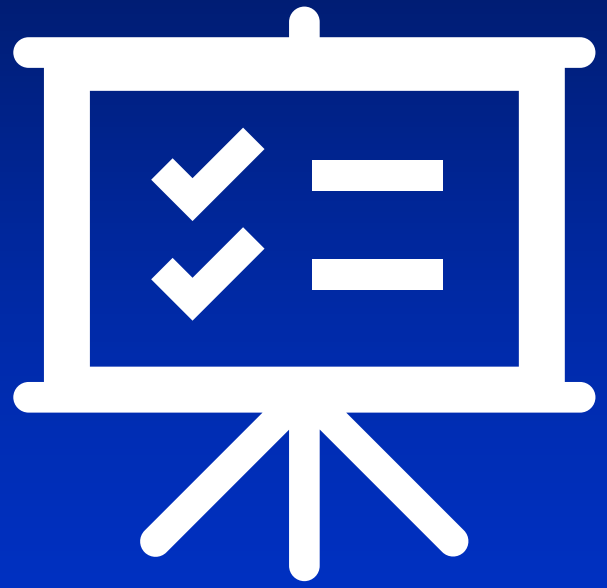
Transportation Planning Division

North East Orange County Areawide Transportation Study (NEOCATS)

October 11, 2022

Presentation Outline

- Background
- Existing Conditions
- Future Conditions
  - No Build Scenario
  - Build Scenario
- Study Recommendations
  - Intersection Improvements
  - Multimodal Improvements
  - ITS /Emerging Technologies Improvements
  - Long Range Transportation Plan Amendments (Needs Plan)
- Summary and Next Steps
- Action Requested



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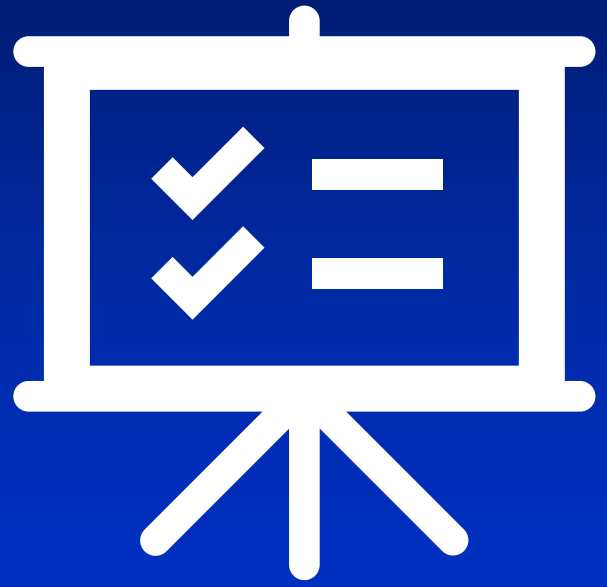
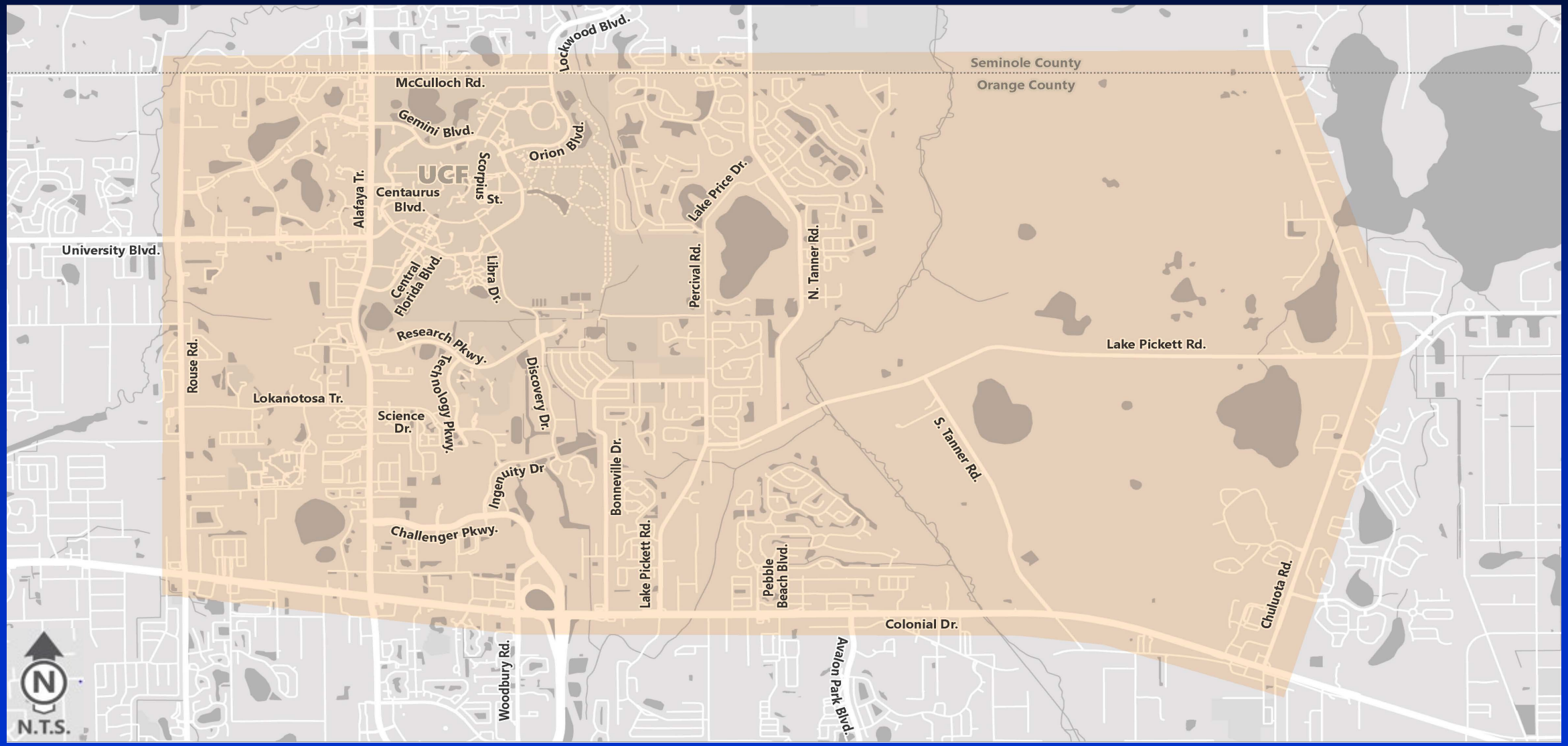


Background

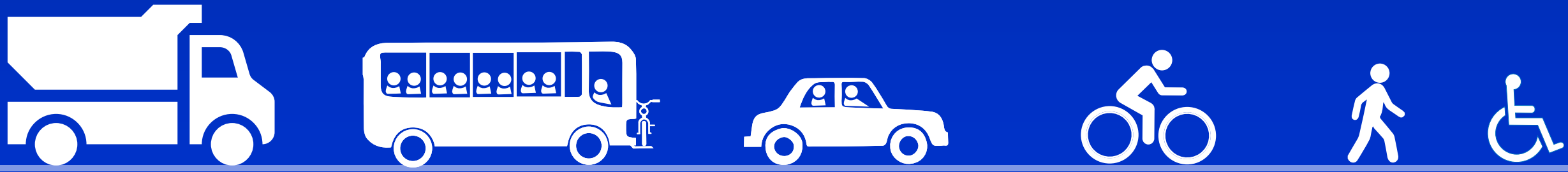

Seminole County
Orange County
Lockwood Blvd.
McCulloch Rd.
Gemini Blvd.
Orion Blvd.
UCF
Centaurus Blvd.
Scorpius St.
Alafaya Tr.
Lake Price Dr.
University Blvd.
Central Florida Blvd.
Libra Dr.
Percival Rd.
N. Tanner Rd.
Research Pkwy.
Lake Pickett Rd.
Rouse Rd.
Technology Pkwy.
Discovery Dr.
Lokanotosa Tr.
Science Dr.
S. Tanner Rd.
Ingenuity Dr
Bonneville Dr.
Challenger Pkwy.
Lake Pickett Rd.
Pebble Beach Blvd.
Chuluota Rd.
Colonial Dr.
Woodbury Rd.
Avalon Park Blvd.
N
N.T.S.

Background

Study Purpose

"Support future growth while preserving community character"

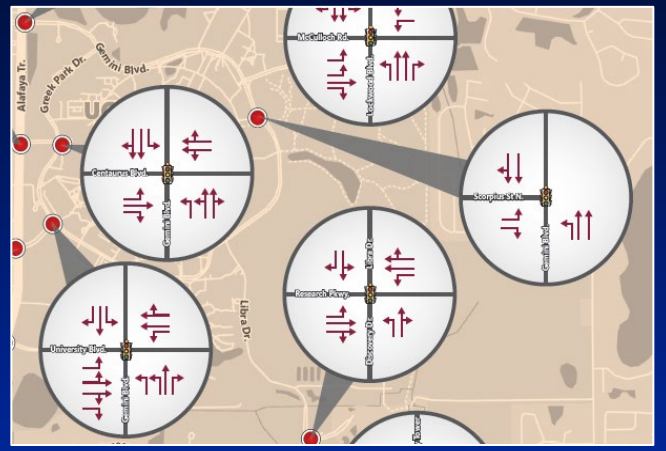
- **Study Objectives**
  - Improve Safety, Mobility & Connectivity for people who drive, walk, bike and use transit
  - Identify and prioritize potential transportation projects
  - Improve network connectivity
  - Provide relief to constrained corridors
  - Short-term (2025), mid-term (2035), and long-term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

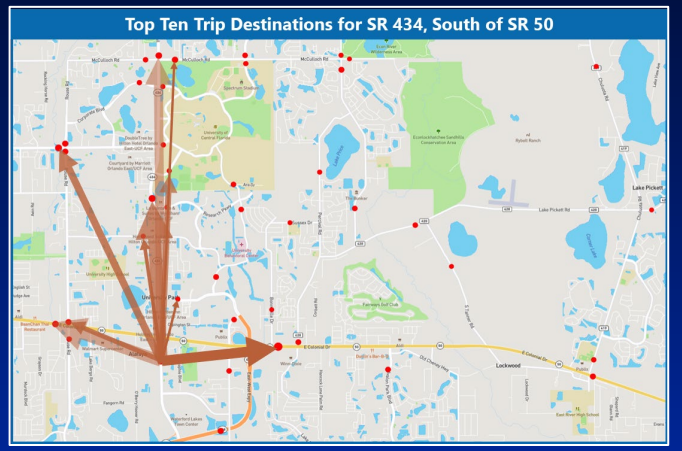


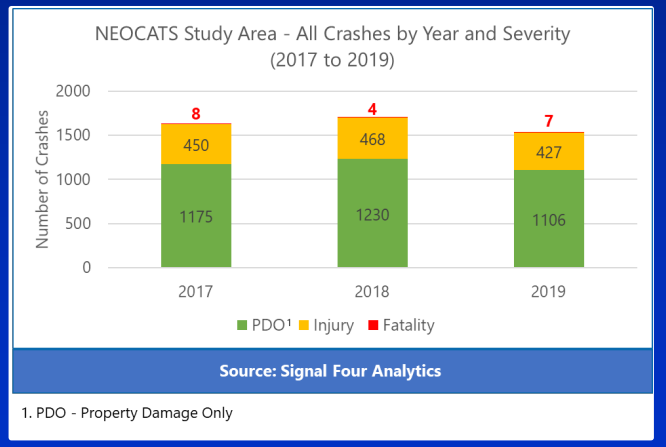
Background

Key Elements

- Roadway data
  - Major developments
  - Pedestrian/bicycle network
  - Transit routes
  - Lighting
  - ITS
- Historical crash data
- Traffic data
  - Traffic volumes
  - Origin-Destination (OD) study
  - Multimodal operational analysis
  - Connected Aut. 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

*Note: *CAV Impacts based on the latest Highway Capacity Manual (HCM) 7th Edition*

Background

Community Meetings #1 & #2

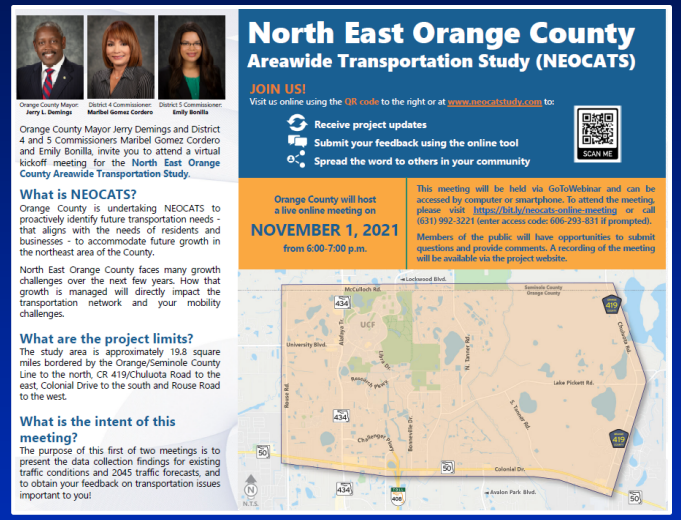
November 1, 2021 (#1) & March 30, 2022 (#2)

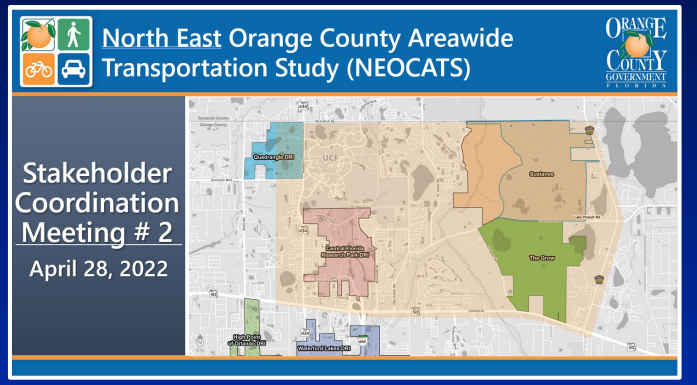
- Mail-outs: 8,656
- Forums: Website, Newspaper Advertisement and GoToMeeting

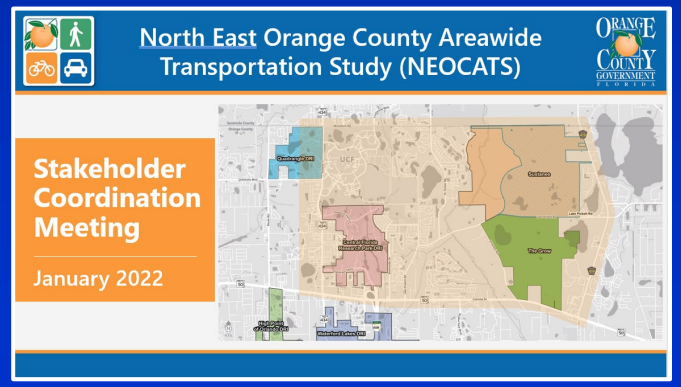
Agency Meetings #1 & #2

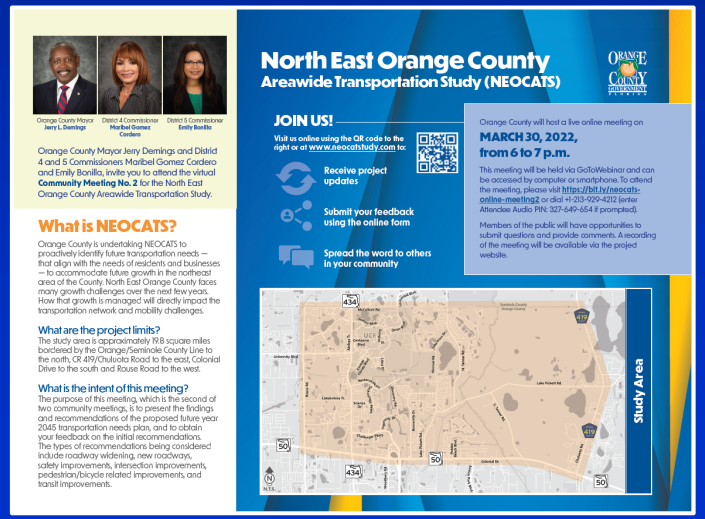
January 21, 2022 (#1) & April 28, 2022 (#2)

- 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)









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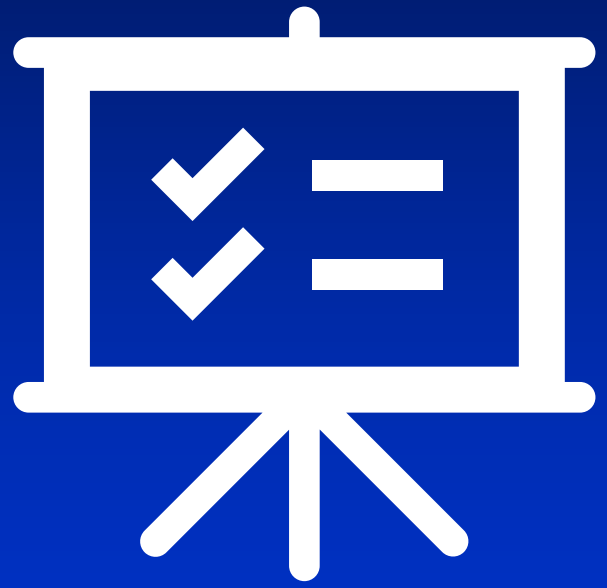
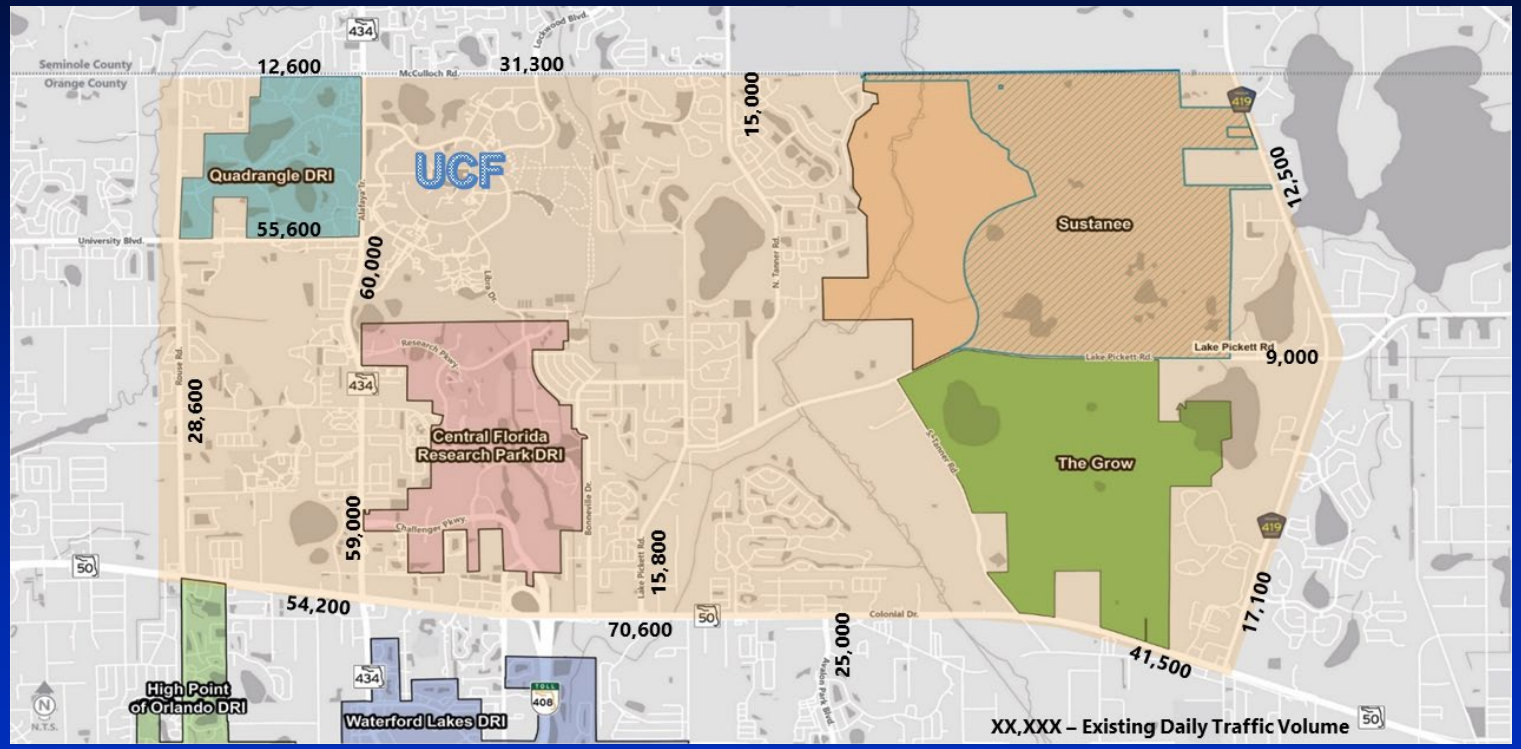


Existing Conditions

Study Area Highlights

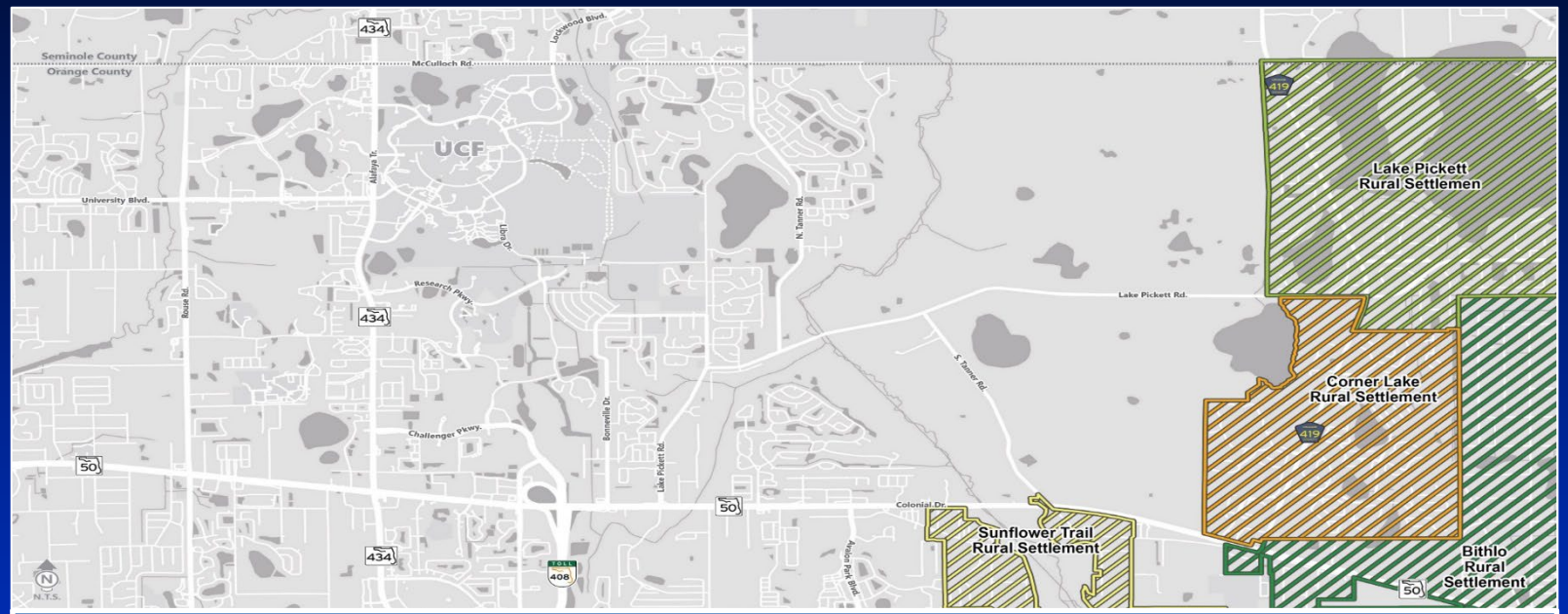
- **Major economic generators**
  - UCF – 2nd largest university
  - Two major business parks
    - Central Florida Research Park
    - Quadrangle
- **Major developments**
  - High Point of Orlando
  - Waterford Lakes
  - Rybolt Park*/Sustanee*
  - The Grow



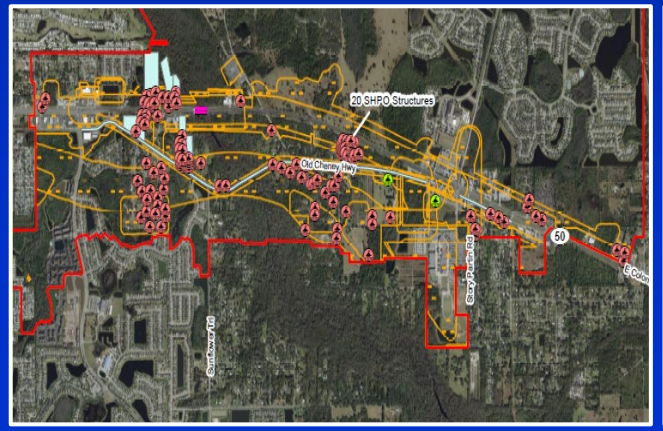
* Both the Rybolt Park DRI application and Sustanee development are withdrawn.

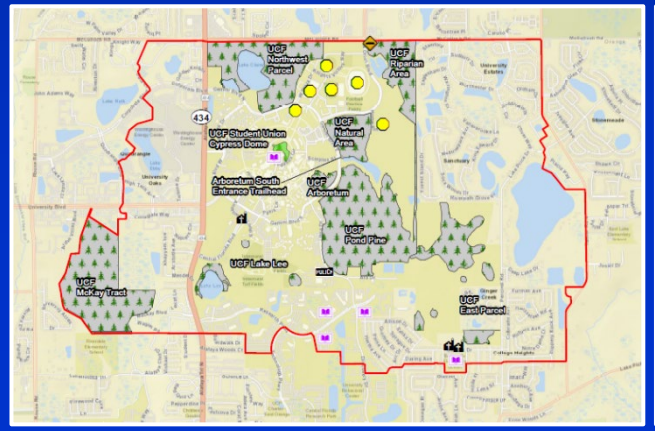
Existing Conditions

- Rural Settlements
  - Sunflower Trail
  - Bithlo
  - Lake Pickett, and
  - Corner Lake
- Environmental Analysis
  - Cultural
  - Social
  - Physical
  - Natural



Rural Settlements

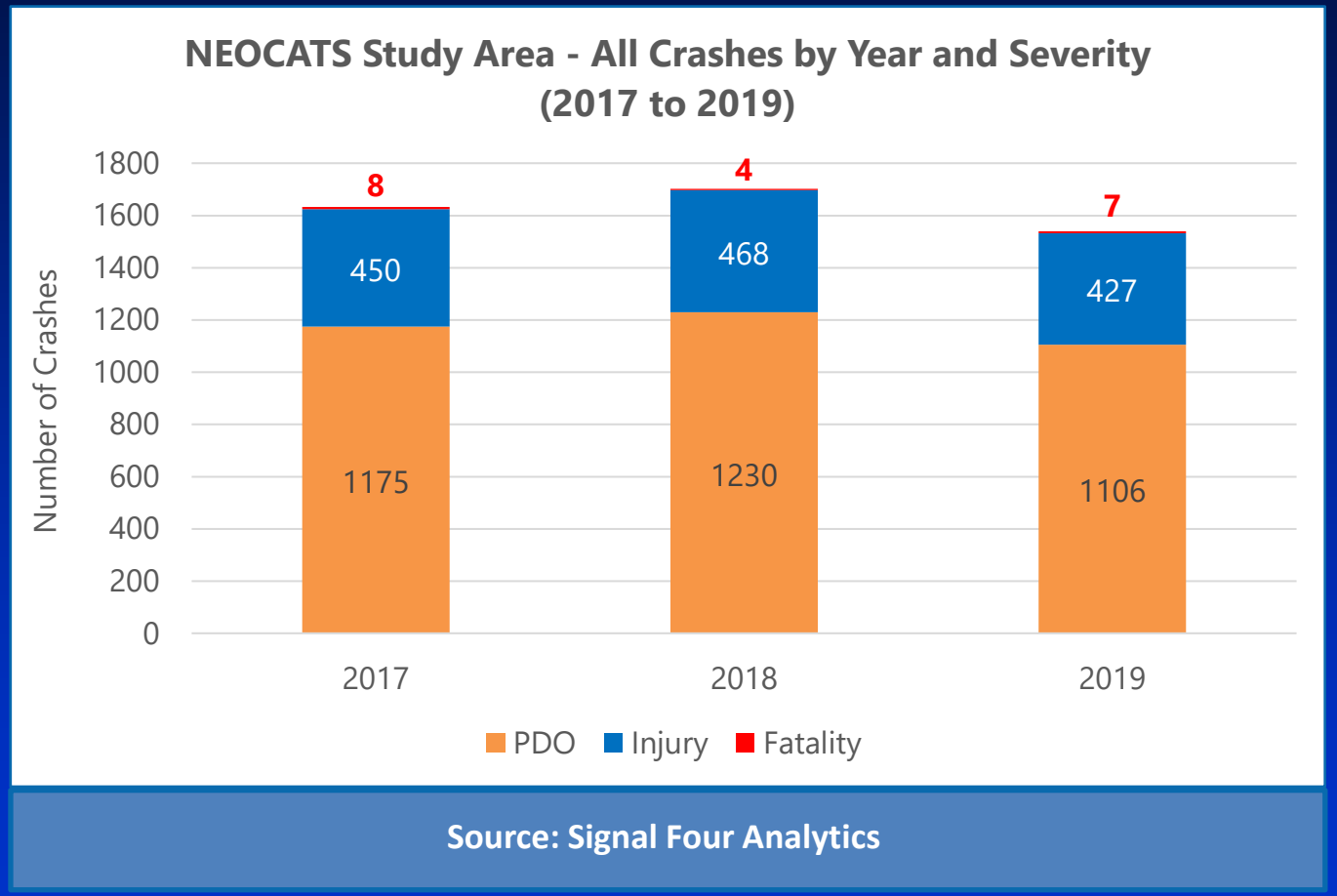




Existing Conditions

Historical Crash Analysis (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)



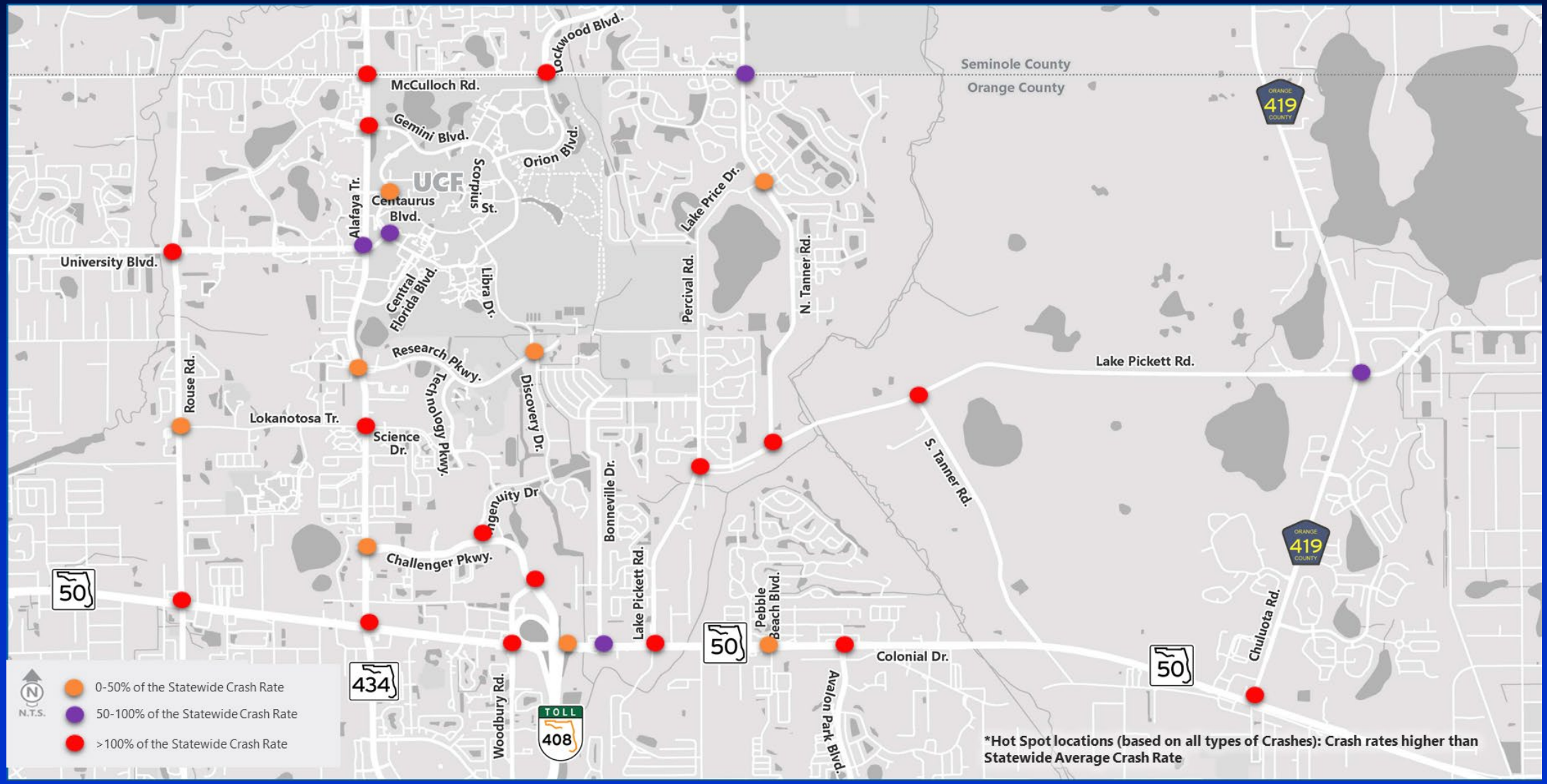
Source: Signal Four Analytics

1. PDO - Property Damage Only

Existing Conditions

Historical Crash Analysis (2017-2019)

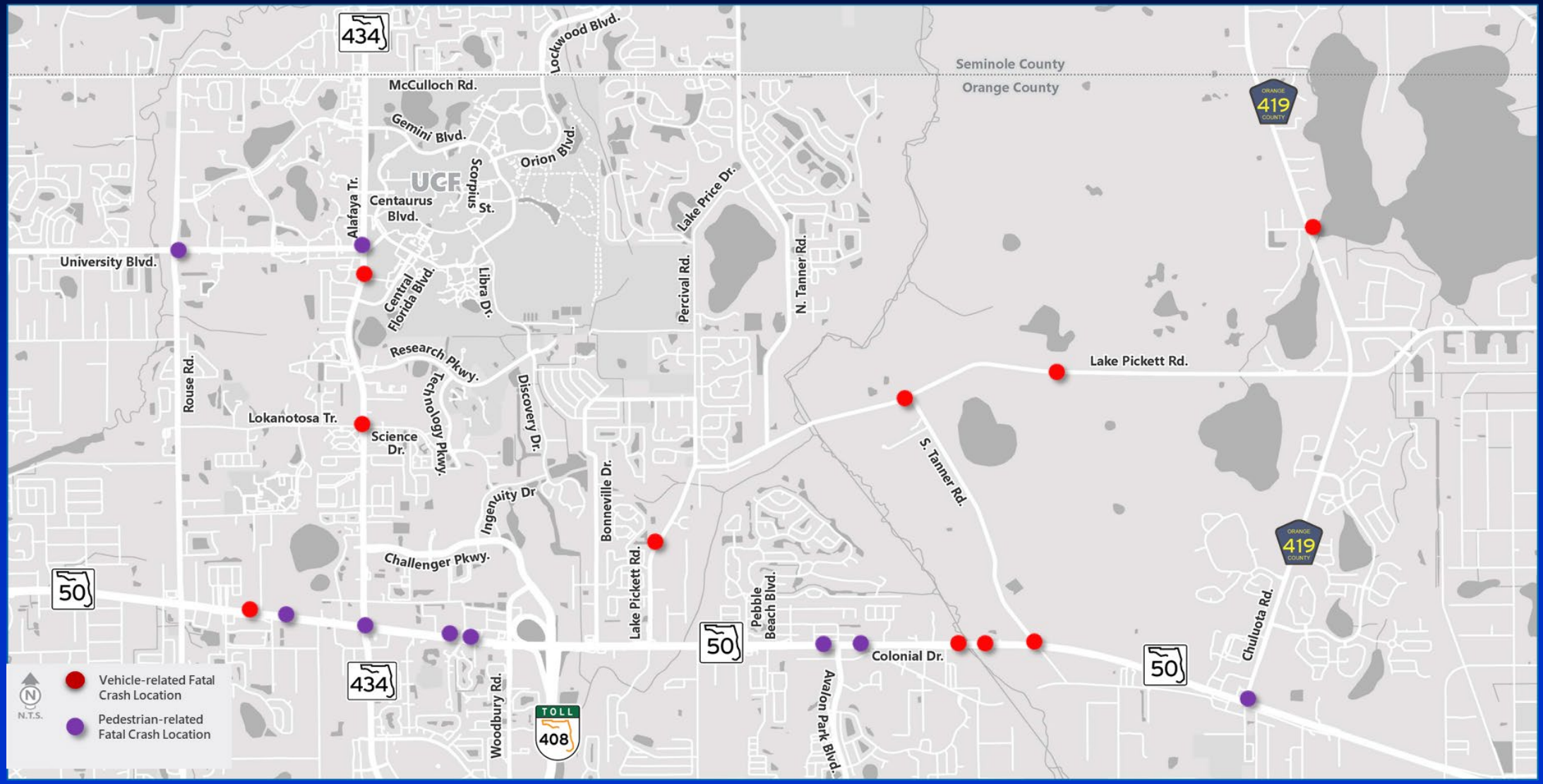
Hot Spot Locations



Existing Conditions

Historical Crash Analysis (2017-2019)

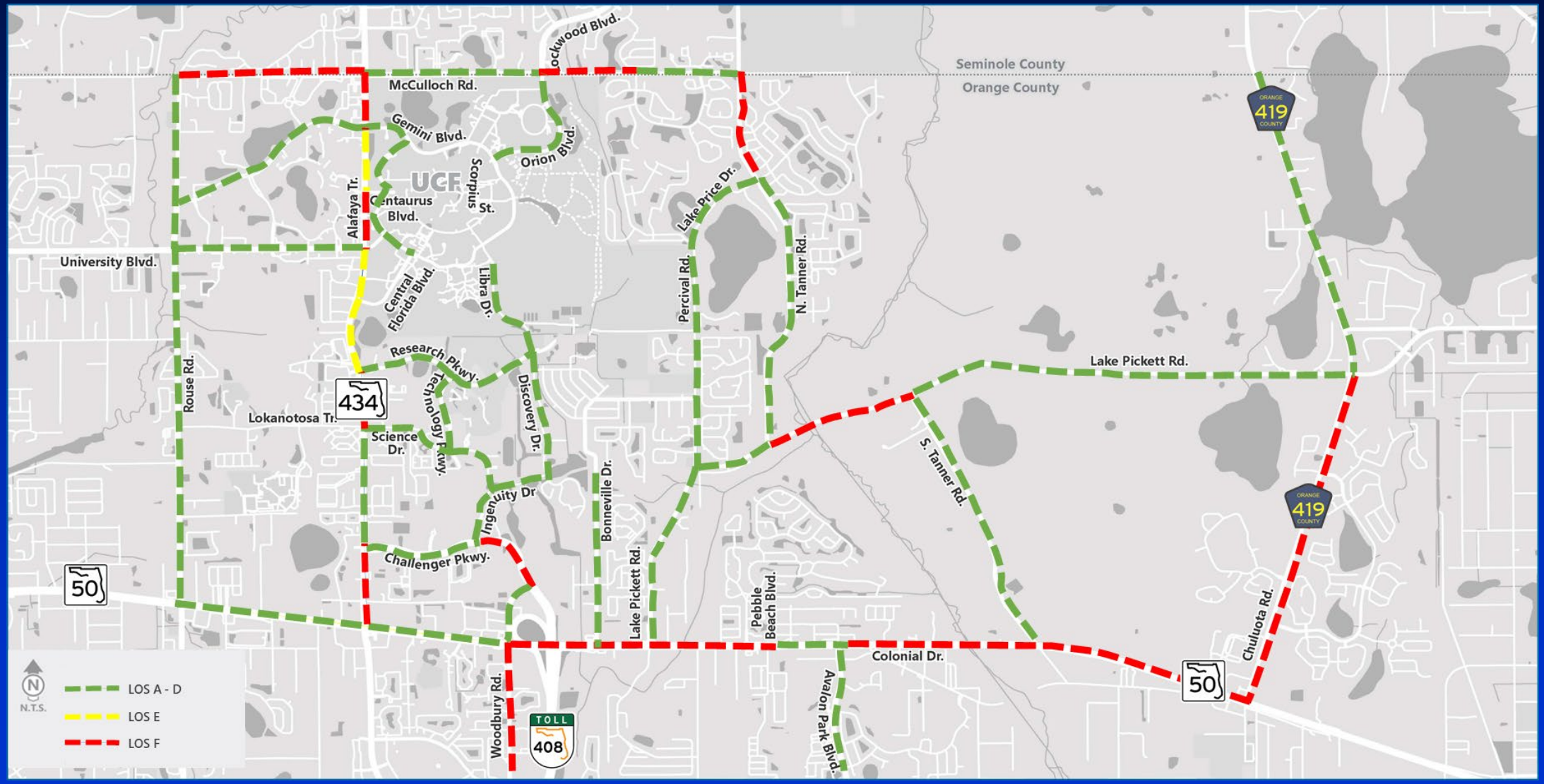
Fatal Crash Locations



Existing Conditions

Level of Service

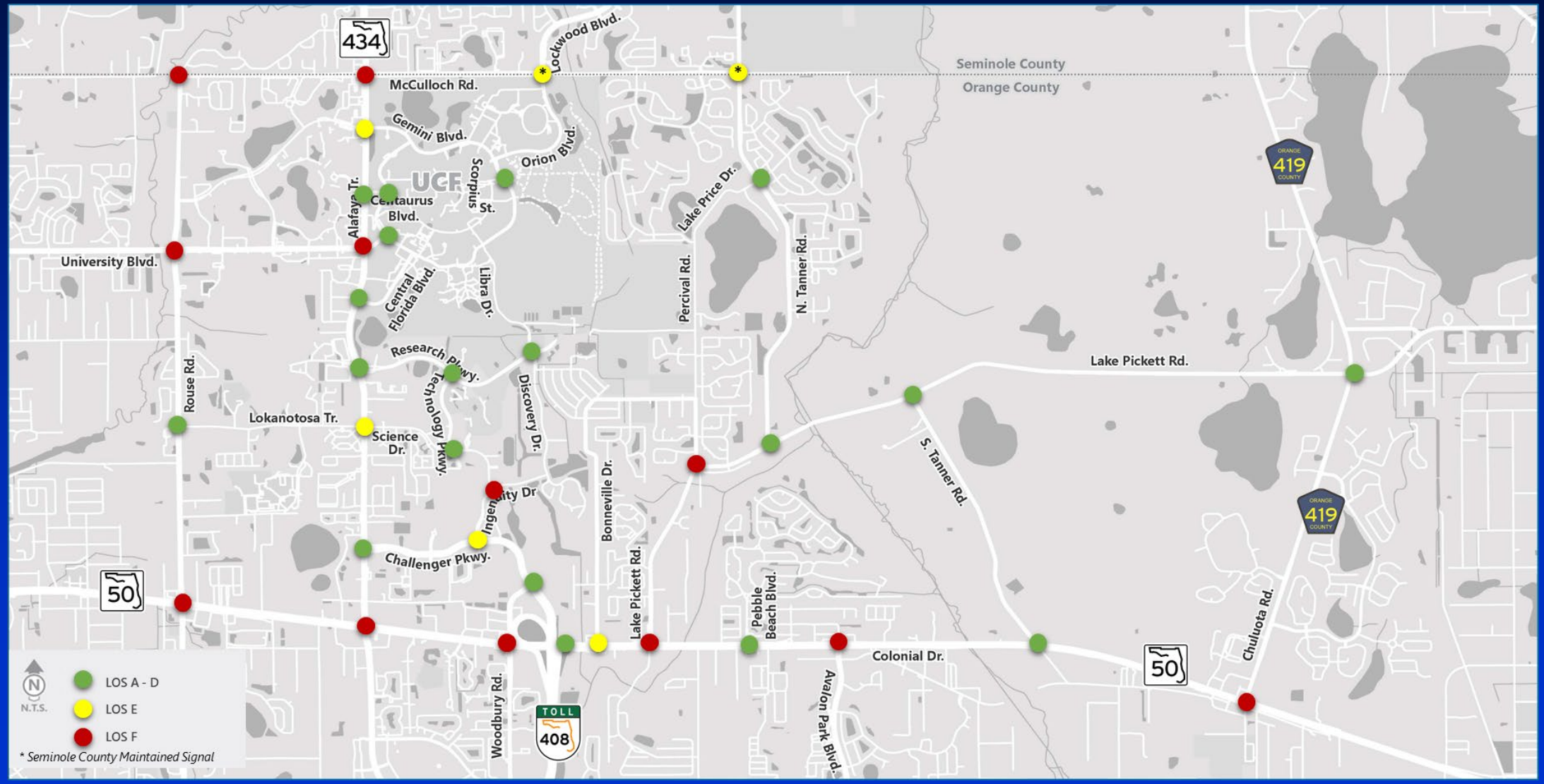
Roadway Segments



Existing Conditions

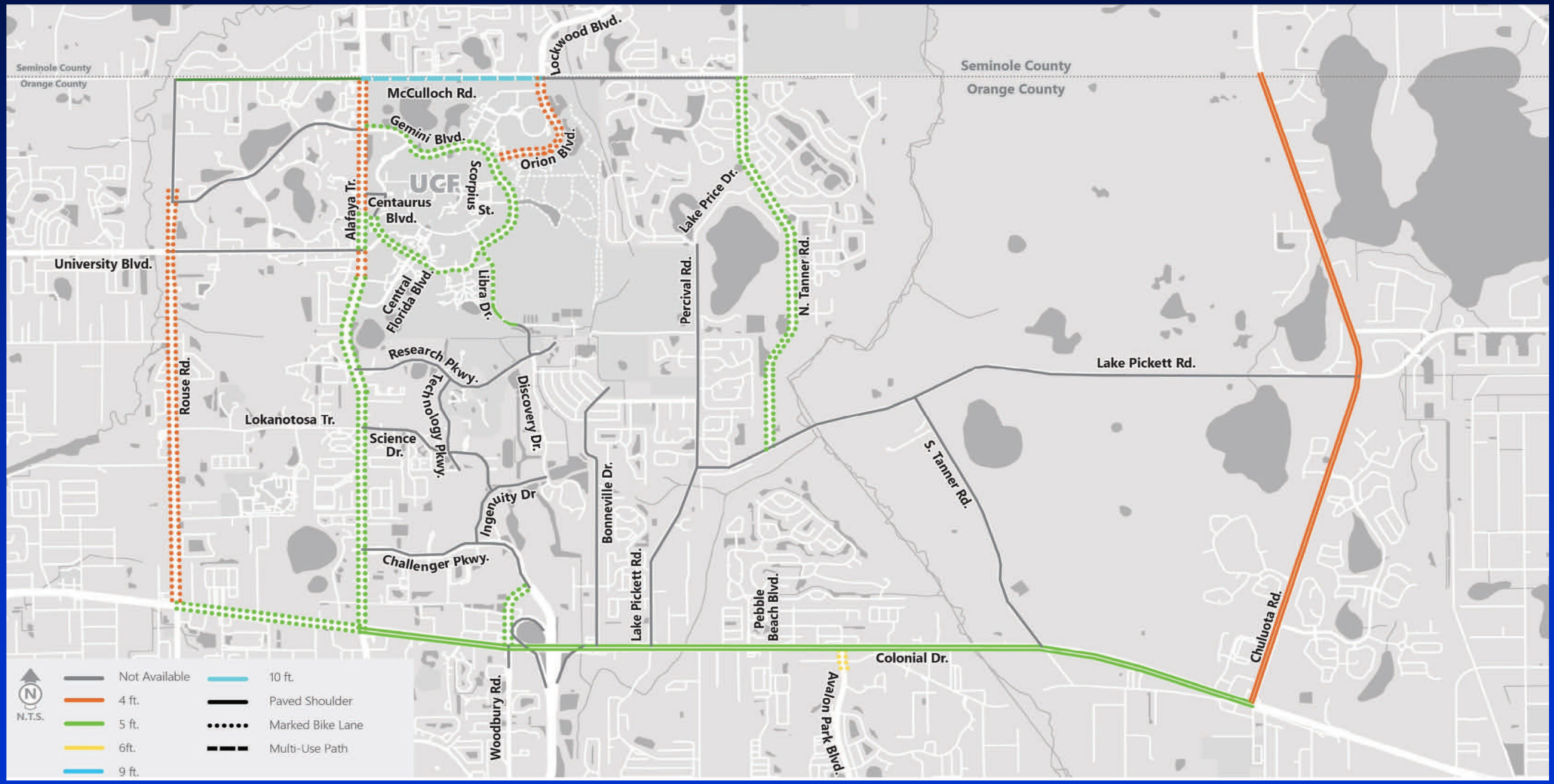
Level of Service

Intersections



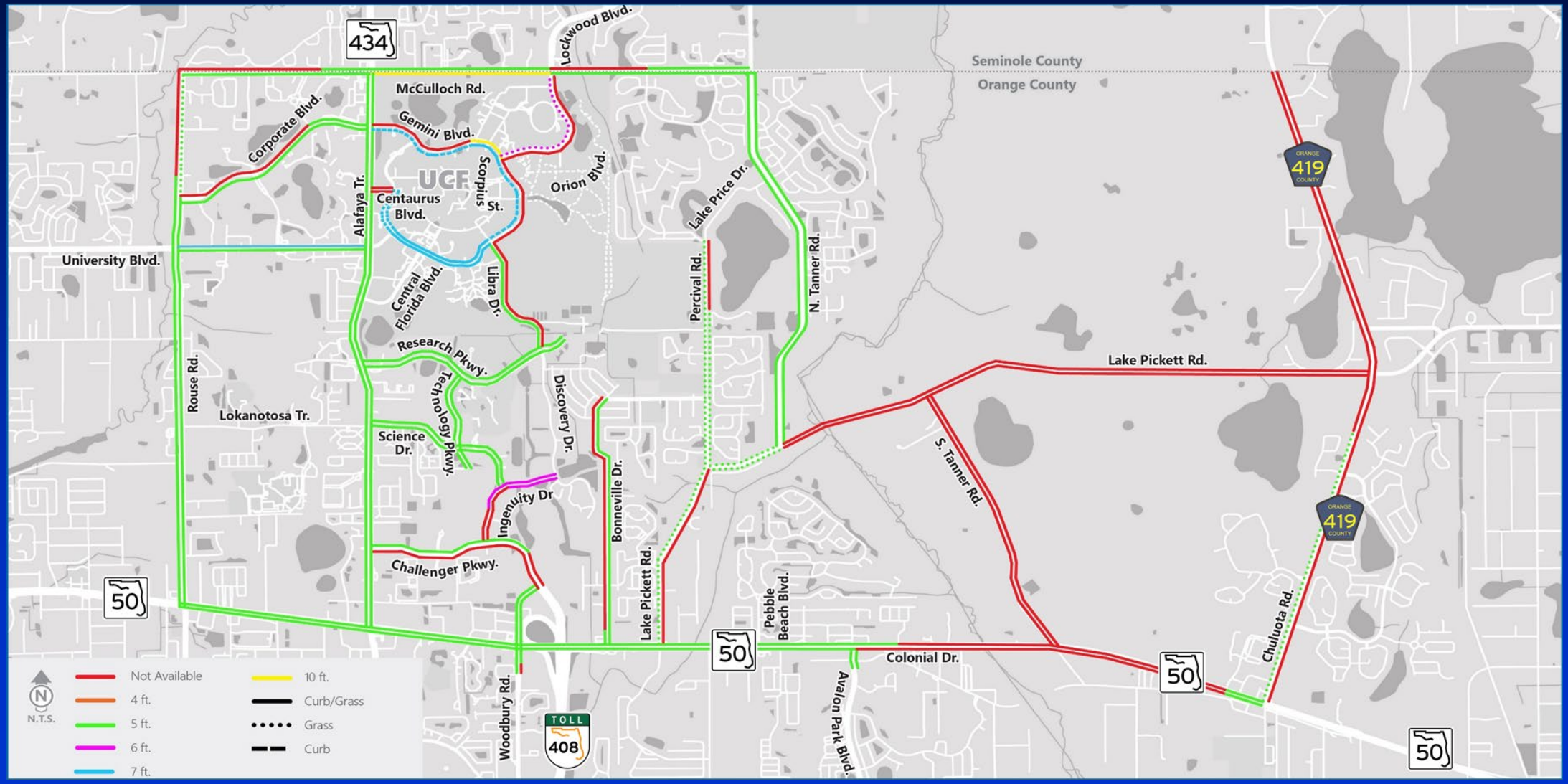
Existing Conditions

Existing Bicycle Facilities



Existing Conditions

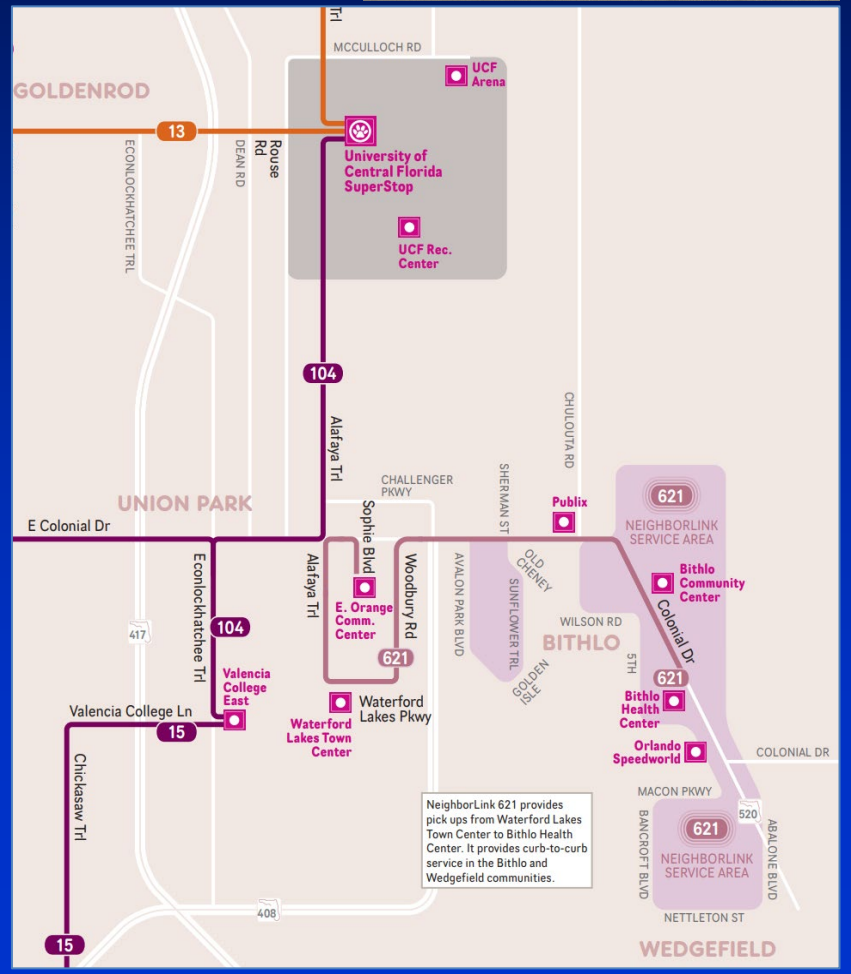
Existing Pedestrian Facilities

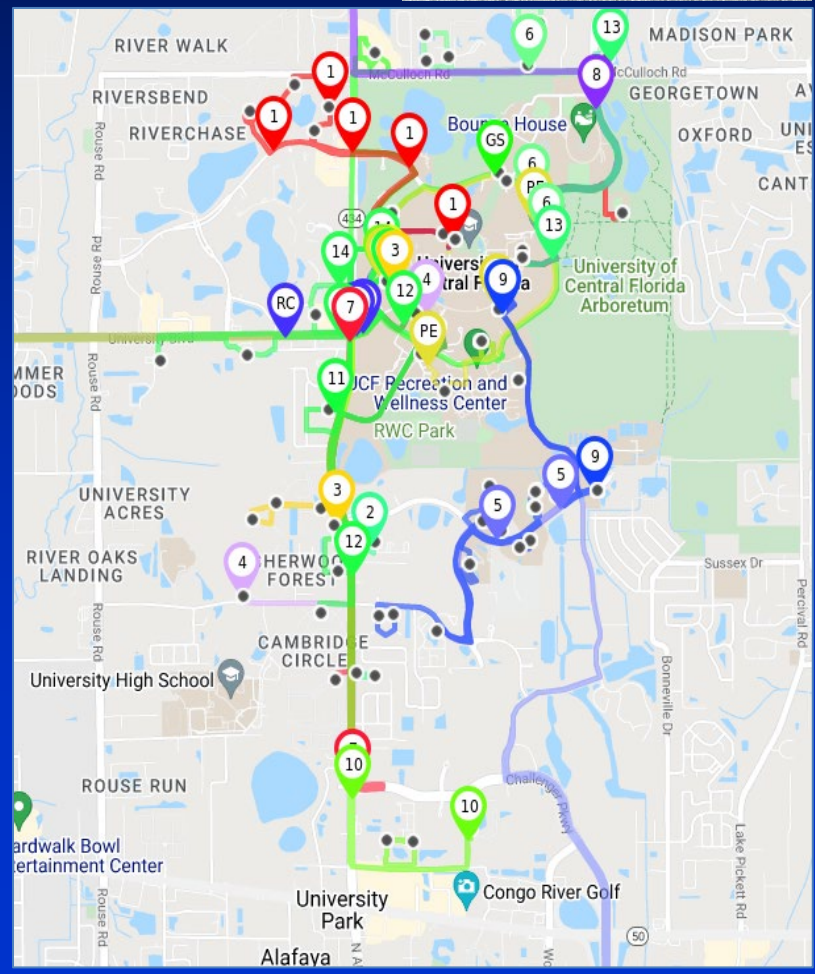


Existing Conditions

LYNX

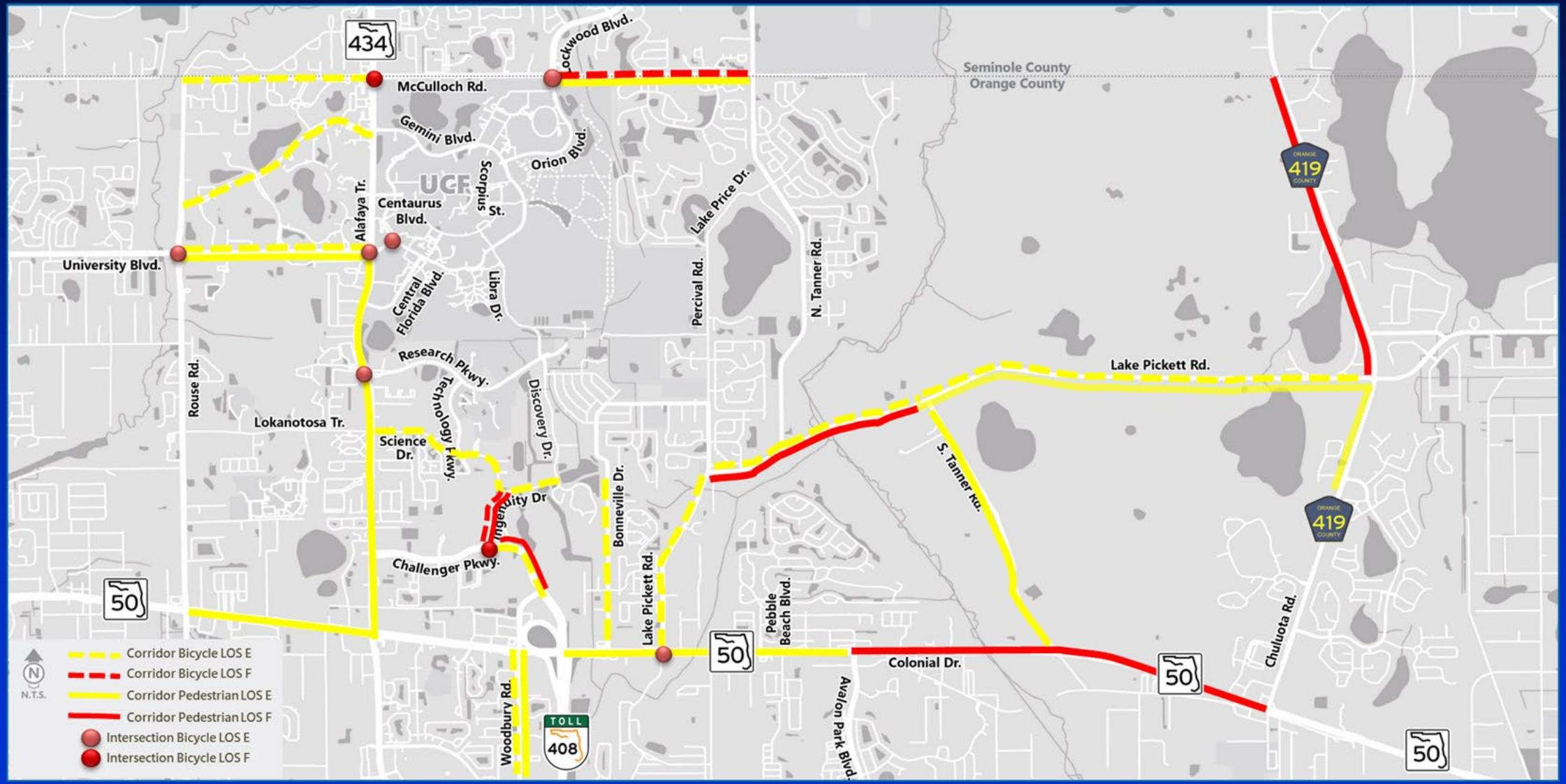
- Route 104, East Colonial Drive/UCF
  - 2019 Ridership – 572,801
  - Frequency – 30 minutes
- Route 13, University Boulevard/UCF
  - 2019 Ridership – 233,629
  - Frequency – 60 minutes
- Route 434, SR 434
  - 2019 Ridership – 139,055
  - Frequency – 60 minutes
- NeighborLink 621,
  - On-Demand Circulator
- UCF Shuttle Service
  - On-Campus (Pegasus Express)
  - Off-Campus
  - Grocery Shuttle
  - Down Town Shuttle





Existing Conditions

Existing Multimodal Analysis



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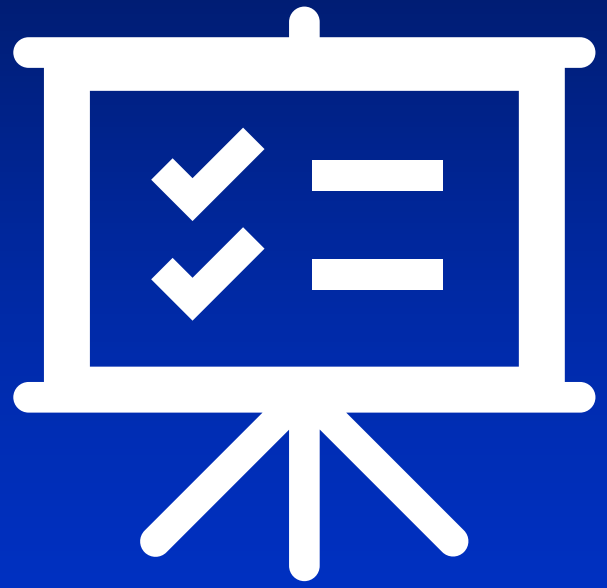
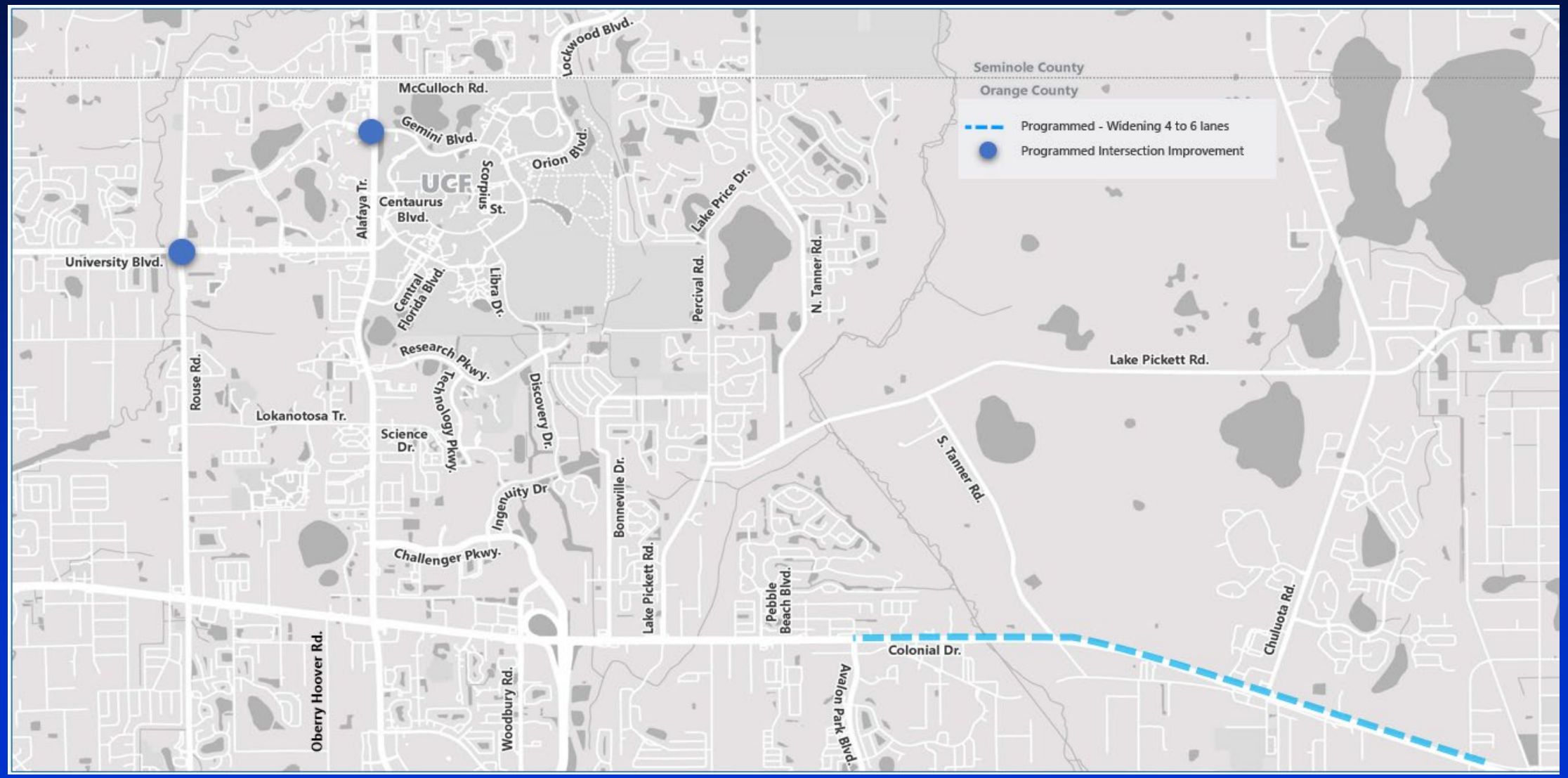


Future Conditions

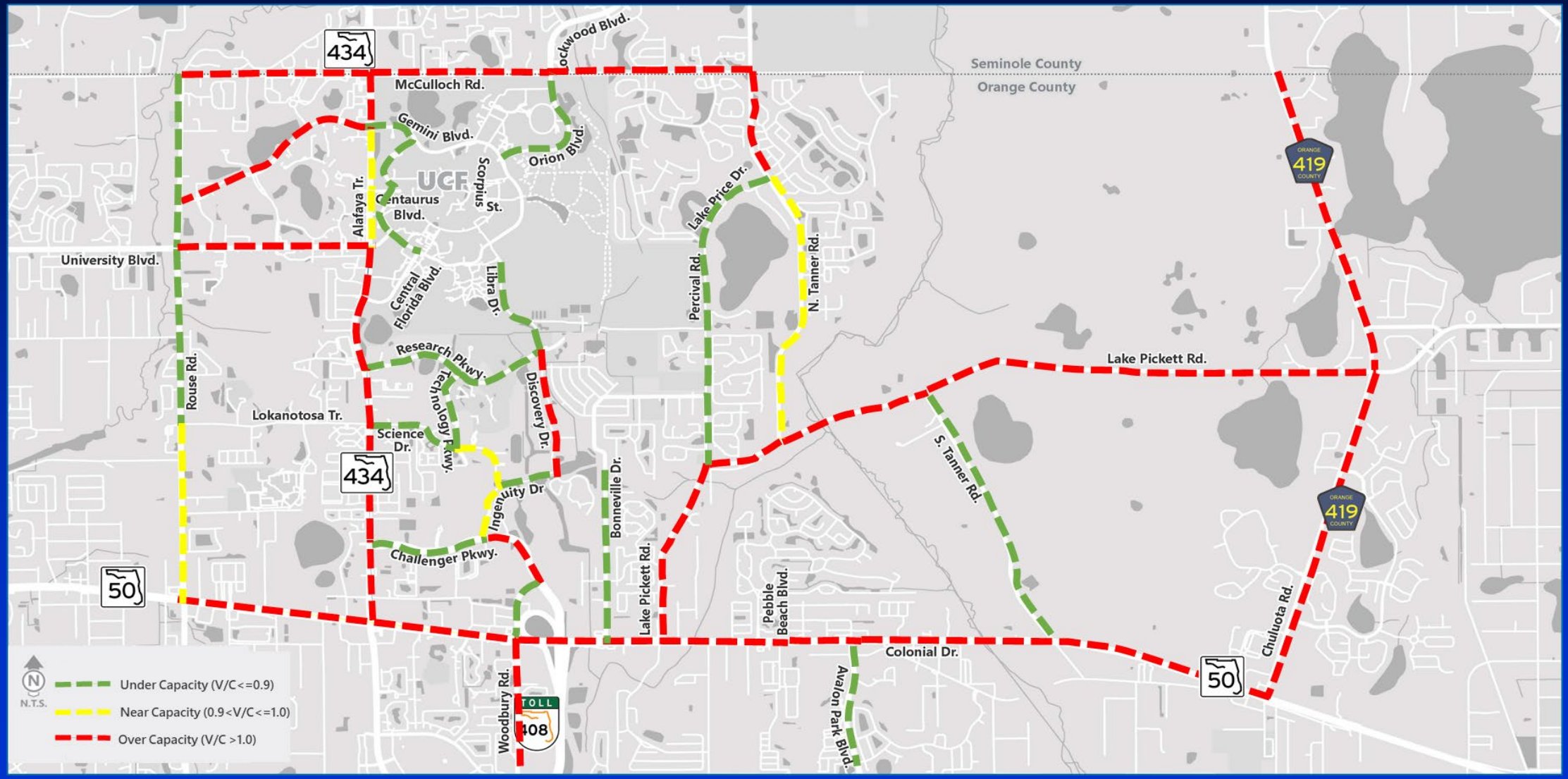
No Build Scenario



Future Conditions

No Build Traffic Conditions

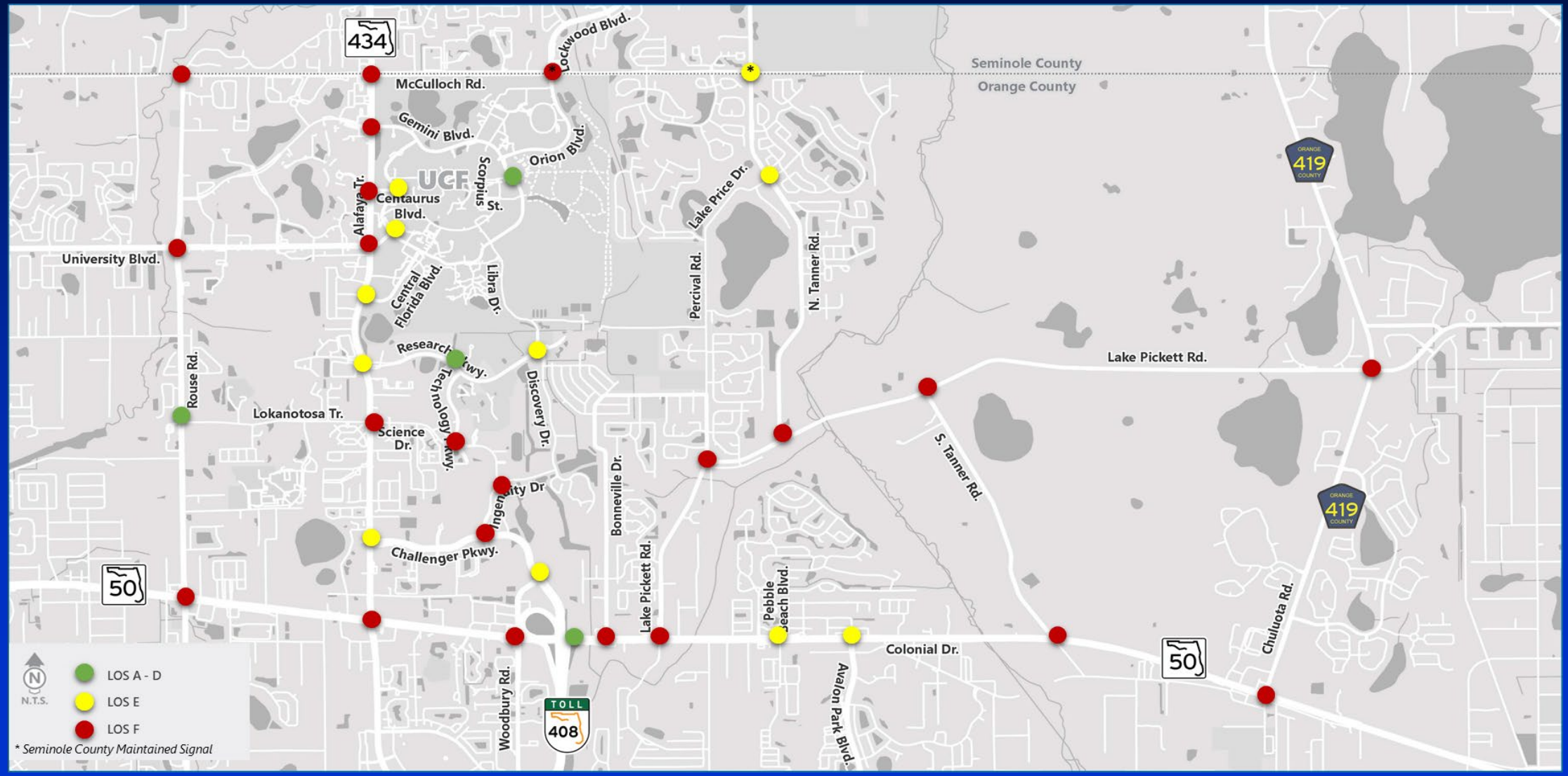
2045 No Build Roadway Segments



Future Conditions

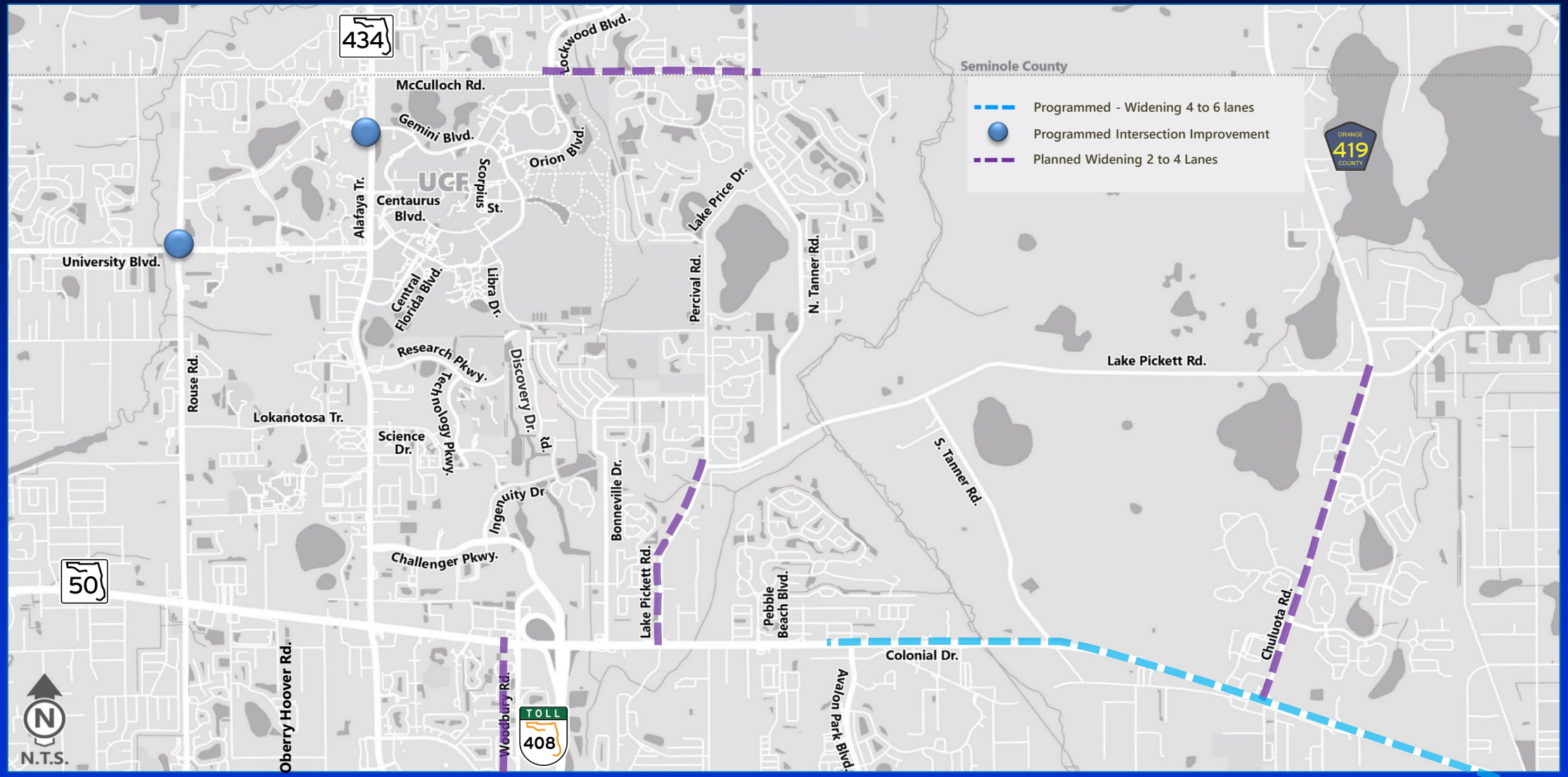
No Build Traffic Conditions

2045 No Build Intersections



Future Conditions

Build Scenario



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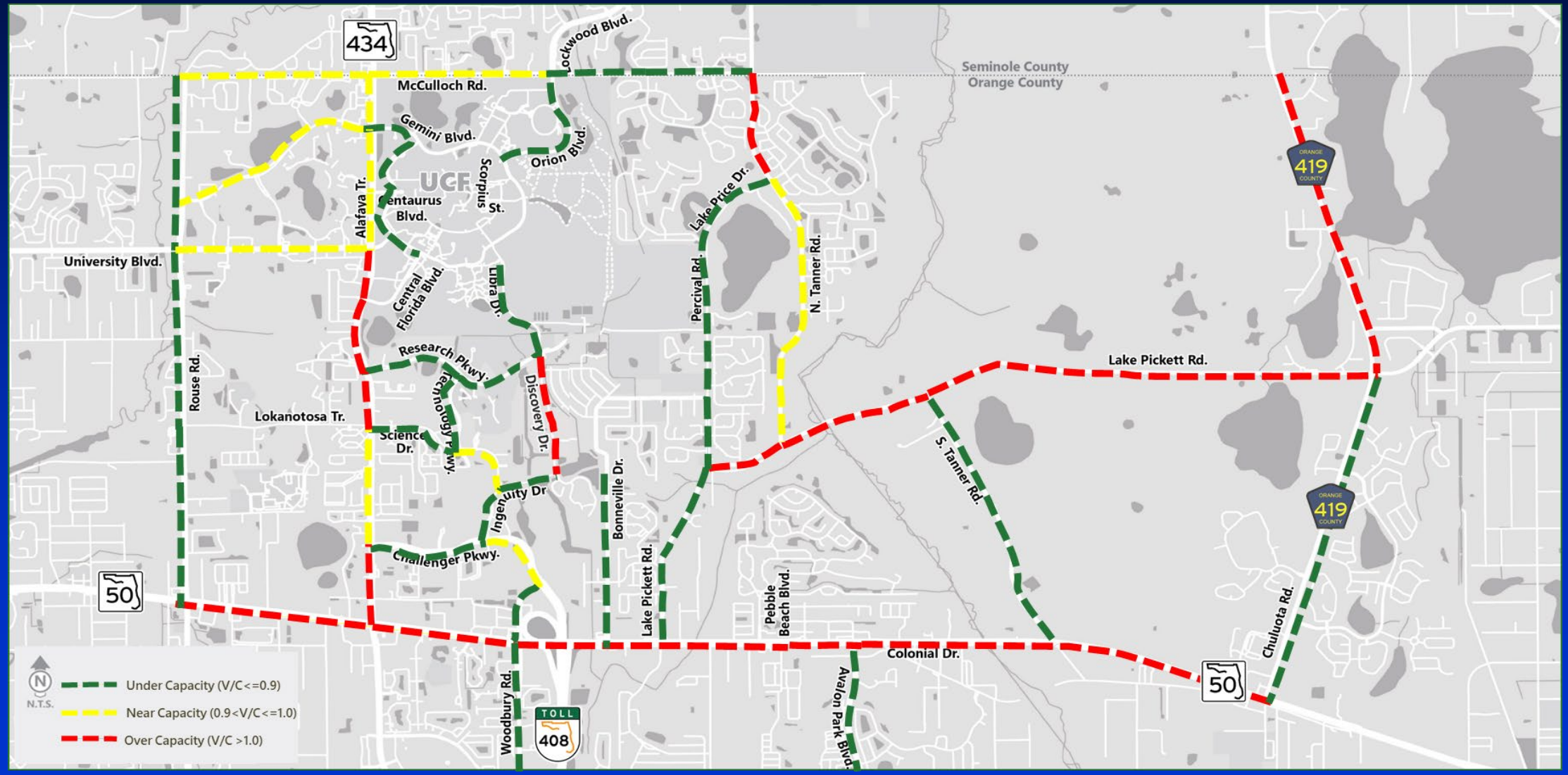
Build Traffic Conditions



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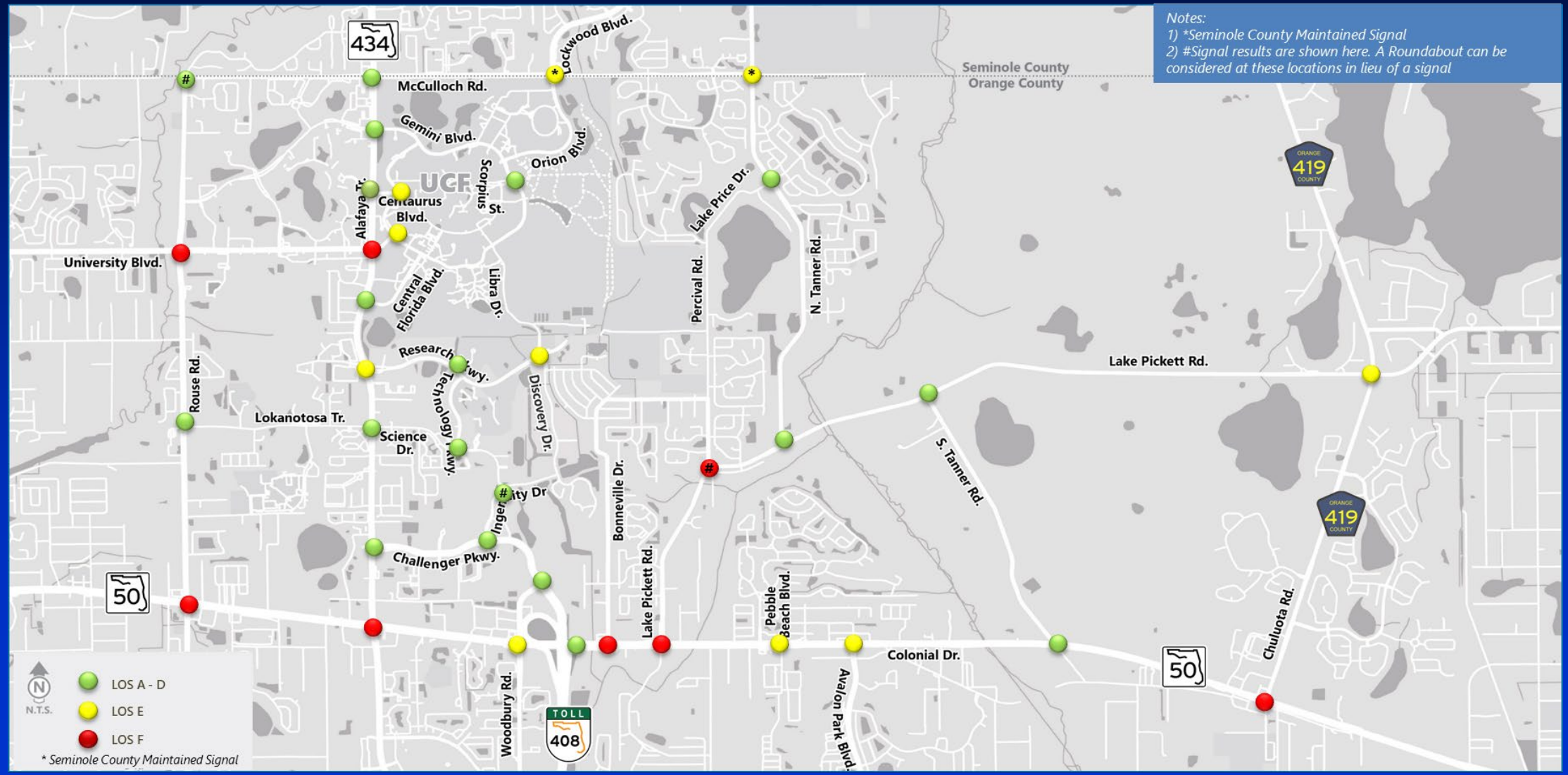
Build Traffic Conditions



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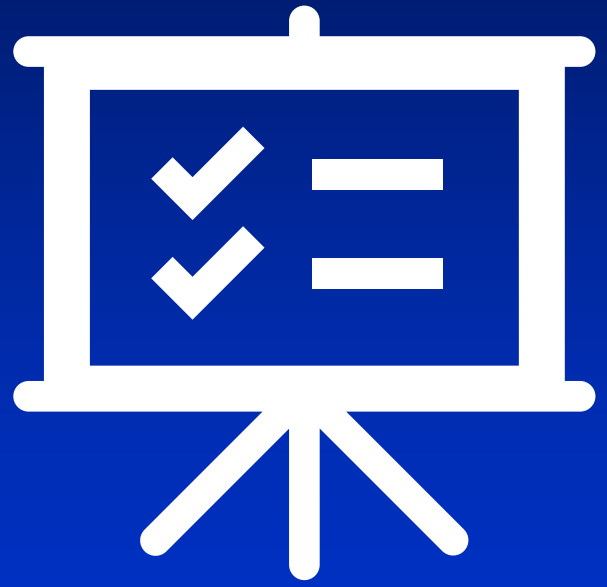
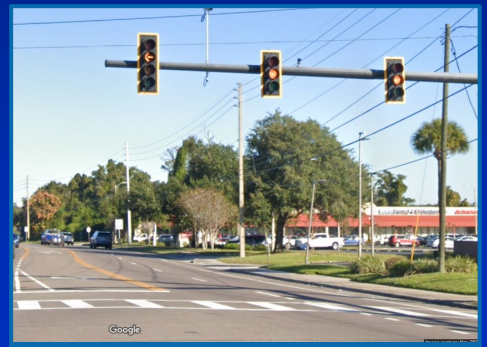


Intersection Improvements

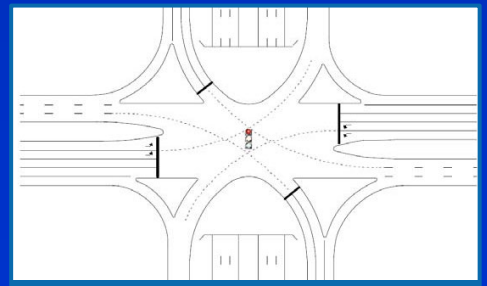
- Innovative intersection concepts evaluated for key intersections
- Provide operational and safety benefits
- Recommendations include:
  - Permissive to protected left turns
  - Exclusive right turn / left turn lanes
  - Roundabouts
  - Median U-Turn (MUT)
  - Restricted crossing U-turn (RCUT)
  - Displaced left turn (DLT)

Traditional/Innovative Intersection Improvements

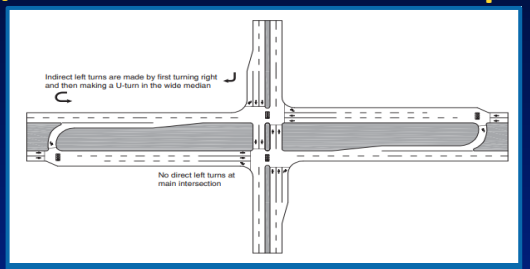
Example Turn Lanes at an Intersection



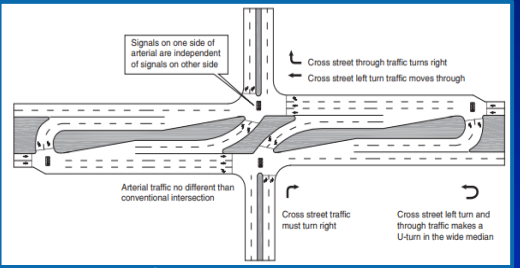
Flashing Yellow Left-turn Signal



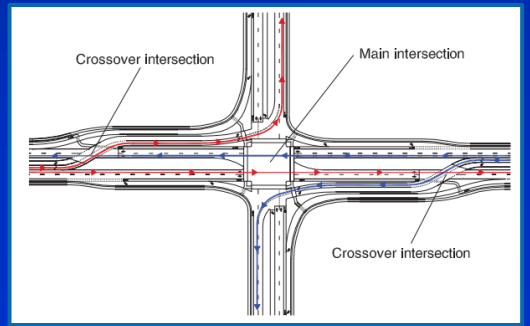
Single Point Urban Interchange (SPUI)



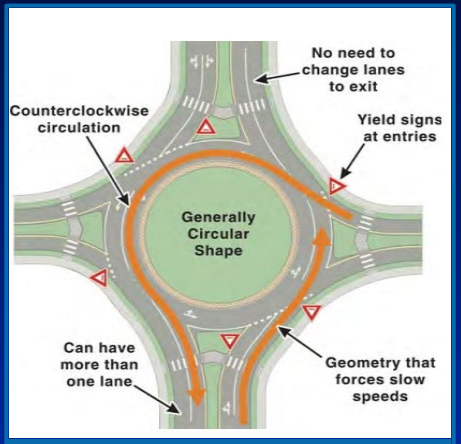
Median U-turn Intersection (MUT)



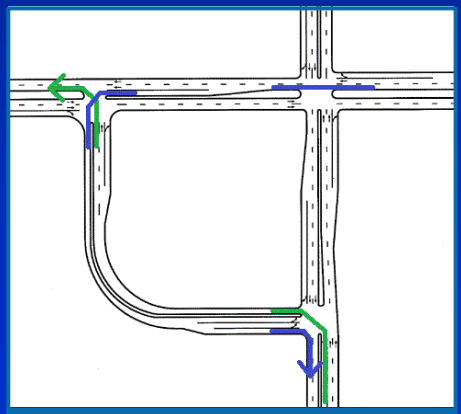
Restricted Crossing U-turn Intersection (RCUT)



Displaced Left-turn Intersection (DLT)



Roundabout



Quadrant Roadway Intersection (QRI)

Source: FHWA

- 33% of CAVs in traffic steam - 10% increase in capacity

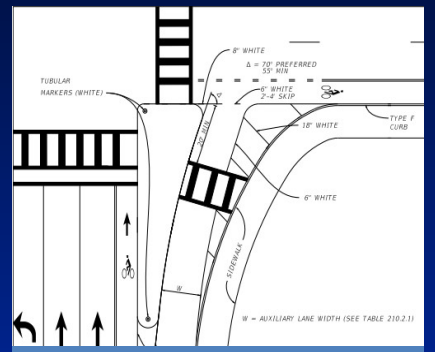
Intersection Improvements

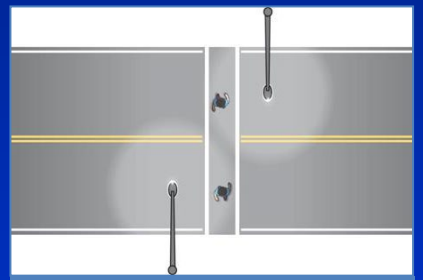
- Evaluated safety strategies at specific locations
- Proposed improvements include:
  - Retroreflective back plates to signal heads
  - Hardened centerlines/pedestrian refuge
  - High-friction surface treatment
  - High emphasis crosswalks
  - Lighting improvements
  - Advance traffic signs
  - HAWK/Pedestrian Hybrid Beacon
  - Detectable warning surfaces on curb ramps
  - Tighten corner radii
    - Improves pedestrian/bicycle safety

Safety/Multimodal/ADA Improvements

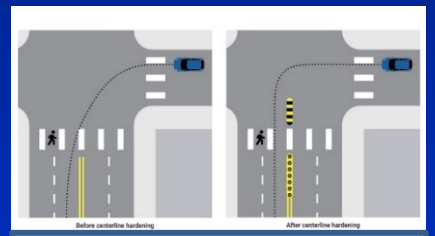
Example Wayfinding Signage


Retroreflective Back Plates

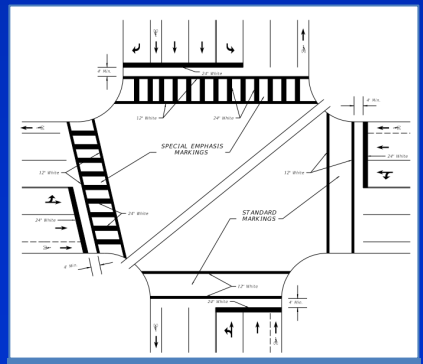

Perpendicular Right Turns


Lights at Mid-block Intersection


Detectable Warning Curb Ramps


Hardened Centerlines/Pedestrian Refuge


Mid-block Crossing with HAWK


Special Emphasis Markings

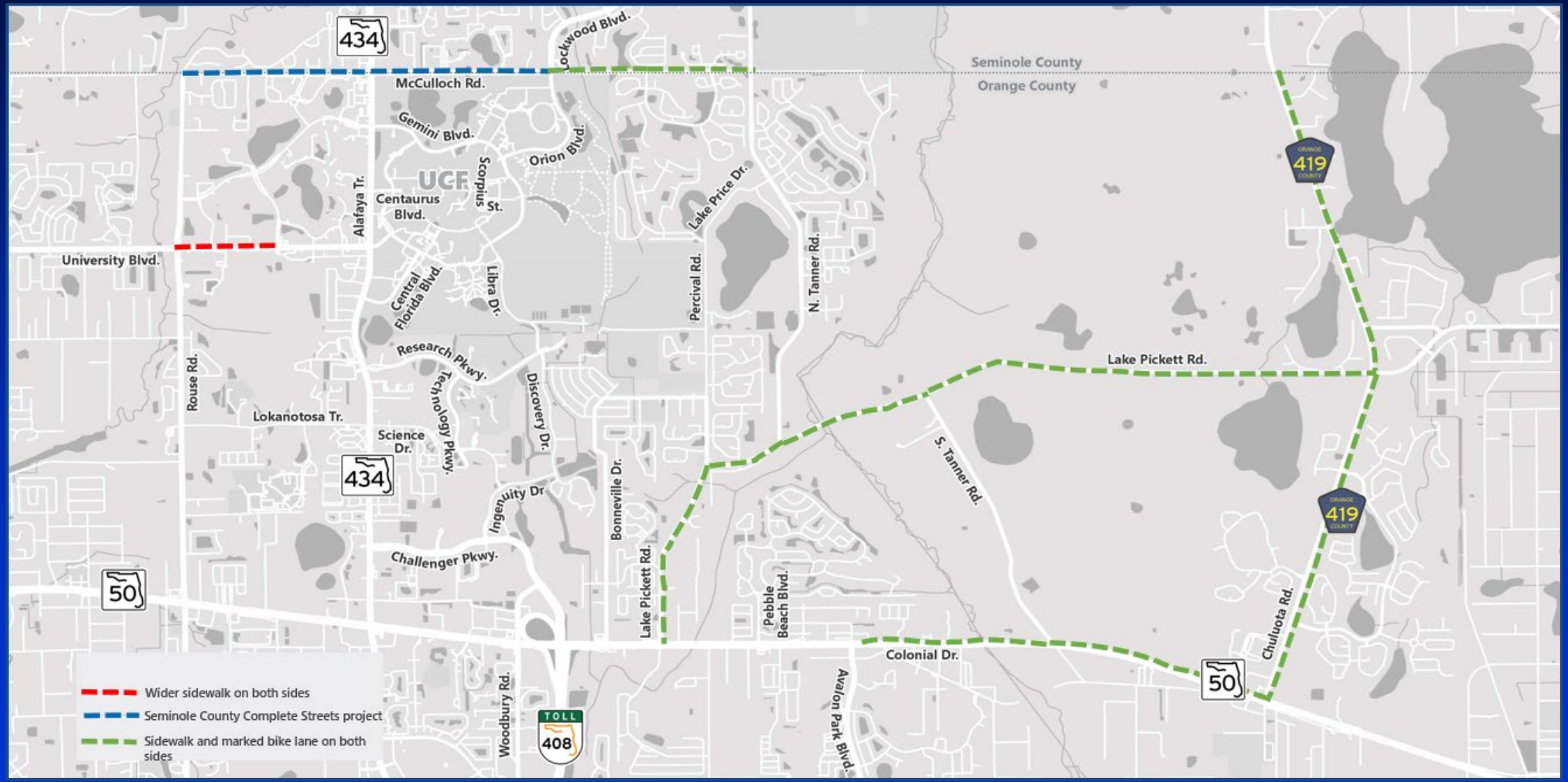
Advance Traffic Control Signs

Multi-modal Improvements

Pedestrian/Bicycle Facilities – Programmed Improvements

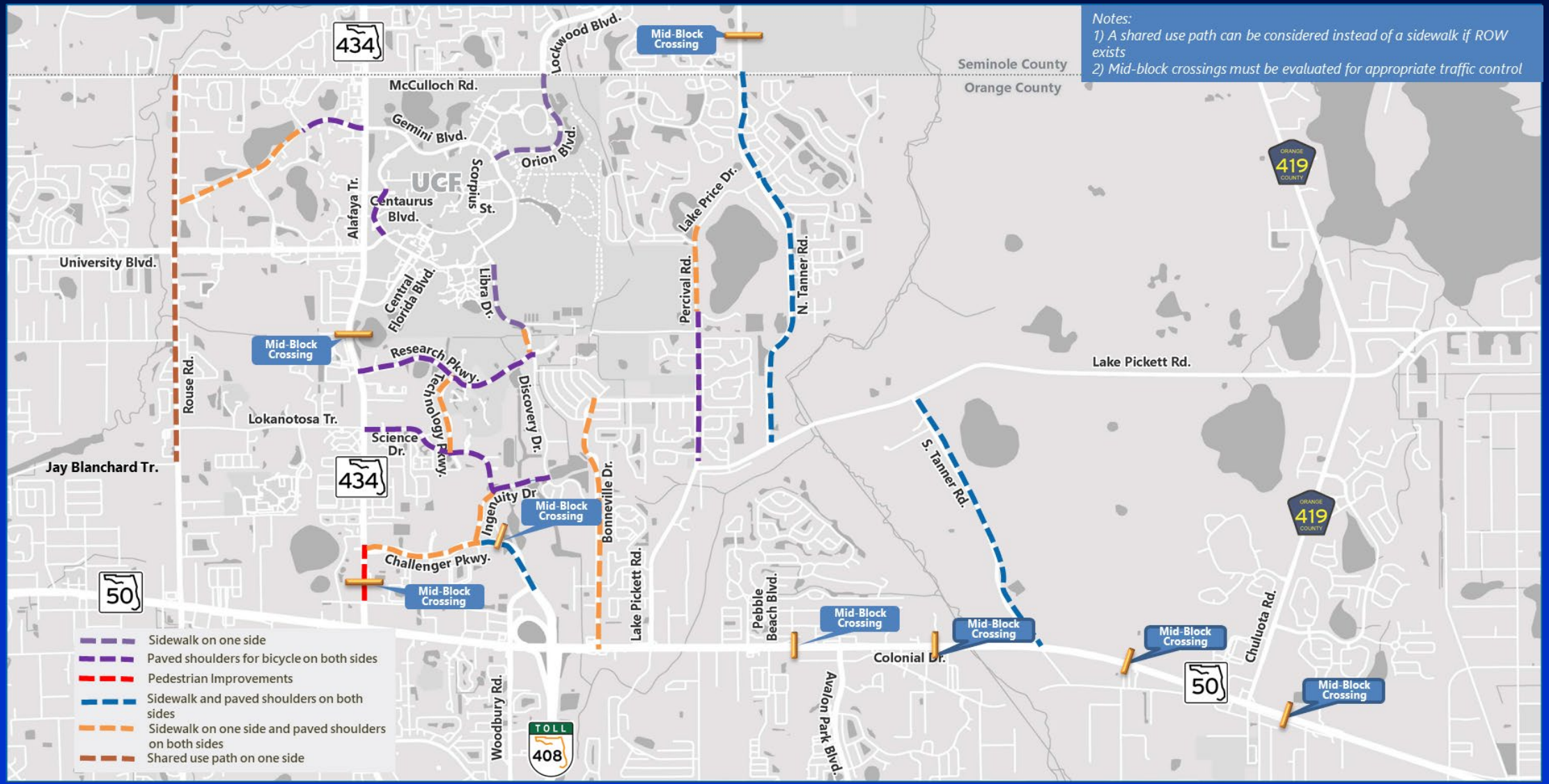
Multi-modal Improvements

Pedestrian/Bicycle Facilities – Planned Improvements



Multi-modal Improvements

Pedestrian/Bicycle Needs



Multi-modal Improvements

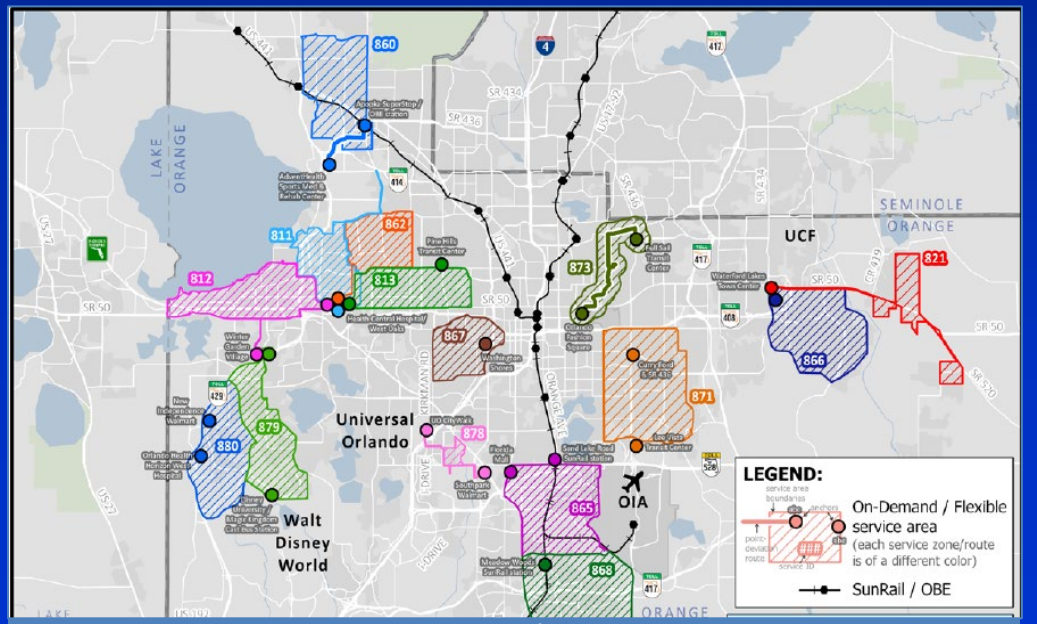
Planned Transit Improvements – LYNX

Orange County Transit Plan

- Enhanced service in existing zones (Curb to Curb)
- 11 New Enhanced On-Demand/ Flexible Routes/Zones
  - Bithlo Neighborhood
  - Waterford Lakes/Avalon Park NeighborLink
- Four Express Routes (Increased frequencies/Connections)
- Bus Rapid Transit 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



Network On-Demand/Flexible Services
(source: Orange County Transit Plan, LYNX, March 2022)

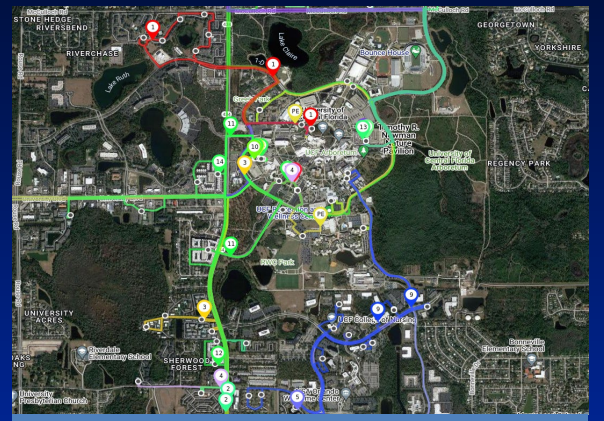
Multi-modal Improvements

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

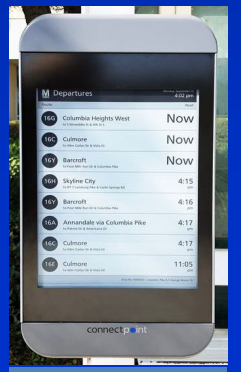
Example Mobility Hub



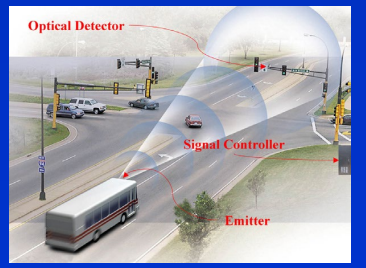
UCF Shuttle Tracker

National Evidence on TDM Program Impacts Vehicle Trip Reduction from Background Conditions

TDM 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



Example Bus Stop Digital Sign



ITS/Emerging Technologies Improvements

- Deploy Smart Technologies in Central Florida
- ATTAIN (Funded by FHWA Grant)
- PedSafe – Hardware Installations Complete
  - Innovative ped/bike collision avoidance system
  - Pilot deployment on Alafaya Tr adjacent to UCF
- Greenway - CV Technologies at 33 Signals (Orange County)
  - Cellular vehicle-to-everything (C-V2X), 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 within UCF
  - Surface Parking Management
- SunStore – FDOT's Data Storage & Research Sharing Initiative

ATTAIN Central Florida

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

ITS Projects

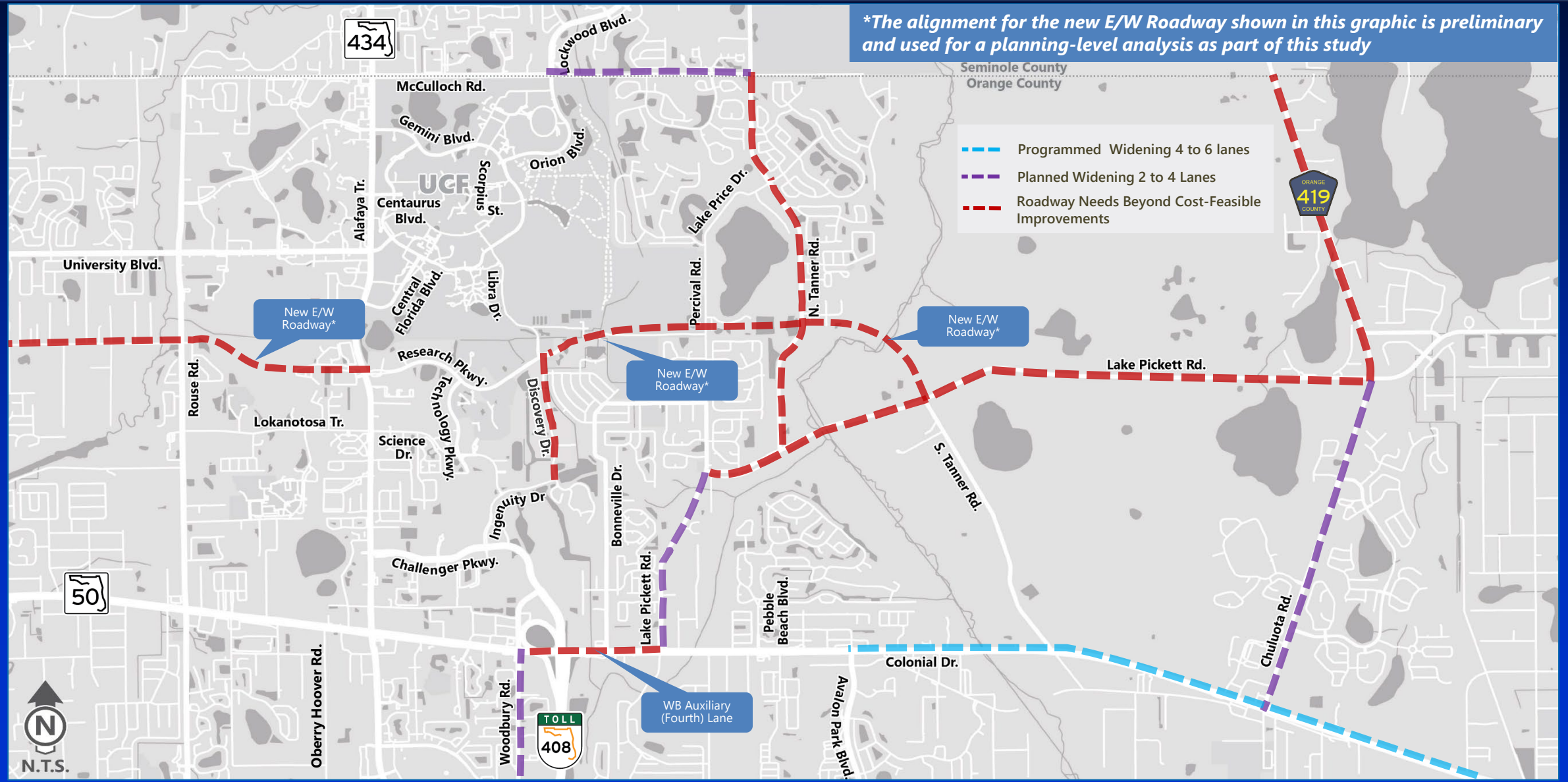
Connected Vehicle Technology (its.dot.gov)

Enhanced Pedestrian Infrastructure

Adaptive Signal System

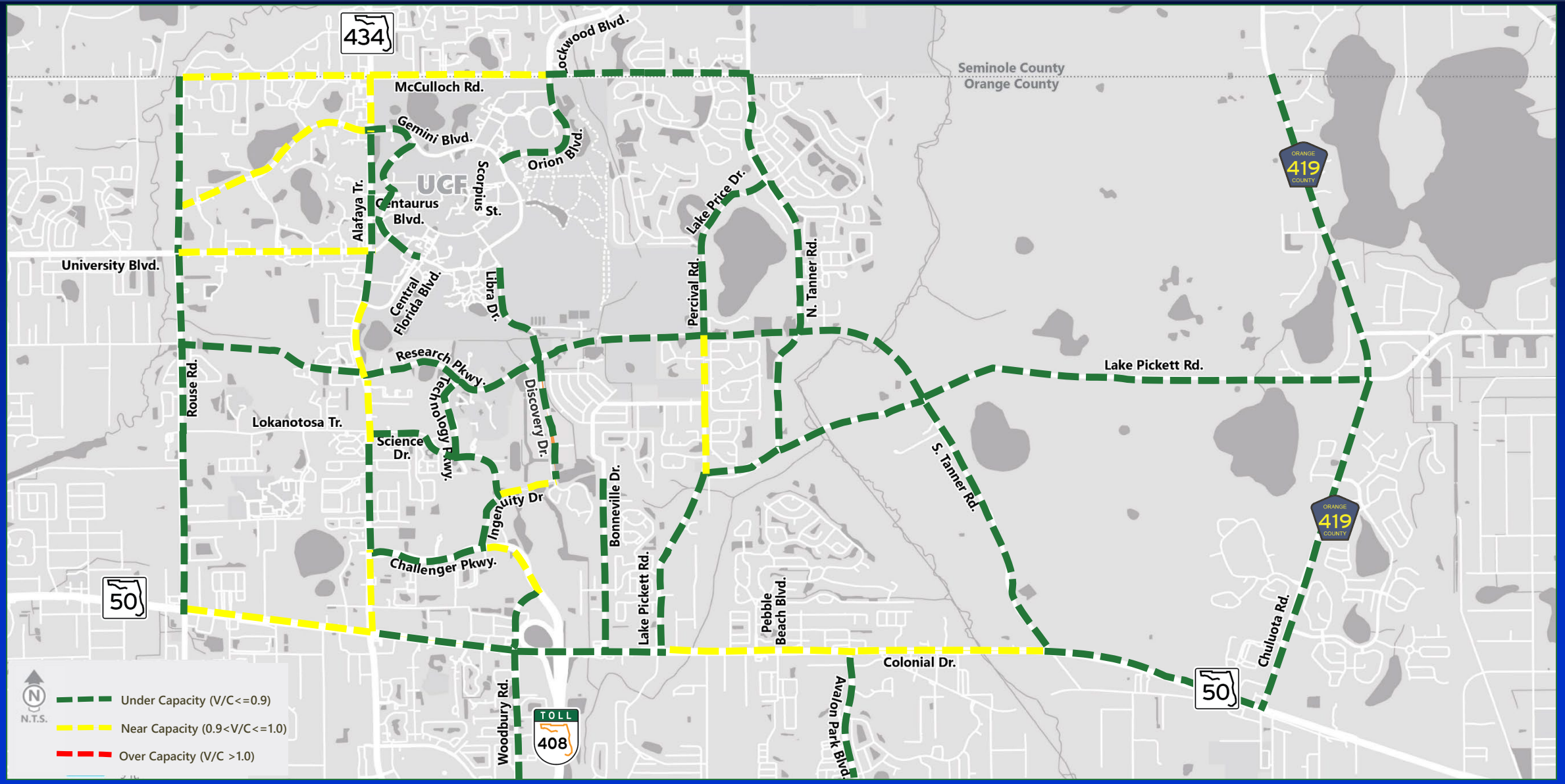
Future Long Range Transportation Plan

Needs Plan Amendments



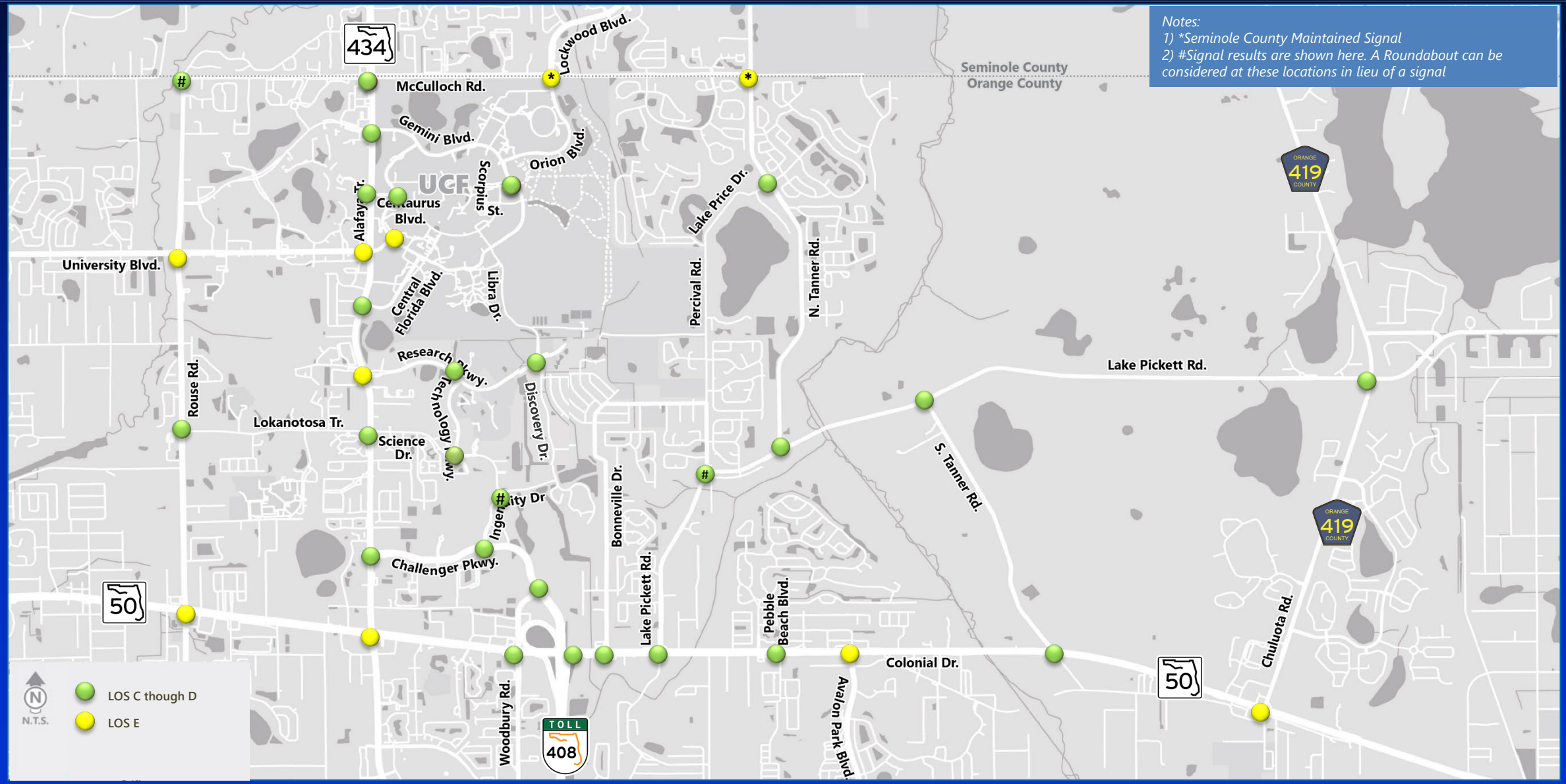
Future Traffic Conditions

Needs Plan Improvements (2045) – Roadways



Future Traffic Conditions

Needs Plan Improvements (2045) – Intersections



Long Range Plan Amendments

Alternative Plan Evaluation

- **Alternatives Comparison**
  - **No Build ($70M)**
    Existing + Programmed Improvements
  - **Build 1: Cost-Feasible ($269M)**
    Existing + Programmed + Planned Improvements
  - **Build 2: Needs Plan ($452M)**
    Existing + Programmed + Planned Improvements + Roadway / Intersection Needs

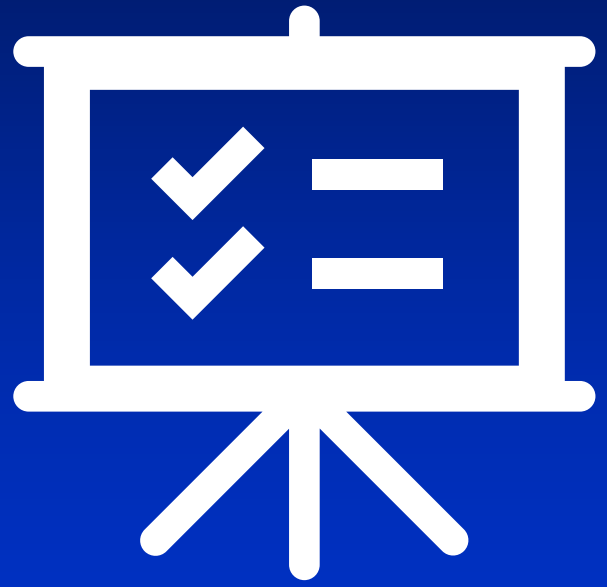
Evaluation Matrix

Evaluation Criteria	Project Alternatives		
	No Build	Build 1	Build 2
Traffic Operations & Safety			
Accommodates future traffic demand[1]	Low	Moderate	High
Provides multimodal improvements (ranking)	Good	Better	Best
Improves safety (ranking)	Good	Better	Best
Potential Community Impacts			
Right-of-Way Potentially Needed (Low/Moderate/High)[2]	Low	Moderate	High
Potential Historic/Archaeological Impacts (Low/Moderate/High)[3]	Low	Low	Low
Potential Utility Impacts (Low/Moderate/High)[3]	Moderate	Moderate	Moderate
Potential Environmental Impacts			
Wetlands (Low/Moderate/High)[3]	Low	Moderate	Moderate
Floodplains (Low/Moderate/High)[3]	Moderate	Moderate	High
Threatened & Endangered Species (Low/Moderate/High)[3]	Low	Low	Low
Potential Contamination Sites (Low/Moderate/High)[3]	Moderate	Moderate	Moderate
Estimated Project Cost ($ Million)[4]			
Estimated Total Cost	70.0	269.0	452.0
B/C Ratio Relative to No Build Alternative[5]			
Value	-	11.7	7.6

Notes:
1 - Based on the number of failing study roadway segments and intersections
2 - Based on available parcel data from Orange County Property Appraiser
3 - Based on NEOCATS Existing Environmental Conditions Report and future roadway improvements
4 - Based on cost estimates provided for the roadway, intersection and multimodal (pedestrian/bicycle) improvements
5 - B/C ratio is calculated for operational benefits (time and fuel saved) of the two Build Alternatives relative to the No Build Alternative. Only roadway and intersection improvement costs are considered in the B/C ratio calculations

Presentation Outline

- Background
- Existing Conditions
- Future Conditions
  - No Build Scenario
  - Build Scenario
- Study Recommendations
  - Intersection Improvements
  - Multimodal Improvements
  - ITS /Emerging Technologies Improvements
  - Long Range Transportation Plan Amendments (Needs Plan)
- **Summary and Next Steps**
- Action Requested



Summary and Next Steps

- NEOCATS study identifies future project needs and solutions addressing a range of mobility, operational, and safety aspects
- Future amendments to LRTP for major capital projects (new roads and widenings)
- Recommended projects will need to be prioritized based on available funding
- Impacts of major projects will be evaluated as part of County's RCA study process
- Coordination required with other agencies as appropriate (i.e. FDOT, LYNX, UCF, etc.)

Presentation Outline

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  - Build Scenario
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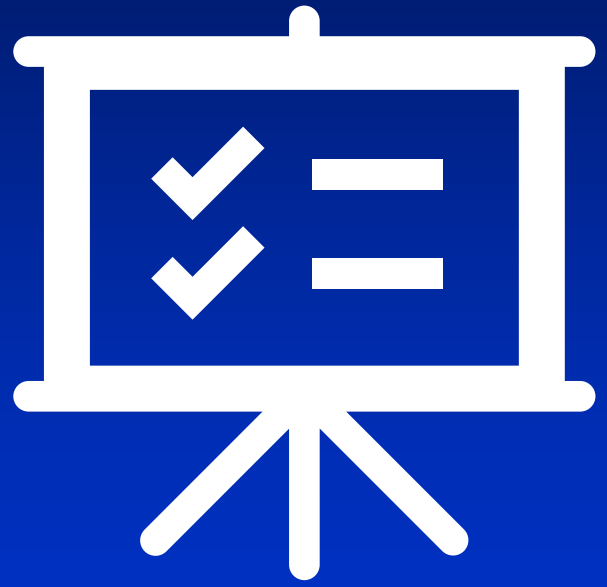

Action Requested

- Acceptance of North East Orange County Areawide Transportation Study (NEOCATS) Needs Plan Study Report. District 5.