

# North East Orange County Areawide Transportation Study (NEOCATS)



### The Virtual Public Meeting will begin at 6:00 P.M.

- 1. If you are not hearing audio, please check your computer speaker settings or your microphone.
- 2. If you are an elected or appointed official, please identify yourself in the Q&A box.
- 3. If you experience technical difficulties during the meeting, this presentation is being recorded and is estimated to be posted onto the project website by April 4<sup>th</sup>, 2022. It will be available for replay until April 12<sup>th</sup>, 2022.

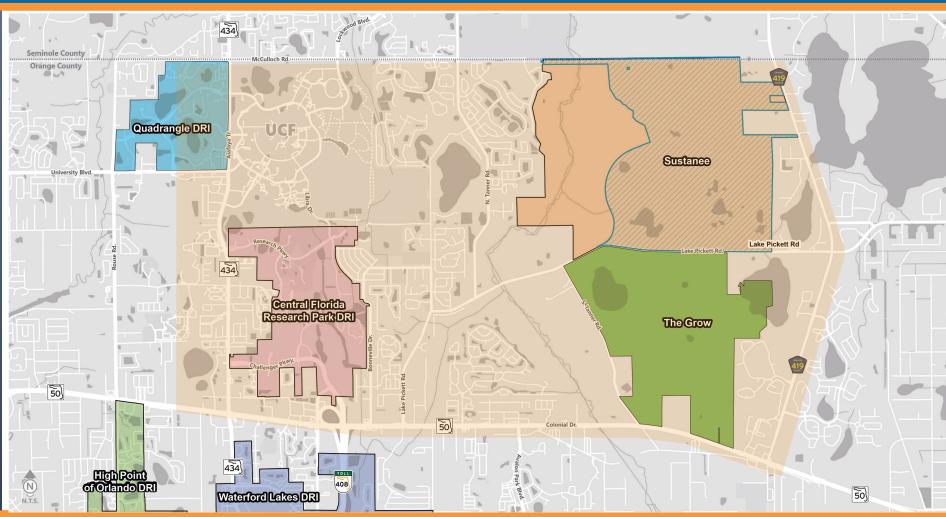


# North East Orange County Areawide Transportation Study (NEOCATS)



# Community Meeting # 2

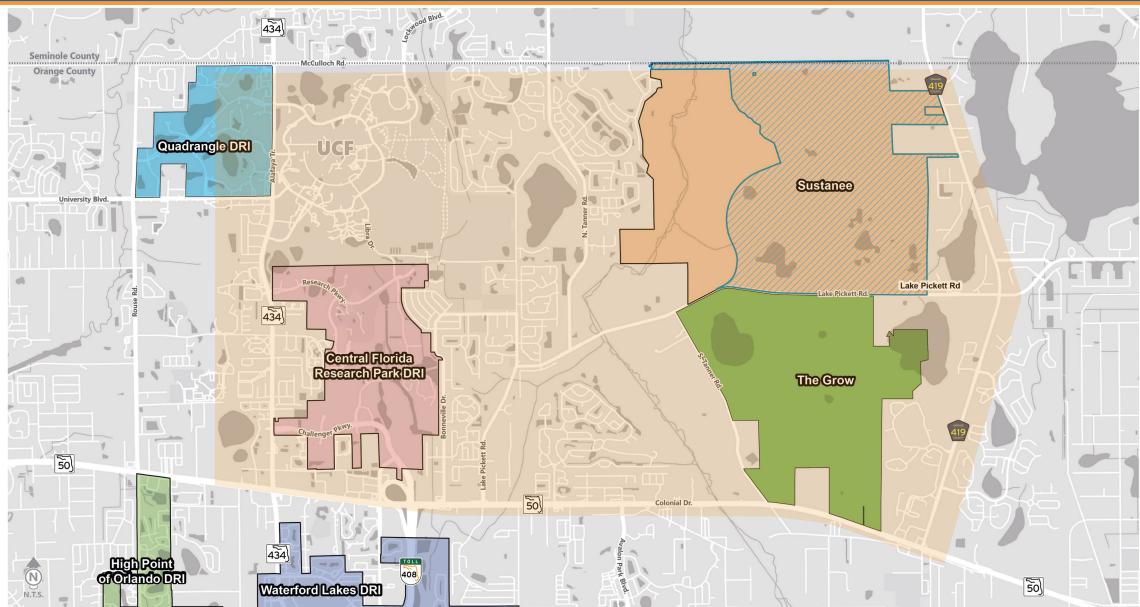
March 30, 2022





## Study Area







### Agenda





Introductions



Study Purpose and Objectives



Study Methodology



Safety Review and Operational Analysis Results



Recommended Improvements



Study Timeline / Next Steps

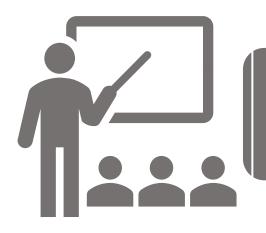


Feedback and Discussion



## Agenda





## Introductions



### Introductions



### **Welcome and Opening Remarks**



Orange County Mayor **Jerry L. Demings** 



District 4 Commissioner Maribel Gomez Cordero



District 5 Commissioner **Emily Bonilla** 



### **Introductions**



### **Orange County**

Hatem Abou-Senna – Transportation Planning Division, Project Manager

### **VHB, Project Consultant**

Babuji Ambikapathy, Consultant Project Manager

**Other Orange County Staff and Consultant Staff** 



### **Virtual Meeting Logistics**





All attendees will be placed in "Listen Only" mode during the presentation



Type your comments or questions into the Q&A box anytime during the meeting



Questions will be answered at the conclusion of the presentation



### Virtual Meeting Logistics



### **Ways to Provide Feedback After the Meeting**





Call or Email (website, newsletter and this presentation)

#### **Project Contact**

Hatem A. Abou-Senna, PhD., P.E.

Project Manager

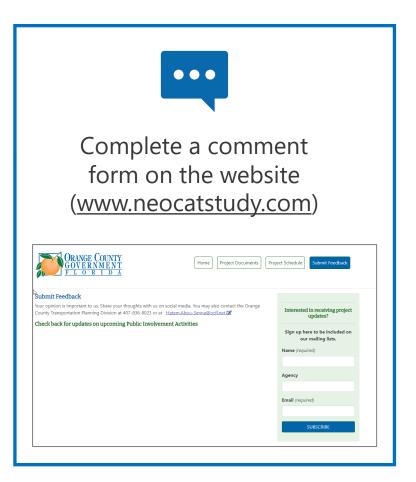
Orange County Transportation Planning Division

4200 S. John Young Pkwy.

Orlando, FL. 32839

Phone: (407) 836-8023

Email: <a href="mailto:hatem.abou-senna@ocfl.net">hatem.abou-senna@ocfl.net</a> Website: <a href="mailto:www.neocatstudy.com">www.neocatstudy.com</a>









# Study Purpose and Objectives



### **Study Purpose and Objectives**



### **Study Purpose**

"Support future growth while preserving community character"

### **Objectives**

- Improve Safety, Mobility & Connectivity for people who drive, walk, bike and use transit
- Identify and prioritize potential transportation projects
  - Improve network connectivity
  - Provide relief to constrained corridors
  - Short-term (2025), mid-term (2035), and long-term (2045) improvements for all road users









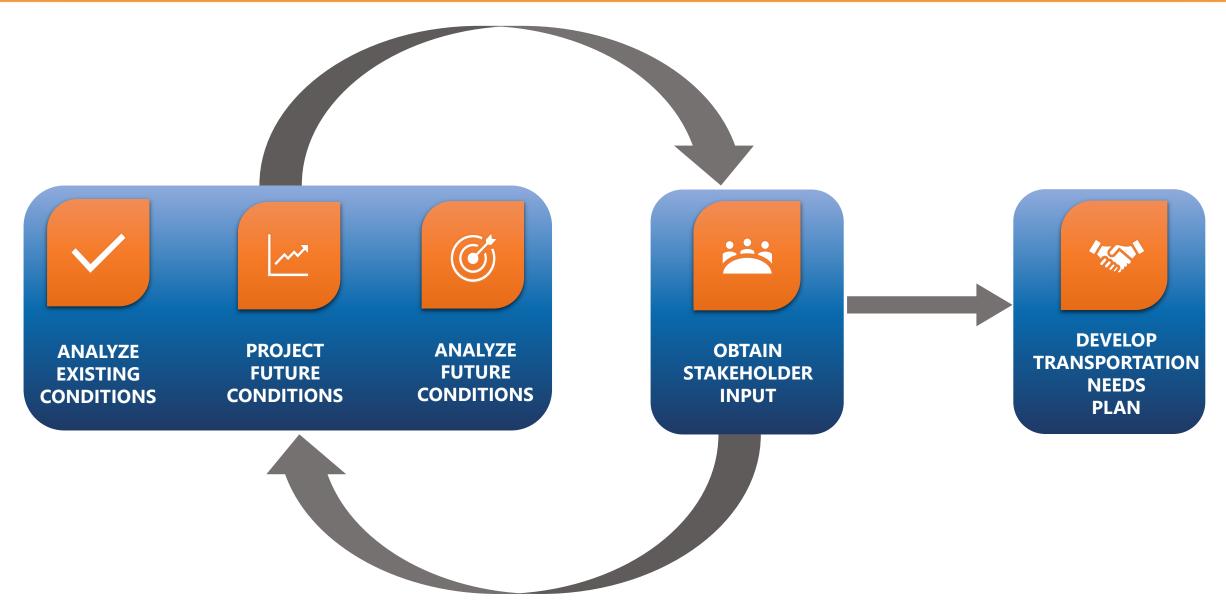






## **Study Approach**







### **Community/Agency Meetings**



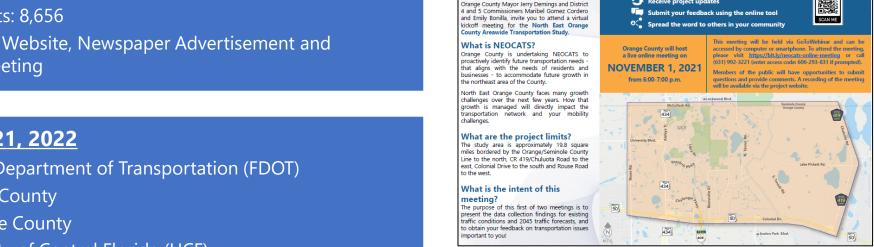
### **Community** Meeting #1

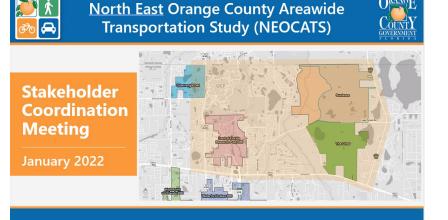
### **November 1, 2021**

- Mail-outs: 8.656
- Forums: Website, Newspaper Advertisement and GoToMeeting

### **January 21, 2022**

- Florida Department of Transportation (FDOT)
- **Orange County**
- **Seminole County**
- University of Central Florida (UCF)
- LYNX
- MetroPlan Orlando
- Central Florida Expressway Authority (CFX)
- Orange County Fire Rescue
- Orange County Sheriff's Office
- Orange County Public Schools (OCPS)
- Central Florida Research Park (CFRP)





**North East Orange County** Areawide Transportation Study (NEOCATS)

using the QR code to the right or at www.neocatstudy.com to

**Agency** Meeting #1



## Agenda





**Study Methodology** 

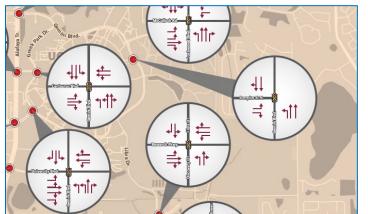


### Study Methodology

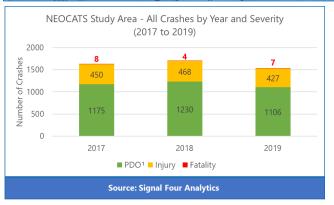


### **Key Elements**

- Roadway data
  - Major developments
  - Pedestrian/bicycle gaps
  - Transit routes
  - Lighting
  - ITS
- Historical crash data
- Traffic data
  - Traffic volumes
  - Origin-Destination (OD) study
  - Multimodal operational analysis
  - Connected Autonomous Vehicles (CAV) impacts\*
- Stakeholder input
- Programmed and planned projects
- Orange County, FDOT, and FHWA guidelines
- Similar projects







1. PDO - Property Damage Only

Capacity Analysis for Planning of Junctions							
Dynamic Results Summary							
TYPE OF INTERSECTION	Overall V/C Ratio	V/C Ranking	Multimodal Score	Pedestrian Accommodations	Bicycle Accommodations	Transit Accommodations	
Displaced Left Turn	0.49	1	4.8	Fair	Fair	Good	
Signalized Restricted Crossing U- Turn N-S	0.50	2	6.3	Good	Good	Fair	
Quadrant Roadway S-W	0.51	3	4.4	Fair	Fair	Fair	
Quadrant Roadway N-W	0.51	3	4.4	Fair	Fair	Fair	
Quadrant Roadway N-E	0.52	5	4.4	Fair	Fair	Fair	
Quadrant Roadway S-E	0.52	5	4.4	Fair	Fair	Fair	
Partial Displaced Left Turn N-S	0.52	5	4.8	Fair	Fair	Good	
Partial Median U-Turn N-S	0.53	8	6.3	Good	Good	Fair	
Traffic Signal	0.56	9	4.8	Fair	Fair	Good	
2NS X 1EW	0.70	10	5.6	Fair	Good	Good	



### Improvement Types



forces slow

### **Range of Improvements**

- **Traditional** 
  - Turn lanes
  - Operational
- Innovative Intersection Types
- Safety
  - Data driven approach
  - Lighting
  - **ADA**
- Emerging Technologies/Intelligent Transportation Systems (ITS)
  - CAV impacts
- Multimodal
  - Pedestrian/bicycle/trails
  - **Transit**
- Transportation Demand Management (TDM) strategies

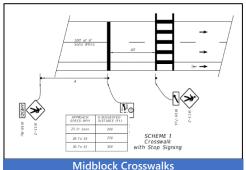


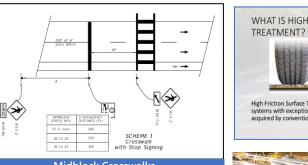
Perpendicular Right Turns

**Connected Vehicle Technology (Source:** its.dot.gov)

Figure 212.12.3 Near Perpendicular Right Turn Lane











circulation

more than

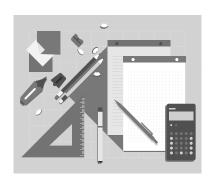






## Agenda





# Safety Review and Operational Analysis Results

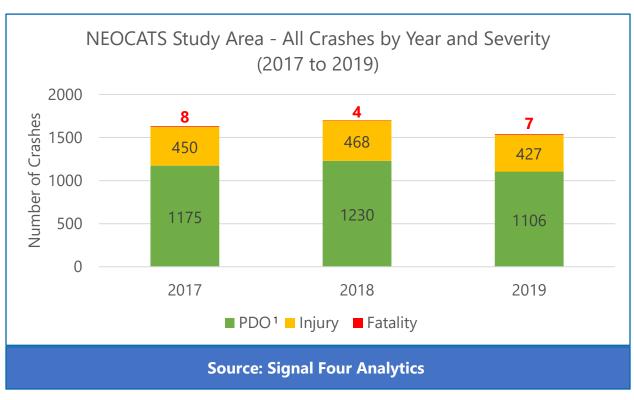


### **Historical Crash Analysis**



### **Signal Four Analytics (2017-2019)**

- Totals (roadway + intersections)
  - **4**,875
  - 19 fatalities
  - 1,345 injury crashes
  - 3,511 property damage
  - Major types rear-end, angle & sideswipe
- Intersections
  - 2,728 (56% of total)
- Mid-segments
  - 2,147 (44% of total)

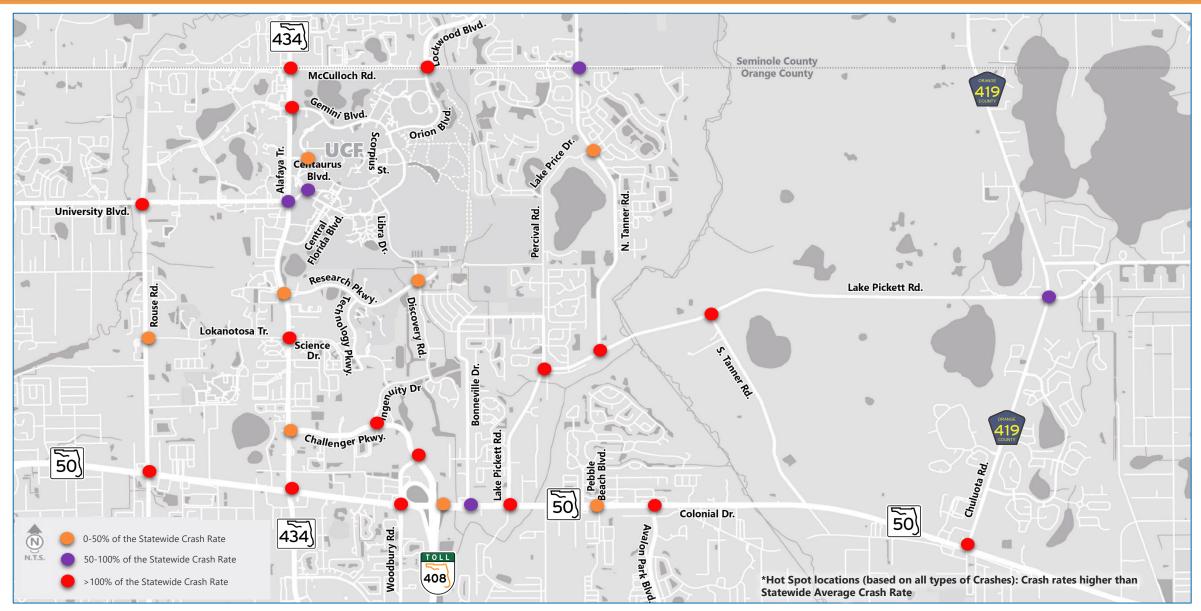


1. PDO - Property Damage Only



## Hot Spot Locations (2017-2019)

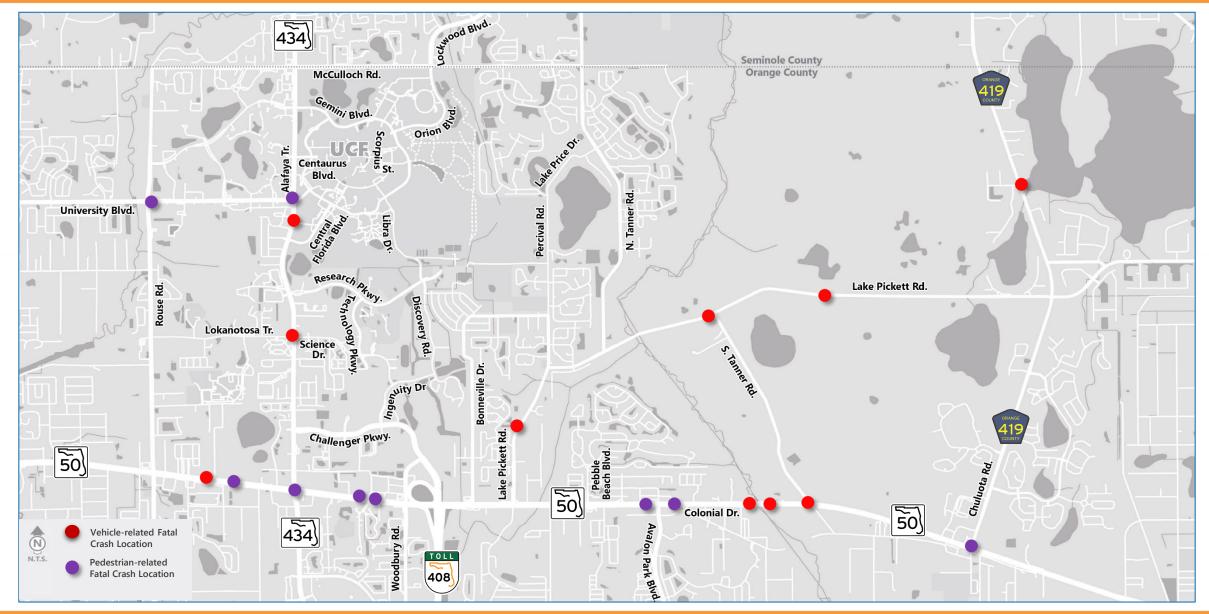






### Fatal Crash Locations (2017-2019)

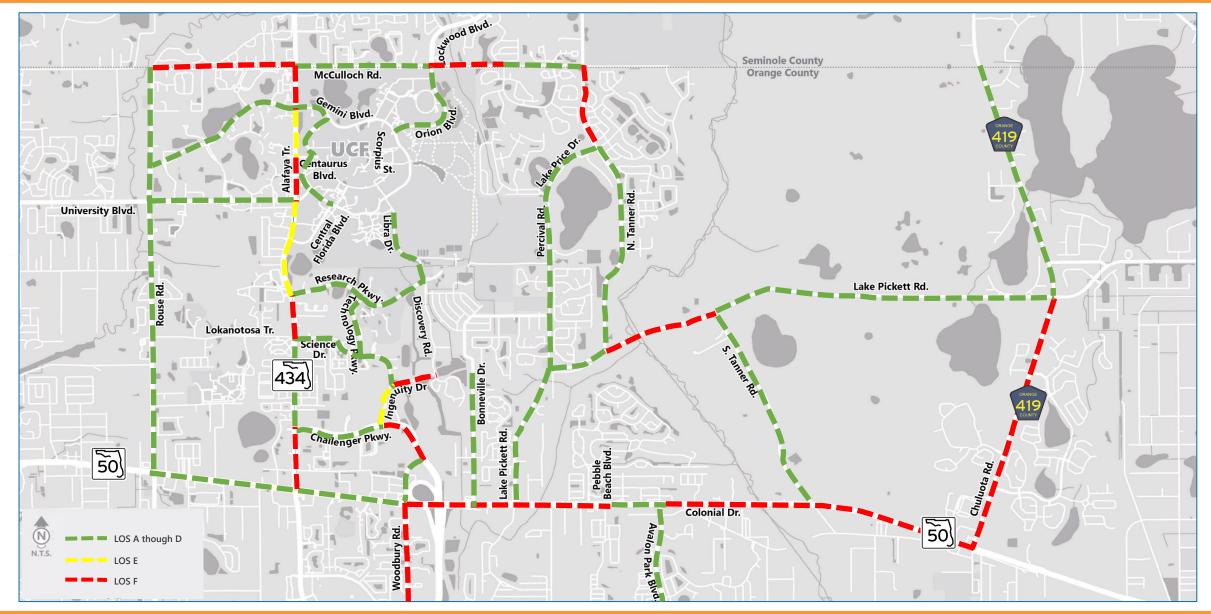






## **Existing Traffic Conditions - Segments**

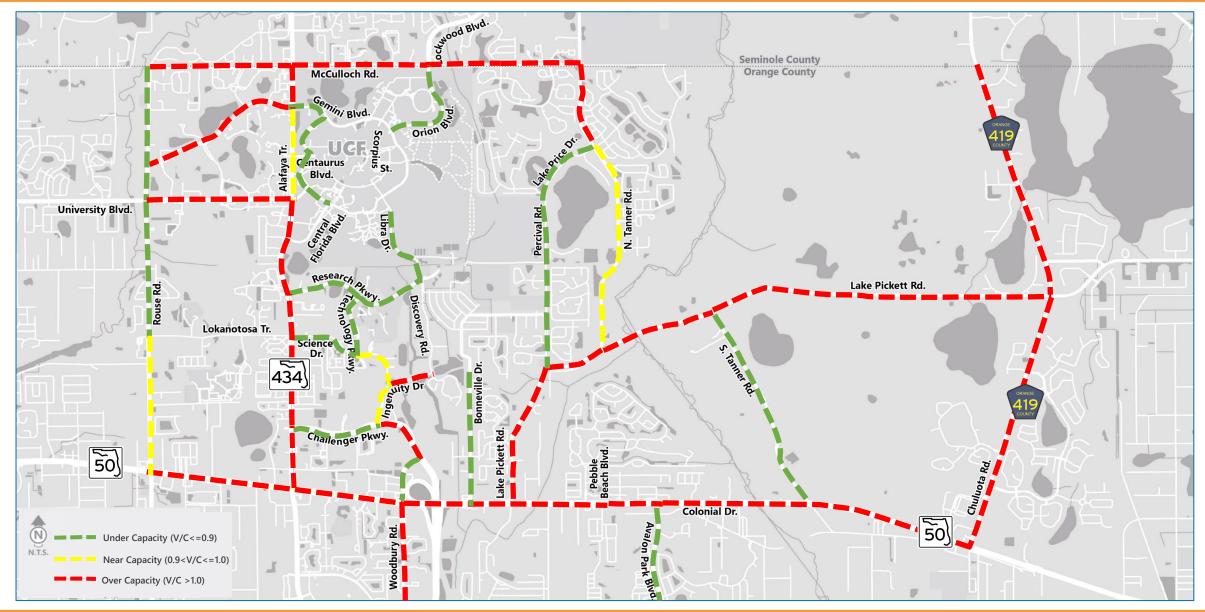






## 2045 No Build Traffic Conditions - Segments

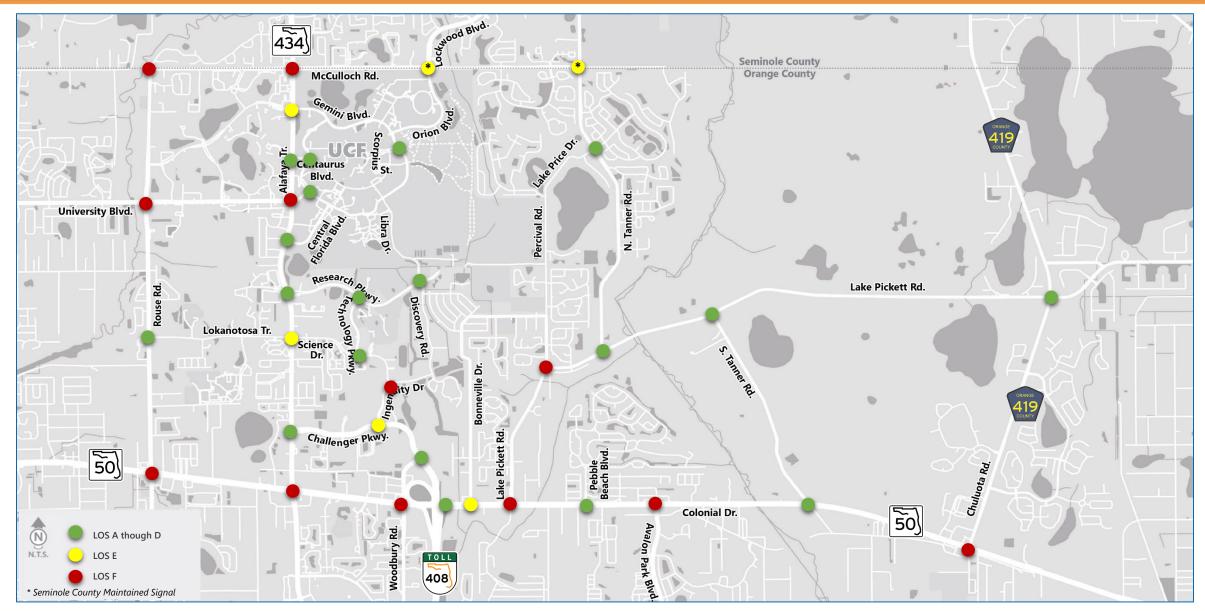






### **Existing Traffic Conditions – Intersections**

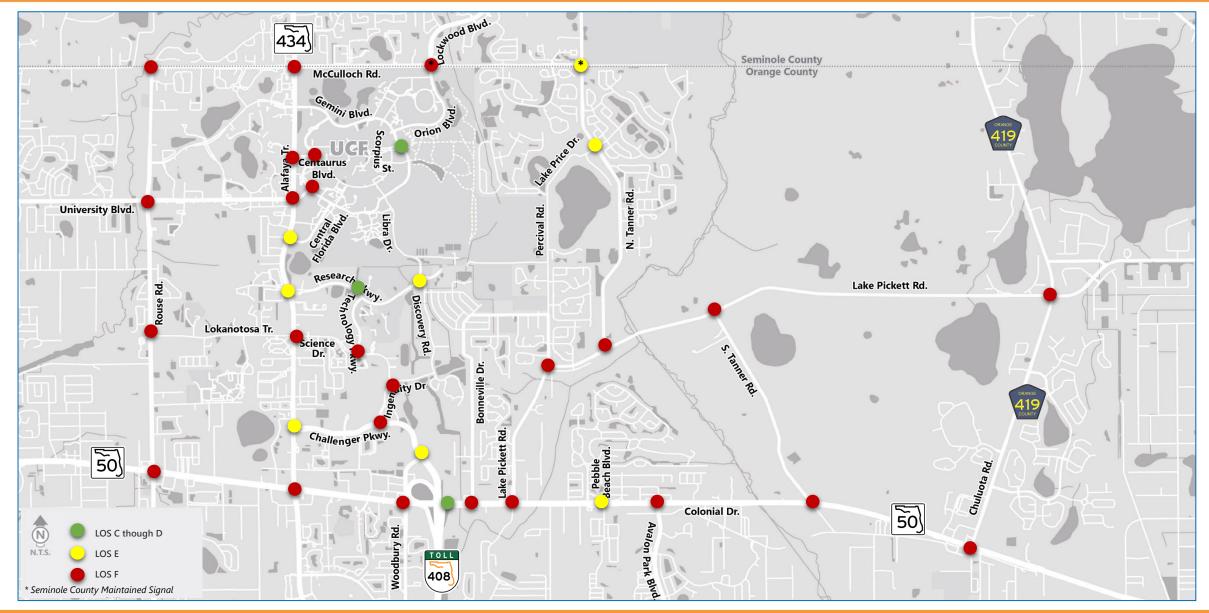






### 2045 No Build Conditions – Intersections

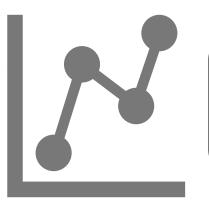






## Agenda





## Recommended Improvements



### **CAV Impacts for 2045**



### **Highway Capacity Manual (7th Edition)**

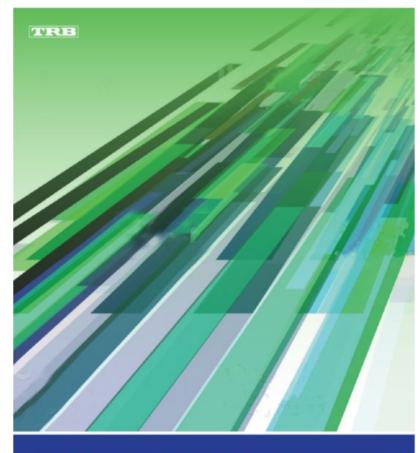
- CAV adjustments for 2045 traffic conditions
- For through movements
- 33% of CAVs in traffic stream
  - Approximately 10% increase in capacity (Base Saturation Flow Rate)

Exhibit 31-64: Base Saturation Flow Rates for CAVs for Through Movements at Signalized Intersections

Proportion of CAVs in Traffic Stream	Base Saturation Flow Rate (pc/h/ln)
0	1,900
20	2,000
40	2,150
60	2,250
80	2,550
100	2,900

Notes: CAV = connected and automated vehicle, defined here as a vehicle with an operating cooperative adaptive cruise control system.

Assumes no interaction with non-motorized road users, no adverse weather impacts, and a facility without driveways or access points impacting saturation flow rates. Interpolate for other CAV proportions.



## HIGHWAY CAPACITY MANUAI

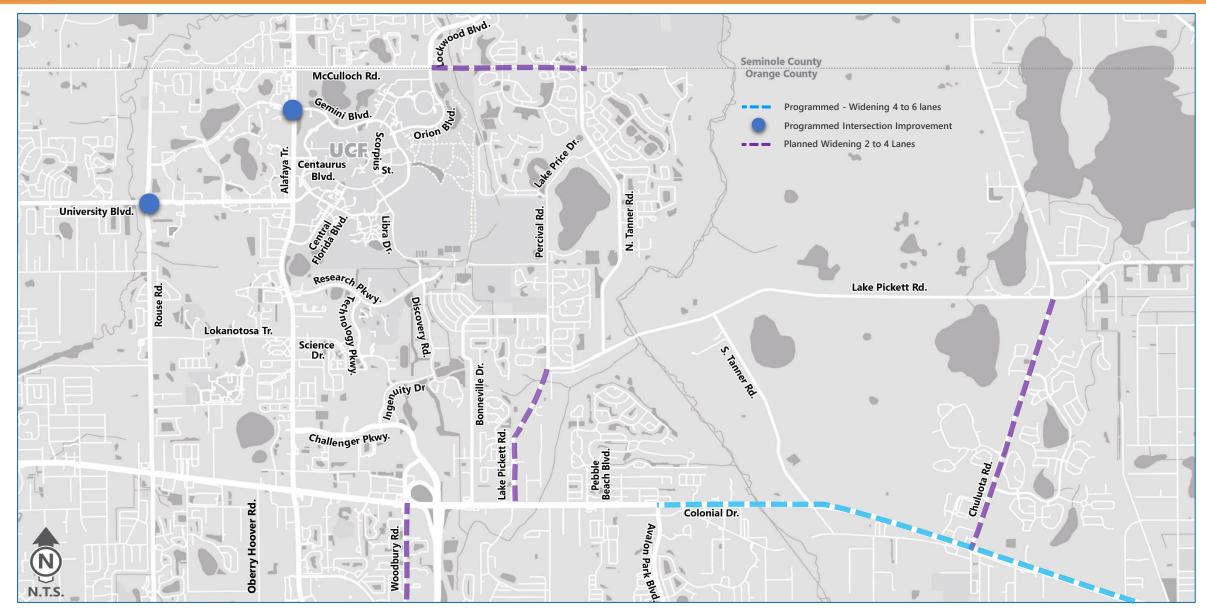
7TH EDITION | A GUIDE FOR MULTIMODAL MOBILITY ANALYSIS

The National Academies of SCIENCES - ENGINEERING - MEDICIN



### **Programmed/Planned Improvements**

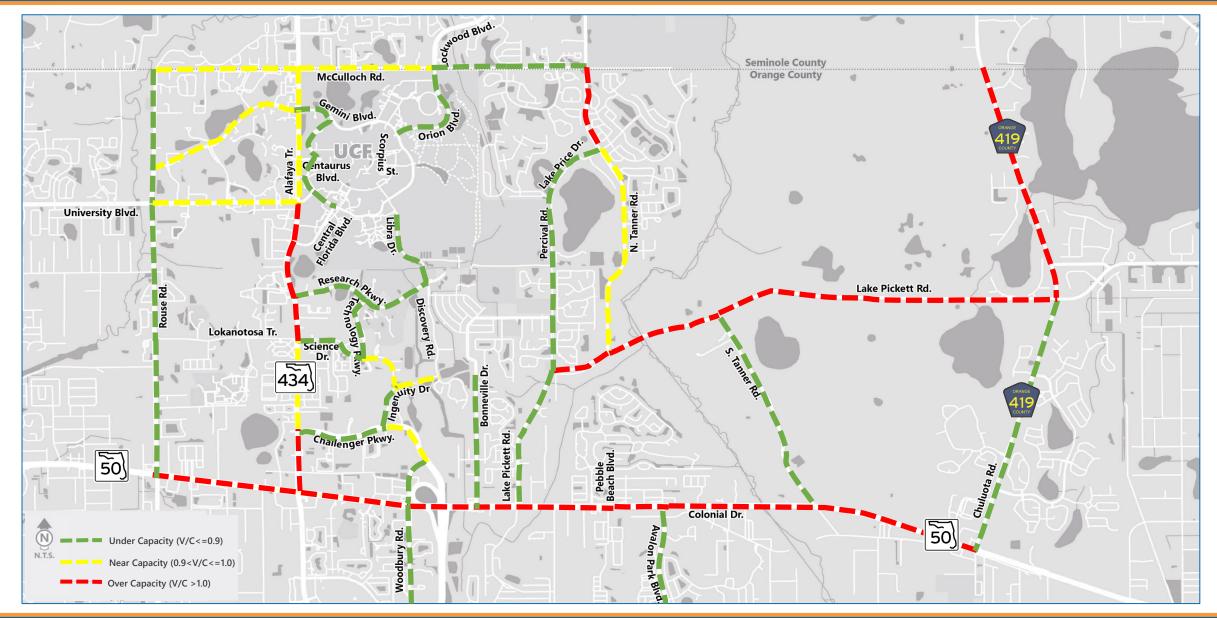






## 2045 Build Traffic Conditions – Roadway Segments (With Planned/Programmed Improvements)

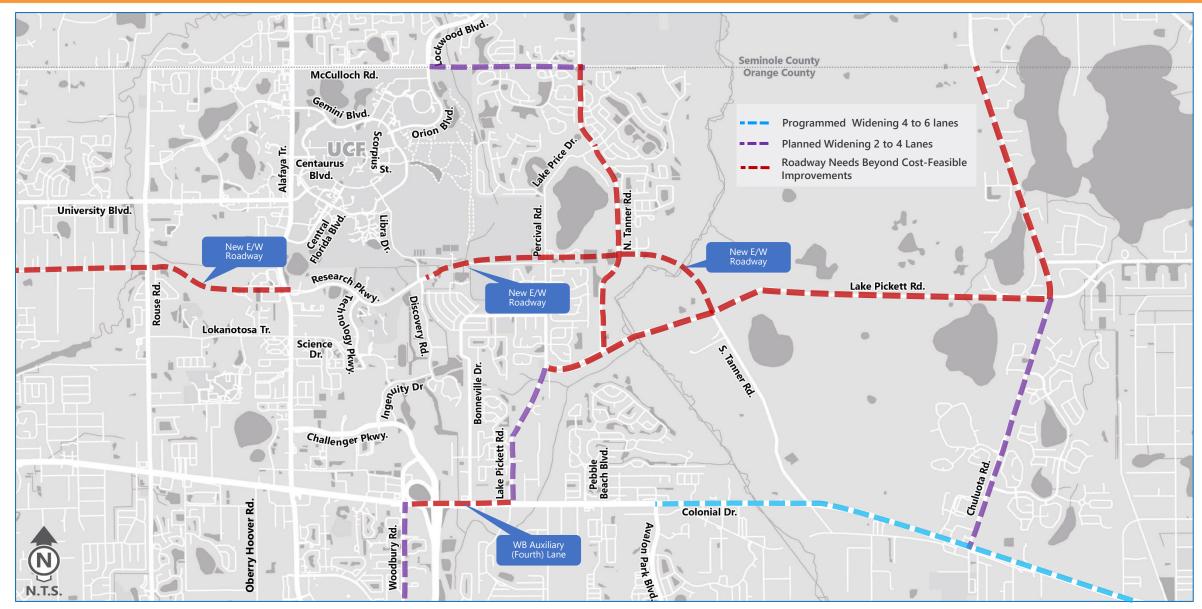






## **Roadway Needs**

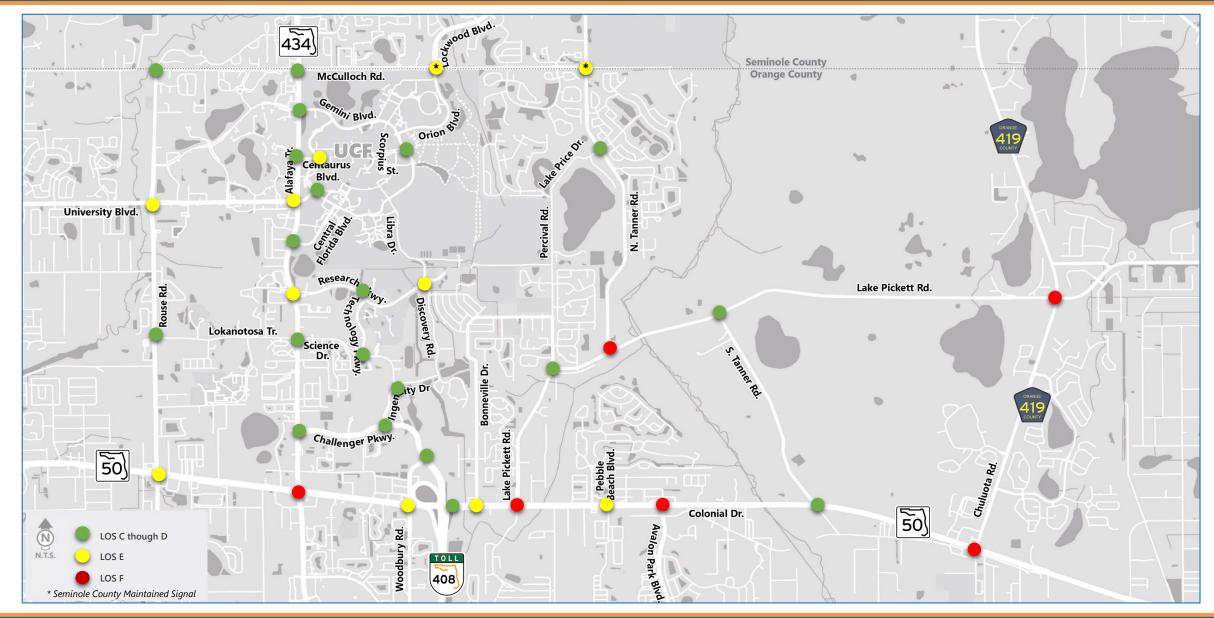






## 2045 Build Traffic Conditions – Intersections (With Planned/Programmed Improvements)







### Traditional/Innovative Intersection Improvements

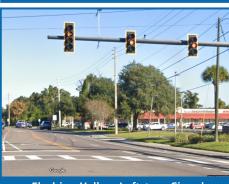


### **Anticipated Safety Benefits**

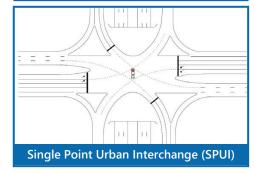
- Permissive to protected left turns
  - **6%** reduction in all crashes
- Exclusive right turn lane
  - 11% reduction in all crash types
- Additional left turn lane
  - **4%** reduction in all crash types
- Roundabout
  - **90%** fewer fatalities/75% fewer injuries
  - 10-40% fewer pedestrian/bicycle crashes
- Traffic signal
  - 23% fewer crashes versus a stop-controlled intersection
- RCUT
  - 20% fewer crashes versus to a traditional intersection
- DLT
  - 12% fewer crashes compared to a stopcontrolled intersection



**Example Turn Lanes at an Intersection** 

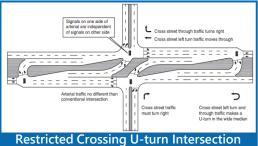


Flashing Yellow Left-turn Signal





Median U-turn Intersection (MUT)

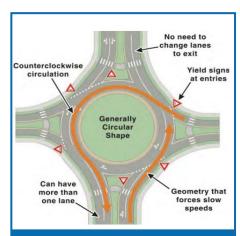


(RCUT)

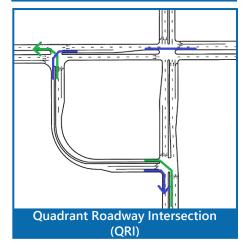


Displaced Left-turn Intersection (DLT)

Source: FHWA



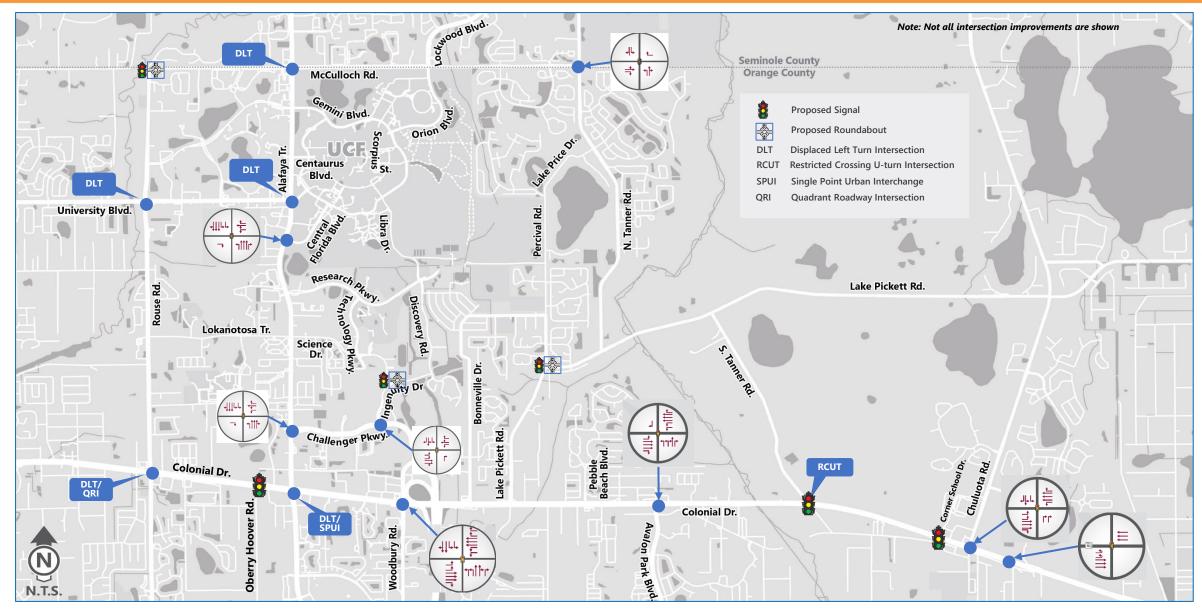
Roundabout





## **Innovative Intersection Improvements**







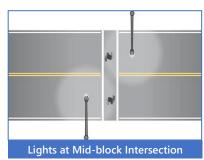
### Safety/Multimodal/ADA Improvements



### **Anticipated Safety Benefits**

- Retroreflective back plates to signal heads
  - 15% reduction in all crashes
- Hardened centerlines/pedestrian refuge
  - **32%** reduction in all pedestrian/vehicle crashes
- High-friction surface treatment
  - 58% reduction in wet weather crashes
- High emphasis crosswalks
  - 40% reduction in pedestrian-related crashes
- Lighting improvements
  - 38-42% reduction pedestrian/vehicle crashes
- Advance traffic signs
  - **20%** reduction in rear-end & sideswipe crashes
- HAWK/Pedestrian Hybrid Beacon
  - **57%** reduction in pedestrian/vehicle crashes
- Detectable warning surfaces on curb ramps
- Tighten corner radii
  - Improves pedestrian/bicycle safety







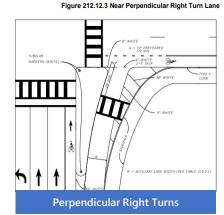




**Advance Traffic Control Signs** 

ППАЙТИЛП







Hardened Centerlines/Pedestrian Refuge





## Agenda



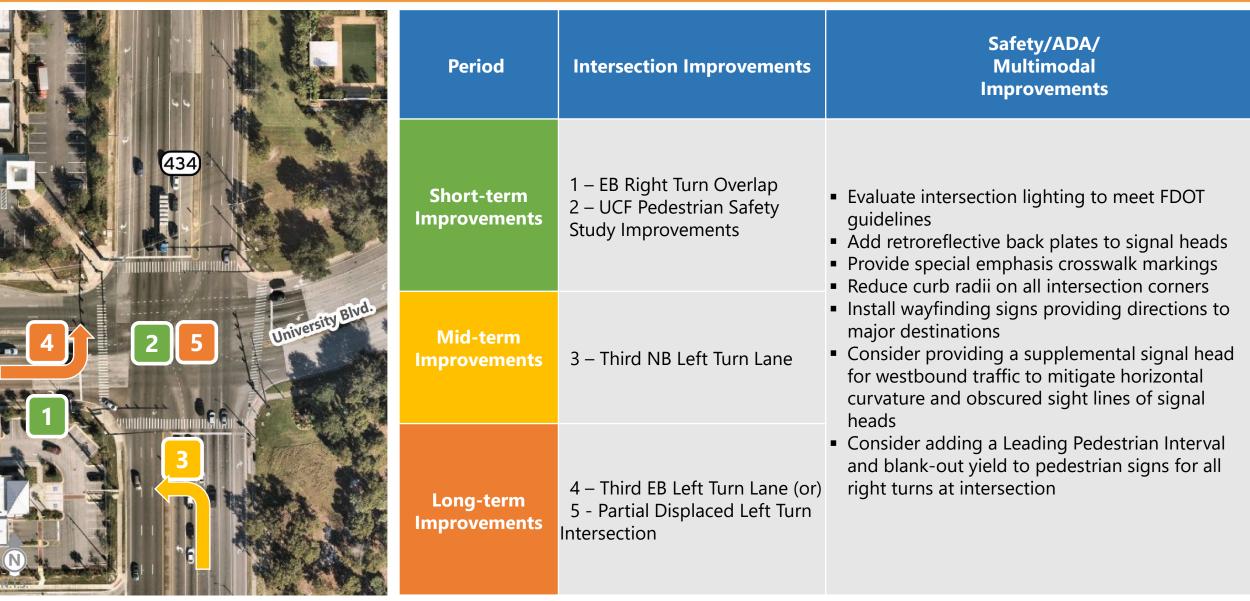


# **Example Intersection Improvements**



### Alafaya Tr & University Blvd Intersection Improvements

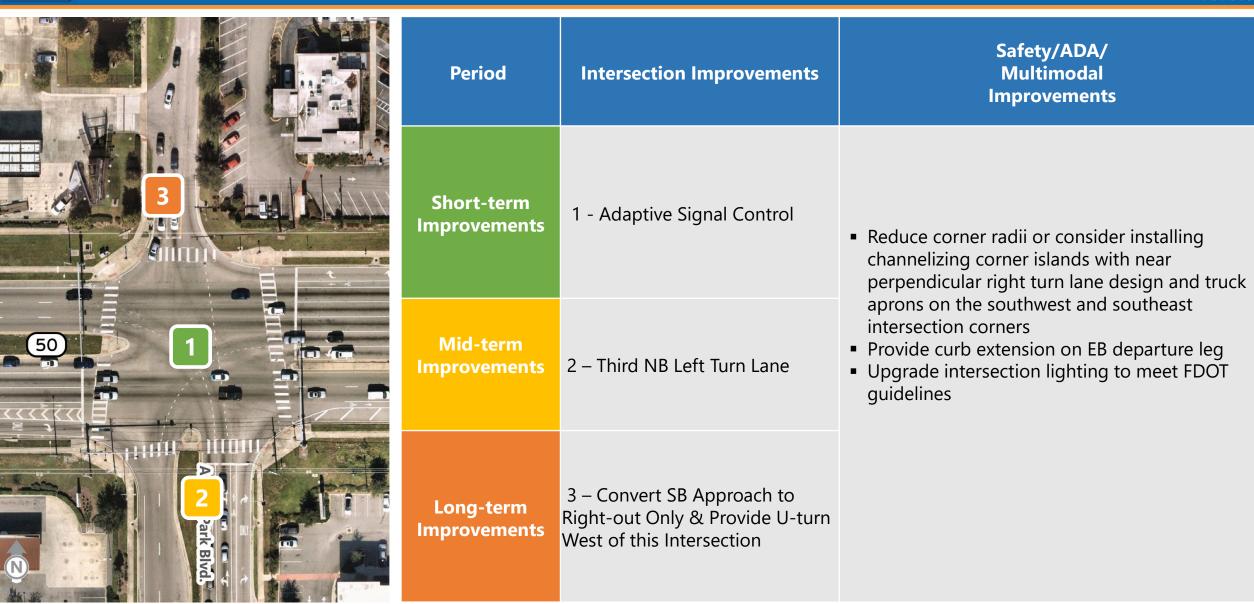






### SR 50 & Avalon Park Blvd Intersection Improvements



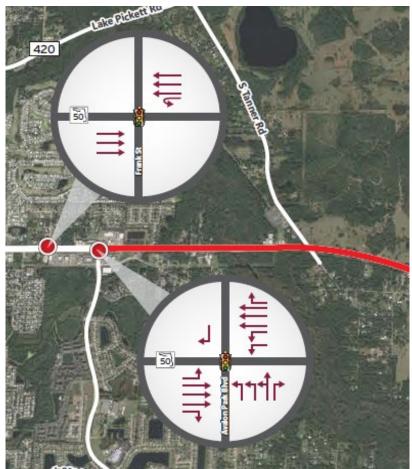




## SR 50 & Avalon Park Blvd Intersection Improvements



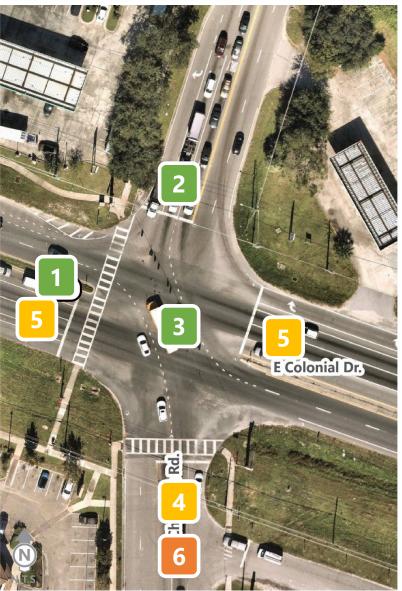






## SR 50 & Chuluota Rd Intersection Improvements





P	Period	Intersection Improvements	Safety/ADA/ Multimodal Improvements						
	ort-term ovements	1 - Second EB Left Turn Lane 2 - Change SB Approach to 2 SB Lefts, 1 SB Through and 1 SB Right 3- Adaptive Signal Control	<ul> <li>Evaluate intersection lighting to meet FDOT guidelines</li> <li>Provide lane-line extensions to guide travel along the curved alignments through the intersection on both the SR 50 and Chuluota</li> </ul>						
i	id-term ovements	4 – Change NB Approach to 2 NB Lefts and 1 SB Through-Right Turn Lane 5 – Six Lanes on SR 50	<ul> <li>Rd approaches</li> <li>Revise strain pole configuration to improve signal head placement and visibility</li> <li>Reduce corner radii on the northwest and southeast intersection corners or provide corner islands with near-perpendicular right</li> </ul>						
_	ng-term ovements	6 – Convert NB Approach to Right-out Only & Provide U-turn East of this Intersection	<ul> <li>turn lane design</li> <li>Add retroreflective back plates to signal heads</li> <li>Consider crosswalks on the north and east legs and fill the sidewalk gap to the Gas Station driveway</li> </ul>						



## SR 50 & Chuluota Rd Intersection Improvements









## Agenda







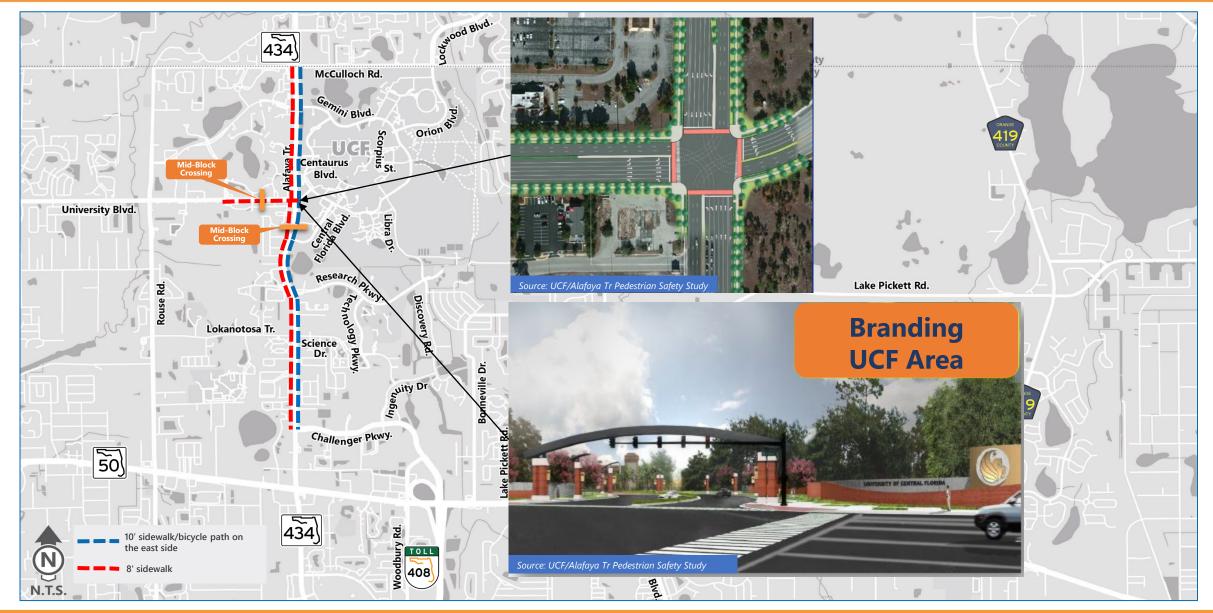


## Multimodal Improvements



## Pedestrian/Bicycle Facilities – Programmed Improvements

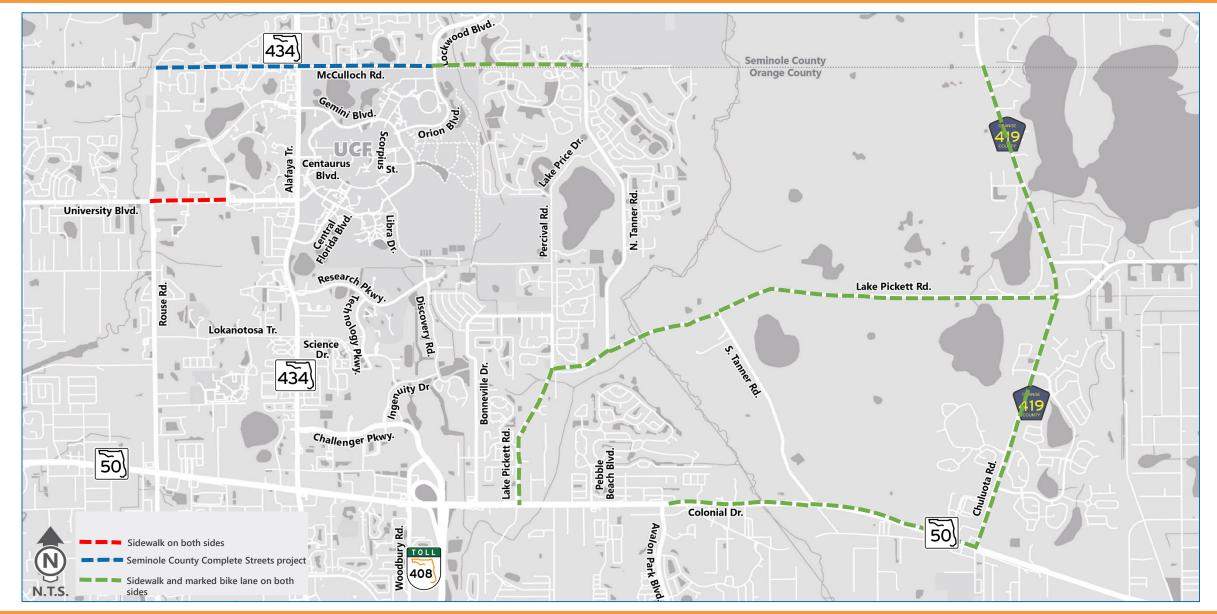






## Pedestrian/Bicycle Facilities – Planned Improvements

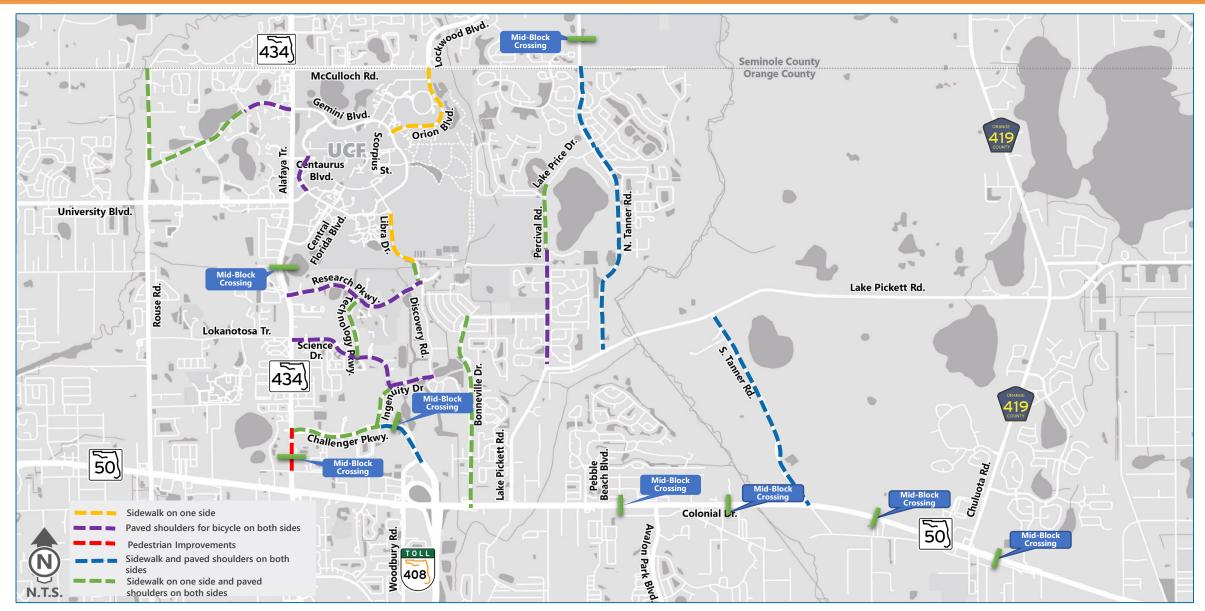






## Pedestrian/Bicycle Needs

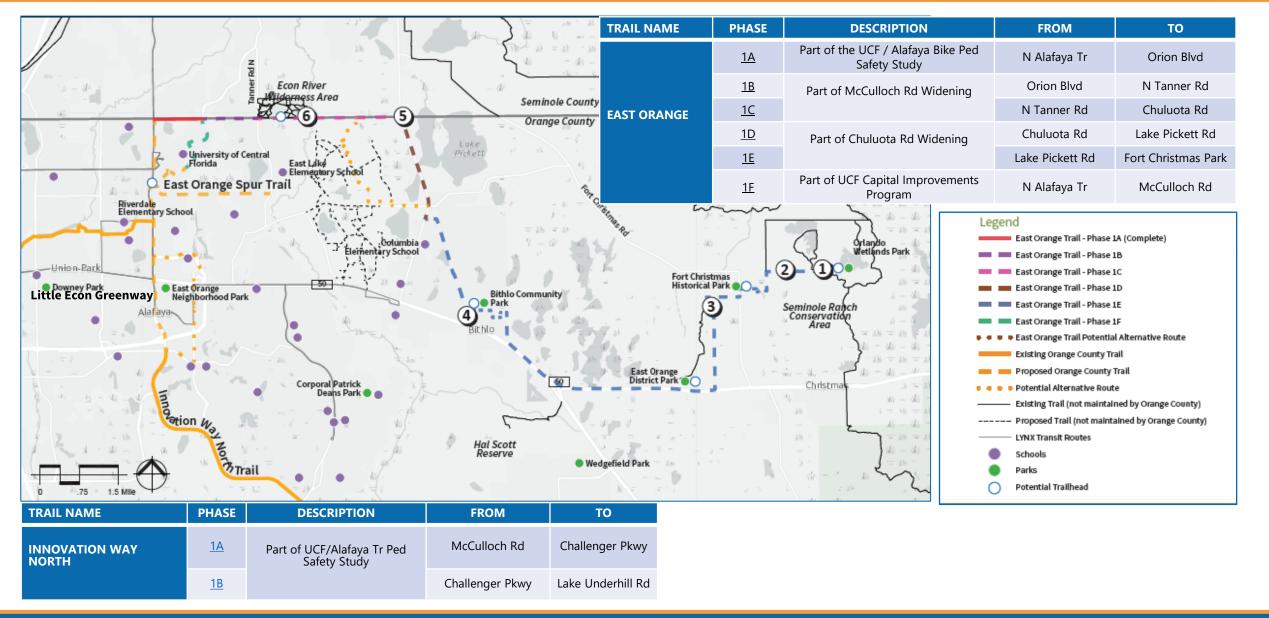






## **Planned Trail Improvements**

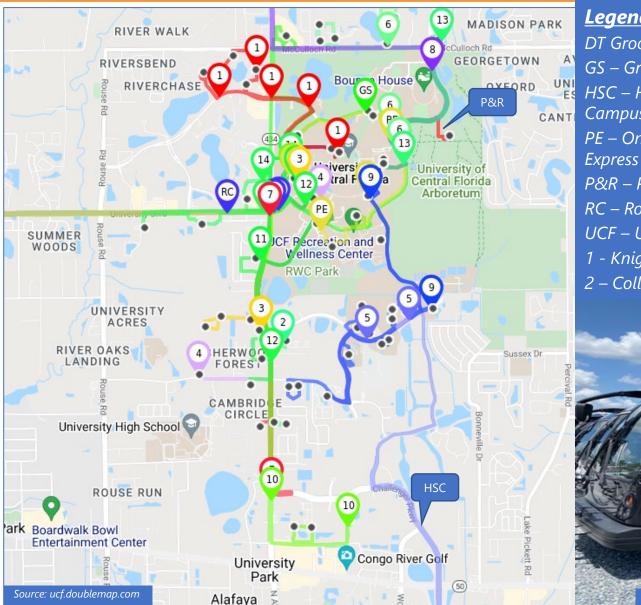






## **Existing Transit - UCF**





#### Legend

DT Grocery Shuttle

GS – Grocery Shuttle

HSC – Health Sciences Campus

PE - On-Campus Pegasus

P&R – Park and Ride Shuttle 7 - The Pointe at Central

RC – Rosen College Shuttle

UCF – UCF Downtown

1 - Knights Circle

2 – College

Station/Boardwalk

3 - The Verge/The Palace at Alafaya

4 - Mercury 3100/Campus Crossings

5 - Village of Science Drive

6 - Northgate Lakes/Tivoli

8 - Riverwind at Alafaya/The Station

9 - Knights Landing/Research Park

10 - The Lofts/Orion on Orpington

11 - The Aves @ Twelve100

12 - Lark Central Florida

13 - NorthView

14 - Plaza on University

15 - Collegiate Village Inn /

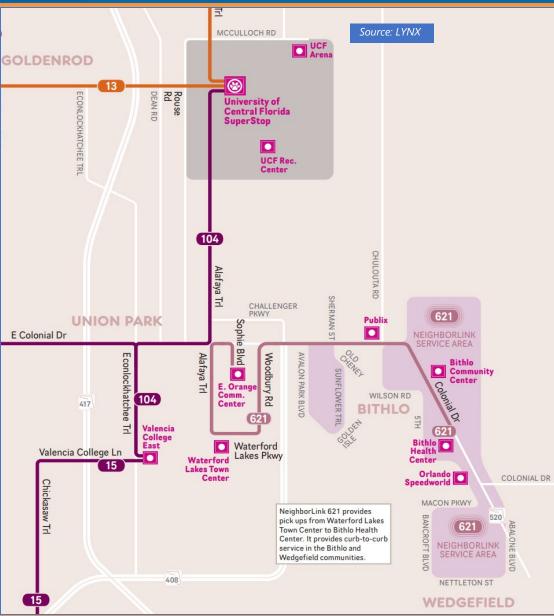
Arden Villas





## **Existing Transit - LYNX**





#### **Legend/Information**

Route 104, East Colonial Drive/UCF

- 2019 Ridership 572,801
- Frequency 30 minutes

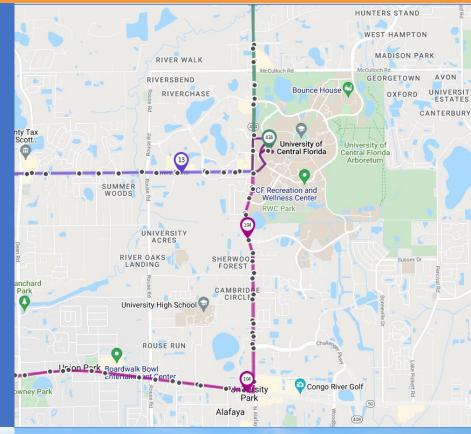
Route 13, University Boulevard/UCF

- 2019 Ridership 233,629
- Frequency 60 minutes

Route 434, SR 434

- 2019 Ridership 139,055
- Frequency 60 minutes

NeighborLink 621, on-demand circulator







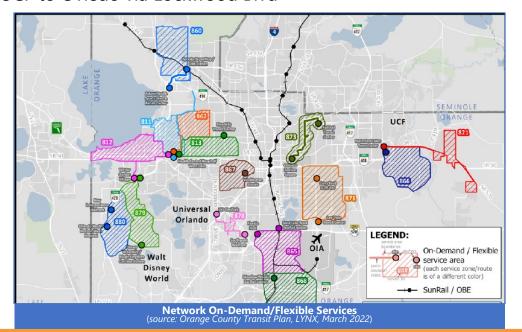


## **Planned Transit Improvements - LYNX**



#### **Orange County Transit Plan – Enhanced Service**

- Enhanced service in existing zones (Curb to Curb)
- 11 New Enhanced On-Demand/Flexible Routes/Zones
  - Bithlo NeighborLink
  - Waterford Lakes/Avalon Park Neighbor Link
- Four Express Routes
  - Increased frequencies/Connections to Rail Station & transfer centers
- BRT Corridor between Ocoee and UCF
  - 20-30 minute frequency
- UCF to Oviedo via Lockwood Blvd



Route Number	Route Name	Frequency (Weekday)						
Planned Routes (Future Condition)								
104	SR 50 UCF-Downtown	20-30 min						
204	SR 50 Limited Stop	20 min						
308	UCF-Downtown Regional Express	30 min						
311B	UCF-Medical City/Lake Nona - Meadowoods Regional Express	30 min						
401A	Waterford Lakes Commuter Express	30 min						
401B	Waterford Lakes Commuter Express (Pattern of 401A)	30 min						
506	Lake Underhill-UCF	30 min						
522	UCF-SR 436/Aloma	30 min						
600B	Red Bug Lake/Alafaya	60 min						
601	Oviedo/Lockwood	60 min						
821	Bithlo NeighborLink (On-Demand/Flex-Route Hybrid)	Flexible (30 min)						
866	Waterford Lakes/Avalon Park (On-Demand/Flex Zone)	Flexible (30 min)						

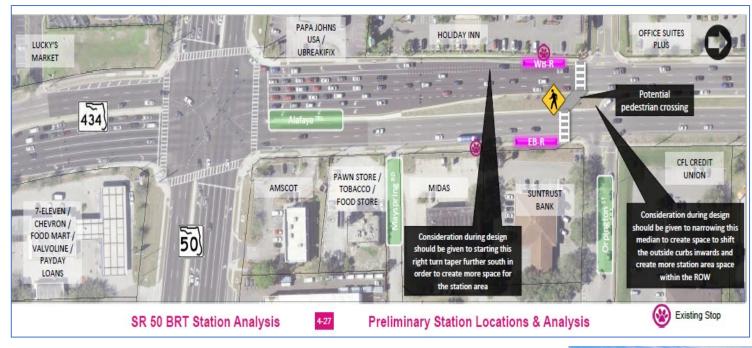
Source: Orange County Transit Plan, LYNX, March 2022



## SR 50 Bus Rapid Transit [BRT] Corridor



- Recommended as part of 2013 SR 50/UCF Connector Alternatives Analysis
- Bus Stations in NEOCATS Area
  - Alafaya Tr and Lokanotosa Tr
  - Alafaya Tr and SR 50
- Transit Signal Priority (TSP) recommended for the entire BRT











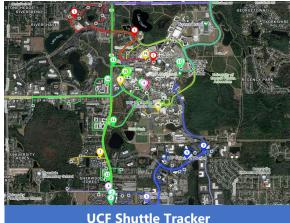
## Travel Demand Management (TDM) Strategies



- New NeighborLinks (Expansion Area/On-Demand)
- Transportation Management Organization (TMO)
- Transit Marketing, Real-Time Information, and Wayfinding
- Special Transit Benefits Zone
- Active Transportation Commuter Stations
- Dedicated Traffic Safety Instructor
- Mobility Hub (UCF SuperStop) and Facility Enhancement
- Express Bus Service and New Park & Ride Lots (TSP/Queue Jumps)

# Anticipated Vehicle Trip Reduction 5-15% for NEOCATS













National Evidence on TDM Program Impacts Vehicle Trip Reduction from Background Conditions									
IDM Program or Strategy	High Transit	Moderate Transit	Low Transit						
Support, Promotion, Information	3-5%	1-3%	<1%						
Alternative Commute Services	5-10%	5-10%	1-3%						
Financial Incentives	10-20%	5-15%	1-5%						
Combined Strategies									
With Free Parking	15-20%	10-15%	3-7%						
With Paid Parking	25-30%	15-20%	N/A						

Source: Cambridge Systematics, 2010 (Fairfax County, VA), FHWA



## Agenda





# ITS Improvements/Emerging Technologies



## ITS Improvements/Emerging Technologies



	Period ITS Project D		Description					
		<ul> <li>SR 50 Adaptive Signal System (Forsyth Rd to Avalon Park Blvd)</li> </ul>	Install an adaptive signal system					
	er.	<ul> <li>Intelligent Transportation</li> <li>Systems/Customer Information</li> <li>Systems/Travel Planning</li> </ul>	<ul> <li>Test upcoming transit technologies and real time transit dissemination applications</li> </ul>					
	Short-term	<ul> <li>Data Sharing Application</li> </ul>	<ul> <li>Access real-time information from other agencies (dashboard with performance measures, and tools to measure performance and communicate information)</li> </ul>					
		<ul> <li>Active Arterial Management (AAM)</li> </ul>	<ul> <li>AAM is a collection of strategies for managed corridors and an integrated regional system.</li> <li>Strategies include traveler information, signal timing, and more.</li> </ul>					
		<ul> <li>Connected Vehicle Pilot Project</li> </ul>	Test connected vehicle strategies					
		<ul> <li>UCF - Bicycle and Pedestrian Innovative ITS Solution</li> </ul>	<ul> <li>Install bicycle and pedestrian ITS technologies</li> </ul>					
	Mid-term	<ul><li>CAV Technology Ready Corridors</li></ul>	<ul> <li>Vehicle-to-vehicle (V2V) &amp; Vehicle-to-Infrastructure (V2I), Road-side Units &amp; Communications Infrastructure</li> <li>Congestion alerts, collision avoidance, weather alerts, blind spot alerts, pedestrians nearby etc.</li> <li>Can be combined with adaptive traffic control system</li> </ul>					
	2	<ul> <li>Install speed/volume sensors, Bluetooth devices, and Arterial DMS (ADMS)</li> </ul>	<ul> <li>Disseminate real-time traffic information, detour routing for incidents, construction &amp; event information</li> <li>Measure near real-time/historic travel time &amp; origin-destination information for performance reporting and optimization</li> </ul>					

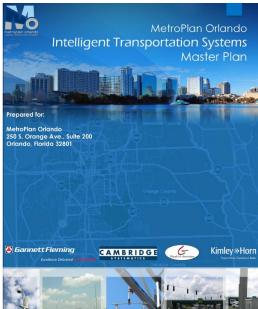














## ITS Improvements/ATTAIN Central Florida

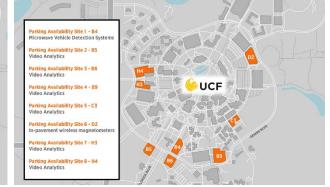


- Deploy smart technologies in Central Florida Four distinct programs
- Funded by FHWA grant and local matching funds
- PedSafe hardware installations complete
  - Innovative ped/bike collision avoidance system that will operate with CV technologies
  - Pilot deployment at/between signals on Alafaya Tr adjacent to UCF
- Greenway CV Technologies installed at 33 signals (Orange County)
  - Cellular vehicle-to-everything (C-V2X) roadside units (RSU),
  - Emergency vehicle preemption (EVP),
  - Transit signal priority (TSP)
  - Passive pedestrian detection (PPD) technology
  - Initially will be used by UCF transit /first responder vehicles
- Smart Community
  - District's 1st autonomous vehicle (AV) shuttles (2) within UCF
  - Surface Parking Management
- SunStore FDOT's Data Storage & Research Sharing **Initiative**







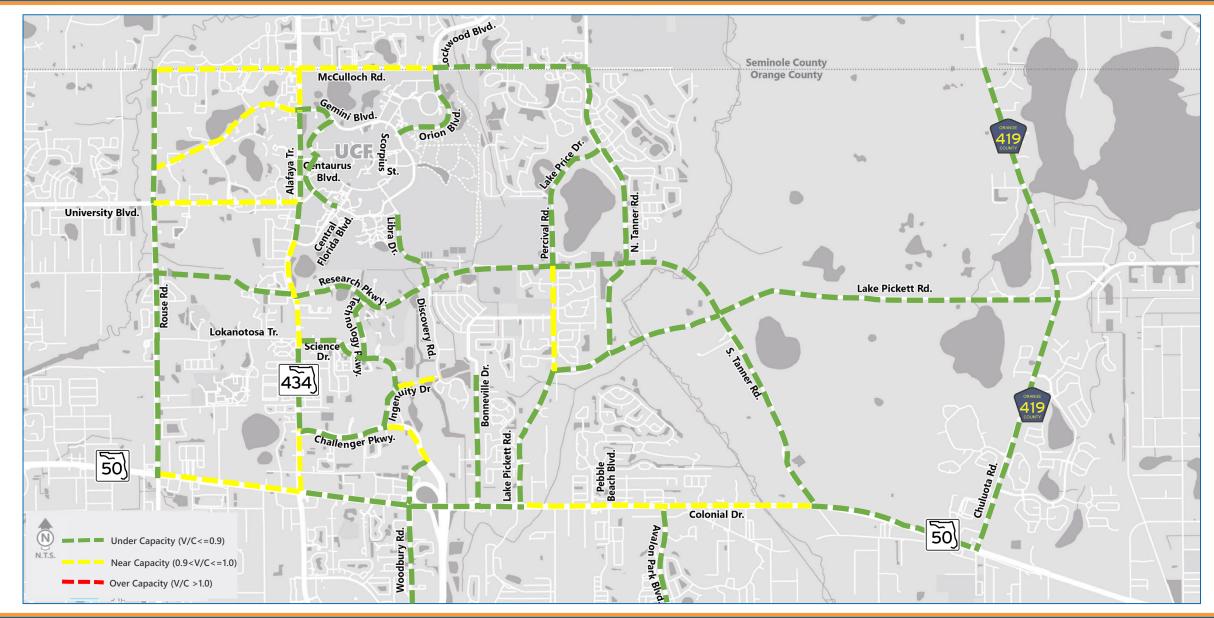


Source: https://cflsmartroads.com/projects/ATTAIN-CFL.html



# 2045 Build Traffic Conditions – Segments (With Improvements based on Roadway Needs)

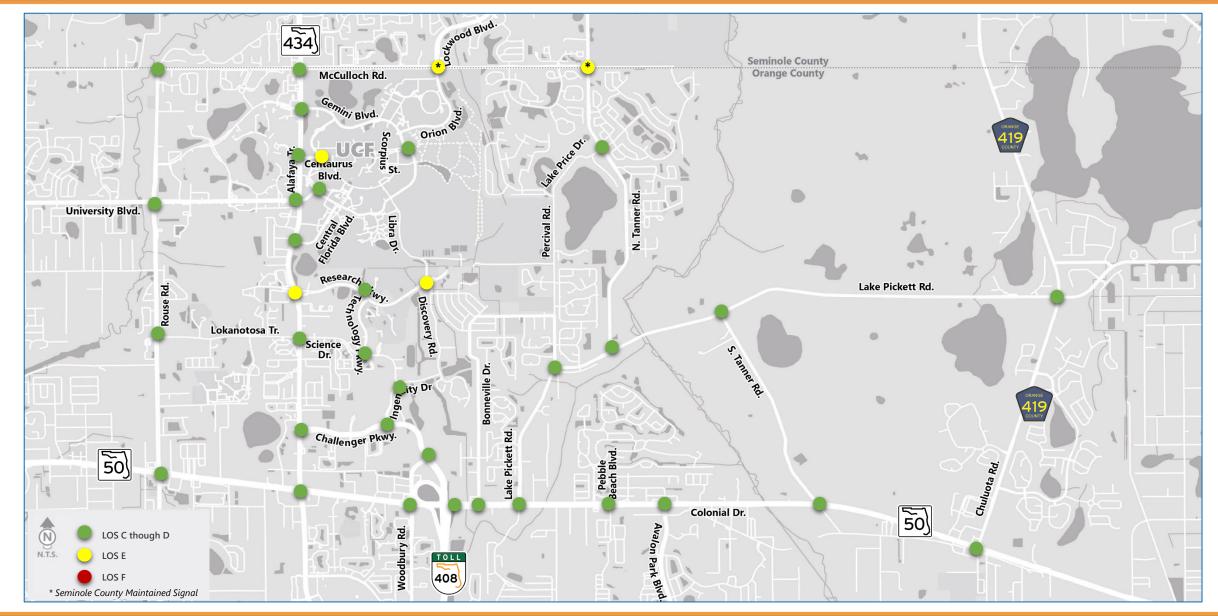






# 2045 Build Traffic Conditions – Intersections (With Improvements based on Roadway & Intersection Needs)







## Agenda





## Study Timeline/ Next Steps



## **NEOCATS Study Timeline/ Next Steps**



Charles Cale a shallo	2021 2022													
Study Schedule	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Project Kick-off	*													
Community Meetings							İ							
Local Planning Agency (LPA) / Board of County Commissioners (BCC) Workshops & Public Hearings												(To E	Be Deci	ded)
Traffic Data Collection & Analysis														
Transportation Modeling														
Evaluation of Scenarios & Needs Plan														
Environmental Conditions														
Final Report & Project Wrap-up														
		★ Pro	oject Kicl	c-off	†Comr	munityM	<b>1</b> eeting		LPA/BC	CHearin	g 📤	<b>∆</b> Proje	ct Milesto	ones



## **NEOCATS Study – Contact Information**





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## NEOCATS – Website/Feedback



<u>w\</u>	ww.neocatstudy.com	
	ORANGE COUNTY GOVERNMENT F. L. O. R. I. D. A.	oject Schedule Submit Feedback
	Submit Feedback  Your opinion is important to us. Share your thoughts with us on social media. You may also contact the Orange County Transportation Planning Division at 407-836-8023 or at Hatem.Abou-Senna@ocfl.net  Check back for updates on upcoming Public Involvement Activities	Interested in receiving project updates?  Sign up here to be included on our mailing lists.  Name (required)  Agency  Email (required)  SUBSCRIBE
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We want to know what you think!



# North East Orange County Areawide Transportation Study (NEOCATS)



### Feedback and Discussion

