



Loudoun County

VIRGINIA

WHERE TRADITION MEETS INNOVATION

Tall Cedars Parkway and Nations Street Intersection Improvement Project

Dulles Direct Town Hall
December 19, 2019

Agenda

- Background
- Safety Improvement Projects
 - Implemented and Programmed
- Tall Cedars Parkway/Nations Street
 - Signal Warrant Analysis
- Proposed Intersection Improvements
 - Interim Improvements
 - Long-term Improvements
- Next Steps

Background

Project Timeline

- February 2017 – County completed the Intersection Improvement Program Study
 - Tall Cedars Parkway at Nations Street, ranked Priority 5 – the highest level of risk based on traffic volumes and crash history
- September 2018 – County initiated Signal Justification/Intersection Improvements Study
 - Collected traffic data at the intersection of Tall Cedars Parkway and Nations Street
 - Performed Intersection Analysis and Signal Warrant Analysis
 - Signal not warranted
 - Evaluation of alternative intersection configurations to address crashes
 - Recommended right-in, right-out and left-in intersection control

Background




Project Timeline

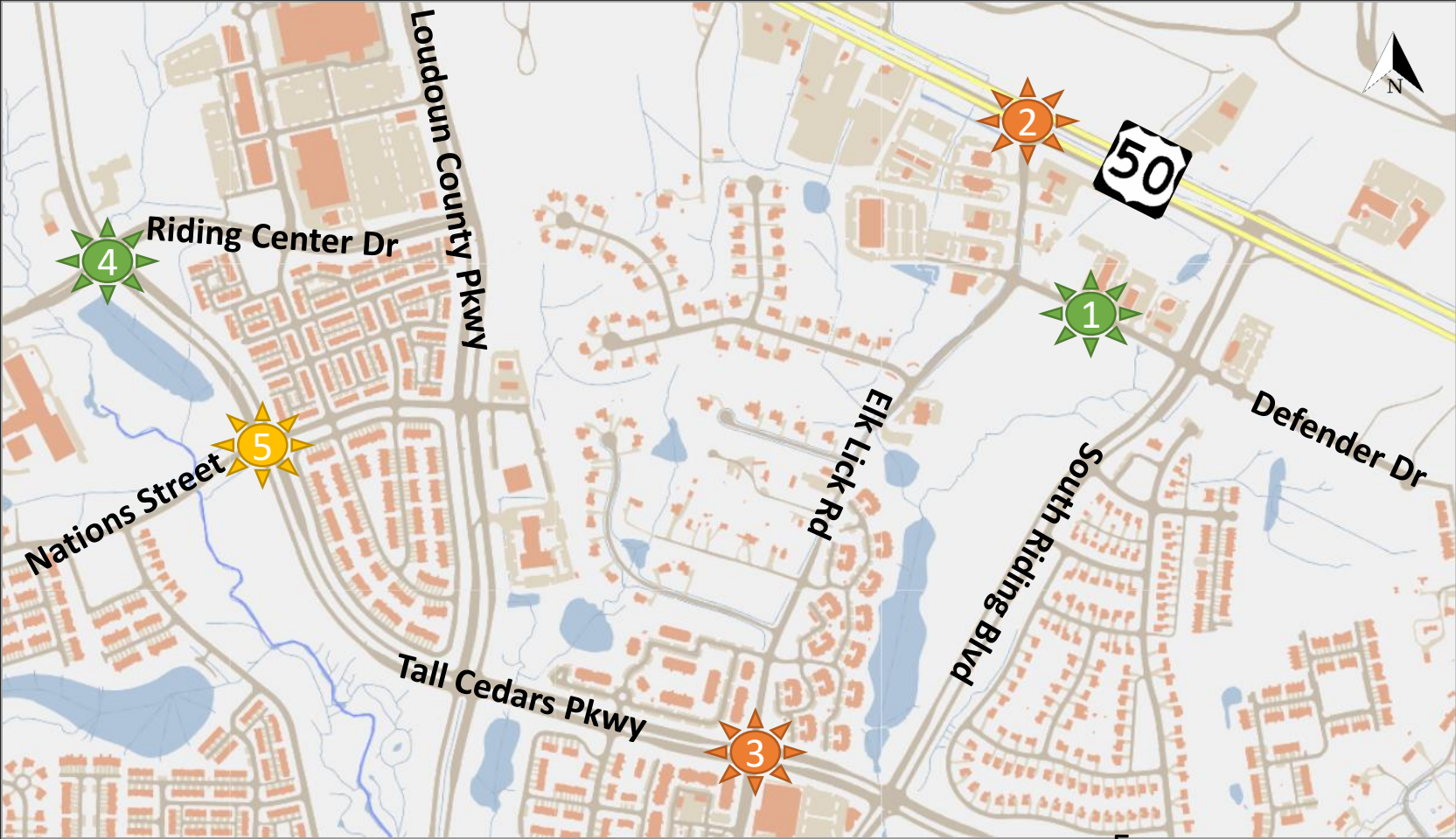
- April 2019 – Board Of Supervisors (BOS) directed County staff to submit analysis results to VDOT
- May 2019 – Submitted to VDOT for review, comment, and approval
- October 2019 – Received VDOT approval
 - Recommended solution – right-in, right-out and left-in intersection control
 - Restrict through and left movements from Nations Street approaches

Safety Improvement Projects

- 1. Defender Dr Restriping
- 2. Route 50 Median Closure at Elk Lick Rd
- 3. Tall Cedars Pkwy/Elk Lick Rd Intersection Improvements
 - ❑ Interim improvements - Completed
 - ❑ Long-term improvements - Ongoing
- 4. Tall Cedars Pkwy/Riding Center Dr Traffic Signal
- 5. Tall Cedars Pkwy/Nations St Intersection Improvements

LEGEND

-  - Completed
-  - Interim Completed/ Long-term Ongoing
-  - Proposed



Background

Study Location

- Located in Dulles District
 - 4-leg intersection
 - Tall Cedars Parkway: 4-lane divided roadway (45 MPH)
 - Nations Street: 2-lane undivided roadway (25 MPH)
 - Stop control on Nations Street approaches



Background

Vehicular and Pedestrian Volumes

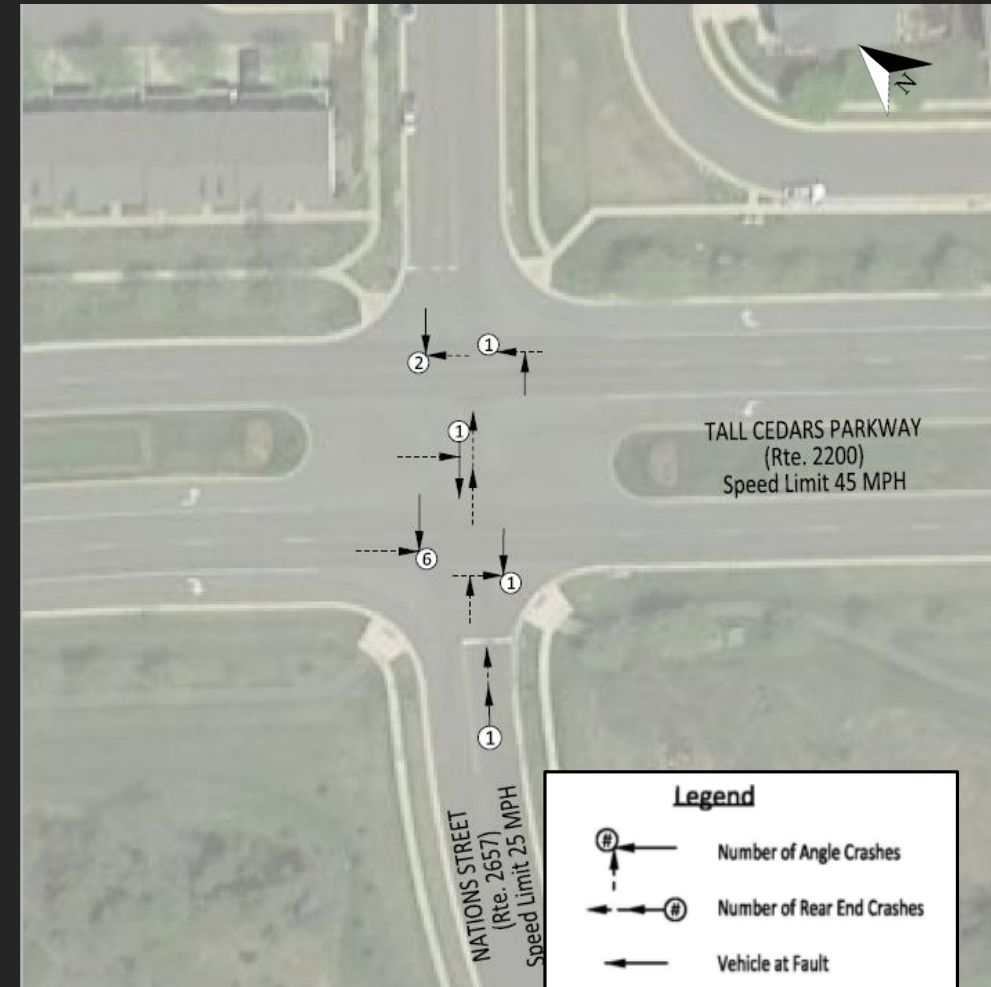
- 13-hour Pedestrian and Vehicle Counts
 - Collected on October 16, 2018
 - AM Peak Hour: 8:15 – 9:15
 - PM Peak Hour: 5:15 – 6:15



Background

Intersection Crash Summary

- 12 crashes from Jan 2016 – May 2018 (29 months)
 - “Angle crash” most common type
 - 11 angle crashes
- 18 crashes reported between May 2018 and November 2019 (18 months)



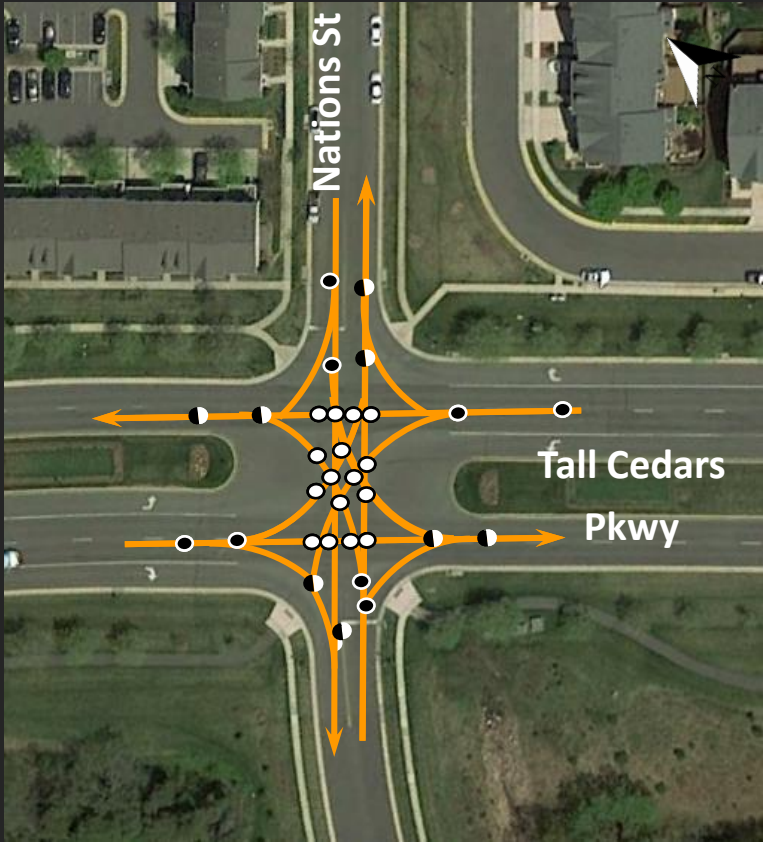
Tall Cedars Parkway/Nations Street

Why is a Traffic Signal NOT a solution?

- Warrants are not met for a traffic signal
 - Traffic Volume is not an issue
- Conflict Points are an issue

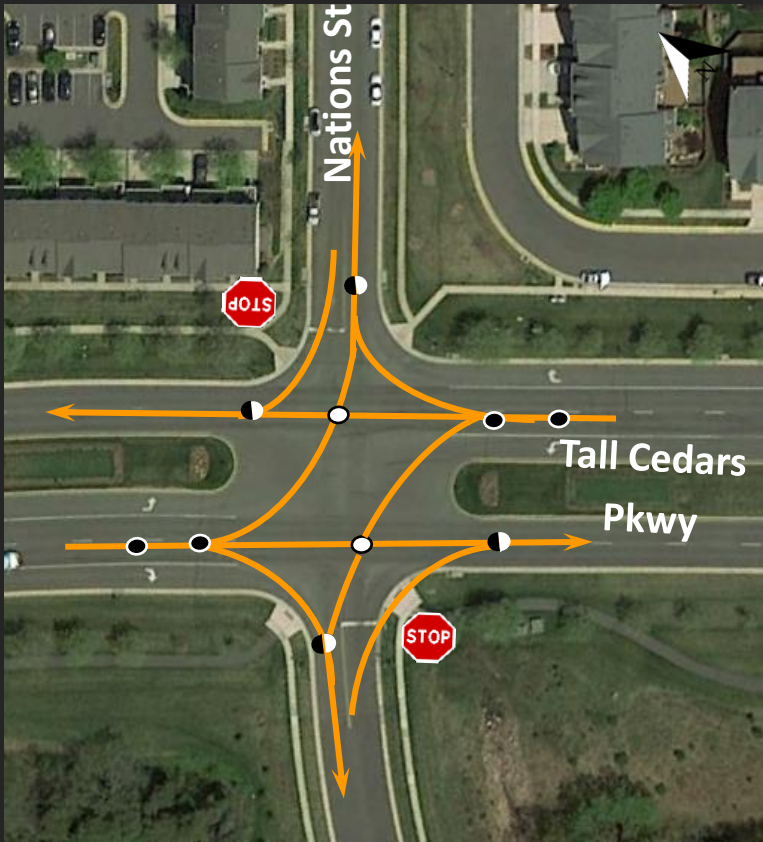
Proposed Intersection Improvements

Conflict Point Reduction (*Right-in, Right-out, Left-in*)



- LEGEND**
- - Merging
 - - Diverging
 - - Crossing
 - - Vehicle Path

Type	Existing	Implementation of Solution
Merging	8	4
Diverging	8	4
Crossing	16	2
Total	32	10



Proposed Intersection Improvements

Right-in, Right-out, Left-in



Interim



Final



Similar Project Example

Loudoun County Parkway and Center Street



Interim



Final



Similar Project Example

Loudoun County Parkway and Center Street



Similar Project Example

Loudoun County Parkway and Center Street



Similar Project Example

Tall Cedars Parkway and Elk Lick Road



Interim



Final



Proposed Improvements (*Right-in, Right-out, Left-in*)

Example of Tall Cedars
Parkway and Elk Lick Road
– Interim Intersection
Improvements Installed



Proposed Improvements (*Right-in, Right-out, Left-in*)

Example of Tall Cedars
Parkway and Elk Lick Road
– Interim Intersection
Improvements Installed






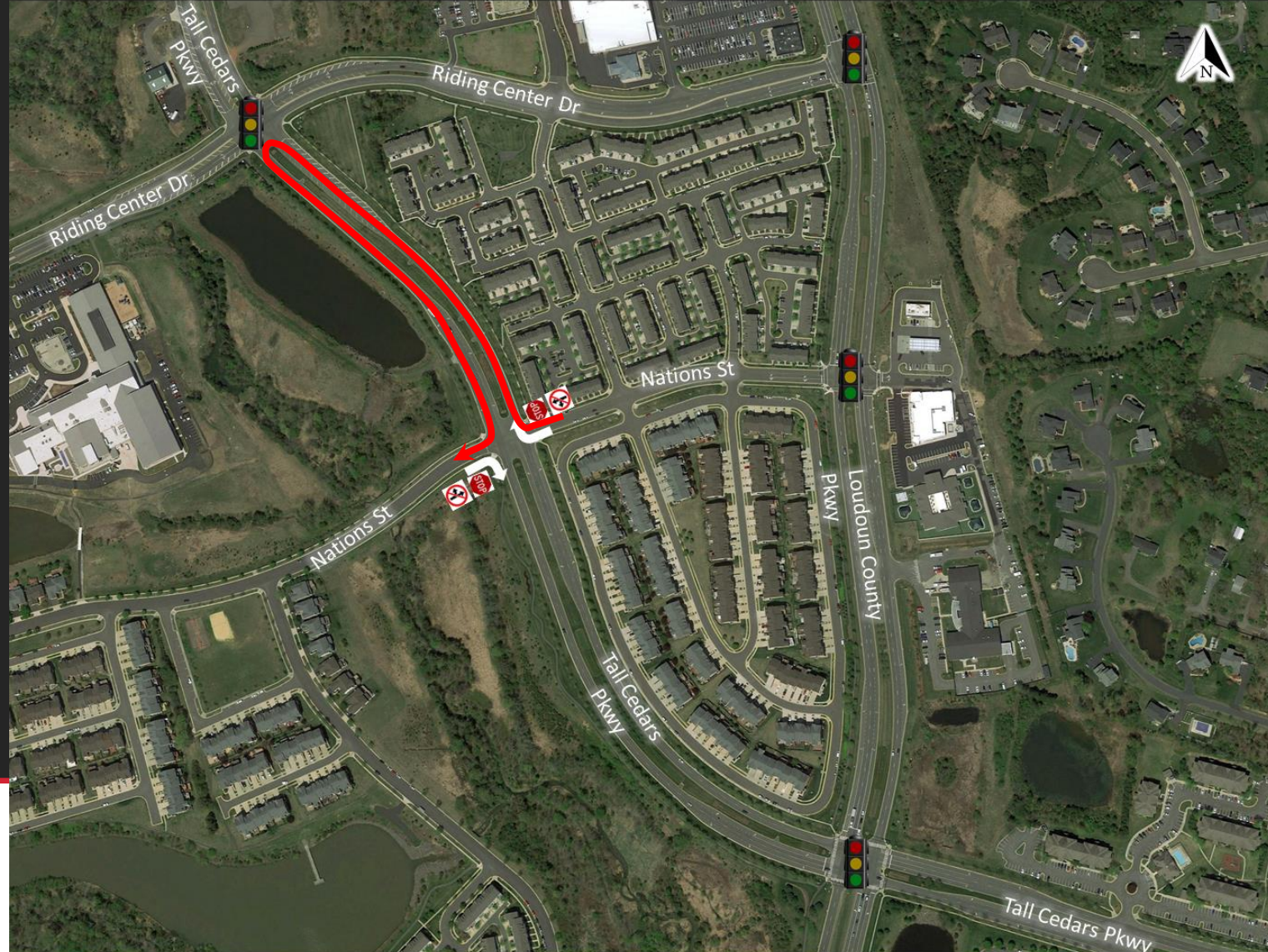
Proposed Intersection Improvements

Potential Alternative Traffic Routes

Southbound Route Choices

Alternative Route Choices

-  SB Route Choice 1
-  SB Route Choice 2
-  SB Route Choice 3






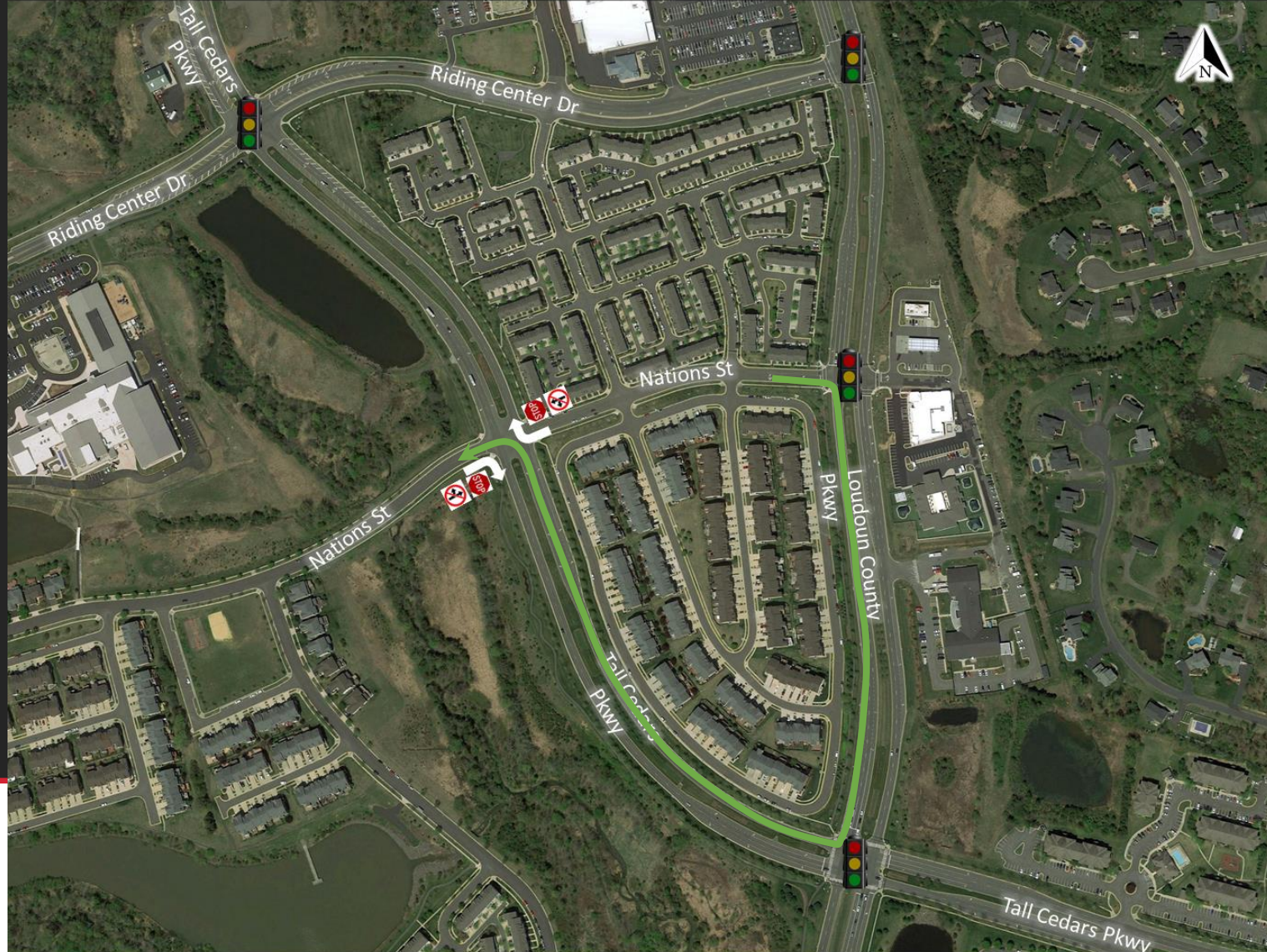
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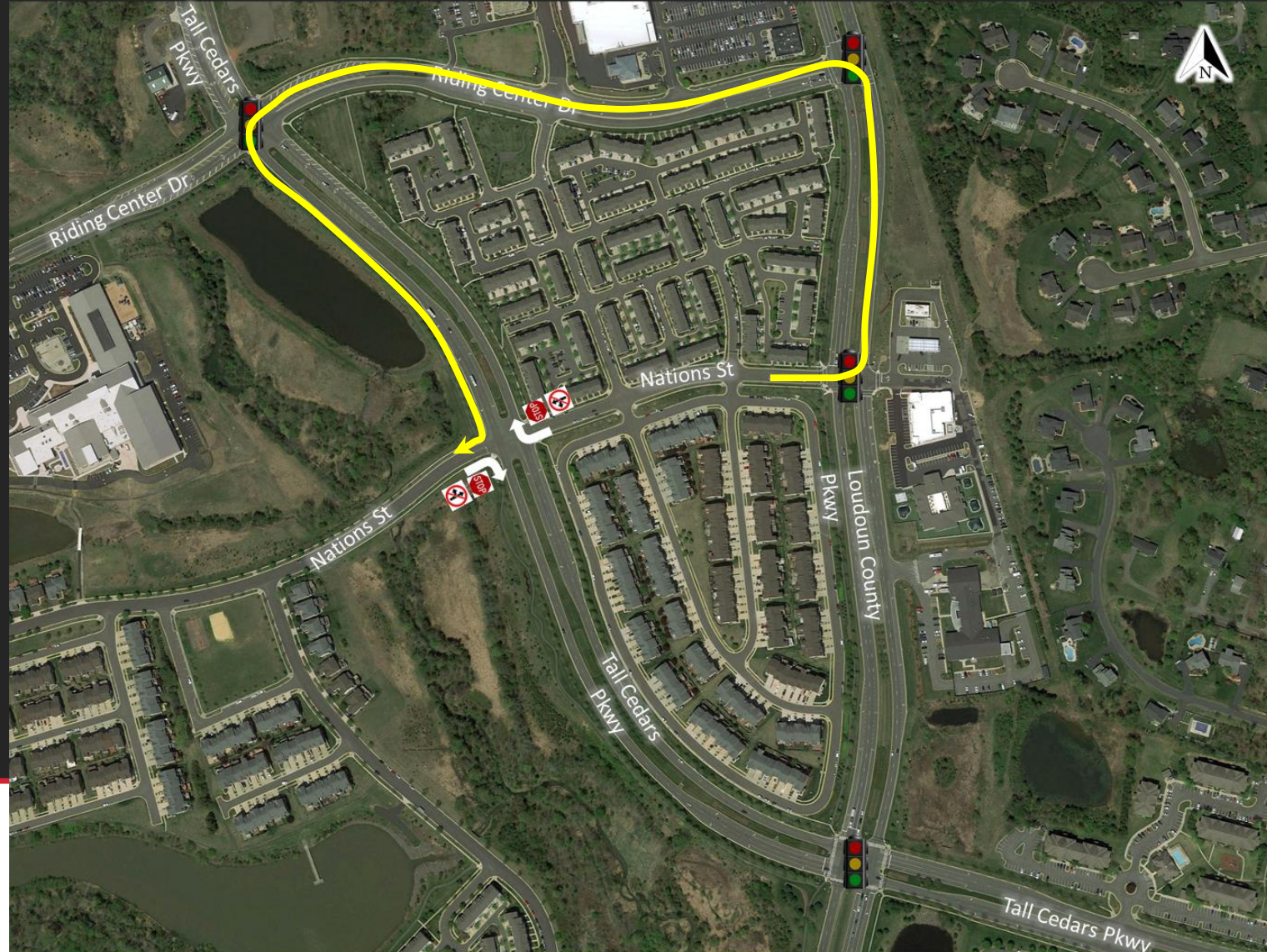
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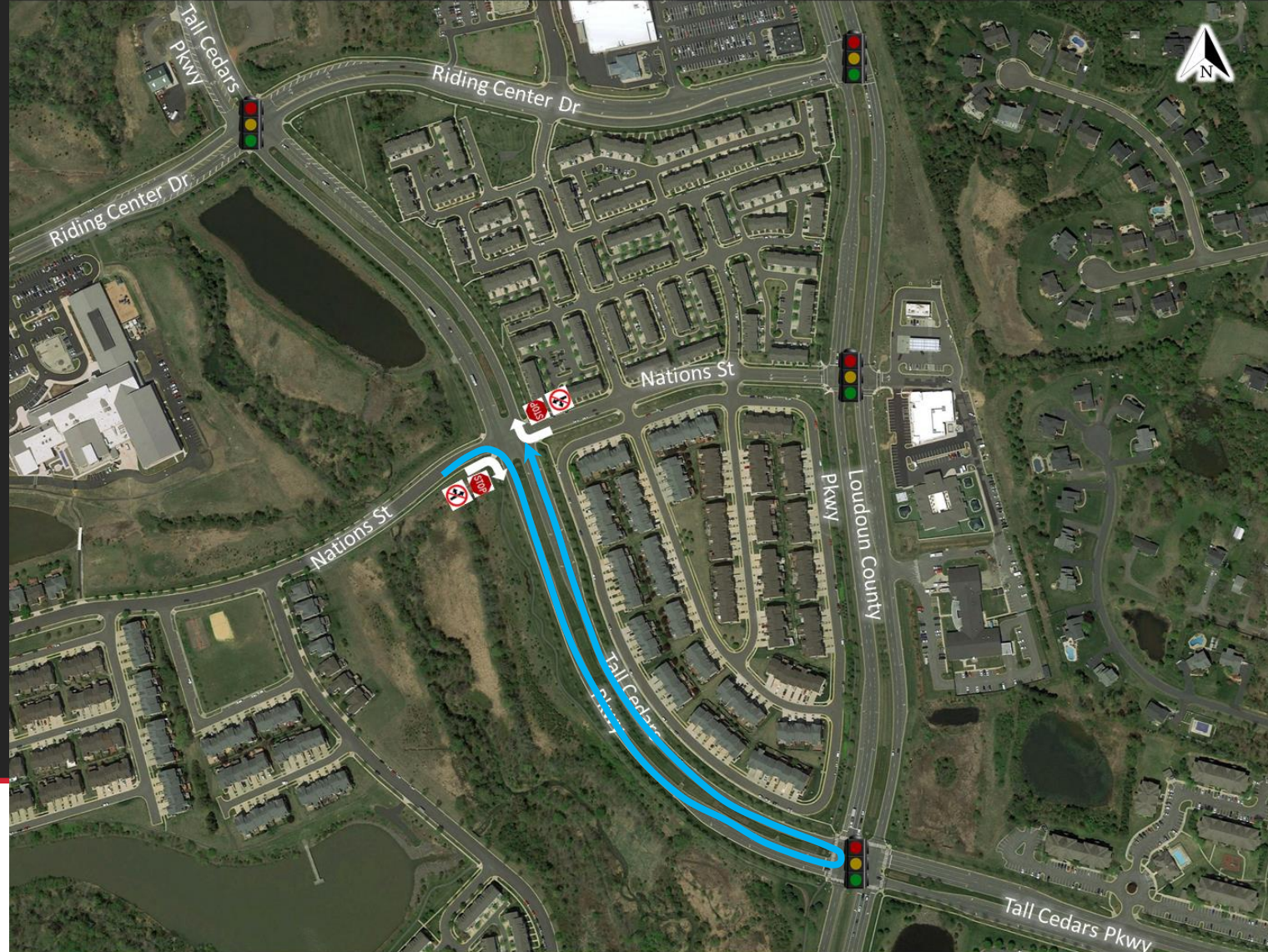
Proposed Intersection Improvements

Potential Alternative Traffic Routes

Northbound Route Choices

Alternative Route Choices

-  NB Route Choice 1
-  NB Route Choice 2





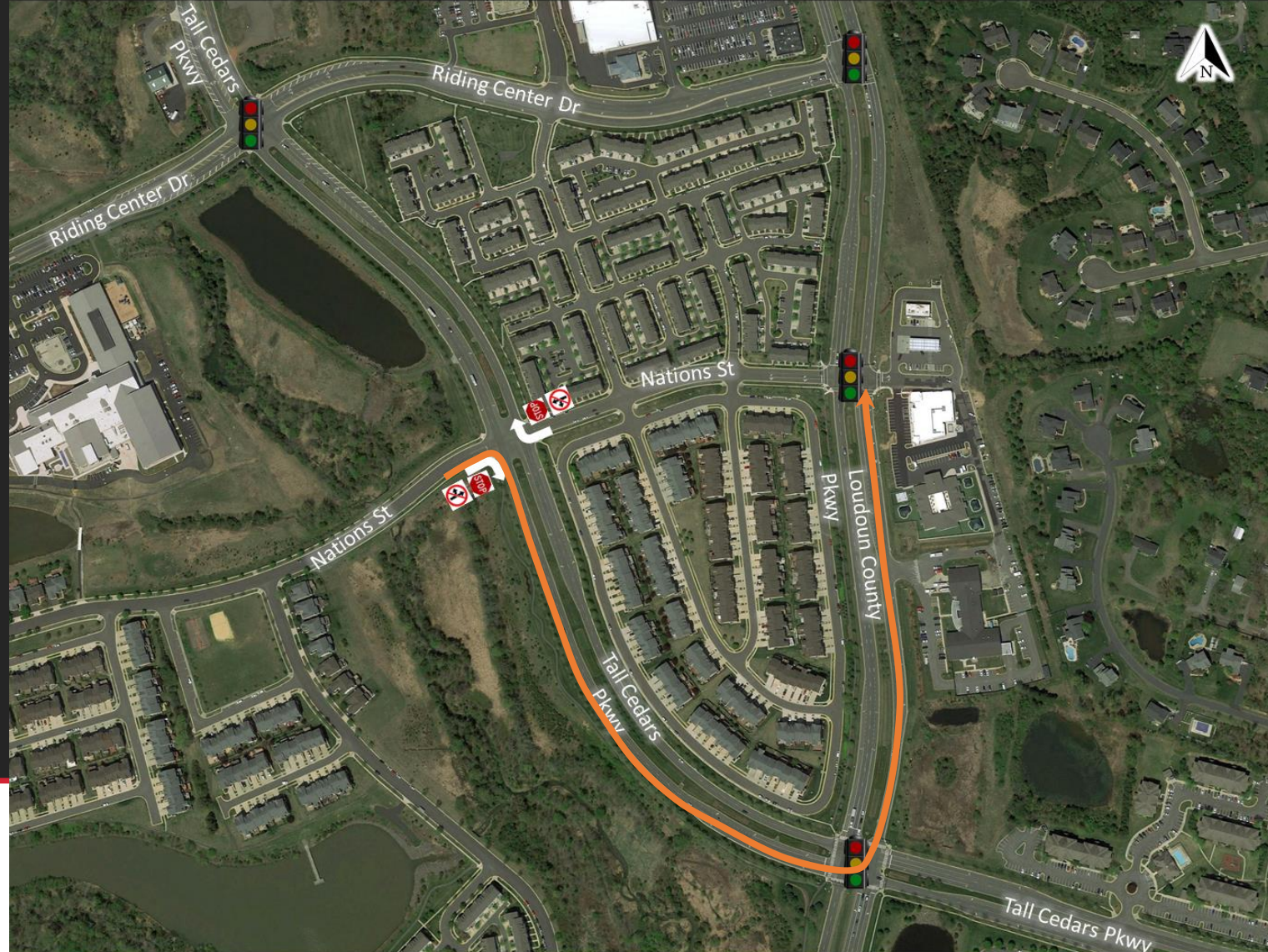
Proposed Intersection Improvements

Potential Alternative Traffic Routes

Northbound Route Choices

Alternative Route Choices

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Proposed Intersection Improvements

Traffic Operations (Tall Cedars Pkwy/Nations St)

- Expected AM and PM Peak Hour Operations

Condition	Overall Intersection Delay	
	AM (sec)/LOS	PM (sec)/LOS
Existing	24.7/C	>100/F
Proposed	11.5/B	10.1/B

HCM Level Of Service Criteria for Unsignalized Intersections	
Level of Service(LOS)	Delay (sec)
A	<10
B	>10-15
C	>15-25
D	>25-35
E	>35-50
F	>50

- Operations will improve compared to the current two-way stop control

Proposed Intersection Improvements

Impacts to Adjacent Signalized Intersections

- Operational impacts with added U-turns to adjacent signals along Tall Cedars Parkway

Intersection	Condition	Overall Intersection Delay	
		AM (sec)/LOS	PM (sec)/LOS
Tall Cedars Parkway and Loudoun County Parkway	Existing	31.9/C	37.4/D
	With Proposed Improvements	34.6/C	40.4/D
Tall Cedars Parkway and Riding Center Drive	Existing	15.5/B	17.3/B
	With Proposed Improvements	15.5/B	17.6/B

HCM Level Of Service Criteria for Signalized Intersections	
Level of Service(LOS)	Delay (sec)
A	<10
B	>10-20
C	>20-35
D	>35-55
E	>55-80
F	>80

- No Significant Impacts

Next Steps

- Obtain funding for intersection improvements
- Design and implement intersection improvements

Additional Questions?

- Following the meeting, please provide any additional written questions or feedback directly to:
 - Supervisor Matthew Letourneau (Matt.Letourneau@loudoun.gov)
 - Legislative Aide: Tom Parker (Tom.Parker@loudoun.gov)