

THE CITY OF ORLANDO BICYCLE PLAN UPDATE EXECUTIVE SUMMARY 2020





Mayor Buddy Dyer at the Colonial Drive Overpass, Orlando Urban Trail (2019)

executive summary

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the Bicycle Plan Update process

Orlando initiated a comprehensive update to their citywide Bicycle Plan in the fall of 2018 and followed the latest national best practices for planning bikeway networks.

The process began with a review of the development and history of the city's current and proposed bicycle network and its existing bicycle-related programs. The project team also reviewed current plans, policies and standards that impact bicycle transportation to ensure that the recommendations of the updated Bicycle Plan would be consistent with the latest national best practices.

Community outreach was a central component of the Bicycle Plan Update process, and input from Orlando residents guided the plan's vision and direction from the beginning. Equity was brought to the forefront of the Bicycle Plan Update process to ensure that all of Orlando's residents needs were fairly considered - first, by recognizing and understanding the existing inequities in bicycle infrastructure for marginalized populations of people and historically and systemically excluded groups, and then accounting for and correcting these inequities throughout the planning process. The city used adaptive and targeted outreach efforts to help ensure the direct involvement of these communities in the plan update, and issues of equity were addressed in the plan's performance targets and project evaluation metrics.

The Bicycle Plan Update ran concurrent to the city's development of its Vision Zero Action Plan, a systemic approach that is being used by cities across the world to reduce serious traffic crashes and move towards a future with zero traffic deaths. The study team coordinated efforts to complete a detailed safety analysis of crash types, severity, lighting conditions and surface conditions, as well as the identification of countermeasures to mitigate common bicycle crash types consistent with the principles of Vision Zero.

The proposed bicycle network was then developed based on a review of the existing and planned network and additional network connections identified through a gap analysis. Preferred bikeway types were determined based on the methodology and standards of the 2019 Federal Highway Administration Bikeway Selection Guide. An implementation approach as well as demonstration projects were developed to illustrate the next steps for completing the proposed bikeway network. Key economic benefits associated with network improvements were quantified.

Additional recommendations in the updated Bicycle Plan include potential supporting initiatives, changes to policies and procedures, bikeway signage and wayfinding and bikeway landscape guidelines.



Orlando Bicycle Plan Update Pop-Up Meeting, Engelwood Neighborhood Center (2019)



INITIAL OUTREACH

7 open houses /
pop-ups **340+**
completed surveys
100+
interactive online
Mapping tool comments

FINAL PUBLIC MEETING

8 completed
comment forms **100%**
supportive
feedback

community engagement

Community input was an important part of the Bicycle Plan Update.

The city held three community workshops and four pop-up meetings between March - June 2019 to kick-off the Bicycle Plan Update process. Targeted meeting locations were used in an effort to include residents from all neighborhoods and backgrounds in the planning process. At these meetings, the community was able to learn about the update of Orlando's Bicycle Plan and participate in a variety of interactive exercises. Additionally, an online survey gathered input on current biking habits and on the Bicycle Plan Update's vision, goals and priorities.

An online mapping comment tool allowed residents to provide input on existing network gaps, safety concerns and wish-list projects. The survey and online comment map were also shared through press releases, NextDoor posts, city newsletters and flyers for those that couldn't attend the meetings.

The draft visionary network was presented at a final community open house near the end of the plan update process to provide the community an opportunity to see how their input helped to shape the plan recommendations and to provide a final opportunity for feedback meetings.



Shingle Creek Regional Trail, Orlando (2020)

RIDERSHIP



BIKE TO WORK
0.6%



BIKE SHARE
FLEET SIZE *
LIME + HOPR
750

MONTHLY RIDES
35K



OFF-STREET PATHS/TRAILS
1. LAKE BALDWIN LOOP
2. GERTRUDE'S WALK
3. LAKE UNDERHILL PATH
TOP 3
SHARED USE PATHS

AVERAGE DAILY USERS
3000
PEDESTRIANS + BICYCLISTS
(EXCLUDING LAKE EOLA)

SOURCES: US CENSUS BUREAU, 2012-2016 AMERICAN COMMUNITY SURVEY 5-YEAR ESTIMATES
CITY OF ORLANDO BICYCLE AND PEDESTRIAN ANNUAL COUNTS FEBRUARY -SEPTEMBER 2019
*BIKE SHARE AS OF APRIL 2019

INFRASTRUCTURE



1 MOUNTAIN BIKE PARK



5 SHARROW ROUTES

53mi NEIGHBORHOOD SIGNED ROUTES

NOTE: ON-STREET BIKE LANES REPORTED BY LANE MILES
SOURCE: CITY OF ORLANDO BIKE INVENTORY, SEPT 2018

3 BIKE PARKING CORRALS



8 BIKE WAY-FINDING ROUTES

268mi ON-STREET BIKE LANES

6 BICYCLE REPAIR STATIONS

43mi OFF-STREET PATHS/TRAILS

+7mi TRAILS CURRENTLY IN DEVELOPMENT

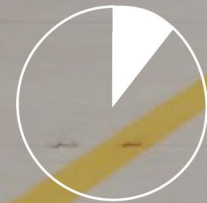
SAFETY



795 CRASHES INVOLVED A BICYCLIST
2012 - 2017



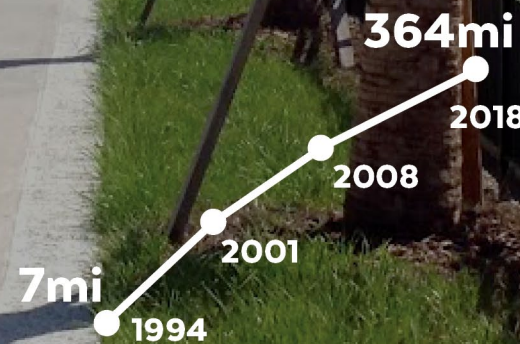
61% MOTORIST AT FAULT
2012-2017



10% OF CRASHES INVOLVING A BICYCLIST RESULT IN AN INCAPACITATING INJURY OR FATALITY
2012 - 2017

SOURCE: CITY OF ORLANDO DRAFT VISION ZERO STUDY, 2019

INVESTMENT



364mi TOTAL MILES OF BIKEWAYS CONSTRUCTED SINCE THE FIRST ORLANDO BIKE PLAN

SOURCES: THE LEAGUE OF AMERICAN BICYCLISTS, 2016
CITY OF ORLANDO BIKE INVENTORY, AUG 2001; JUNE 2008; SEPT 2018

12% TRANSPORTATION PLANNING BUDGET SPENT ON BICYCLING

CULTURE



BRONZE BICYCLE FRIENDLY COMMUNITY
2016 - 2020

THE LEAGUE OF AMERICAN BICYCLISTS

1

OF BICYCLE FRIENDLY BUSINESSES

BIKES BEANS & BORDEAUX

1

OF BICYCLE FRIENDLY UNIVERSITIES






UCF



2 ANNUAL CITY-SPONSORED BICYCLE EVENTS
200+ PARTICIPANTS

SOURCE: THE LEAGUE OF AMERICAN BICYCLISTS, 2016

plan goals & 2030 performance targets

 <p>COMFORT: make bicycling within the city comfortable and convenient for people of a wide range of ages and abilities.</p>	<p>↑ bike parking locations</p>	<p>+ 20% miles of separated bikeways</p>	
 <p>CONNECTIVITY: create and maintain an integrated network of low-stress bikeways connecting residents to activity centers, schools, workplaces, parks and regional bikeway networks.</p>	<p>+ 46 miles of bikeways</p>	<p>↑ 70+ citywide bikescore</p>	
 <p>EQUITY ensure that people from all neighborhoods, backgrounds, abilities and income levels in the city have access to bicycling infrastructure and resources.</p>	<p>↓ inequities in share of total bikeways across neighborhoods</p>	<p>↓ inequities in share of separated bikeways across neighborhoods</p>	
 <p>SAFETY improve the safety of people bicycling within the city through engineering, education and enforcement.</p>	<p>↓ 30% bicycle danger index</p>	<p>⊘ fatal crashes</p>	
 <p>CULTURE build a culture of bicycling through programs and policies.</p>	<p>↑ 150% people who bike to work</p>	<p>↑ 5x bike events per year</p>	<p>↑ 115% avg. monthly trail users</p>



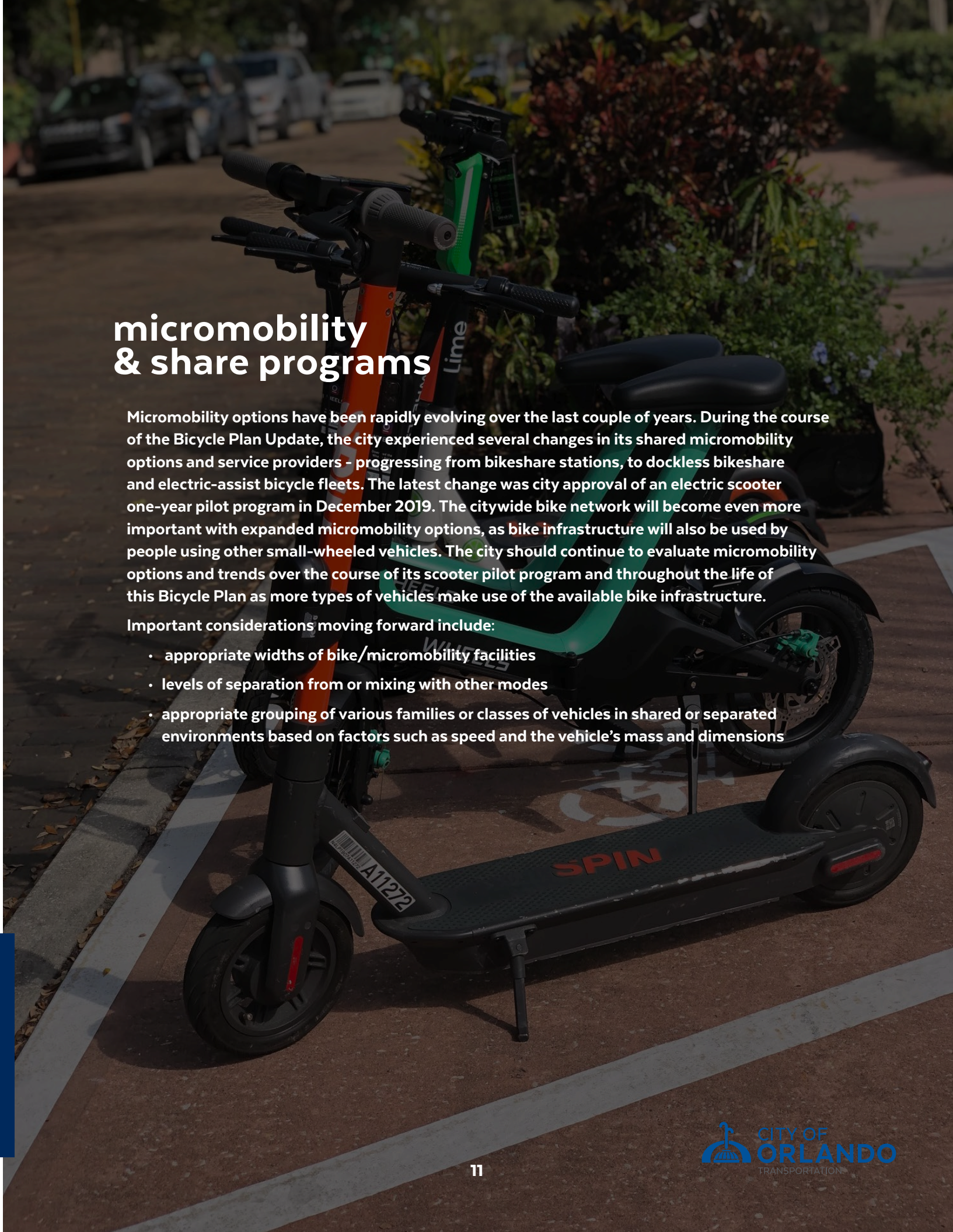
IN THE CITY OF ORLANDO, RIDING A BICYCLE IS A SAFE AND COMFORTABLE EXPERIENCE FOR RESIDENTS AND VISITORS OF ALL AGES, ABILITIES AND BACKGROUNDS. RESIDENTS CONSIDER BICYCLING A PRACTICAL TRAVEL CHOICE ENABLED BY A HIGHLY CONNECTED, CONVENIENT AND LOW-STRESS BIKEWAY NETWORK THAT CONTRIBUTES TO QUALITY OF LIFE THROUGHOUT THE CITY.

micromobility & share programs

Micromobility options have been rapidly evolving over the last couple of years. During the course of the Bicycle Plan Update, the city experienced several changes in its shared micromobility options and service providers - progressing from bikeshare stations, to dockless bikeshare and electric-assist bicycle fleets. The latest change was city approval of an electric scooter one-year pilot program in December 2019. The citywide bike network will become even more important with expanded micromobility options, as bike infrastructure will also be used by people using other small-wheeled vehicles. The city should continue to evaluate micromobility options and trends over the course of its scooter pilot program and throughout the life of this Bicycle Plan as more types of vehicles make use of the available bike infrastructure.

Important considerations moving forward include:

- appropriate widths of bike/micromobility facilities
- levels of separation from or mixing with other modes
- appropriate grouping of various families or classes of vehicles in shared or separated environments based on factors such as speed and the vehicle's mass and dimensions



the future bikeway network

Network planning for the Bicycle Plan Update followed a two-step process. First, a **visionary network** was developed. The visionary bikeway network is illustrative of the highly connected, convenient, low-stress comprehensive bikeway network described in the Bicycle Plan Update vision statement. The visionary network comprehensively completes gaps in the existing network, adds new bikeway connections and identifies upgrades to existing bikeway facilities. The visionary network map does not represent corridor-level feasibility or constructibility; however, it is important for defining the long-term desired connections.

The city's existing network is made up of three designations - signed routes, on-street bike lanes, and off-street paths/ trails - and does not differentiate which bikeways are part of the low-stress network. As the visionary bikeway network represents a primarily low-stress network, alternative designations were used to identify these low-stress bikeway types based on the 2019 FHWA guidance:

1. Neighborhood Bicycle Boulevards - Low traffic volume and low speed residential streets that give bicyclists priority using signs, pavement markings and traffic calming measures to discourage through trips by motor vehicles and provide bicyclists with enhanced crossings of arterial streets. While some of the city's existing signed routes meet the criteria for neighborhood bicycle boulevards, others are not good candidates based on the context of the street.

2. Bike Lanes (Buffered Preferred) - One-way facilities that typically carry bicycle traffic in the same direction as adjacent motor vehicle traffic on the left or right side of the street. A painted flush buffer zone between a bike lane and the adjacent travel lane is preferred to increase the riding comfort for bicyclists as they increase separation from vehicular traffic and/or parked vehicles.

3. Separated Bike Lanes or Shared Use Paths - Physically separated space using a vertical element within a buffer area such as bollards, parked vehicles, raised curbs, or landscaping/planters. These may be shared spaces with pedestrians or dedicated for people on bikes.

The next step was to define a project implementation strategy by determining a priority list of projects to form the visionary network to implement in the near-term. Using a set of evaluation criteria based on the plan goals, segments of the visionary network were assigned relative priority scores, ranging from 0 - 100.

A 10-year planning horizon was chosen to narrow the visionary network into a list of cost-feasible priority projects based on relative priority scores, budget assumptions, bikeway types and planning level cost assumptions.

The **2030 priority network** narrows the visionary network into a list of projects that could be reasonably developed over the next 10-year horizon based on opinion of probable costs and funding assumptions. The 2030 priority project list is intended to provide general guidance but does not restrict bicycle network improvements from being made as opportunities arise related to lower priority projects (e.g., projects that can piggyback on other infrastructure improvements, such as resurfacing, utility or stormwater projects). Project evaluation criteria were used to identify high priority projects for inclusion in the 2030 priority network, which also reflects a mix of facility types from low-cost and easy-to-implement bicycle boulevards, to street retrofits for separated bike lanes, to new sections of shared-use paths.

These networks define long-term desired connections using the ideal level of separation based on traffic volumes and posted speeds at the time of the Bicycle Plan Update. However, it does not represent projects based on corridor-level feasibility or constructibility.

bikeway selection methodology

INTERESTED BUT CONCERNED CYCLISTS



SOMEWHAT CONFIDENT CYCLISTS



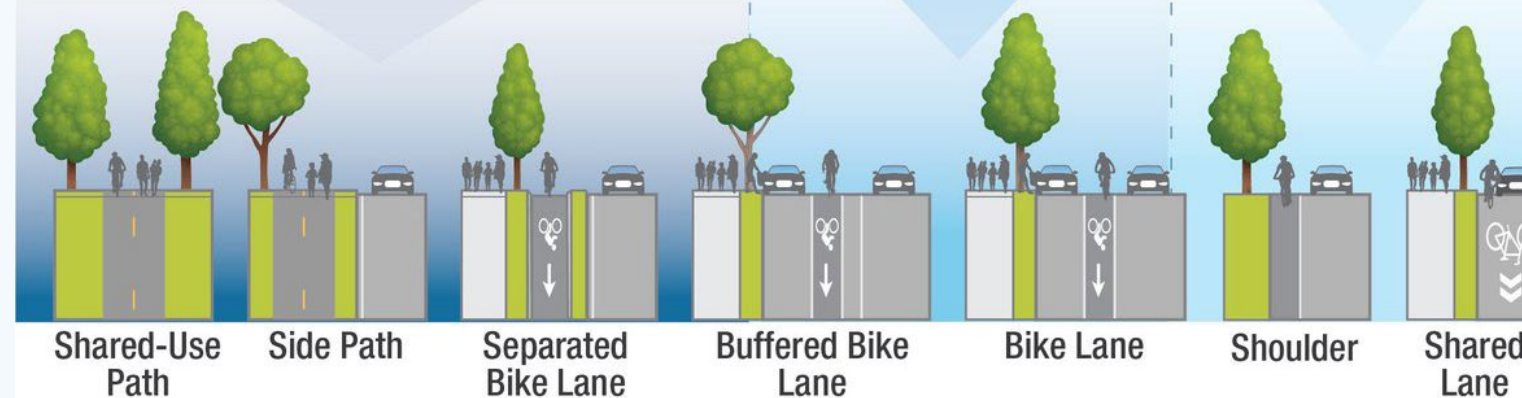
HIGHLY CONFIDENT CYCLISTS



51% – 56%
of the population

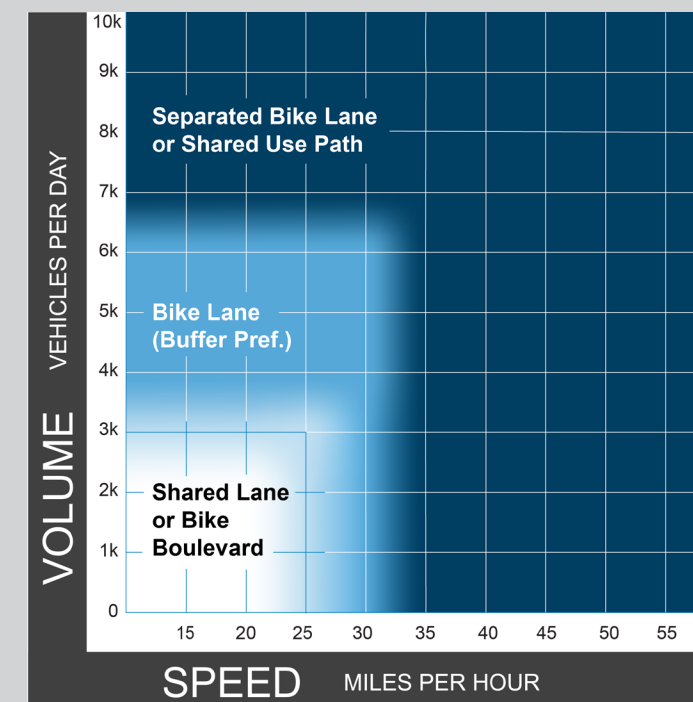
5% – 9%
of the population

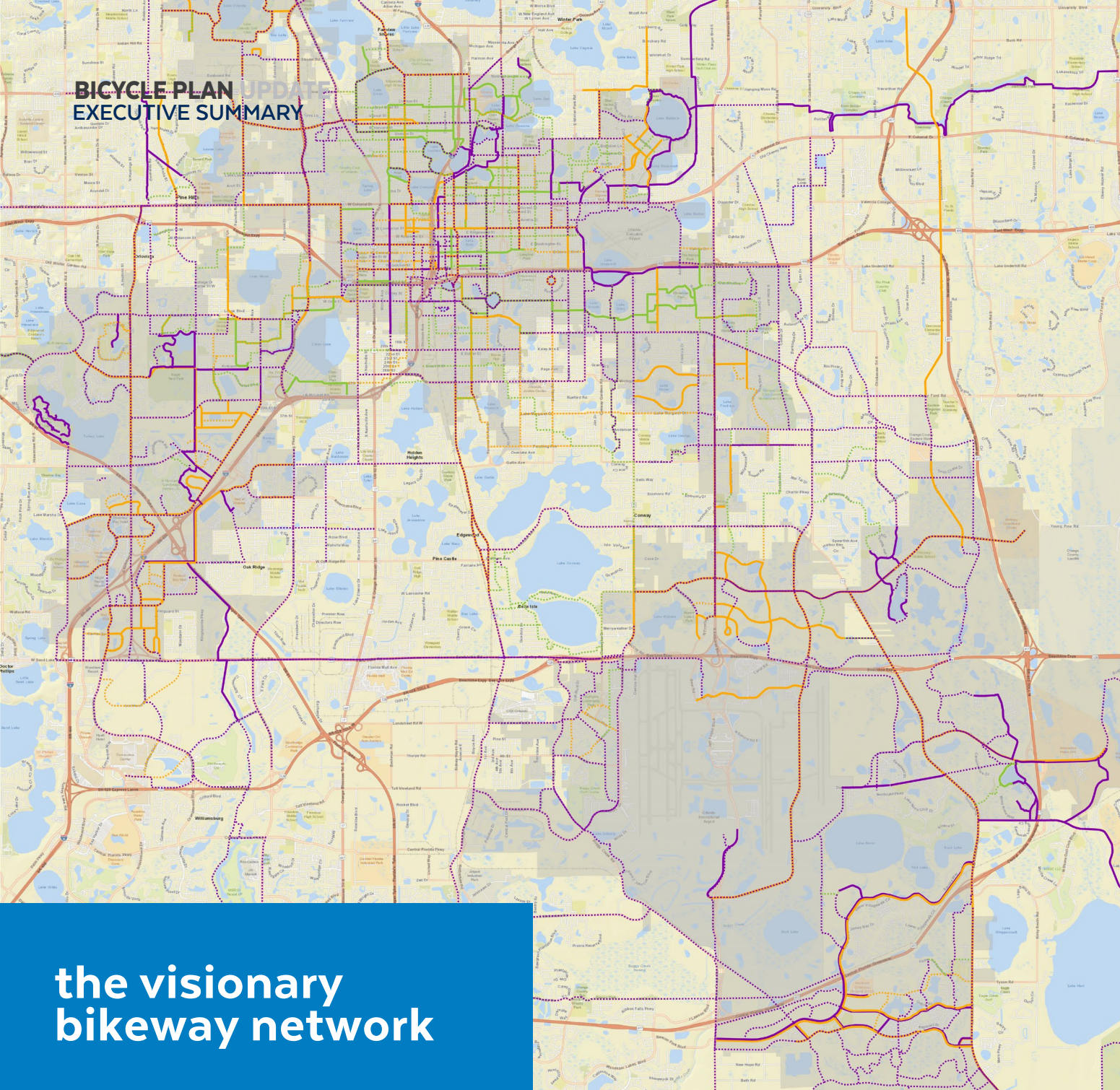
4% – 7%
of the population



fhwa guidelines







The graphic above, from the 2019 FHWA Bikeway Selection Guide shows the different types of bicyclists and the percentage of the general population that they represent. To encourage more people to make trips by bike, it is critical to plan and design for the “interested but concerned” group. This group requires more separation from traffic or very low volume, low speed neighborhood streets to feel comfortable riding a bike. More traditional bike facilities, such as conventional on-street bike lanes, tend to cater to a much smaller portion of the population that is either highly or somewhat confident riding with traffic. The preferred bicycle facility type graphic to the right visually represents the guidelines used to determine the most appropriate bikeway types for individual segments in the visionary bicycle network.

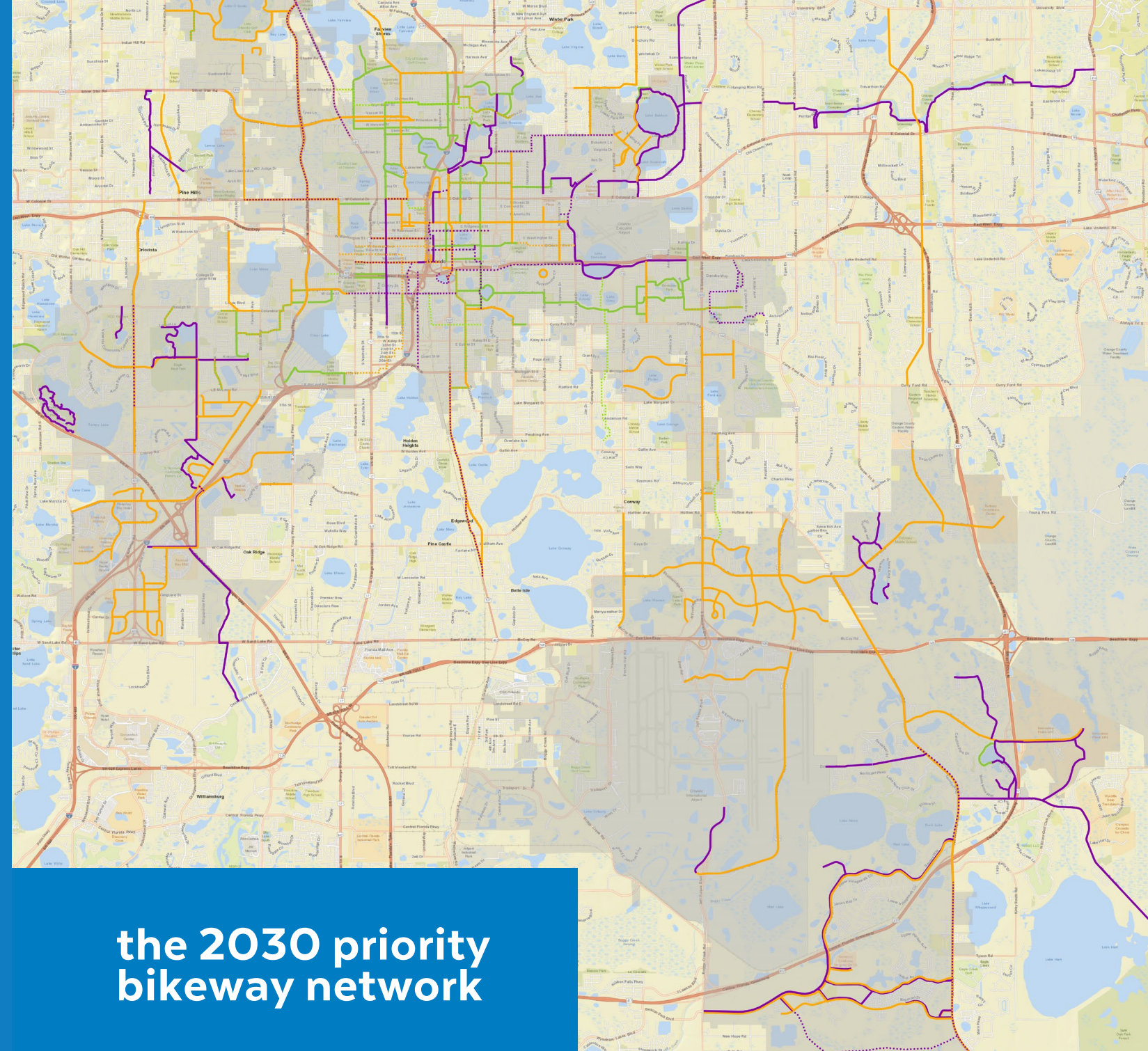




the visionary bikeway network








LEGEND

EXISTING	PROPOSED
 SIGNED ROUTES	 NEIGHBORHOOD BICYCLE BOULEVARDS
 ON-STREET BIKE LANES	 BIKE LANES (BUFFERED PREFERRED)
 OFF-STREET PATHS / TRAILS	 SEPARATED BIKE LANES OR SHARED USE PATHS



the 2030 priority bikeway network

LEGEND

EXISTING	PROPOSED
 SIGNED ROUTES	 NEIGHBORHOOD BICYCLE BOULEVARDS
 ON-STREET BIKE LANES	 BIKE LANES (BUFFERED PREFERRED)
 OFF-STREET PATHS / TRAILS	 SEPARATED BIKE LANES OR SHARED USE PATHS
 PROGRAMMED SEPARATED BIKE LANES OR SHARED USE PATHS	

the future
bikeway network:
by the numbers



850+ miles of low-stress bikeways

8mi
OF EXISTING SIGNED ROUTES
UPGRADED TO
SEPARATED BIKE LANES OR
SHARED USE PATHS

62mi
OF EXISTING BIKE LANES
UPGRADED TO
SEPARATED BIKE LANES OR
SHARED USE PATHS

370mi
OF PROPOSED NEW
SEPARATED BIKE LANES OR
SHARED USE PATHS

35mi
OF EXISTING SIGNED ROUTES
UPGRADED TO
NEIGHBORHOOD BICYCLE
BOULEVARDS

71mi
OF PROPOSED NEW
NEIGHBORHOOD BICYCLE
BOULEVARDS

10mi
OF EXISTING SIGNED ROUTES
UPGRADED TO
ON-STREET BIKE LANES

50mi
OF PROPOSED NEW
ON-STREET BIKE LANES
(BUFFERED PREFERRED)

480mi
SEPARATED
BIKE LANES OR
SHARED-USE
PATHS

105mi
NEIGHBORHOOD
BICYCLE
BOULEVARDS

265mi
ON-STREET
BIKE LANES

NOTE: TOTAL MILES OF THE EXISTING + PROPOSED NETWORK



10X
MILES OF
SEPARATED BIKE LANES &
SHARED-USE PATHS



81%
OF THE CITY IS
WITHIN 1/4 MI OF
A BIKEWAY

95%
OF THE CITY IS
WITHIN 1/2 MI OF
A BIKEWAY



60%
OF NEW BIKEWAY
MILES ARE IN UNDER-
SERVED AREAS



135
PROJECTS ON
HIGH CRASH SEGMENTS

NOTE: THE VISIONARY NETWORK REPRESENTS THE LONG-TERM PLAN, AND APPENDIX H INCLUDES SCORING FOR PROJECTS, INCLUDING PROJECTS LOCATED ON IDENTIFIED HIGH CRASH LOCATIONS

bicycling economics

The continued improvement and expansion of the bikeway network will not only benefit those biking in the city today, but also Orlando's future residents.

More people will choose to bike as low-stress bikeways become accessible to different neighborhoods across the city, and bicycle trips may grow in length and frequency. An economic analysis was completed to project monetized economic benefits of continued bikeway investments for three factors:

- Recreation
- Health
- Reduced Auto Use

The analysis is far from a complete cost/benefit analysis; further benefits and impacts not specifically quantified in the analysis include safety savings, environmental savings, economic growth and higher property values.

This analysis compared a snapshot of 2030 benefits, with and without progress towards the visionary bikeway network, to derive the additional value these investments provide to the city.

Estimates were developed using:

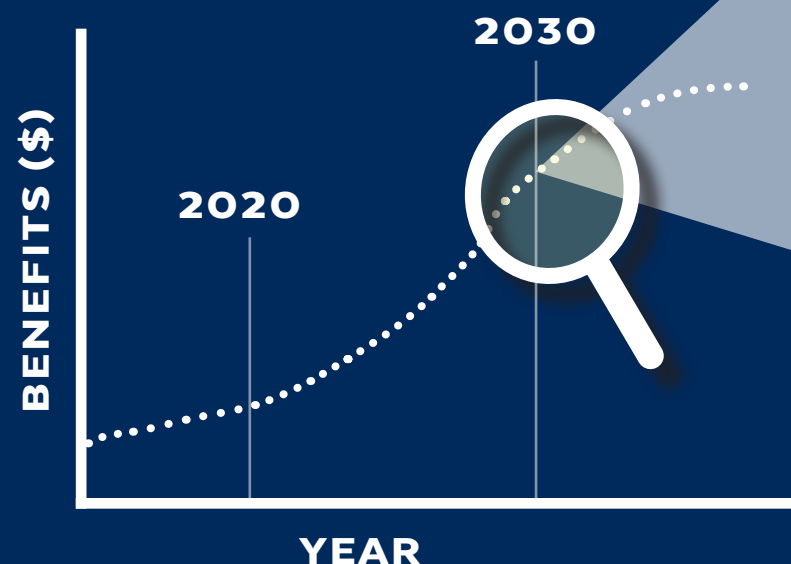
- projections for the number of bicyclists based on population growth, 2019 city trail counts and bike share user data
- frequency and types of bicycle trips based on the Bicycle Plan Update online survey, as well as findings from an Orlando Urban Trail field survey (completed in May, 2019)
- parameters to quantify benefits into monetary values (2018 \$s) based on the methodologies described in the National Cooperative Highway Research Report Program (NCHRP) Report 552: Guidelines for Analysis of Investments in Bicycle Facilities methodology

The benefits analysis took a conservative approach to what may be achieved by 2030 - assuming just +10 miles of separated bike lanes, +22 miles of off street paths/trails, +7 miles of buffered bike lanes and +8 miles of neighborhood bicycle boulevards are constructed over the next 10 years.

Even with this conservative estimate, the monetized annual benefits to health, recreation and reduced auto use quantified in this analysis are projected to amount to **+\$4.4 million (in constant 2018 dollars) for the 2030 calendar year.**

Assuming other things equal, including no additional increase in bikeway network or cycling frequency, a simplified estimate places the aggregate value of the monetized benefits over the subsequent 20 year period (2030 - 2049) at **+\$87 million.**

This simplified estimate does not take into account the additional magnitude of benefits from health, recreation and reduced auto use that would continue to grow as the volumes of cycling and network expands in future years, nor does it account for the incremental benefits as the network expands between 2020 and 2030.



Year 2030 where the priority bike network has been constructed would experience...



...compared to year 2030 with no improvements

NEXT STEPS

Next steps are identified throughout the document at the end of each relevant section. In total, 15 next steps are identified:



IDENTIFY AND PRIORITIZE OTHER INTERSECTIONS ACROSS THE CITY FOR TRAFFIC CONTROL IMPROVEMENTS TO ASSIST BICYCLISTS WITH CROSSINGS ALONG EXISTING OR PROPOSED ROUTES. IDENTIFY AND PROGRAM SPECIFIC CROSSING ENHANCEMENTS.



IN CONJUNCTION WITH THE VISION ZERO ACTION PLAN, WORK TO SYSTEMICALLY INCLUDE FEATURES, COUNTERMEASURES AND TREATMENTS IN ALL TRANSPORTATION PROJECTS TO ADDRESS THE MOST COMMON BIKE CRASH TYPES.



SYSTEMATICALLY COMPLETE MULTIMODAL SAFETY AUDITS AND REGULAR WALKING AND BICYCLING AUDITS OF KEY LOCATIONS AND HIGH CRASH CORRIDORS OR INTERSECTIONS TO IDENTIFY LOCATION-SPECIFIC COUNTERMEASURES.



FORMALIZE STANDARDS FOR BIKE DETECTION AT SIGNALS. CURRENTLY, BIKES TYPICALLY ACTUATE A SIGNAL VIA EITHER VEHICULAR MEANS (VIDEO OR IN-PAVEMENT LOOP DETECTION) OR PEDESTRIAN MEANS (PEDESTRIAN PUSH BUTTON). NEW FACILITY TYPES, SUCH AS STREET-LEVEL SEPARATED BIKE LANES, THAT WILL PROVIDE AN EXCLUSIVE AREA FOR BIKES, WILL NEED TO HAVE SPECIFIC SIGNAL DETECTION STRATEGIES EMPLOYED. THIS MAY INCLUDE PASSIVE DETECTION METHODS (VIDEO, IN-PAVEMENT LOOPS, INFRARED, ETC.) OR ACTIVE DETECTION METHODS (PUSH BUTTONS PLACED AND ORIENTED TO SERVE BICYCLISTS USING THE SPECIFIC FACILITY).



REFINE THE PROJECTS WITHIN THE PRIORITY NETWORK BASED ON THE PROJECT IMPLEMENTATION STRATEGY.



IDENTIFY AND PRIORITIZE AREAS FOR MORE SPECIFIC BIKE INFRASTRUCTURE FEASIBILITY STUDIES. POTENTIAL AREAS FOR STUDY INCLUDE THE MAIN STREET DISTRICTS (SIMILAR TO THE MILLS 50 AND MILK DISTRICT BICYCLE AND PEDESTRIAN STUDY PREVIOUSLY COMPLETED), OR SPECIFIC NEIGHBORHOODS (FOR EXAMPLE, DELANEY PARK, WHICH LACKS GOOD LOW-STRESS BIKE CONNECTIVITY INTO THE CENTRAL BUSINESS DISTRICT, OR ROSEMONT, THE LOCATION OF THE NORTH LANE / LAKE ORLANDO LOOP DEMONSTRATION PROJECT AND A TARGETED OUTREACH AREA BASED ON IT'S COMPOSITE EQUITY SCORE).



REFERENCE THE PLANNED BIKEWAY NETWORK AND EVALUATION SCORES DURING CAPITAL IMPROVEMENT WORK PROGRAMMING TO CONFIRM THAT PROJECTS BEING ADVANCED ARE CONSISTENT WITH THE GOALS AND OBJECTIVES OF THE BICYCLE PLAN.



IDENTIFY AND AGGRESIVELY PURSUE ADDITIONAL FUNDING SOURCES, GRANTS, PARTNERSHIPS AND OTHER AVENUES TO ADVANCE THE PRIORITY LIST OF PROJECTS.



KEEP CITY GIS FILES OF EXISTING BIKE INFRASTRUCTURE, AS WELL AS OTHER SUPPORTING TRANSPORTATION-RELATED DATA (POSTED SPEEDS, NUMBER OF LANES, CROSSING LOCATIONS, ETC.), UP TO DATE.



TARGET AT LEAST A MINOR UPDATE TO THE BICYCLE PLAN EVERY FIVE YEARS, AND A MAJOR UPDATE TO THE PLAN EVERY TEN YEARS.



FINALIZE AND FORMALIZE THE WAYFINDING AND SIGNAGE STANDARDS FOR SHARED-USE PATHS. A FRAMEWORK AND GUIDANCE FOR CITYWIDE WAYFINDING AND SIGNAGE FOR ON-STREET FACILITIES IS PROVIDED IN THIS PLAN, BUT THE CITY IS IN THE PROCESS OF UPDATING SIGN STANDARDS RELATED TO SHARED-USE PATHS.



FORMALIZE GUIDANCE ON THE CONVENTIONS FOR NAMING TRAILS AND BIKEWAYS WITHIN THE NETWORK, INCLUDING THOSE THAT MAY HAVE SUB-NAMES, E.G., THE DINKY LINE OR GERTRUDE'S WALK, WHICH ARE PART OF THE LARGER ORLANDO URBAN TRAIL, ALONG WITH GUIDANCE DOCUMENTS MATCHING CONSISTENCY OF SUPPLEMENTAL SIGNS TO MARK RECREATIONAL LOOPS OR ROUTES.



IDENTIFY A SET OF BICYCLE BOULEVARDS, SUCH AS THE TOP FIVE OR TOP TEN ROUTES, TO MOVE INTO RAPID IMPLEMENTATION IMMEDIATELY FOLLOWING PLAN ADOPTION. DEVELOP SPECIFIC PLANS TO INCLUDE WAYFINDING SIGNS, ALONG WITH SUPPLEMENTAL PAVEMENT MARKINGS AND TRAFFIC CALMING DEVICES. ADDITIONALLY, IDENTIFY AND EVALUATE KEY BUSY INTERSECTIONS ALONG ROUTES FOR POTENTIAL NEW OR ENHANCED TRAFFIC CONTROL DEVICES, SUCH AS RRFBS, PEDESTRIAN HYBRID BEACONS, HALF SIGNALS, ETC.



UPDATE CITY POLICIES, ADOPT PROCEDURAL CHANGES, COMPLETE THE '6 KEY STEPS TO SILVER', AND IMPLEMENT AT LEAST FIVE ADDITIONAL RECOMMENDED INITIATIVES - ONE FOR EACH 'E' BY 2021, AND HIGHLIGHT THESE ITEMS IN THE CITY'S NEXT LEAGUE OF AMERICAN CYCLIST'S BICYCLE FRIENDLY COMMUNITY APPLICATION.



DOCUMENT BASELINE PERFORMANCE MEASURES AND MONITOR PROGRESS ANNUALLY.



PREPARED FOR:

