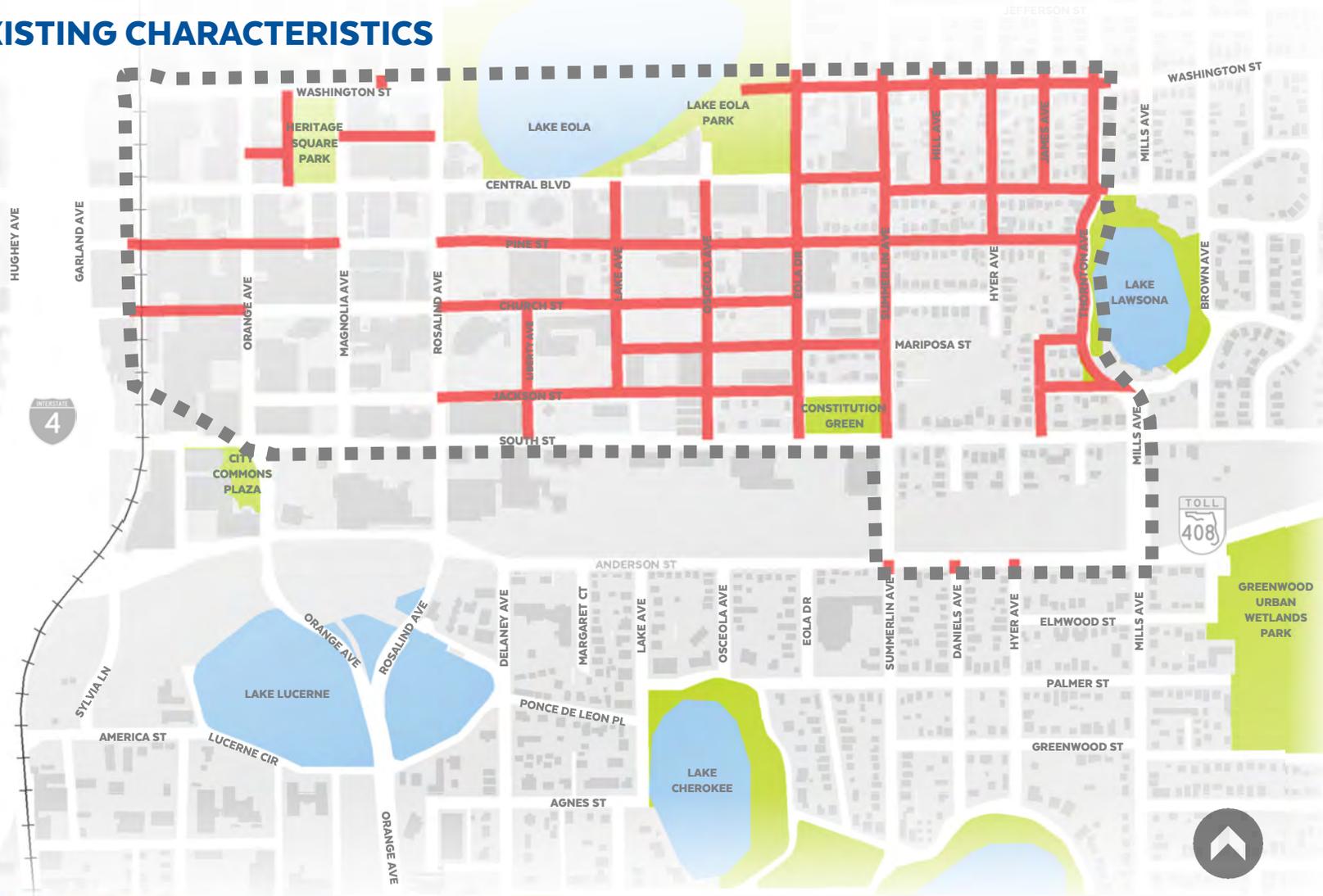
More Lanes

Fewer Lanes



CORRIDOR SELECTION

EXISTING CHARACTERISTICS



BRICK STREETS

Many of the city's downtown streets are brick. Those that don't appear brick may have a brick base under a layer of asphalt. For people riding on bicycles, a brick surface is not ideal.

The presence of a brick surface does not preclude placing a cycle track on the corridor. However, a corridor with a brick surface may lend itself to a sidewalk level cycle track since removal of the brick would be preferred regardless.

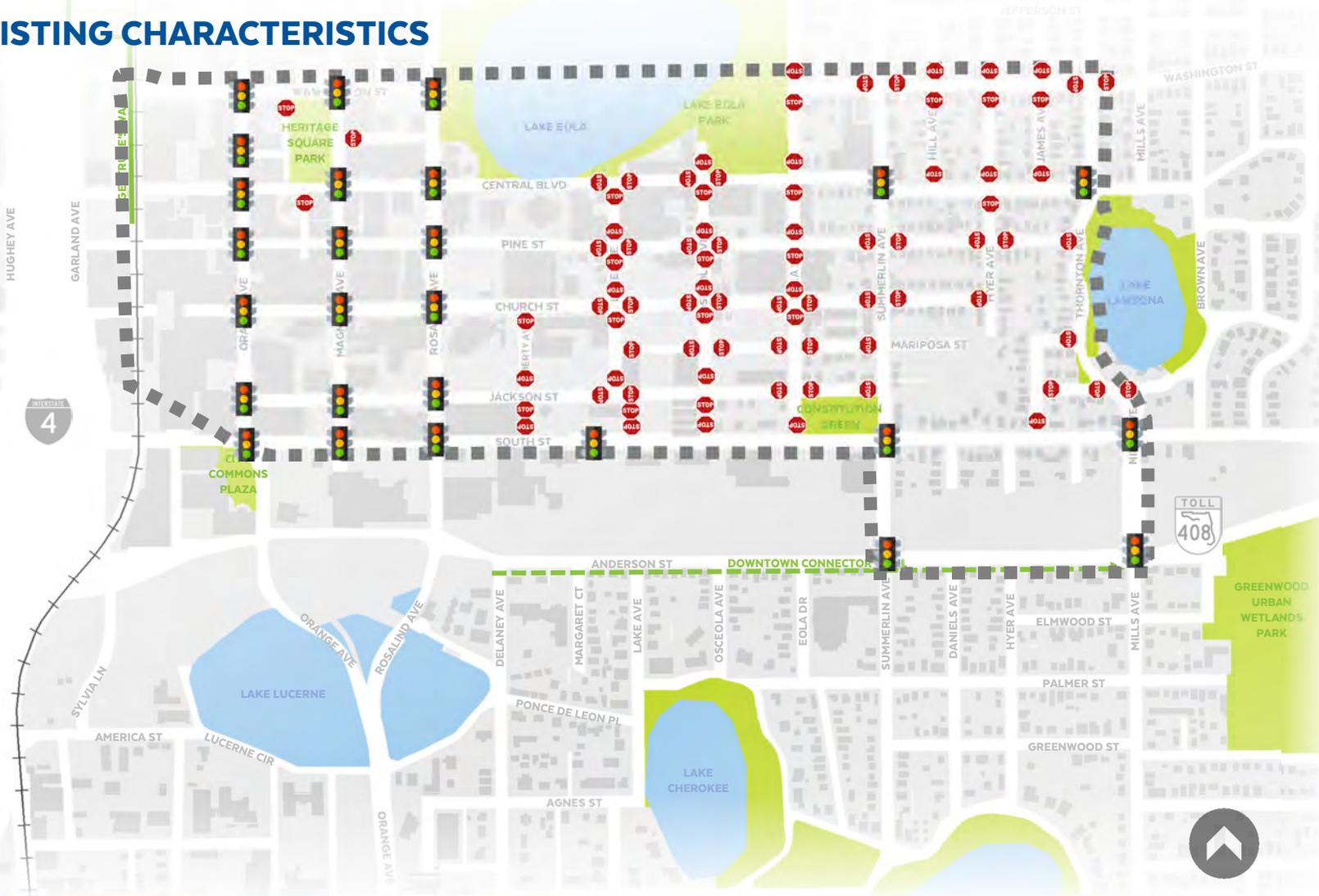
LEGEND

 BRICK SURFACE



CORRIDOR SELECTION

EXISTING CHARACTERISTICS



INTERSECTION CONTROL

There are 26 signalized intersections and 44 unsignalized intersections in the study area. Of the 44 unsignalized intersections, 6 of them are all way stops, 2 of them are three-way stops, and the rest are two or one-way stops.

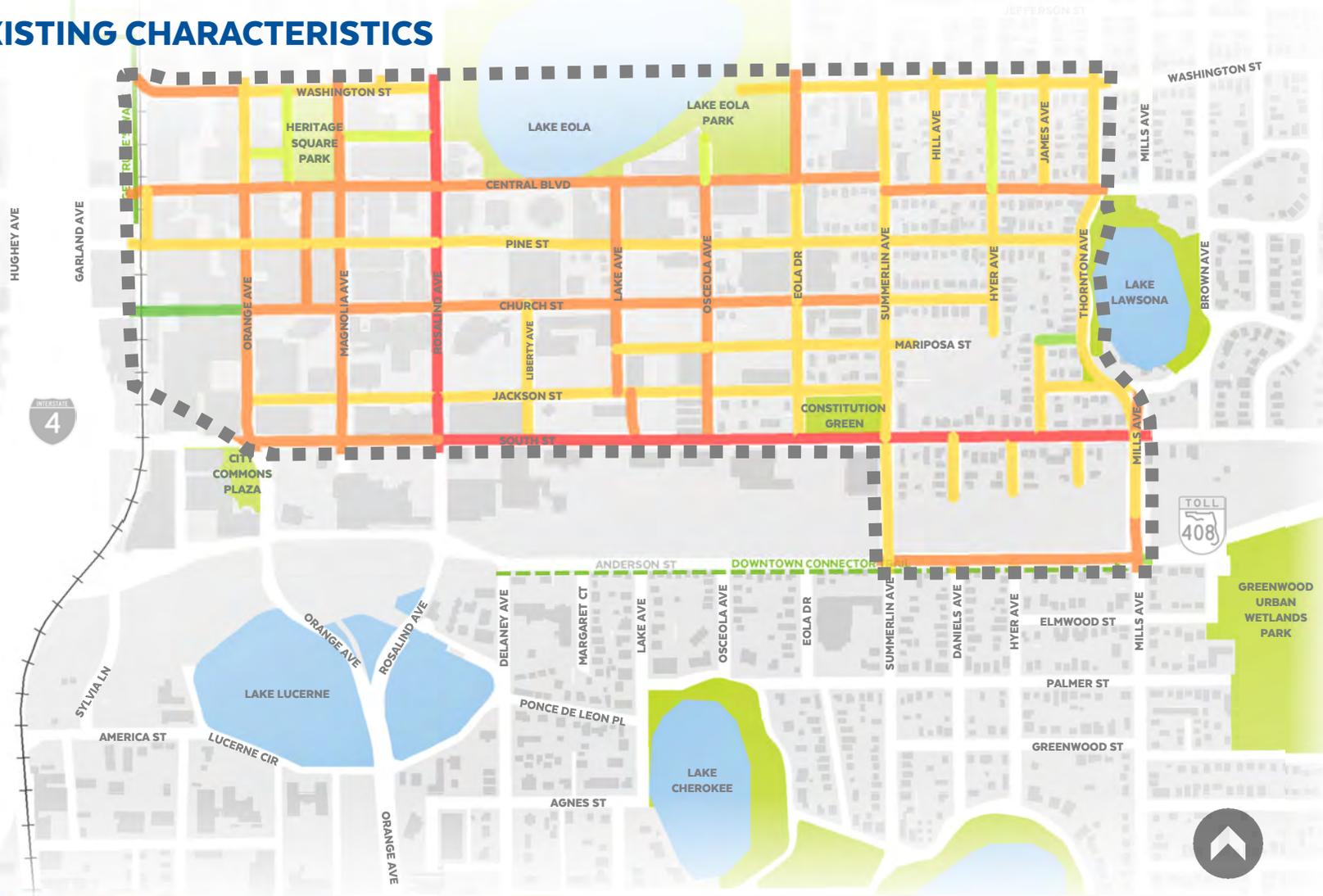
Signalized intersections can affect how long it takes for cyclists to travel to and from their desired destination. The more signals along a bicycle route, the more likely it may be that a person biking would disobey traffic controls which puts them at risk.

Unsignalized intersections can present similar problems. They force cyclists to stop during their route, but not for a determined amount of time like a signalized intersection does. That leaves the decision to cross an intersection up to the cyclist.



CORRIDOR SELECTION

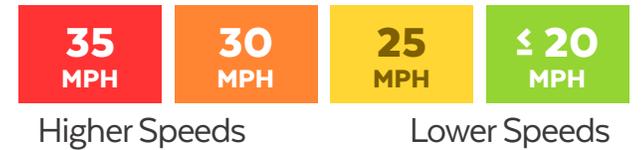
EXISTING CHARACTERISTICS



POSTED SPEED LIMITS

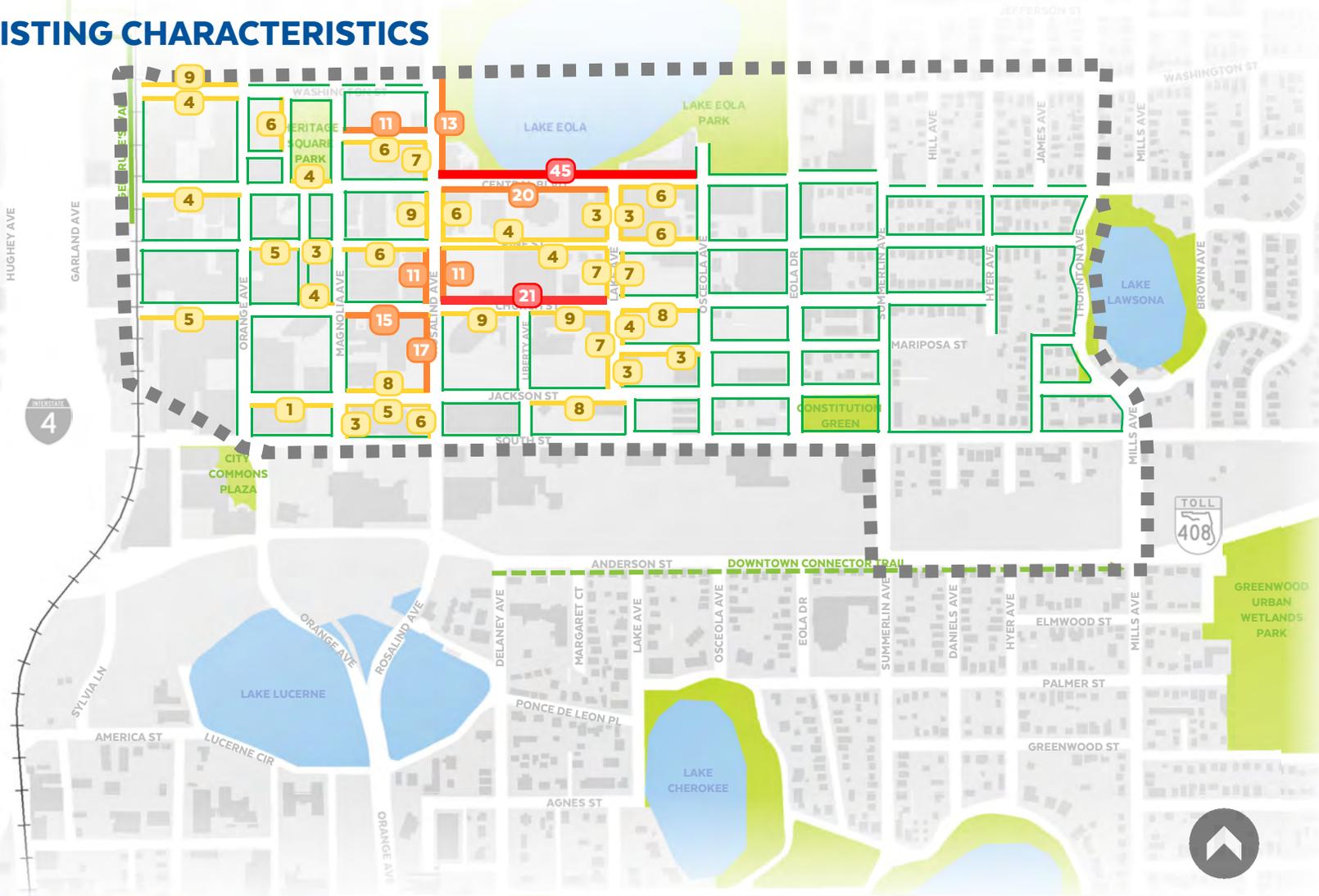
The speed limit on a corridor can affect the comfort level of cyclists adjacent to the roadway. Within the study area, South Street and Rosalind Avenue have the highest posted speed limits. While every other street within the study area has a speed limit of 30 MPH or less.

LEGEND



CORRIDOR SELECTION

EXISTING CHARACTERISTICS



ON-STREET METERED PARKING

Metered parking exists within the existing right-of-way (ROW). Block faces marked in green may still have unmarked free parking spaces. On-street parking can offer access to businesses and residential areas in downtown.

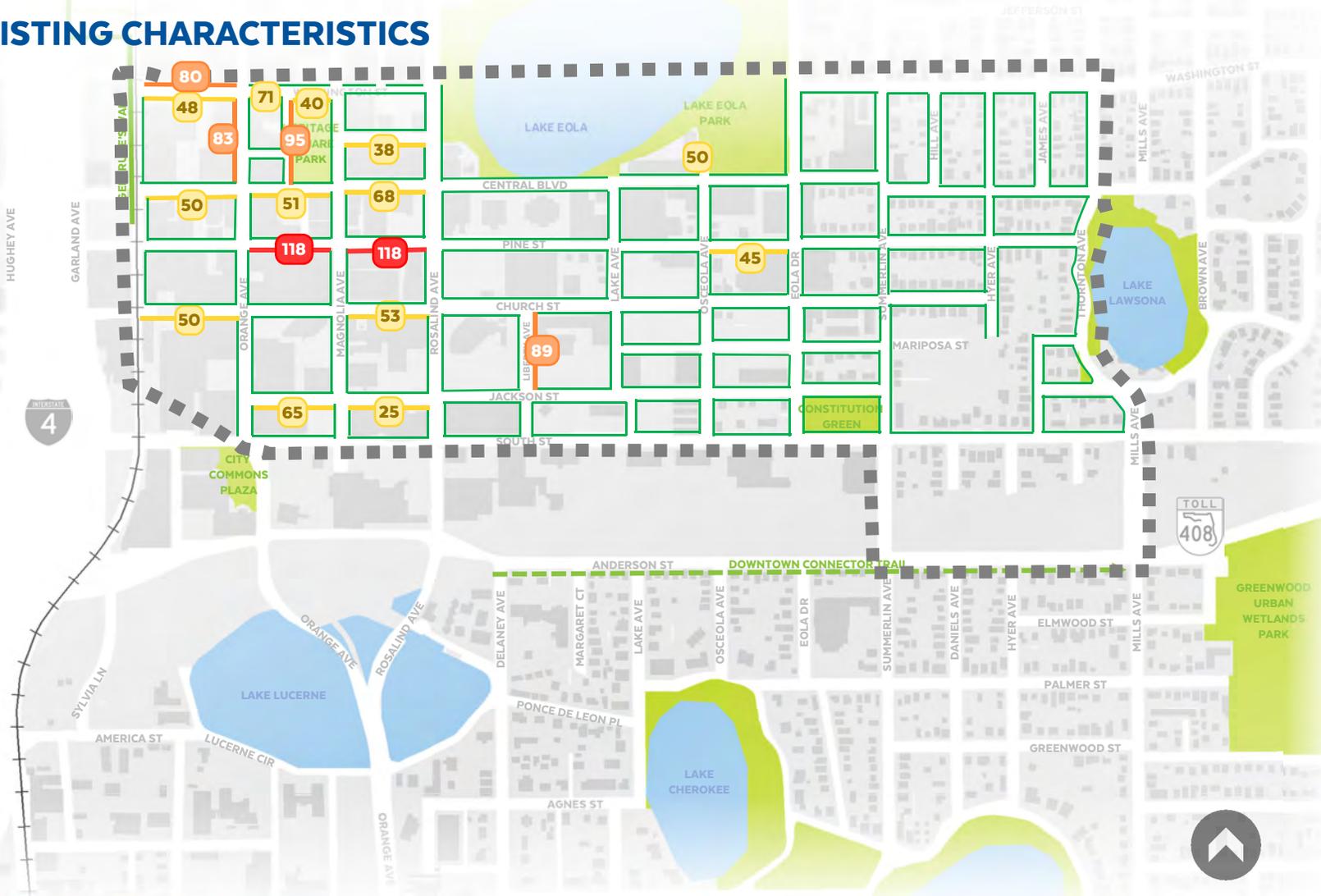
Central Boulevard and Church Street east of Rosalind Avenue have the highest number of metered parking spaces on each block face.

LEGEND



CORRIDOR SELECTION

EXISTING CHARACTERISTICS



FREIGHT ZONES

Freight zone parking exists within the ROW, similar to on-street parking. The map shows length in feet of freight zones on each block face. The city of Orlando also permits general use parking in these freight zone spaces, which are marked by orange curbs. Freight trucks may only be in these spaces for a maximum of 30 minutes and require a permit. The green blocks do not have designated freight zone parking, but freight trucks may park in the street regardless.

Church Street, Pine Street and Central Boulevard have the most freight zone parking in the study area.

LEGEND



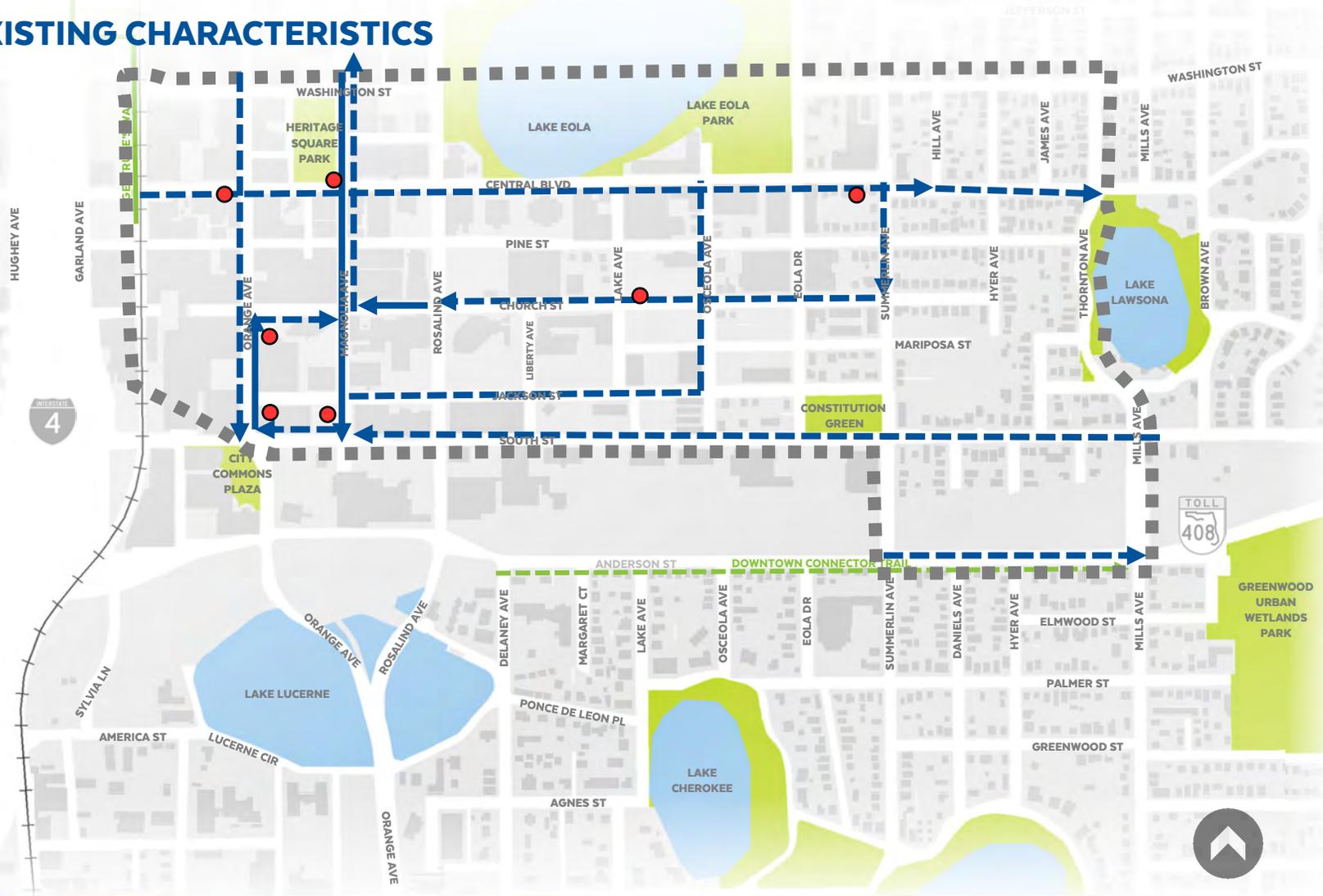
Longer
Freight Zone

Shorter
Freight Zone



CORRIDOR SELECTION

EXISTING CHARACTERISTICS



TRANSIT ROUTES

Wider travel lanes may be desired along transit routes. Within the study area, LYNX operates within mixed traffic and dedicated lanes.

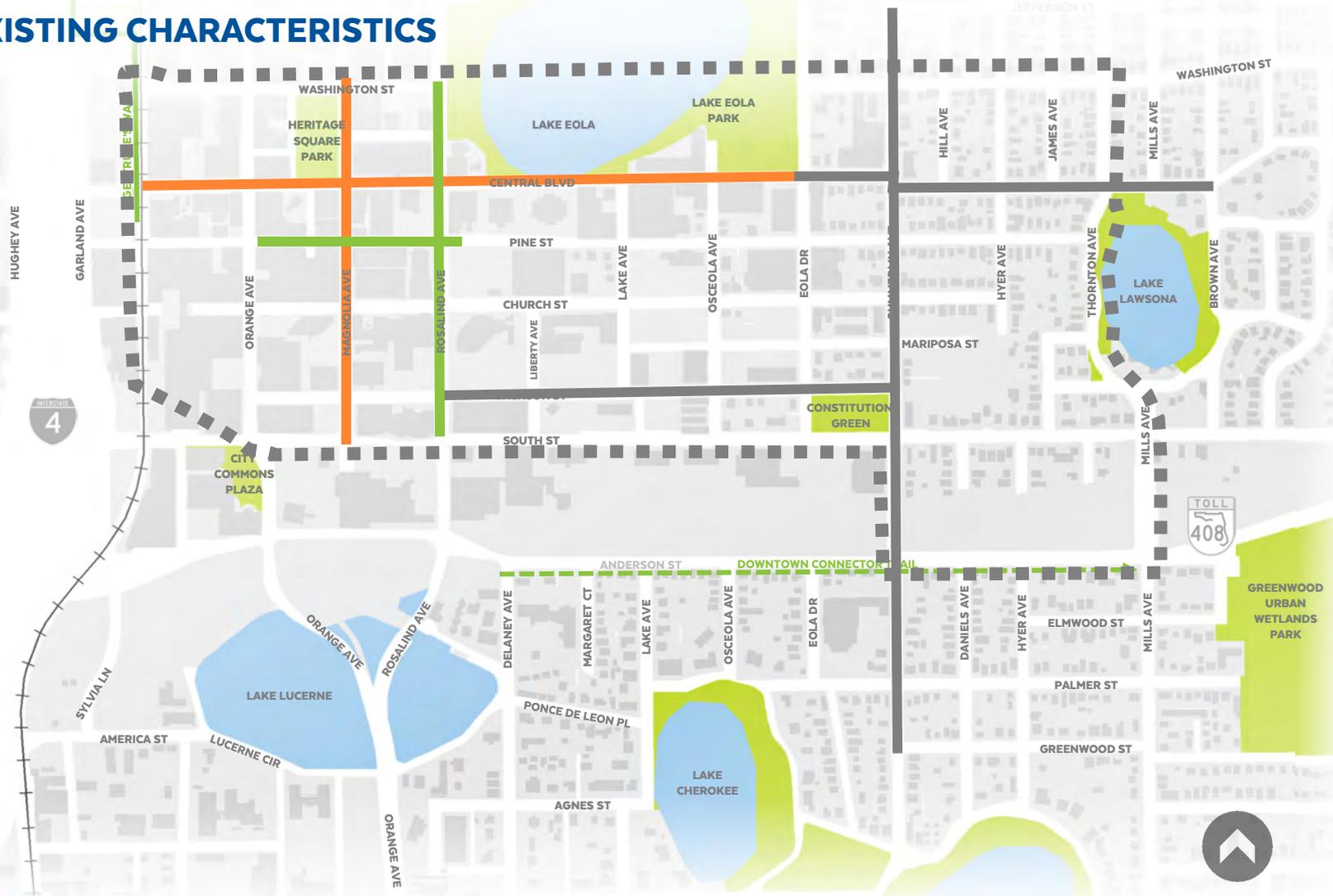
LEGEND

-  BUS ONLY LANE
-  SHARED LANE
-  SHELTER



CORRIDOR SELECTION

EXISTING CHARACTERISTICS



EXISTING BIKE FACILITIES

The existing bike facilities in the study area are on-street routes, sharrow routes, and bike lanes. The on-street routes have signs that indicate bicyclists may share the road. The sharrows have indicators on the street that tell motorists and bicyclists they may share the street. The bike lanes are separated from the vehicle travel lanes using painted lanes for cyclists to ride in.

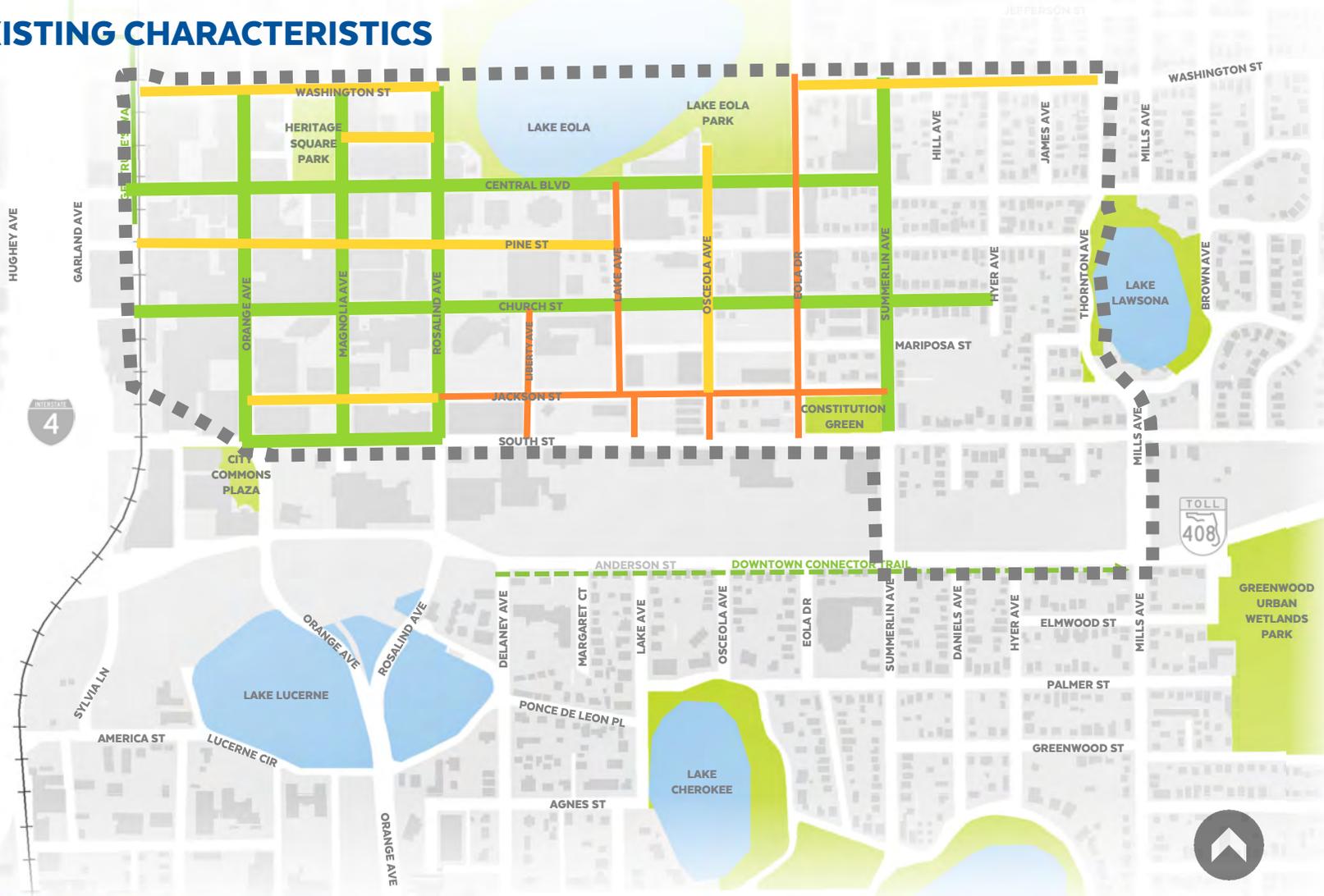
LEGEND

-  BIKE LANE
-  ON-STREET ROUTE
-  SHARROW ROUTE



CORRIDOR SELECTION

EXISTING CHARACTERISTICS



DOWNTOWN STREETSCAPE SIDEWALK WIDTH GUIDELINES

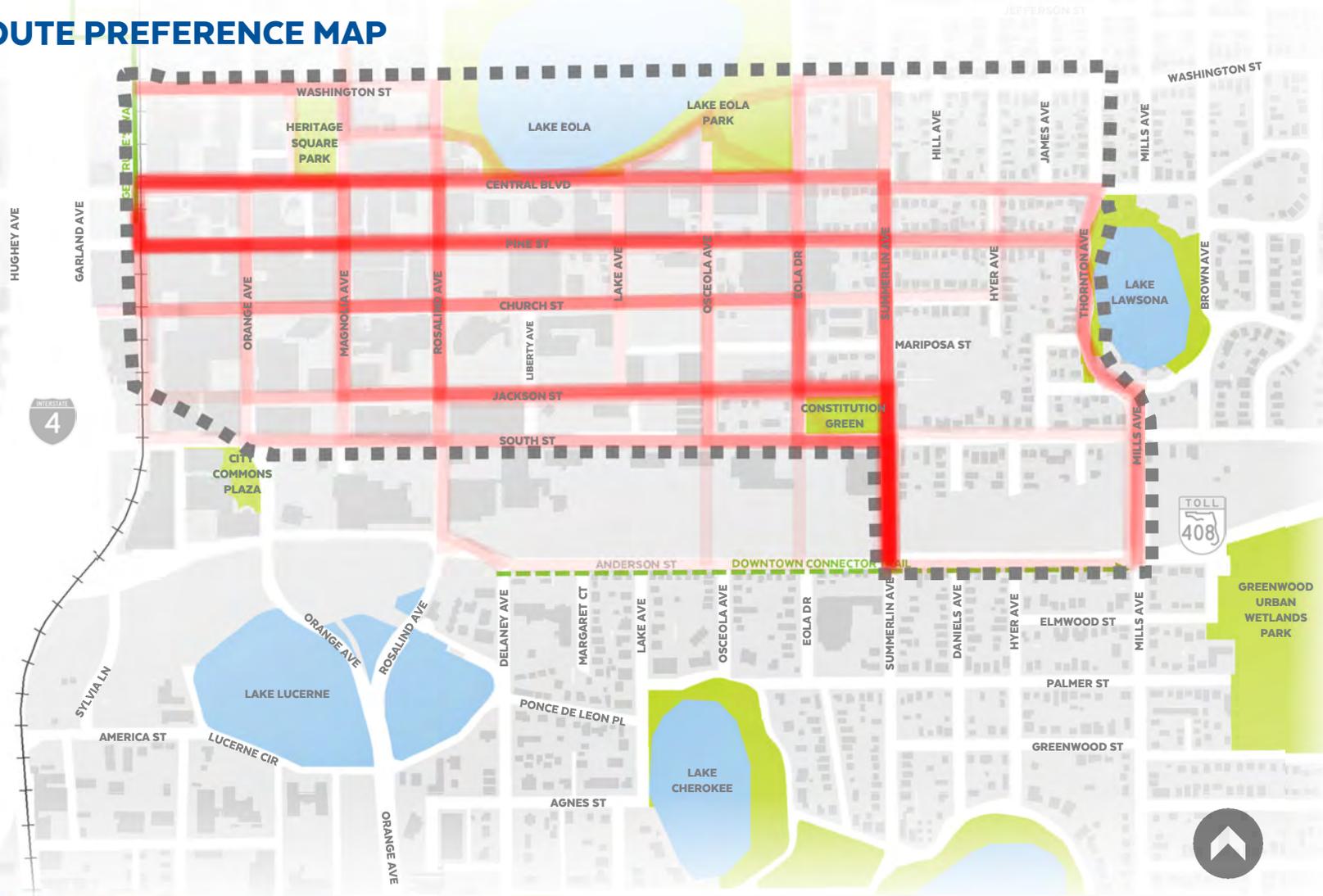
The desired sidewalk widths are from the city's Downtown Orlando Streetscape Guidelines (where specified). In general, Rosalind Avenue, Magnolia Avenue, Orange Avenue, and Central Boulevard all should have a 15' wide sidewalk with tree wells on both sides of the street. Whereas Pine Street, Washington Street, Jackson Street, and South Street all have reduced sidewalk requirements. Notably, Gertrude's Walk is designated as a 16'-18' wide sidewalk with tree wells.

LEGEND



CORRIDOR SELECTION

ROUTE PREFERENCE MAP



ROUTE PREFERENCE MAP

This heat map shows the desired bicycle routes in the South Eola subarea that were drawn by attendees of the first Public Meeting, the second Project Visioning Team Meeting, and the August 2, 2019 Bicycle & Pedestrian Advisory Committee meeting. The more opaque the red line, the more the line was repeated on the Comment Forms. The streets used most were Central Ave, Pine Street, Jackson Street, and Summerlin Ave.







CHAPTER 4

PRELIMINARY DESIGN STRATEGIES

PRELIMINARY DESIGN STRATEGIES

STAKEHOLDER & PUBLIC FEEDBACK



SUMMARY

The second Project Visioning Team meeting was held on Friday, July 26, 2019 at the Discover Downtown building between 10:00 am and 12:00 pm. The second half of the meeting focused on preliminary design strategies, including cycle track design (on-street, sidewalk level) and buffer types (intermittent, continuous).



PRELIMINARY DESIGN STRATEGIES

STAKEHOLDER & PUBLIC FEEDBACK



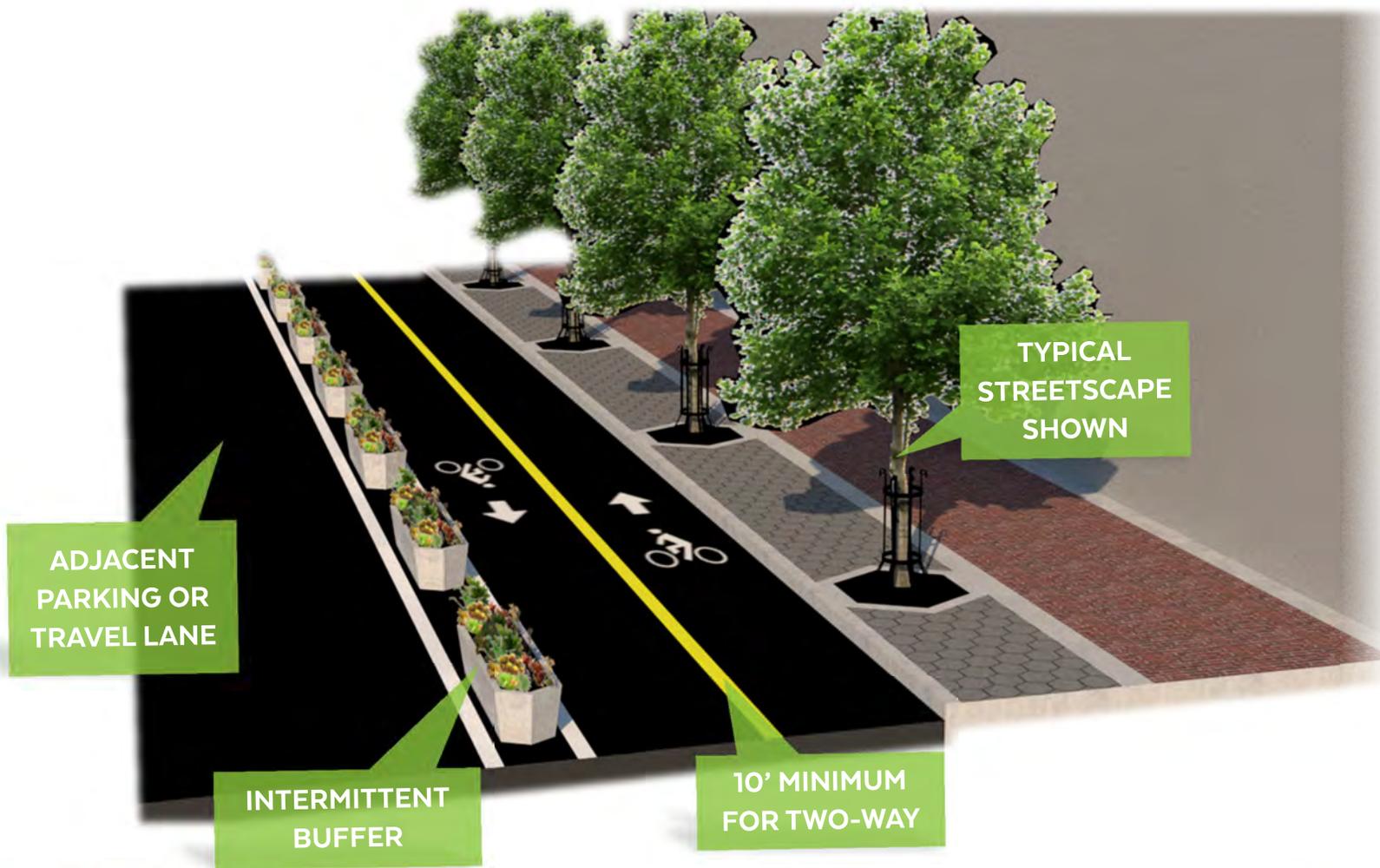
SUMMARY

The City of Orlando Bicycle and Pedestrian Advisory Committee Meeting was held on Friday, August 2, 2019 from 11:00 am to 12:00 pm. During the meeting, the project team had a chance to provide an update on the Downtown Gap Study. Attendees were able to view the same presentation and participate in the same exercises completed at Project Visioning Team #2 Meeting.



PRELIMINARY DESIGN STRATEGIES

CYCLE TRACK OPTIONS

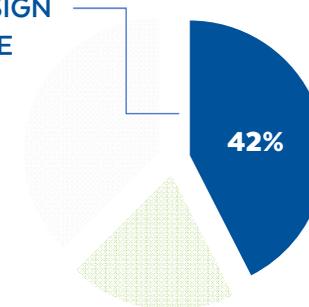


STREET LEVEL CYCLE TRACK WITH INTERMITTENT BUFFER

For street level separated bike lanes without a raised median, vertical objects are needed in the street buffer to provide separation. Examples of vertical objects include flexible delineator posts, parking stops, planter boxes, concrete barriers or rigid bollards. They must be supplemented with a painted median to mark the buffer.

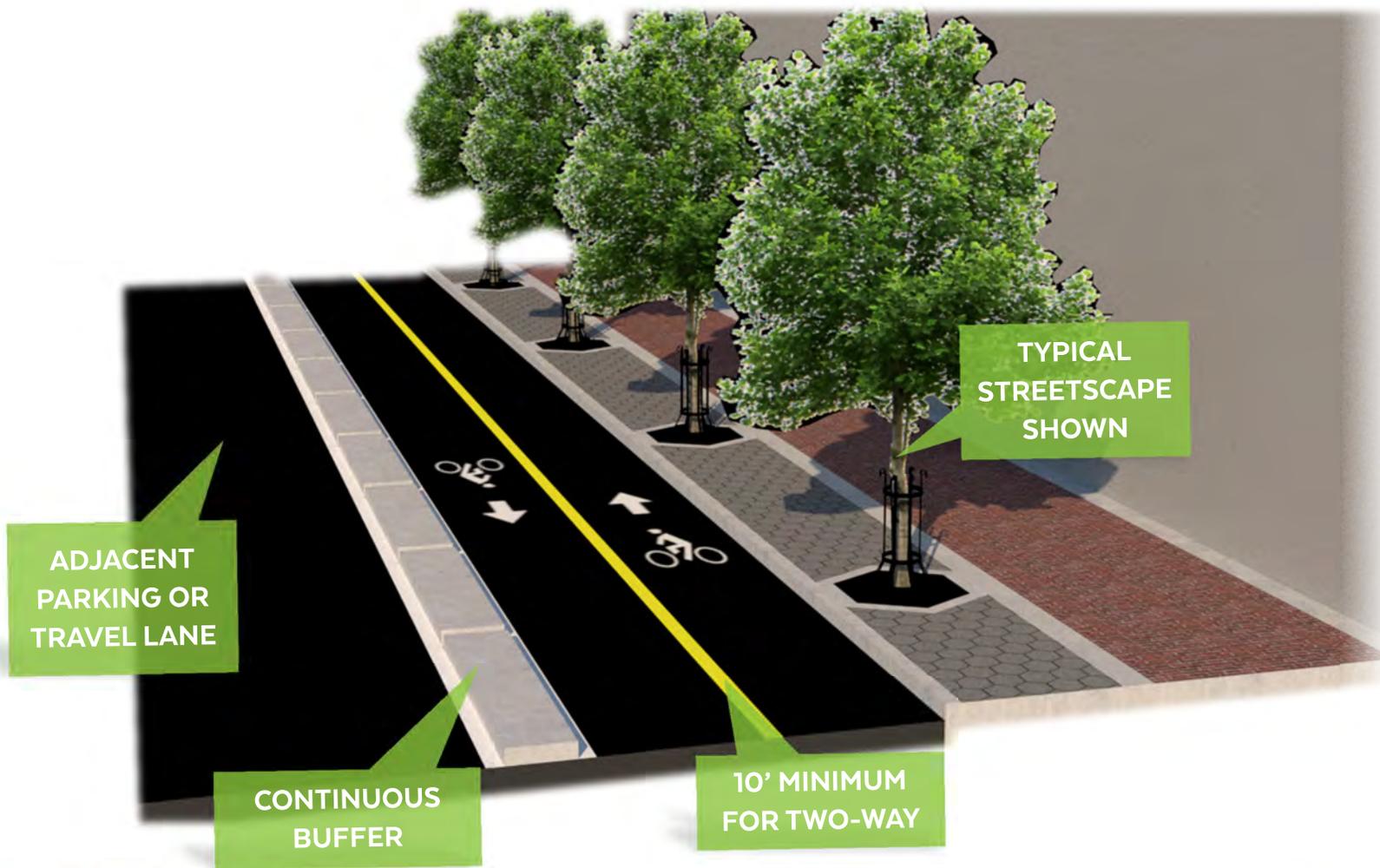
INTERMITTENT BUFFER DESIGN PREFERENCE

BASED ON 40
COMPLETED
SURVEYS FROM
THE PUBLIC AND
ADVISORY GROUP



PRELIMINARY DESIGN STRATEGIES

CYCLE TRACK OPTIONS

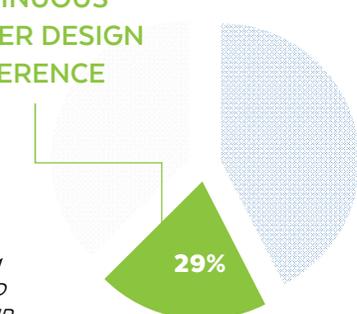


STREET LEVEL CYCLE TRACK WITH CONTINUOUS BUFFER

Vertical curb separation should be considered where on-street parking is not present. Stormwater drainage will need to be considered with this option. Planter boxes and other design elements may be included within the vertical curb.

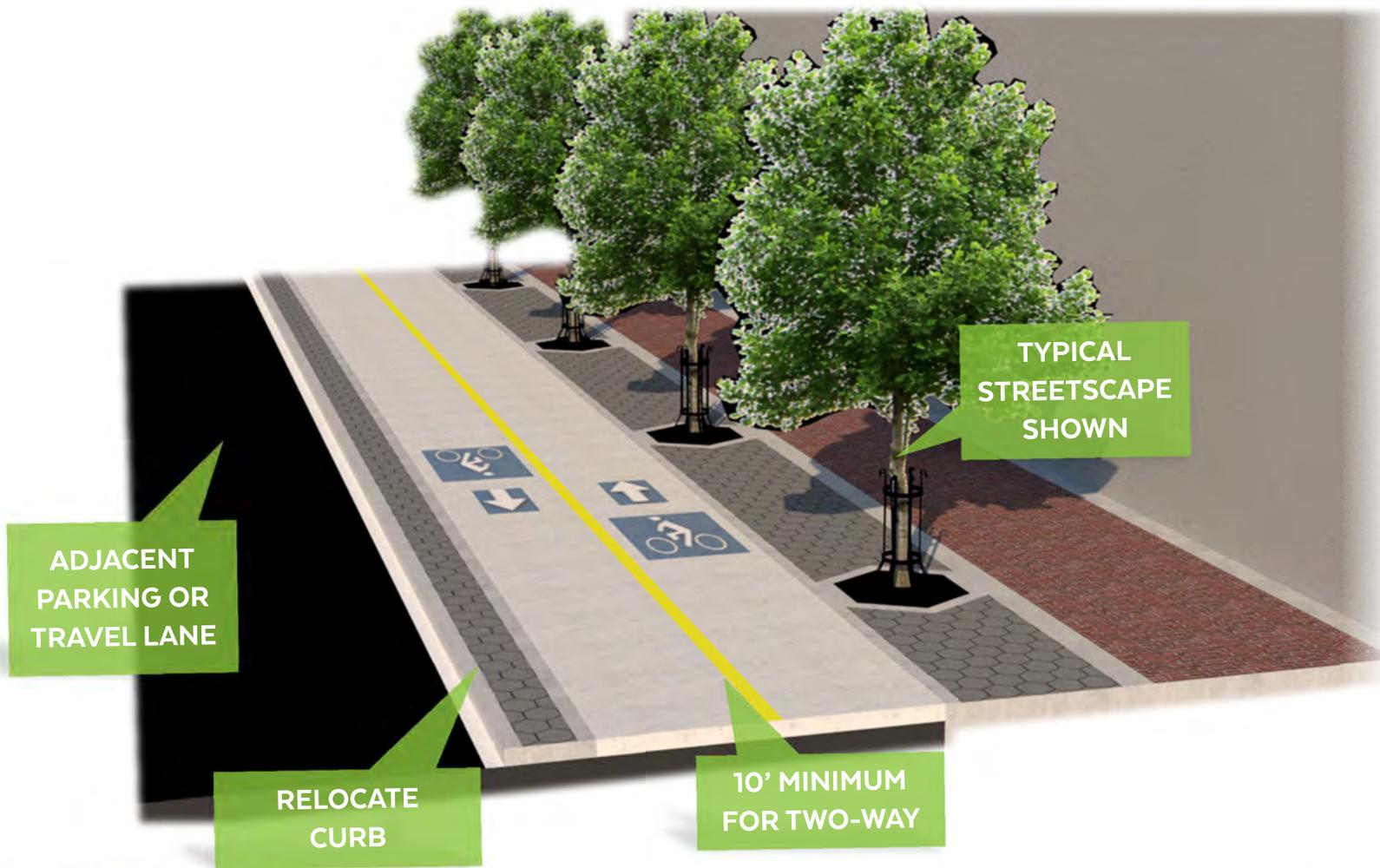
CONTINUOUS BUFFER DESIGN PREFERENCE

BASED ON 40
COMPLETED
SURVEYS FROM
THE PUBLIC AND
ADVISORY GROUP



PRELIMINARY DESIGN STRATEGIES

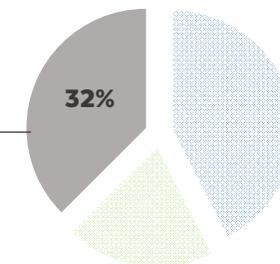
CYCLE TRACK OPTIONS



SIDEWALK LEVEL CYCLE TRACK

When cycle tracks are designed at sidewalk level, vertical elements, such as trees, planters, or bollards, can be used to reinforce separation between pedestrians and cyclists. Additional considerations related to driveway and conflict zones must be given to sidewalk level facilities. To maintain comfort and safety of users, a shy distance of between 6" (minimum) and 24" (preferred) should be provided between the edge of the sidewalk level cycle track and adjacent benches, sign posts, or other objects.

SIDEWALK LEVEL DESIGN PREFERENCE



BASED ON 40 COMPLETED SURVEYS FROM THE PUBLIC AND ADVISORY GROUP



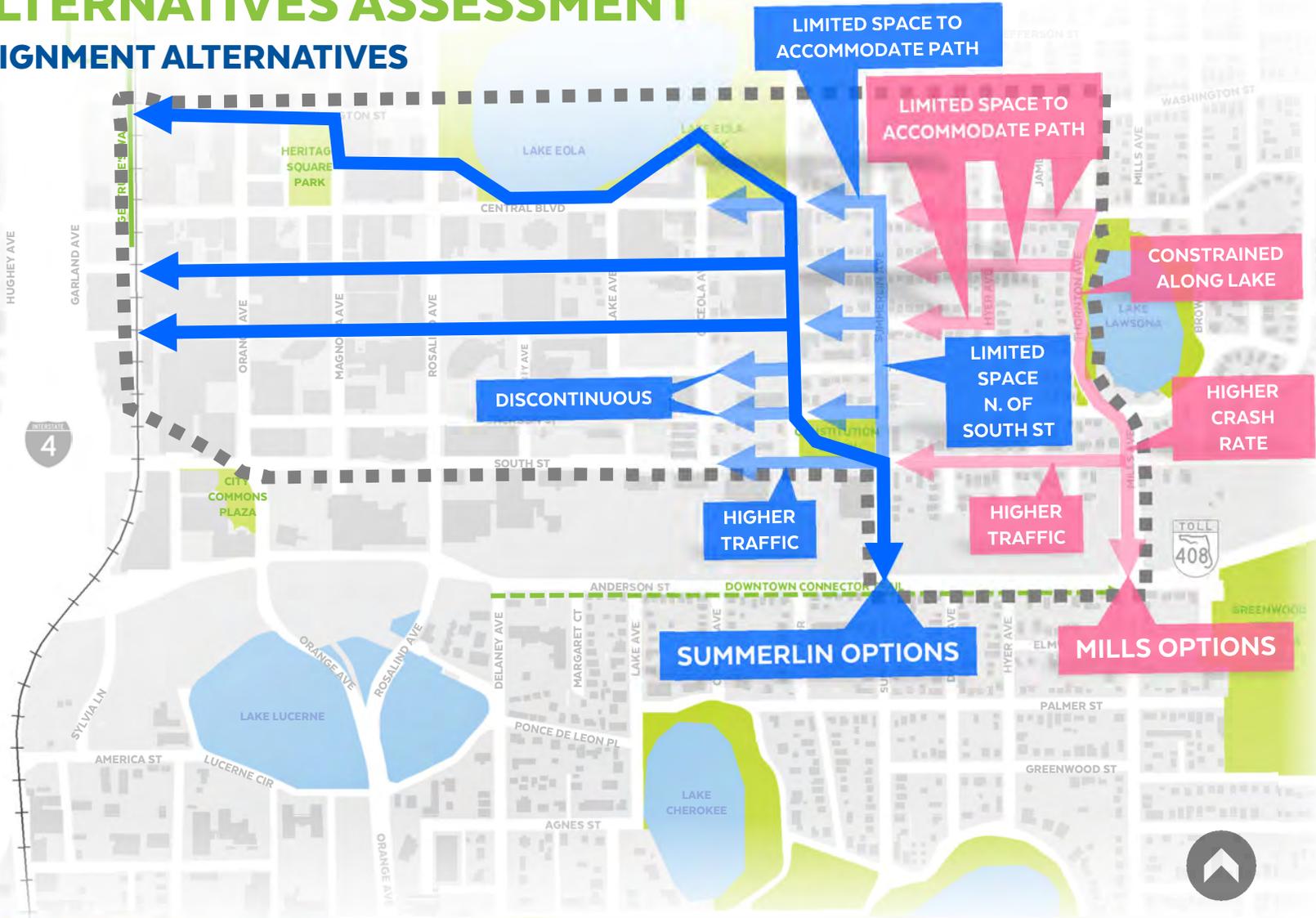


CHAPTER 5

ALTERNATIVES ASSESSMENT

ALTERNATIVES ASSESSMENT

ALIGNMENT ALTERNATIVES



ALTERNATIVES REFINEMENT

There are two locations within the refined study area to cross under SR 408 from the Downtown Connector Trail along Anderson Street. Mills Avenue and Summerlin Avenue each provide opportunities for a connection under SR 408. However, each has a variety of challenges to overcome.

MILLS OPTIONS

The Mills Avenue options provide fewer feasible and desirable options.

SUMMERLIN OPTIONS

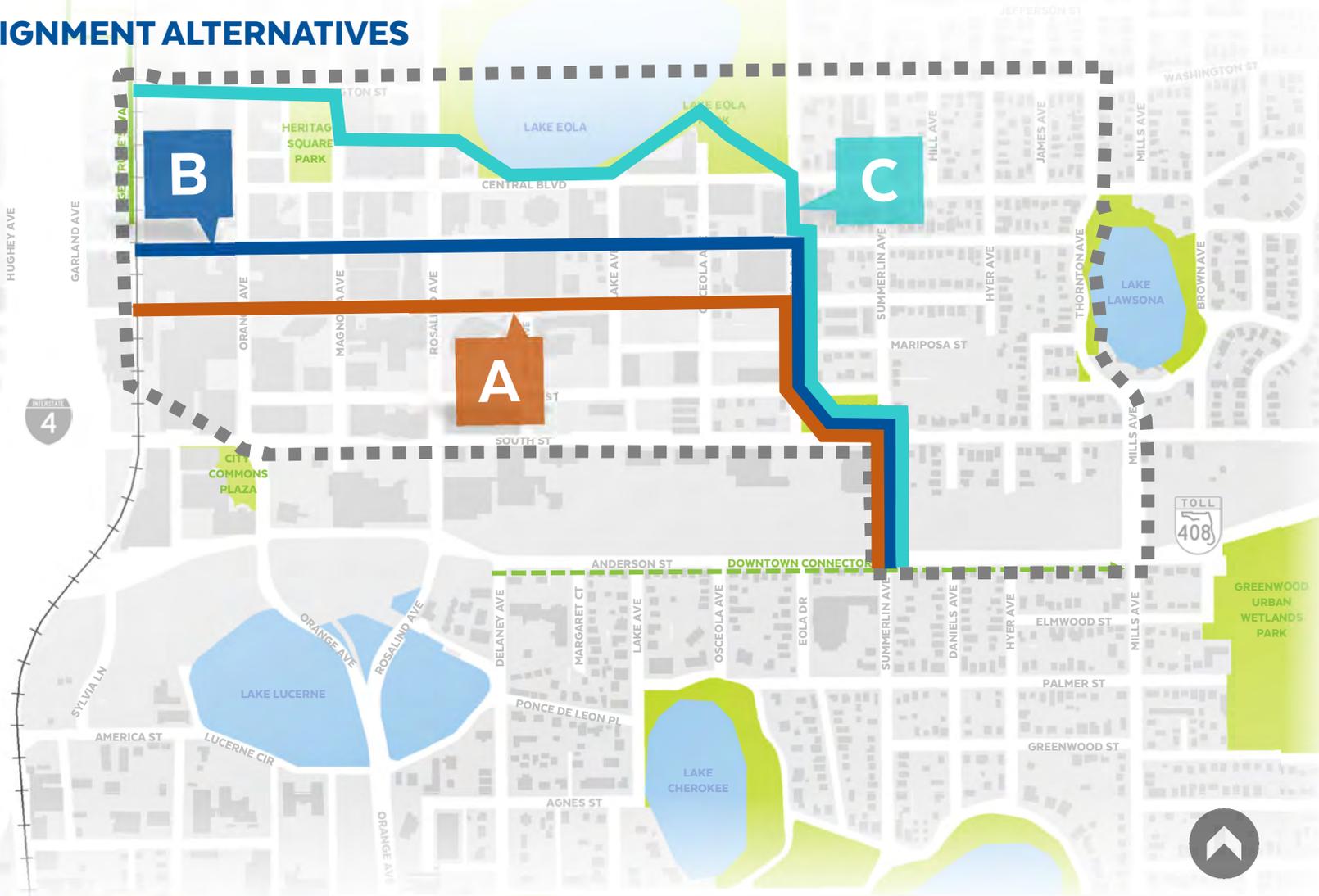
The Summerlin Avenue options could connect at several streets between South Street and Central Boulevard. There is also a potential to continue the path north to the planned Robinson Street cycle track.

The project team also cycled through each location. It was agreed that the Summerlin Option provides a more comfortable connection when compared to Mills.



ALTERNATIVES ASSESSMENT

ALIGNMENT ALTERNATIVES



PRELIMINARY ALTERNATIVES

Based on evaluation of existing conditions of each of the corridors within the study area, the following three alignment alternatives were presented to the public at the Bike Orlando Public Meeting on October 3, 2019. Each of the alternatives utilizes the west side of Summerlin Avenue to connect to the Downtown Connector Trail and go along Constitution Green Park towards Eola Drive.

After the public meeting, additional 'hybrid' alternatives were also assessed and are included in this chapter.

LEGEND

- A** CHURCH STREET
- B** PINE STREET
- C** NORTH OF CENTRAL



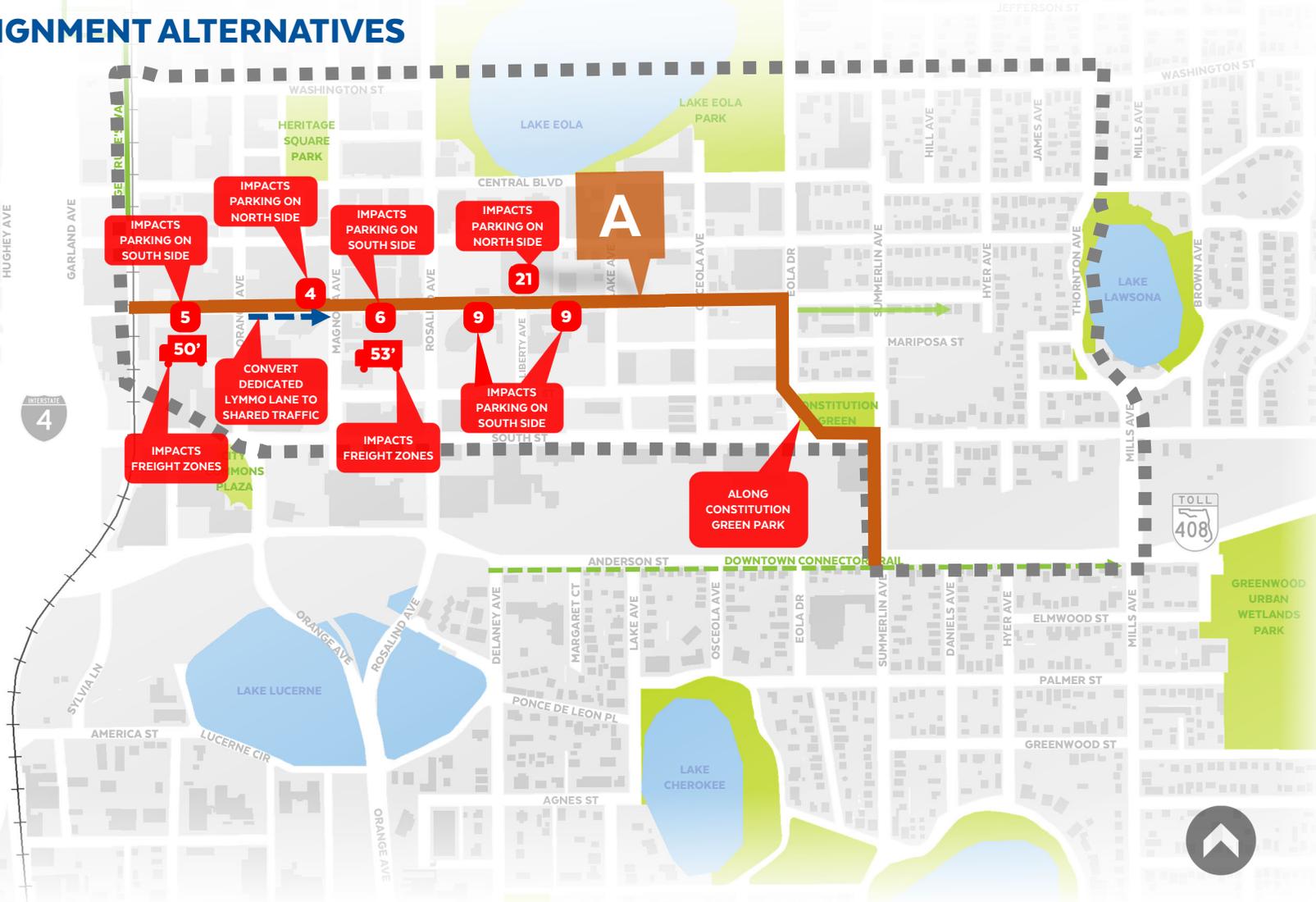
ALTERNATIVES ASSESSMENT

ALIGNMENT ALTERNATIVES

ALTERNATIVE

A

CHURCH STREET



KEY BENEFITS

1

PARK CONNECTION

5,200' OF STREETScape IMPROVEMENTS

CLOSEST ALTERNATIVE TO CITY HALL & MAJOR VENUES (STADIUMS, PERFORMING ARTS, ETC.)

ESTIMATED IMPACTS

54

METERED PARKING SPACES IMPACTED

103'

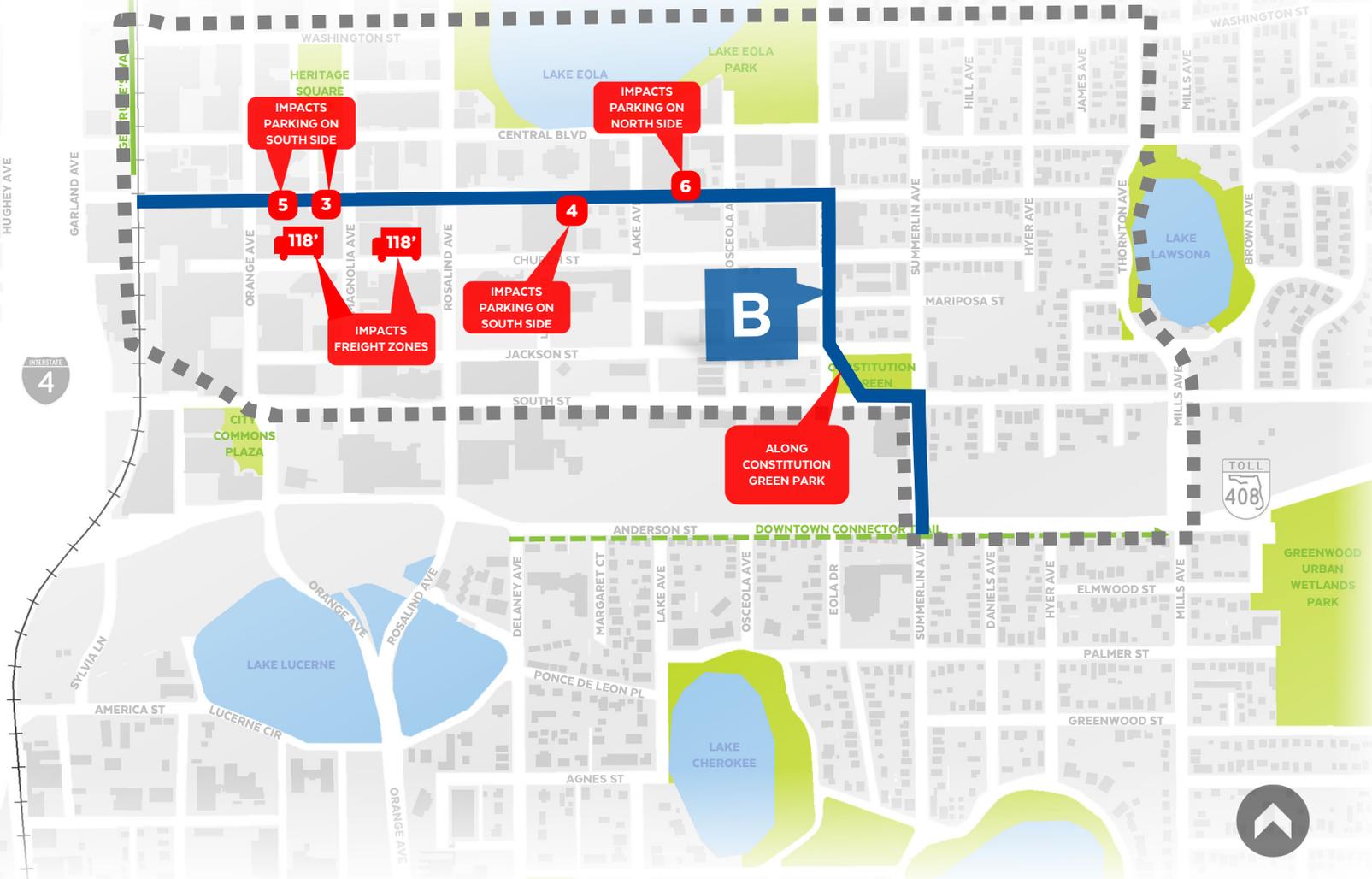
OF FREIGHT ZONES IMPACTED

MAY REQUIRE CLOSURES DURING CHURCH ST. EVENTS



ALIGNMENT ALTERNATIVES

PINE STREET



KEY BENEFITS

1

PARK CONNECTION

5,600'
OF STREETScape IMPROVEMENTS

HIGHEST PUBLIC SUPPORT OF ALTERNATIVES A, B, & C PRESENTED AT PUBLIC MEETING

ESTIMATED IMPACTS

18

METERED PARKING SPACES IMPACTED

236'

OF FREIGHT ZONES IMPACTED



ALTERNATIVES ASSESSMENT

ALIGNMENT ALTERNATIVES

ALTERNATIVE

C

NORTH OF CENTRAL



KEY BENEFITS

3

PARK CONNECTIONS

4,000'

OF STREETSCAPE IMPROVEMENTS

FEWEST CONFLICTS WITH VEHICULAR TRAFFIC

ESTIMATED IMPACTS

10

METERED PARKING SPACES IMPACTED

48'

OF FREIGHT ZONES IMPACTED

REQUIRES MODIFICATIONS TO LAKE EOLA PARK & MAY REQUIRE CLOSURES DURING PARK EVENTS



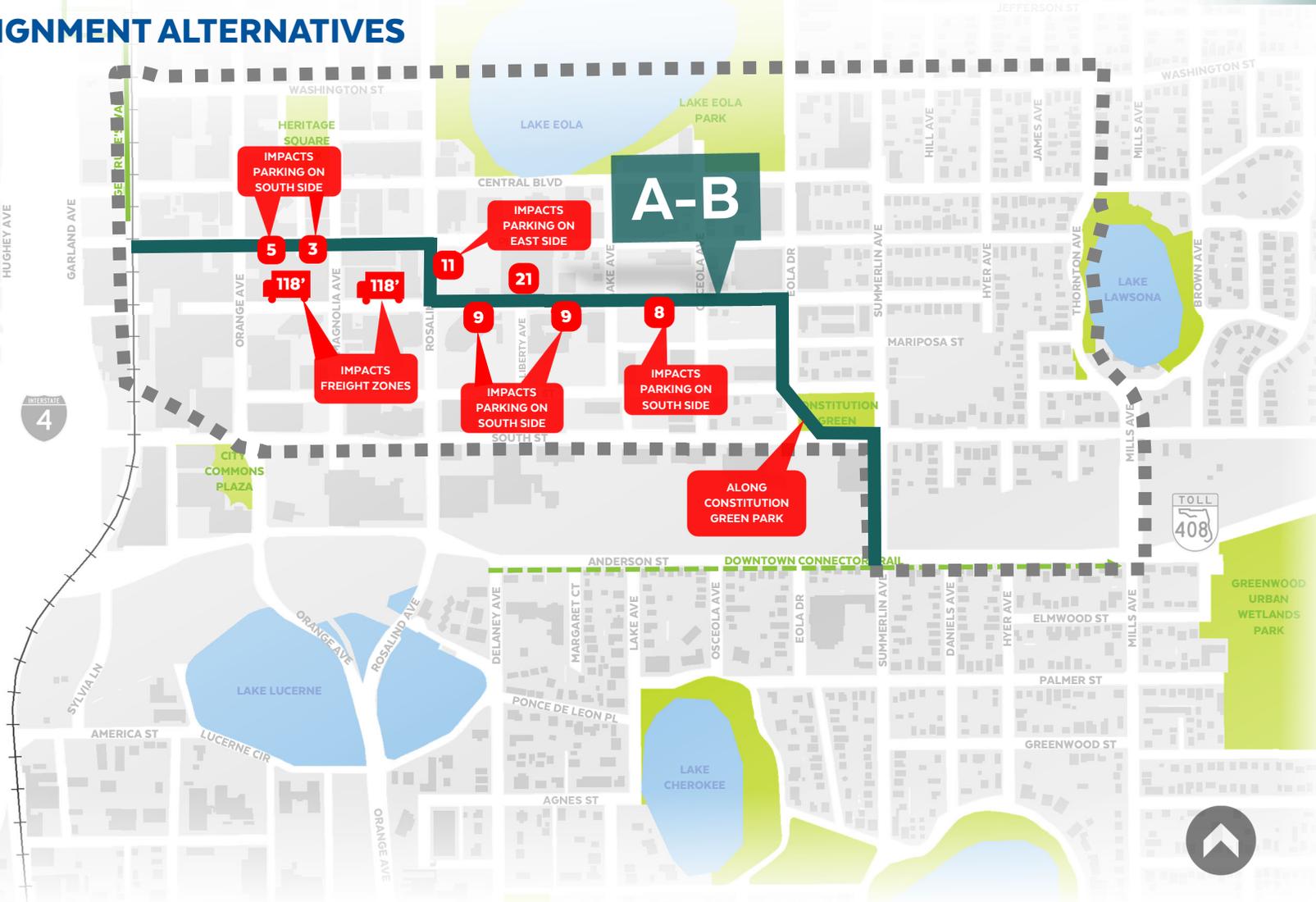
ALTERNATIVES ASSESSMENT

ALIGNMENT ALTERNATIVES

HYBRID ALTERNATIVE

A-B

CHURCH STREET TO PINE STREET



KEY BENEFITS

- 1** PARK CONNECTION
- 5,600'** OF STREETScape IMPROVEMENTS
- TRAFFIC CALMING ON ROSALIND AVE. & AVOIDS CHURCH ST. EVENTS

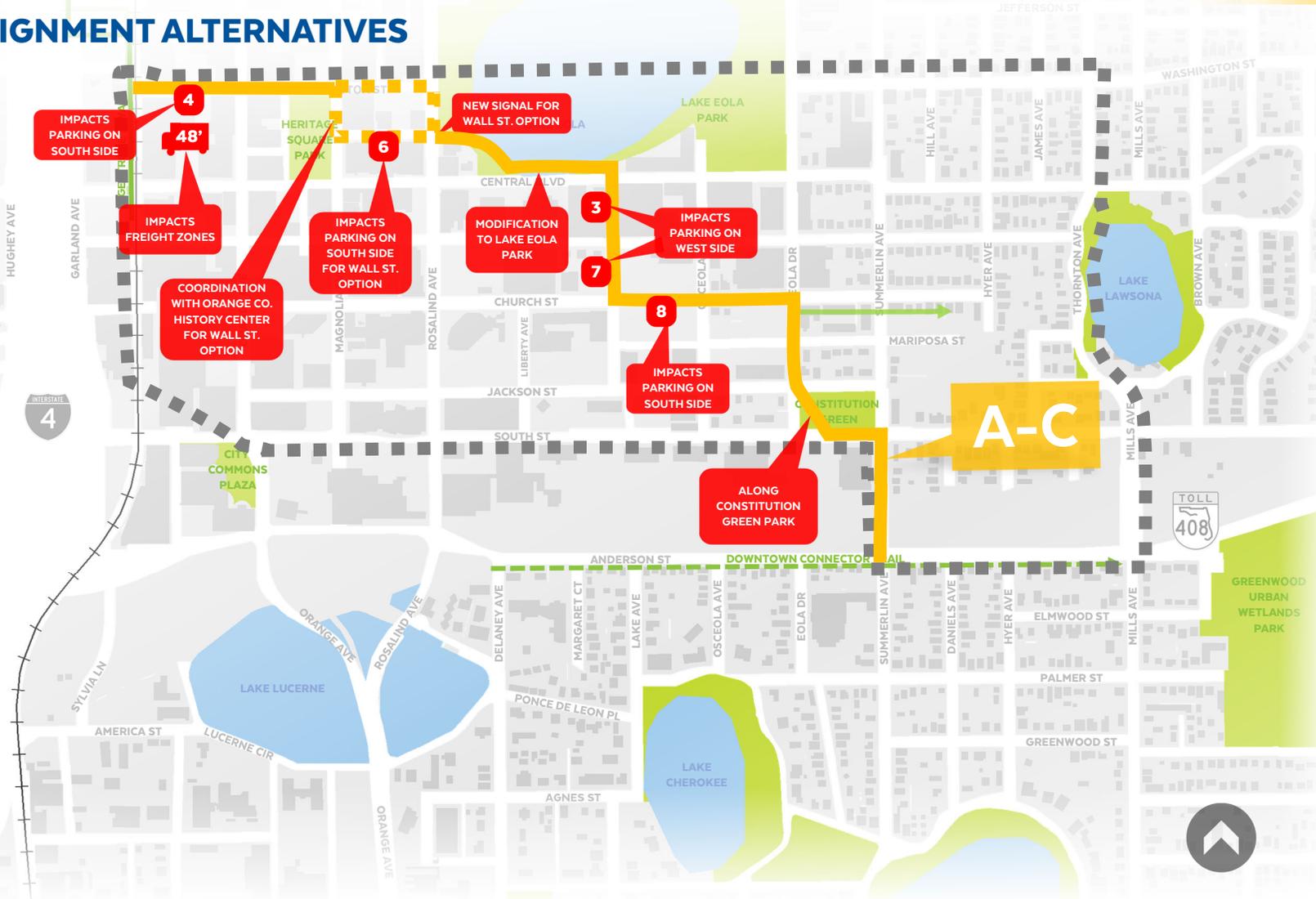
ESTIMATED IMPACTS

- 64** METERED PARKING SPACES IMPACTED
- 236'** OF FREIGHT ZONES IMPACTED



ALTERNATIVES ASSESSMENT

ALIGNMENT ALTERNATIVES



HYBRID ALTERNATIVE

A-C

CHURCH STREET TO N. OF CENTRAL

KEY BENEFITS

3

PARK CONNECTIONS

5,200'

OF STREETScape IMPROVEMENTS

DIRECTLY CONNECTS TO LAKE EOLA PARK & AVOIDS CHURCH ST. EVENTS

ESTIMATED IMPACTS

28

METERED PARKING SPACES IMPACTED

48'

OF FREIGHT ZONES IMPACTED

REQUIRES MODIFICATIONS TO LAKE EOLA PARK & MAY REQUIRE CLOSURES DURING PARK EVENTS



ALTERNATIVES ASSESSMENT

EVALUATION CRITERIA

KEY PRINCIPLES	A CHURCH ST.	B PINE ST.	C N. OF CENTRAL	A-B CHURCH ST. TO PINE ST.	A-C CHURCH ST. TO N. OF CENTRAL	B-C PINE ST. TO N. OF CENTRAL
CONNECTIVITY Route connects the bike network						
WAYFINDING Route is easy to follow						
SAFETY Limited conflicts with vehicles						
DIRECTNESS Distances/stops are minimized						
LIVABILITY Promotes parks/economic benefits						
FEASIBILITY Limits impacts to potential conflicts						
PUBLIC SUPPORT Input received at public meeting	32 POINTS	52 POINTS	32 POINTS	N/A	N/A	N/A



ALTERNATIVES ASSESSMENT

EVALUATION CRITERIA

KEY BENEFITS & ESTIMATED IMPACTS	A CHURCH ST.	B PINE ST.	C N. OF CENTRAL	A-B CHURCH ST. TO PINE ST.	A-C CHURCH ST. TO N. OF CENTRAL	B-C PINE ST. TO N. OF CENTRAL
PARK CONNECTIONS Number of direct park connections	1	1	3	1	3	3
STREETScape IMPROVEMENTS LF of streetscape/beautification	5,200	5,600	4,000	5,600	5,200	6,400
METERED PARKING IMPACTS Number of metered parking impacts	54	18	10	64	28	32
FREIGHT ZONE IMPACTS Linear feet (LF) of freight zone impacts	103	236	48	236	48	48

ALIGNMENT RECOMMENDATION

Based on the Key Principles Evaluation Criteria on the previous page, Alternative B: Pine St. and the Hybrid Alternative B-C: Pine St. to N. of Central tie for the highest rankings. In addition to the Key Principles, a Comparison of Key Benefits & Estimated Impacts matrix was prepared to further evaluate each of the alternatives. This comparison assessed the

number of park connections, linear feet of streetscape/beautification opportunities, impacts to metered parking spaces, and impacts to freight zones. Based on the cumulative assessment, Alternative B: Pine St. is the recommended alignment to begin concept development. This recommendation, as opposed to Alternative B-C, is based on the directness of the route and proximity to destinations in the Central Business District.

