

2017

WICKHAM ROAD

OPERATIONAL ANALYSIS

PREFERRED ALTERNATIVES OVERVIEW | DECEMBER 11 AND 14, 2017
TAC/CAC AND TPO BOARD PRESENTATIONS

 **KITTELSON**
& ASSOCIATES


INFRASTRUCTURE
ENGINEERS, INC.


SPACE COAST
TPO

AGENDA

- Study Background/Schedule
- Public Involvement Activities
- Issues/Opportunities Review
- Future Conditions Analysis
- Short-Term Improvement Opportunities
- Intersection Improvements
- Roadway Improvement Alternatives
- Next Steps



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OPERATIONAL ANALYSIS



STUDY BACKGROUND/SCHEDULE

STUDY BACKGROUND

- Countywide Safety Analysis conducted 2014
- Performed Road Safety Audits in 2015/2016
- Citizen pedestrian concerns at key intersections

LEGEND

- Study Corridor
- City of Melbourne
- Brevard County



Kick-Off: Project Advisory Team Meeting

TASK 2: DATA COLLECTION

TASK 3: EXISTING CONDITIONS

Task 3.1 + 3.2: Historical Safety Review and Existing Operations

Task 3.3: Issues and Opportunities Identification

Project Advisory Team Meeting

Submit DRAFT Existing Conditions Report

TPO/PAT Review

Submit **FINAL** Existing Conditions Report

Public Workshop

TASK 4: FUTURE CONDITIONS ASSESSMENT

Task 4.1: Determination of Future Growth Rate

Project Advisory Team Meeting

Task 4.2 + 4.3: Future Volume Development and Future No-Build Operational Analysis

Submit DRAFT Future Conditions Report

TPO/PAT Review

Submit **FINAL** Future Conditions Report

TASK 5: ALTERNATIVES ANALYSIS

Task 5.1: Development of Roadway Alternatives and Cross Sections

Task 5.2 + 5.3: Drainage and Impacted Utilities Assessment

Project Advisory Team Meeting

Task 5.4 + 5.5: Preliminary Construction and ROW Cost Estimates

Task 5.6: Operational MOEs and B/C Matrix

Project Advisory Team Meeting

Public Workshop

Task 5.7: Select Preferred Alternative

SCTPO TAC/CAC Presentation

SCTPO Board Meeting Presentation

Submit DRAFT Corridor Alternatives & Strategies Report

TPO/PAT Review

Submit **FINAL** Corridor Alternatives & Strategies Report



Project Schedule



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PUBLIC INVOLVEMENT ACTIVITIES

PUBLIC INVOLVEMENT ACTIVITIES

- Project Advisory Team consisting of TPO, FDOT, Brevard County, City of Melbourne, and Space Coast Area Transit
- Held 2 public meetings and received overwhelming support for preferred alternatives
 - 91 total attendees
 - Project website had 39 comments and 459 total "Likes"
- Coordinated with School Board during alternatives analysis stage of study





2017

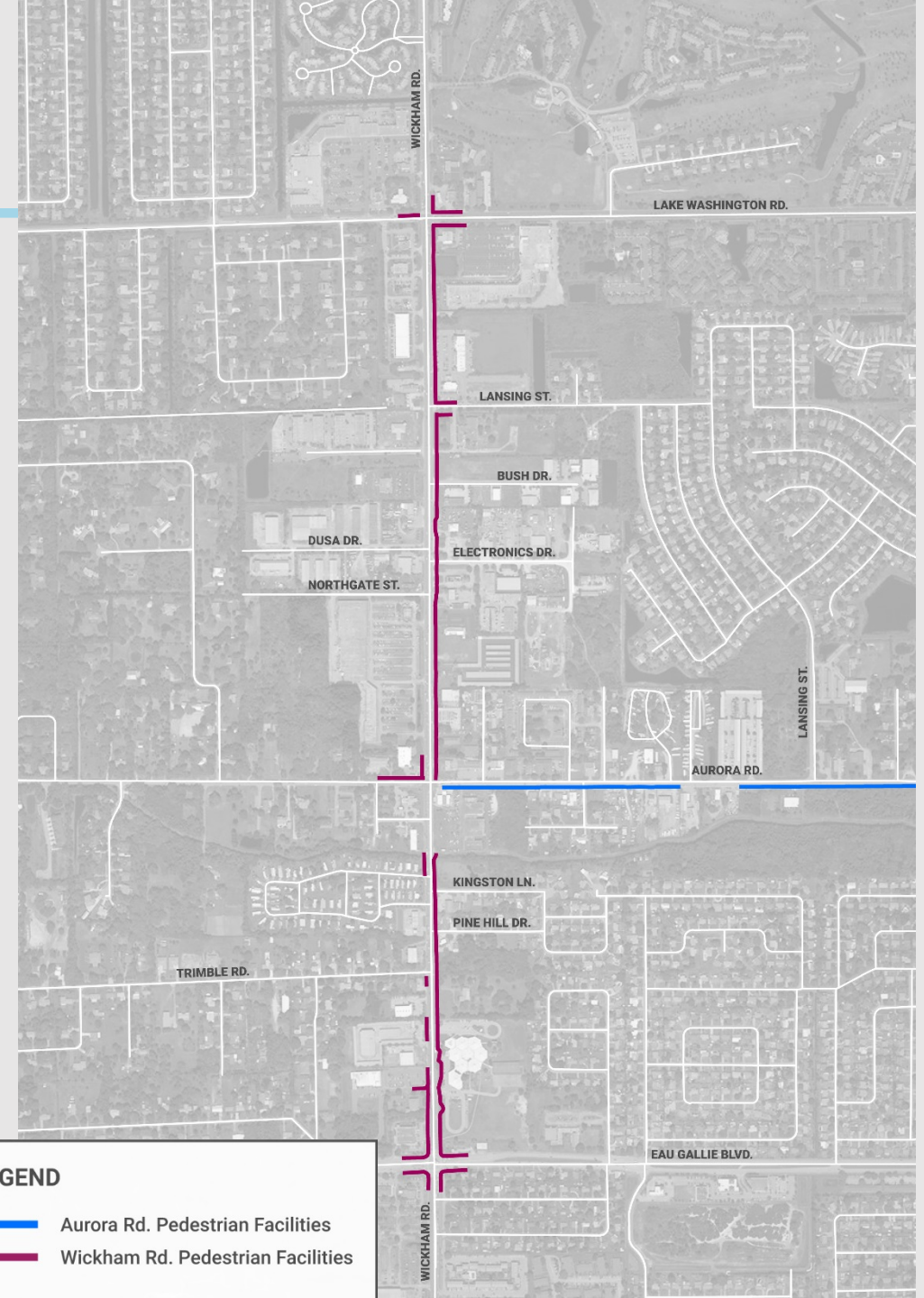
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OPERATIONAL ANALYSIS



ISSUES / OPPORTUNITIES REVIEW

EXISTING PEDESTRIAN FACILITIES



LEGEND

- Aurora Rd. Pedestrian Facilities
- Wickham Rd. Pedestrian Facilities

EXISTING DRAINAGE AND UTILITIES



CRASH HISTORY (2011-2015)

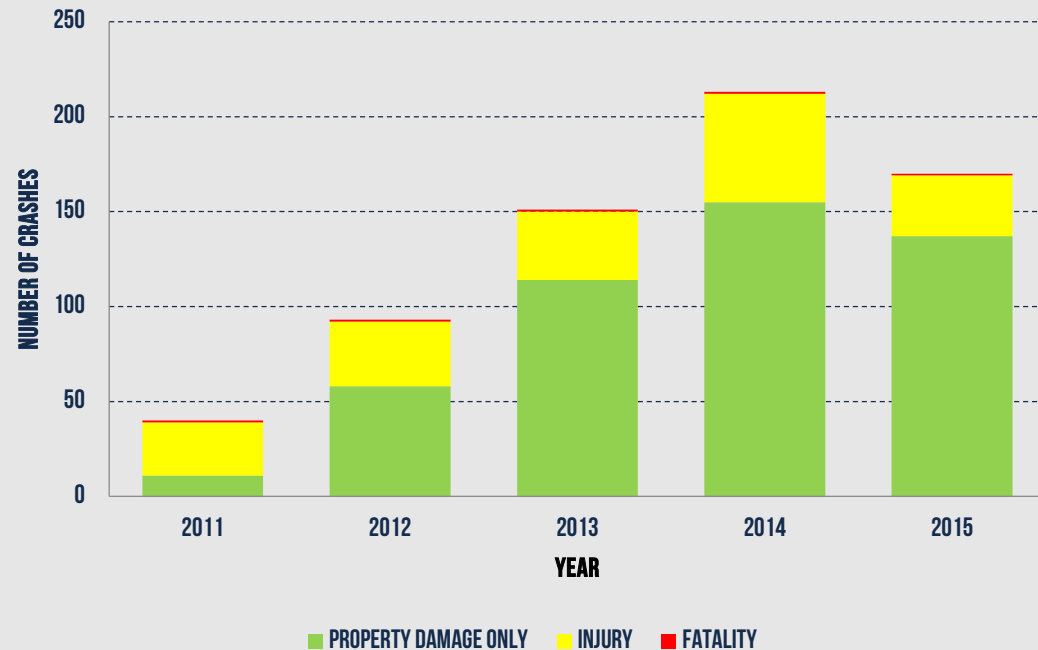
667 crashes from 2011 to 2015

- 5 fatal (1 percent) and 187 injury crashes (28 percent)
- 80 percent of the crashes occurred on a weekday (Monday through Friday)
- 33 percent of the crashes occurred between 3 PM and 6 PM

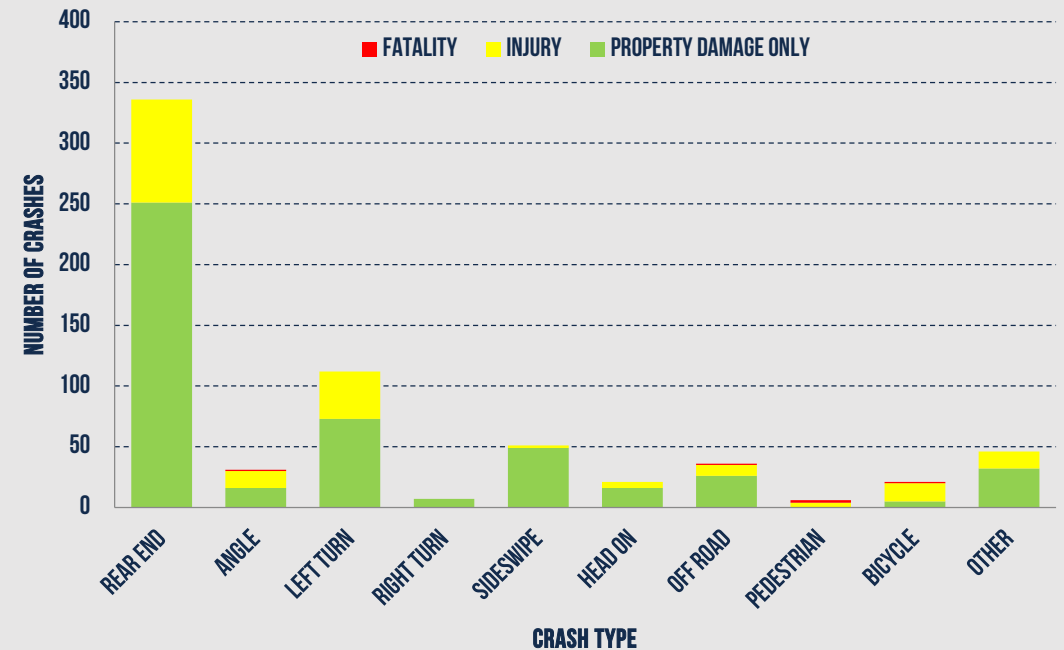
21 bicycle crashes

6 pedestrian crashes

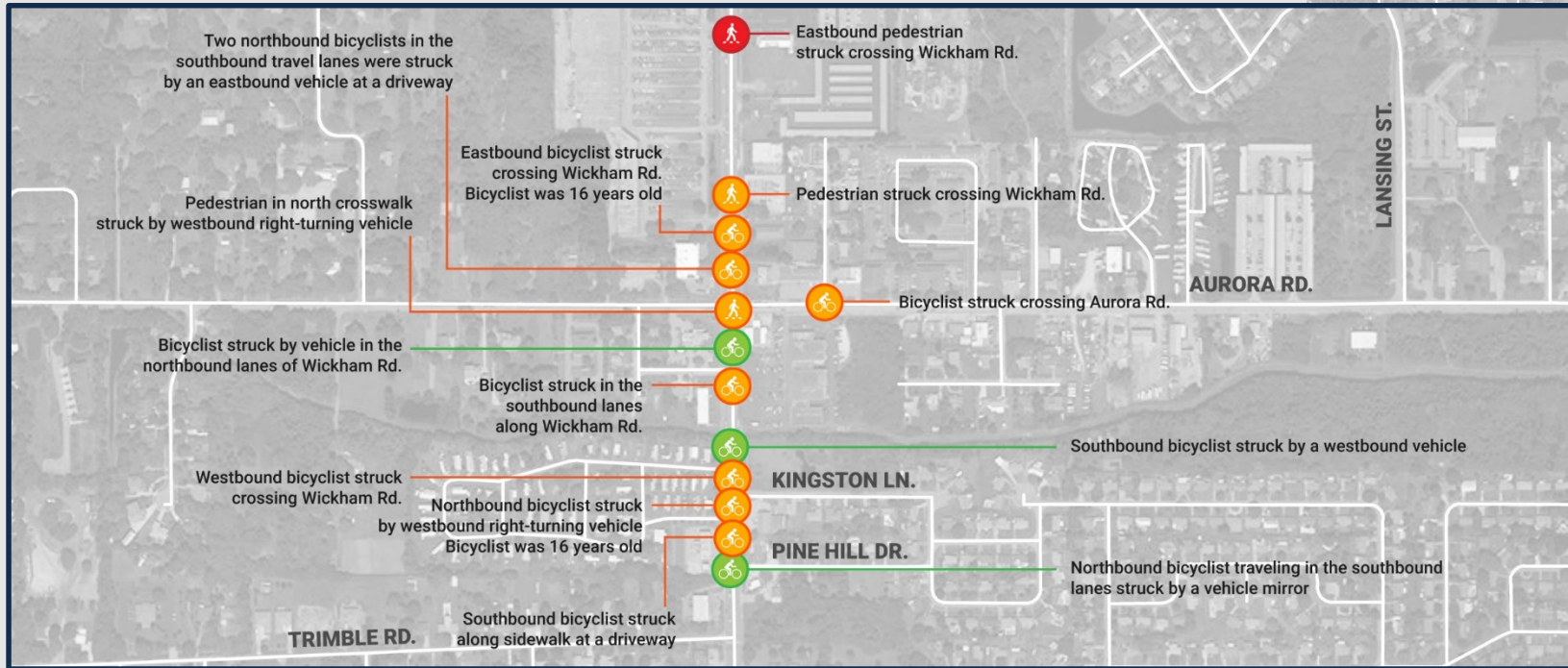
CRASHES BY YEAR AND SEVERITY



CRASHES BY TYPE AND SEVERITY



PEDESTRIAN AND BICYCLE CRASH HISTORY (2011-2015)



● **Fatality**
● **Injury**
● **Property Damage Only**

MULTI-MODAL ISSUES AND OPPORTUNITIES

LEGEND

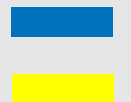
-  Pedestrian Mobility Emphasis Intersection
-  Transit Stop Enhancements
-  Pedestrian Facility Gaps
-  Bicycle Facility Enhancements



Pedestrian Mobility Emphasis Intersections
Intersection Concepts



Transit Stop Enhancements
Preferred Alternative Concept Development



**Pedestrian Facility Gaps and
Bicycle Facility Enhancements**
Preferred Alternative Concept Development



VEHICULAR, UTILITY, AND DRAINAGE ISSUES AND OPPORTUNITIES

LEGEND

-  Left-Turn Crash Emphasis Intersection
-  Left-Turn/Angle Crash Emphasis Area
-  Peak Hour Queuing
-  Utilities Adjacent to Roadway
-  Drainage Facilities Adjacent to Roadway



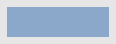
Left-Turn Crash Intersections
Intersection Concepts



Left-Turn/Angle Crash Areas
Preferred Alternative Concept Development



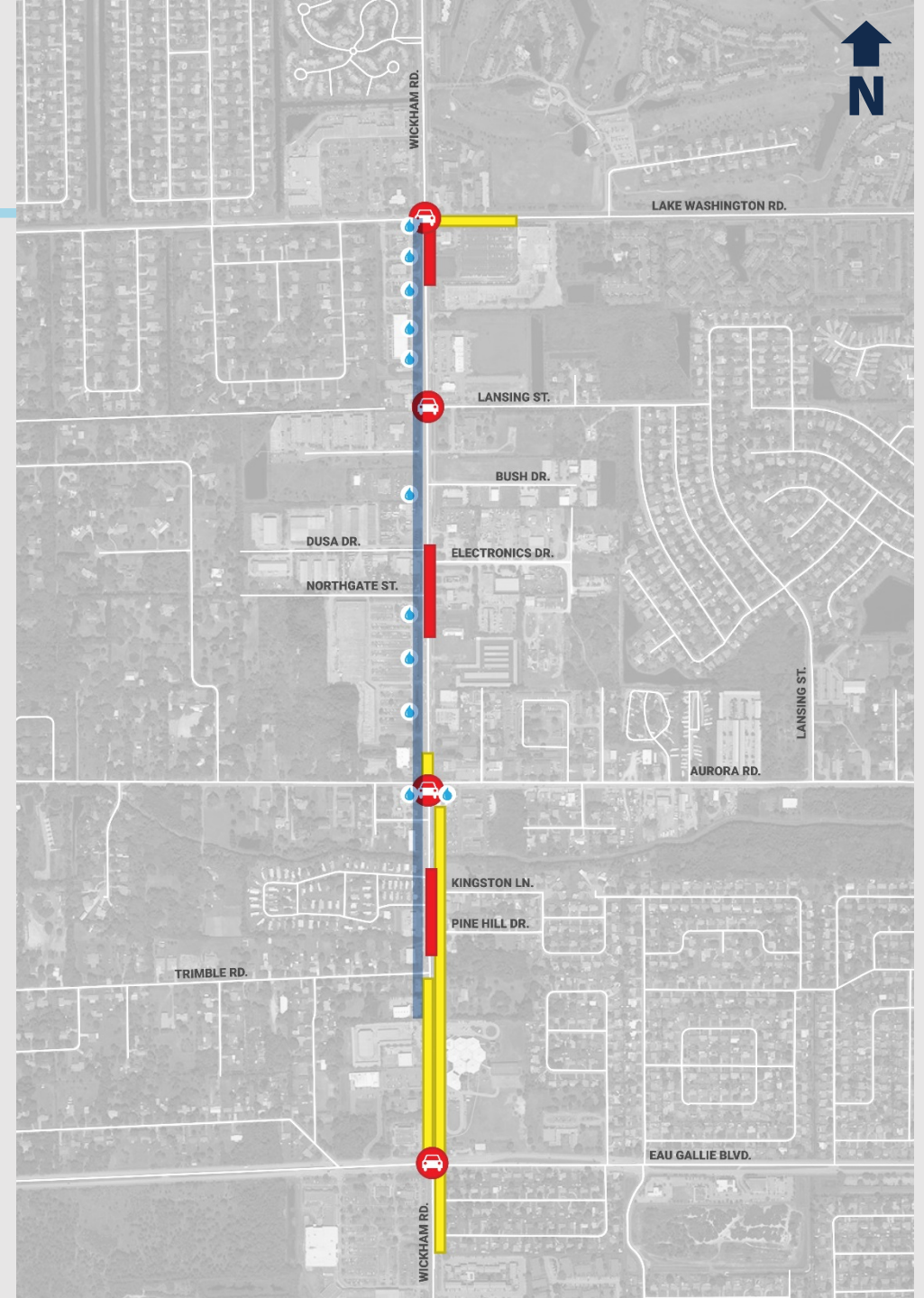
Peak Hour Queuing
Intersection Concepts



**Utilities and
Drainage**



Typical Section and Preferred Alternative Concept Development





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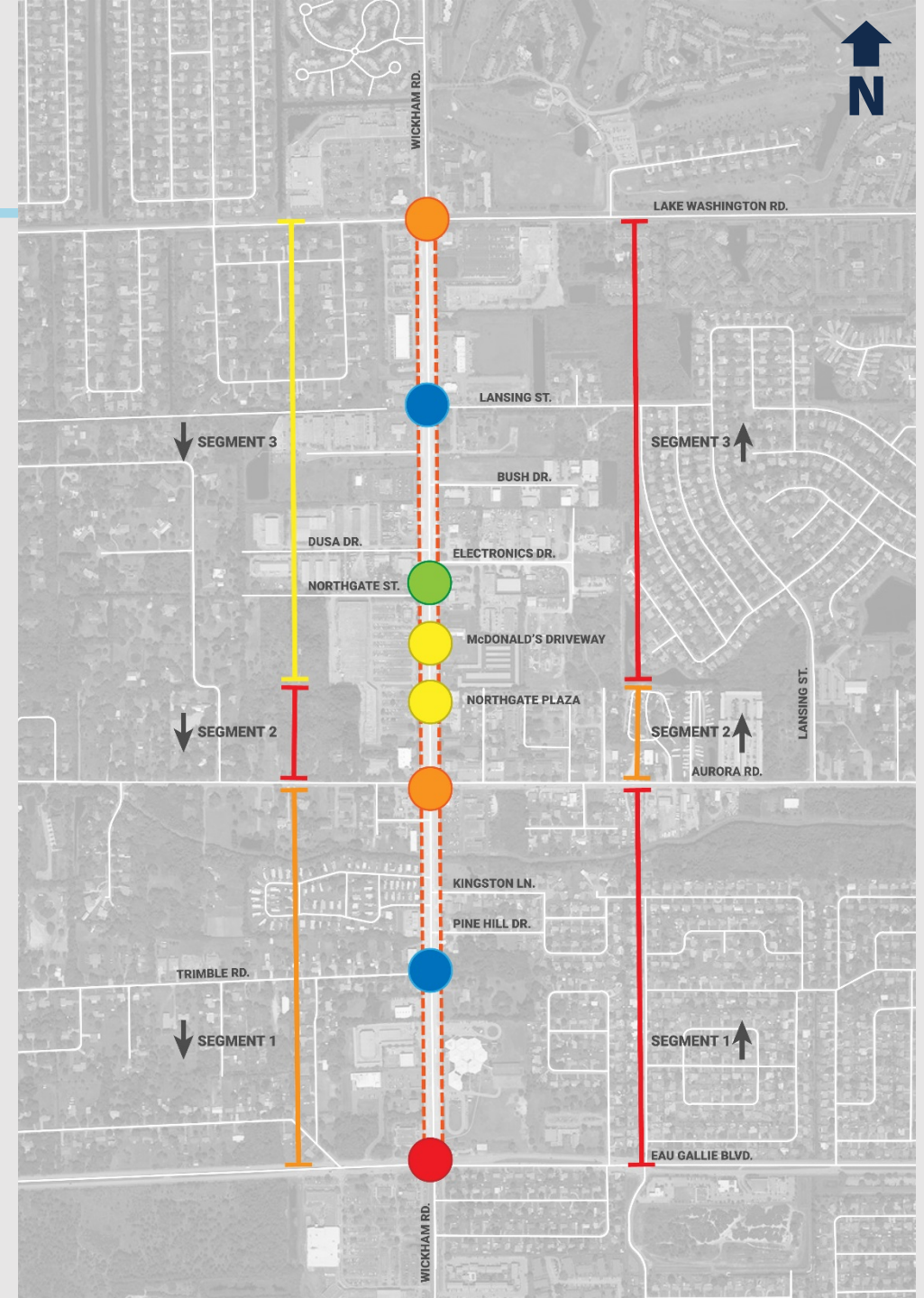


FUTURE CONDITIONS ANALYSIS

FUTURE CONDITIONS OPERATIONS

By 2040 if no improvements implemented, Wickham Road will only experience increased congestion

- LOS E/F anticipated NB from Eau Gallie to Lake Washington
- LOS E/F anticipated SB from Northgate Plaza to Eau Gallie
- Eau Gallie, Aurora, and Lake Washington anticipated to operate at LOS E or F





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PREFERRED ALTERNATIVES

PREFERRED ALTERNATIVES OVERVIEW

- Short-Term Improvement Opportunities
- Intersection Improvements
- Roadway Improvement Alternatives



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**SHORT-TERM IMPROVEMENT
OPPORTUNITIES**

SHORT TERM IMPROVEMENTS

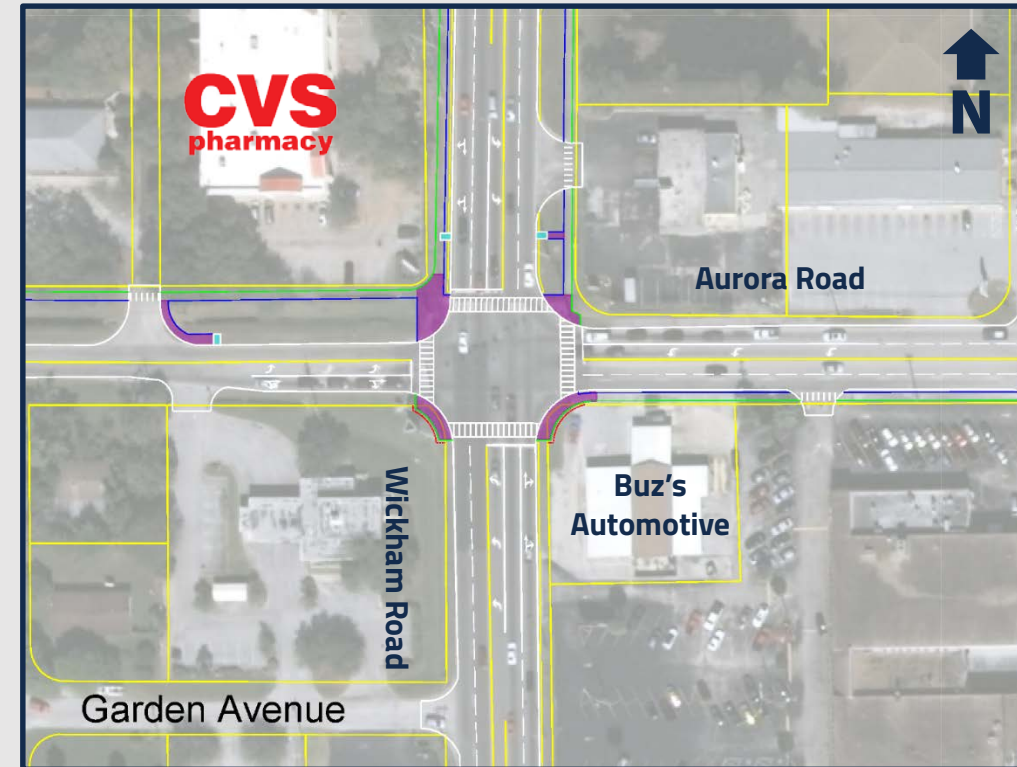
- Pedestrian facility improvements at intersections
- Adaptive signal control/ITS related improvements aimed at reducing peak hour and non-reoccurring congestion - ongoing Brevard County projects
- Incorporate spot medians/directional median openings at Northgate Plaza
- LED corridor lighting - 40% of ped/bike crashes occurred at night
- PEDSAFE



AURORA ROAD SHORT TERM IMPROVEMENTS

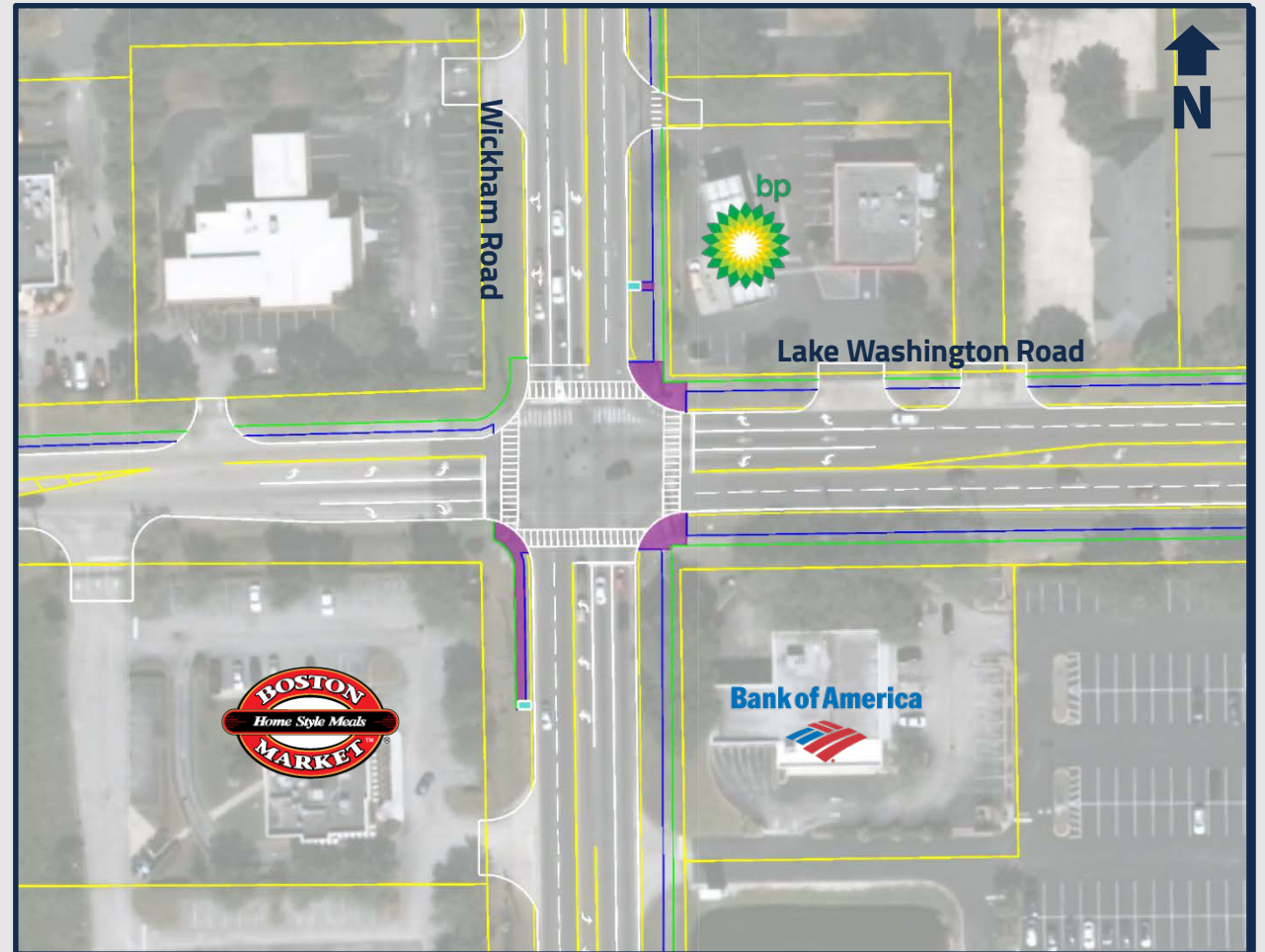
- Adding crosswalks to east and south legs
- Adding pedestrian landing pad to SE corner
- Rebuilding pedestrian landing pads on SW, NE, and NW corners
- Adding bus stop landing pads and sidewalk connections

Wickham Road at Aurora Road	
Construction	\$60,000
Utility Relocations	\$0
Engineering/CEI	\$20,000
Roadway ROW	\$80,000
Total	\$160,000



LAKE WASHINGTON ROAD SHORT TERM IMPROVEMENTS

- Adding crosswalks to west and south legs
- Adding pedestrian landing pad to SW corner
- Rebuilding pedestrian landing pads on NE and SE corners
- Adding bus stop landing pads and sidewalk connections



Wickham Road at lake Washington Road	
Construction	\$50,000
Utility Relocations	\$0
Engineering/CEI	\$20,000
Roadway ROW	\$0
Total	\$70,000



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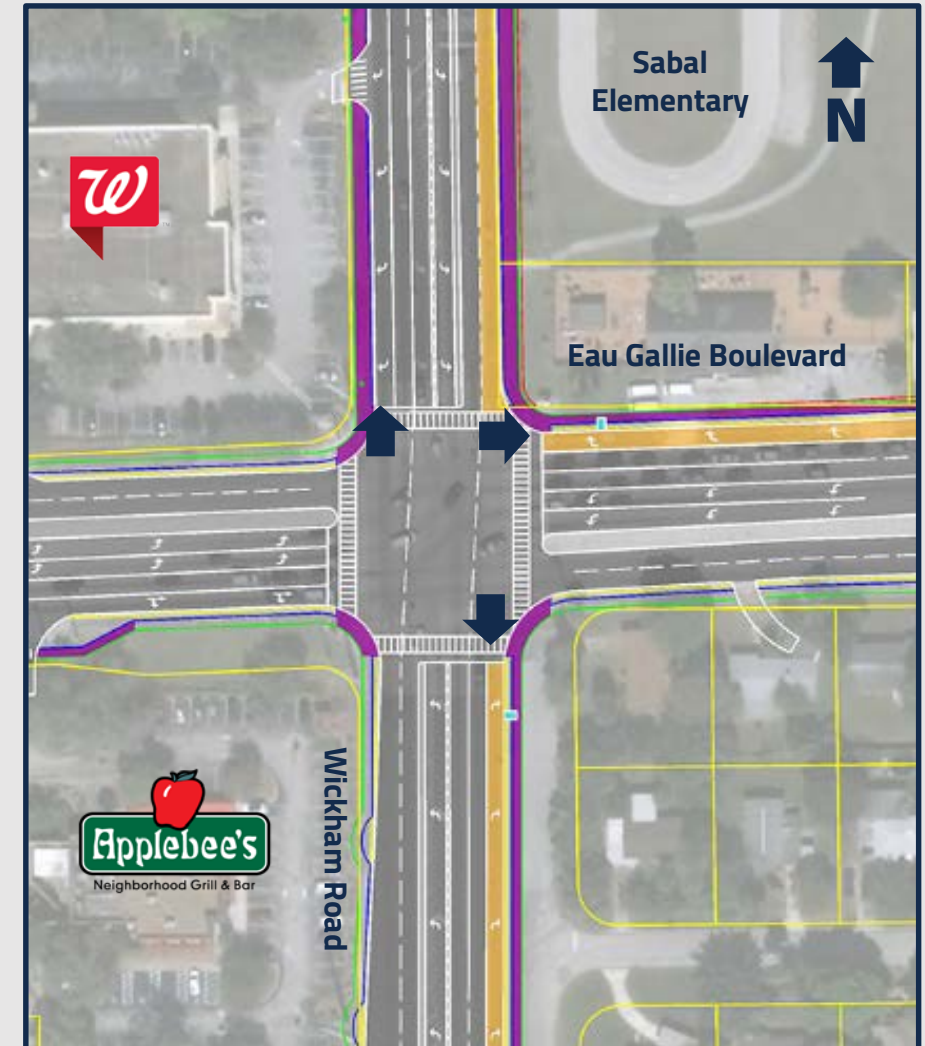
INTERSECTION IMPROVEMENTS

EAU GALLIE BOULEVARD PREFERRED ALTERNATIVE

Add NB, SB, and WB Right Turn Lanes

- **No-Build**
LOS F in PM peak,
9 over-capacity movements
- **Build**
LOS E in PM peak,
0 over-capacity movements

Wickham Road at Eau Gallie Boulevard	
Alternative	NB / SB / WB Right Turn Lanes
Construction	\$2,700,000
Utility Relocations	\$700,000
Engineering/CEI	\$1,000,000
Roadway ROW	\$8,500,000
Total	\$12,900,000
Benefit/Cost	3.17

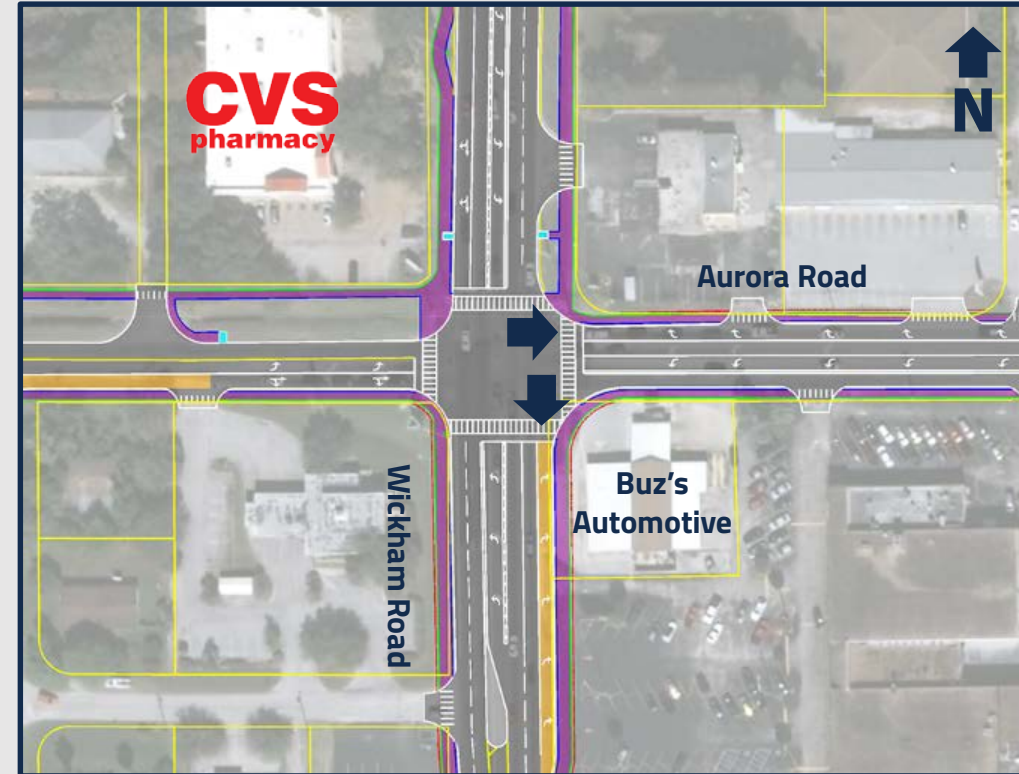


AURORA ROAD PREFERRED ALTERNATIVE

Add NB and WB Right Turn Lanes

- **No-Build**
LOS E in PM peak,
4 over-capacity movements
- **Build**
LOS E in PM peak,
0 over-capacity movements

Wickham Road at Aurora Road	
Alternative	NB/WB Right Turns
Construction	\$1,400,000
Utility Relocations	\$50,000
Engineering/CEI	\$400,000
Roadway ROW	\$2,700,000
Total	\$4,550,000
Benefit/Cost	3.16

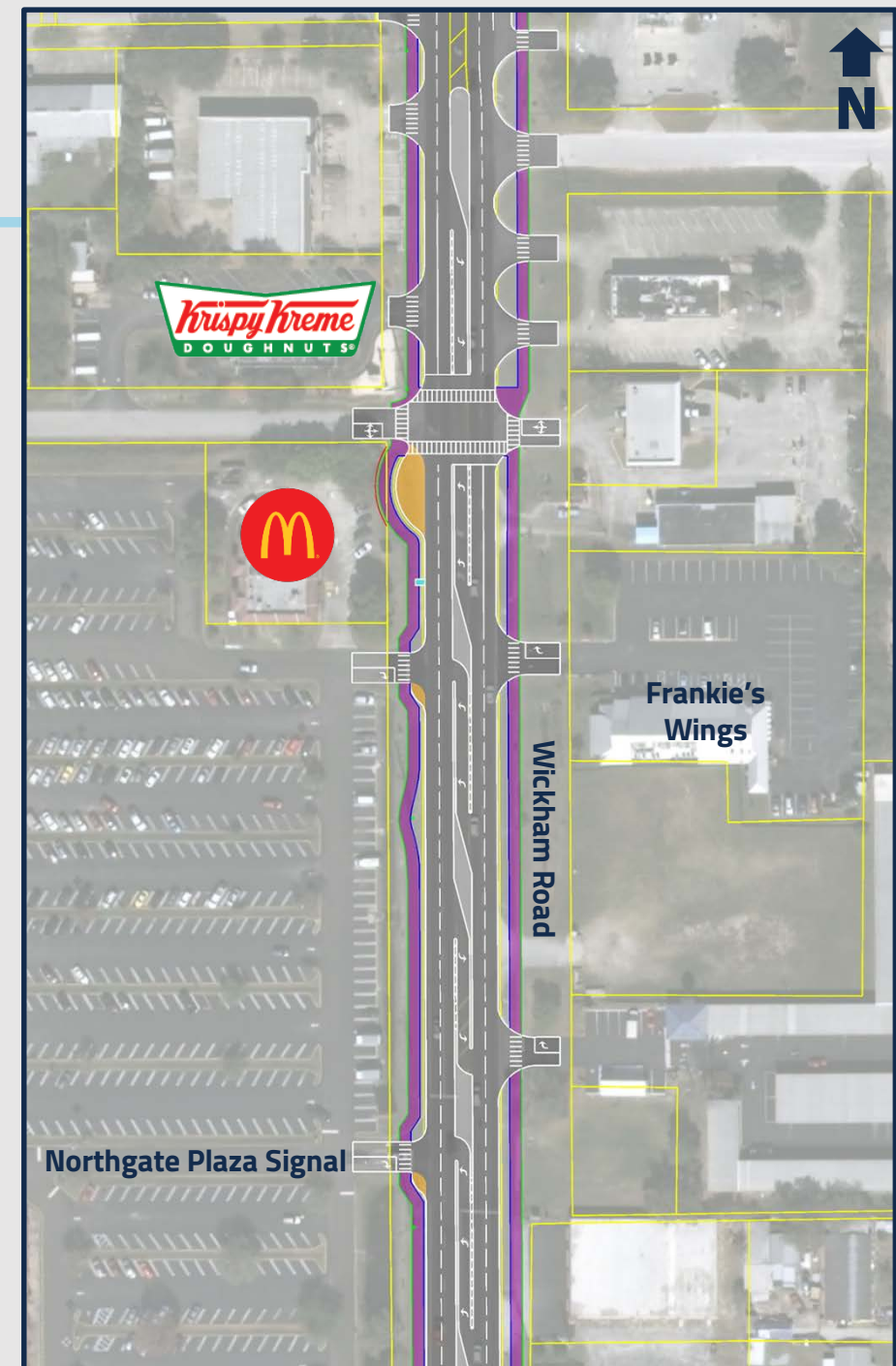


NORTHGATE PLAZA IMPROVEMENTS

Move Signal to Northgate Street and Add Medians

- **Northgate Plaza Build**
LOS C in PM peak, 0 over-capacity movements
- **Northgate Street Build**
LOS A in PM peak, 0 over-capacity movements
- **McDonald's Build**
LOS C in PM peak, 0 over-capacity movements

Wickham Road at Northgate Plaza	
Construction	\$1,000,000
Utility Relocations	\$0
Engineering/CEI	\$300,000
Roadway ROW	\$100,000
Total	\$1,400,000



VENTURE LANE AND LANSING STREET IMPROVEMENTS

New access road around existing school, signalized intersection at Wickham Road and Venture Lane

- **Build**
LOS B in PM peak,
0 over-capacity movements

Wickham Road at Venture Lane and Lansing Street	
Construction	\$1,700,000
Utility Relocations	\$0
Engineering/CEI	\$500,000
Roadway ROW	\$9,200,000
Total	\$11,400,000

Concept feasibility still under discussion with Brevard County School Board



LAKE WASHINGTON ROAD PREFERRED ALTERNATIVE

Add NB Right Turn Lane and 2nd WB Through Lane

- No-Build**

LOS E in PM peak,
5 over-capacity movements

- Build**

LOS E in PM peak,
0 over-capacity movements

Wickham Road at Lake Washington Road	
Alternative	WB Lane Drop at Publix
Construction	\$2,600,000
Utility Relocations	\$400,000
Engineering/CEI	\$900,000
Roadway ROW	\$4,600,000
Total	\$8,500,000
Benefit/Cost	2.47



LAKE WASHINGTON ROAD PREFERRED ALTERNATIVE

WB Lane Drop at Publix





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**ROADWAY IMPROVEMENT
ALTERNATIVES**

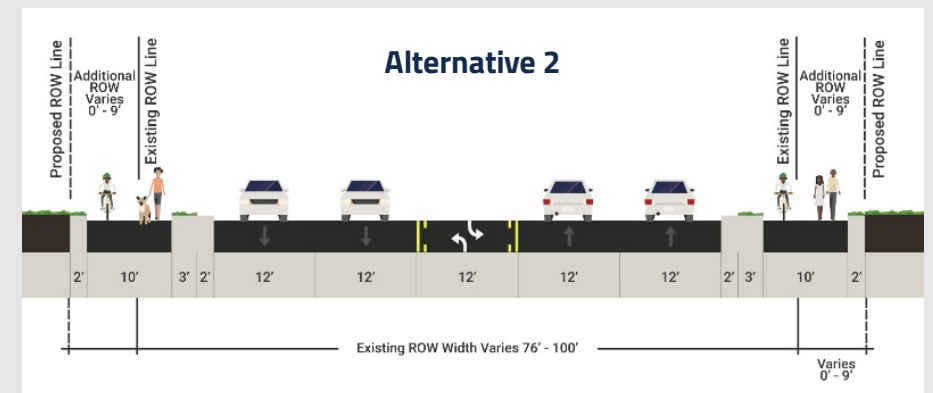
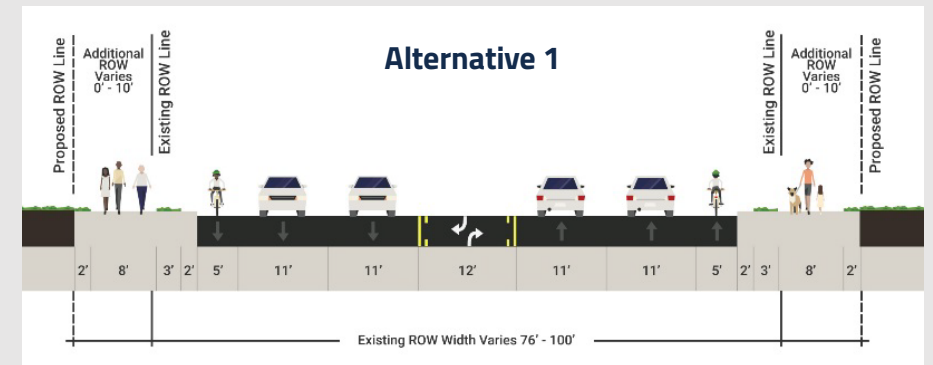
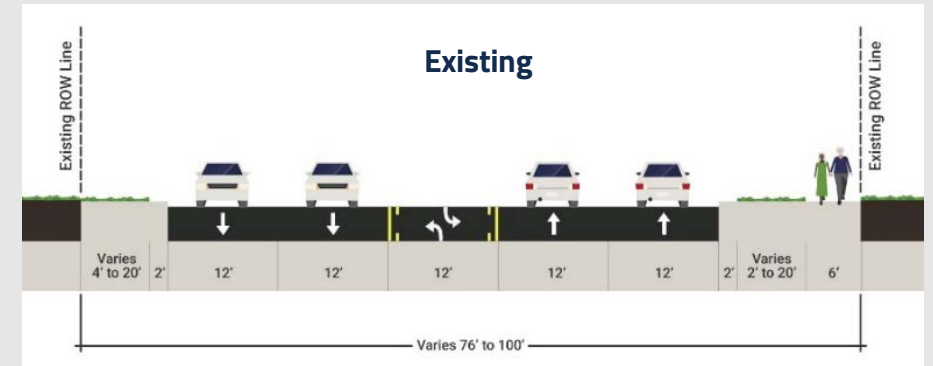
ROADWAY IMPROVEMENT ALTERNATIVES

Alternative 1

- Maintain existing two-way center left turn lane
- Add bike lanes adjacent to travel lanes
- Add sidewalk on the west side and rebuild all existing sidewalks

Alternative 2

- Maintain existing two-way center left turn lane
- Add 10' shared use path on west side
- Replace sidewalk with 10' shared use path on east side



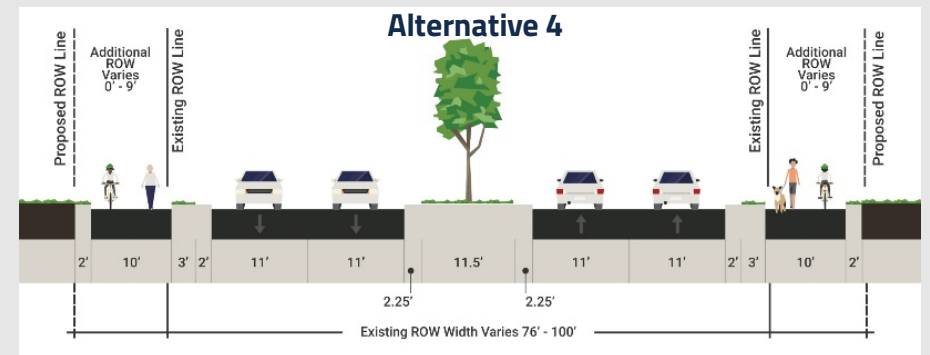
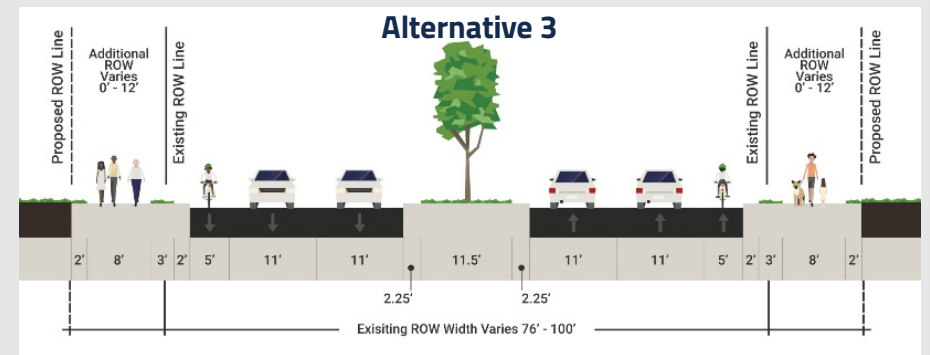
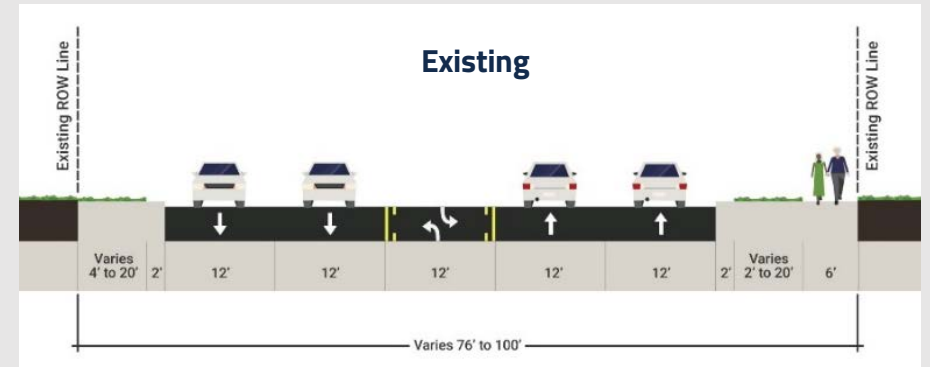
ROADWAY IMPROVEMENT ALTERNATIVES

Alternative 3

- Convert two-way center left turn lane to raised median
- Add bike lanes adjacent to travel lanes
- Add sidewalk on the west side and rebuild all existing sidewalks

Alternative 4

- Convert two-way center left turn lane to raised median
- Add 10' shared use path on west side
- Replace sidewalk with 10' shared use path on east side



MEASURES OF EFFECTIVENESS

✓ Positive Impacts

✓ Moderate Impacts

\$ Least Cost

\$\$ Moderate Cost

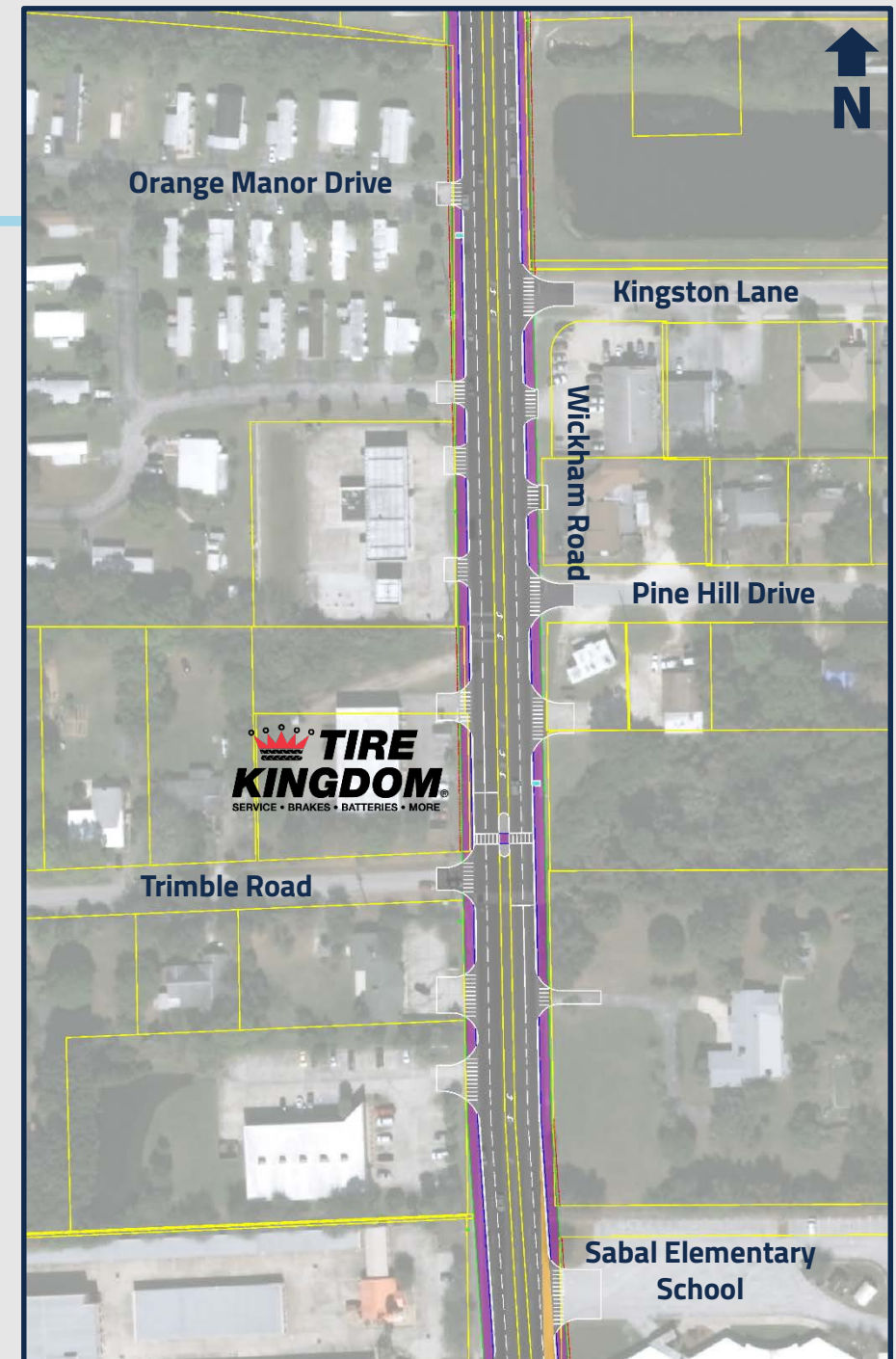
\$\$\$ High Cost

Measure of Effectiveness	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Improve Pedestrian Mobility/Safety	✓	✓	✓	✓
Improve Bicycle Mobility/Safety	✓	✓	✓	✓
Improve Vehicular Mobility	No Change	No Change	✓	✓
Improve Vehicular Safety	✓	No Change	✓	✓
Right-of-Way Impacts	\$\$\$	\$\$	\$\$\$	\$\$\$
Drainage Impacts	\$\$\$	\$\$	\$\$\$	\$\$\$
Utility Impacts	\$\$\$	\$\$	\$\$\$	\$\$\$
Total Cost Comparison	\$\$	\$	\$\$\$	\$\$\$

EAU GALLIE TO AURORA IMPROVEMENTS

Shared-Use Path Additions on East and West Sides

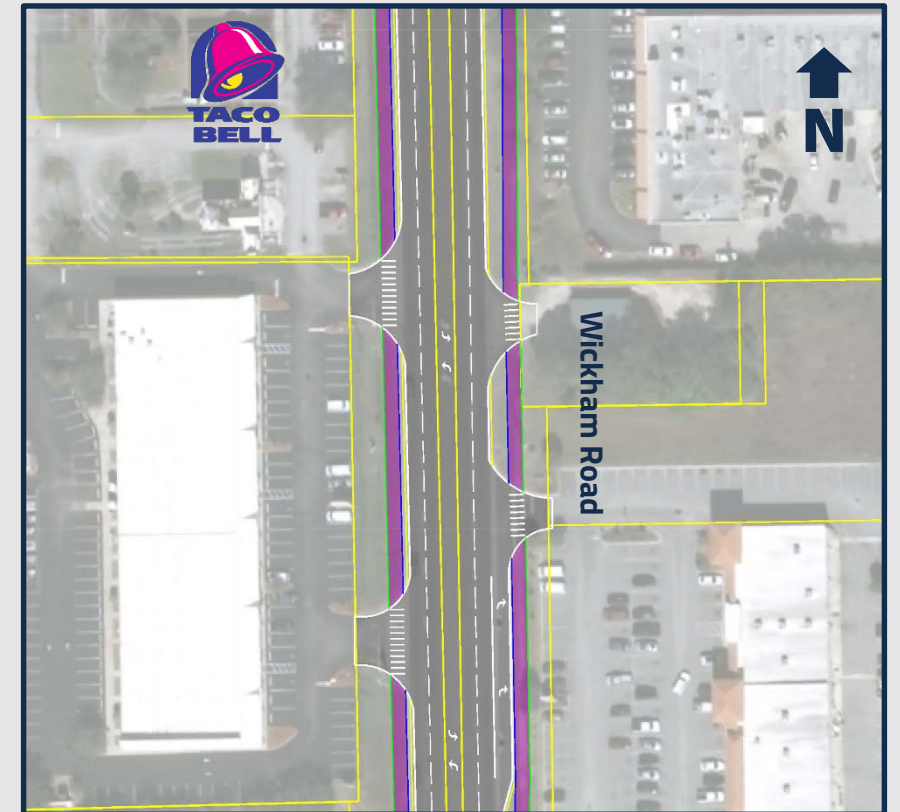
Wickham Road at Northgate Plaza	
Construction	\$600,000
Utility Relocations	\$0
Engineering/CEI	\$200,000
Roadway ROW	\$900,000
Total	\$1,700,000



LANSING TO LAKE WASHINGTON IMPROVEMENTS

Shared-Use Path Additions on East and West Sides

Wickham Road at Northgate Plaza	
Construction	\$250,000
Utility Relocations	\$0
Engineering/CEI	\$80,000
Roadway ROW	\$0
Total	\$330,000





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NEXT STEPS

IMPLEMENTATION PLAN

Short-Term Improvements	
Construction/Utility	\$110,000
Engineering/CEI	\$40,000
Roadway ROW	\$80,000
Total Cost	\$230,000

Short-Term Improvements - Aurora and Lake Washington Pedestrian Improvements

Near-Term Intersection Improvements	
Construction/Utility	\$7,850,000
Engineering/CEI	\$2,300,000
Roadway ROW	\$15,800,000
Total Cost	\$29,950,000

Near-Term Intersection Improvements - Eau Gallie Boulevard, Aurora Road, and Lake Washington Road

Long-Term Corridor Improvements	
Construction/Utility	\$3,550,000
Engineering/CEI	\$1,080,000
Roadway ROW	\$10,200,000
Total Cost	\$14,830,000

Long-Term Corridor Improvements

- Northgate Plaza Access Management and Signal Relocation
- Venture Lane/Lansing Street New Roadway and Signal
- Shared-Use Path Additions from Eau Gallie to Aurora and Lansing to Lake Washington

QUESTIONS?

