



**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

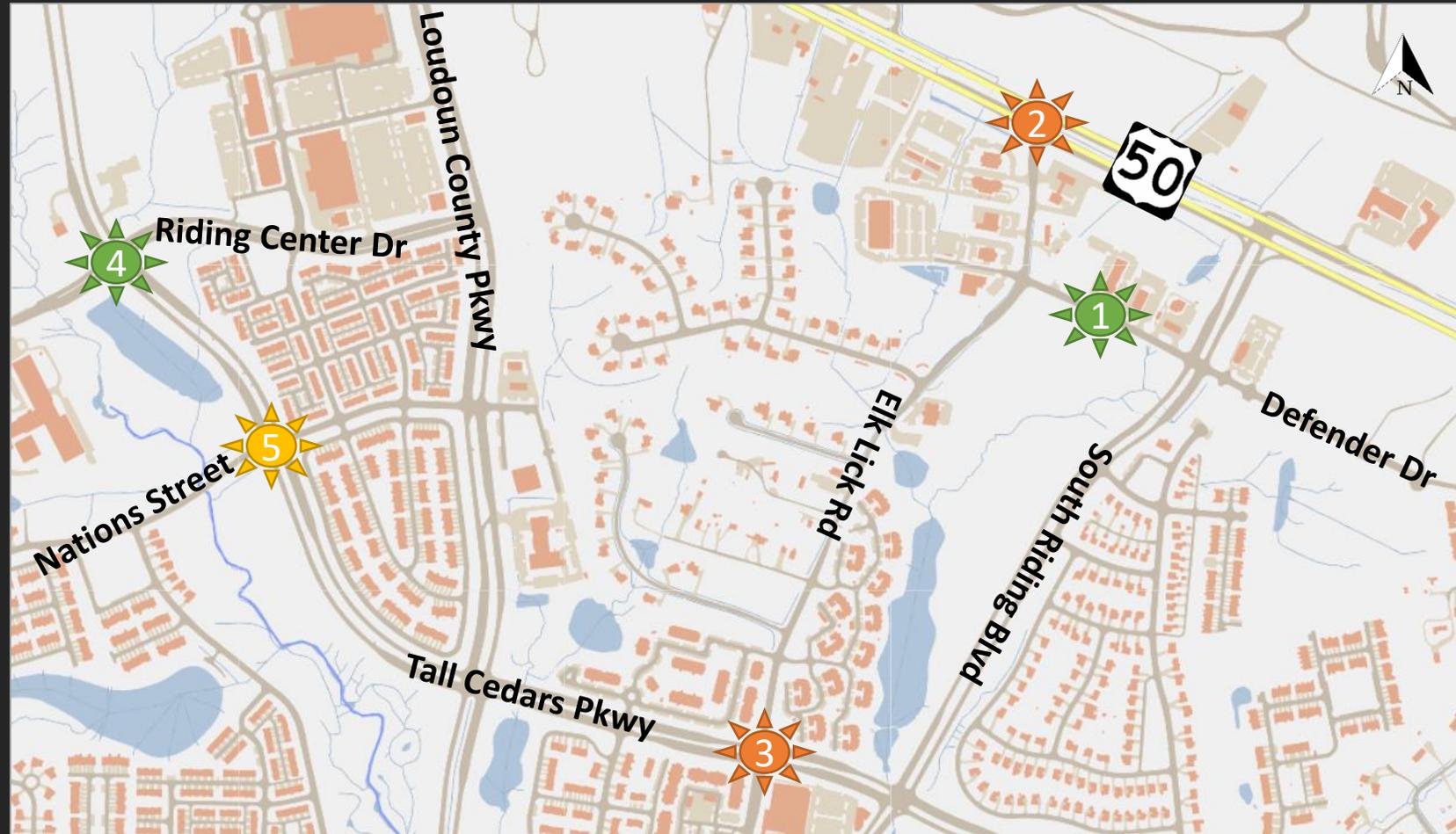
- April 2019 – Board Of Supervisors (BOS) directed County staff to submit analysis results to VDOT
- May 2019 – Submitted to VDOT for review, comment, and approval
- October 2019 – Received VDOT approval
  - Recommended solution – right-in, right-out and left-in intersection control
  - Restrict through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

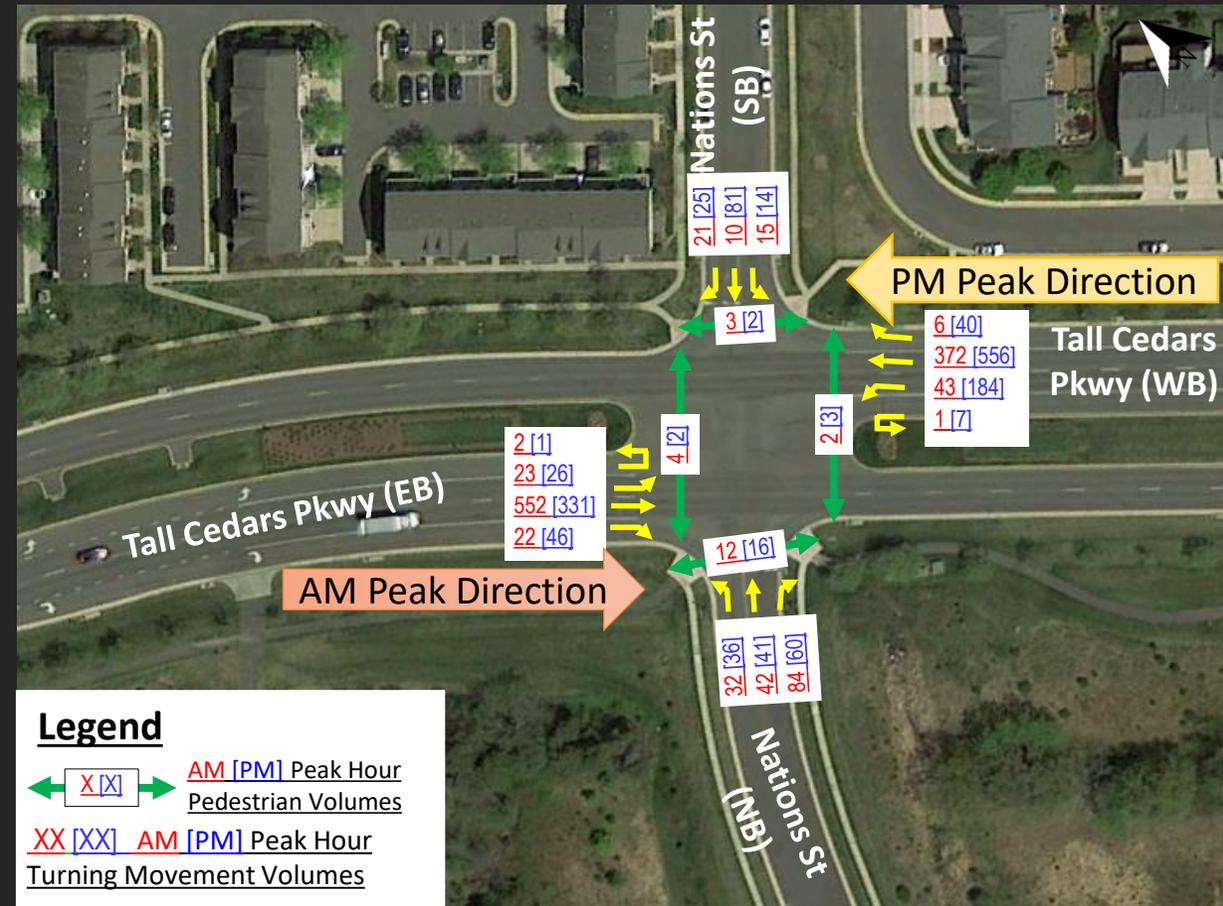
- Located in Dulles District
  - 4-leg intersection
  - Tall Cedars Parkway: 4-lane divided roadway (45 MPH)
  - Nations Street: 2-lane undivided roadway (25 MPH)
  - Stop control on Nations Street approaches



# Background

## Vehicular and Pedestrian Volumes

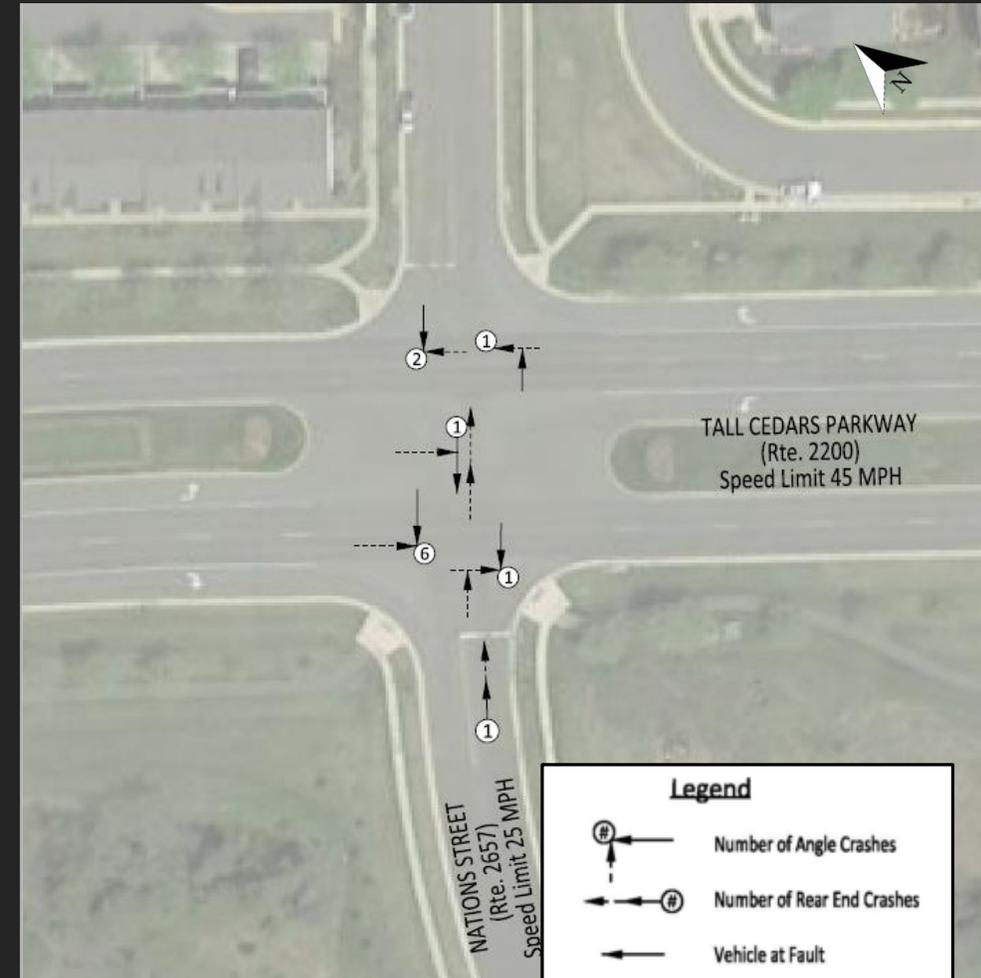
- 13-hour Pedestrian and Vehicle Counts
  - Collected on October 16, 2018
  - AM Peak Hour: 8:15 – 9:15
  - PM Peak Hour: 5:15 – 6:15



# 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)



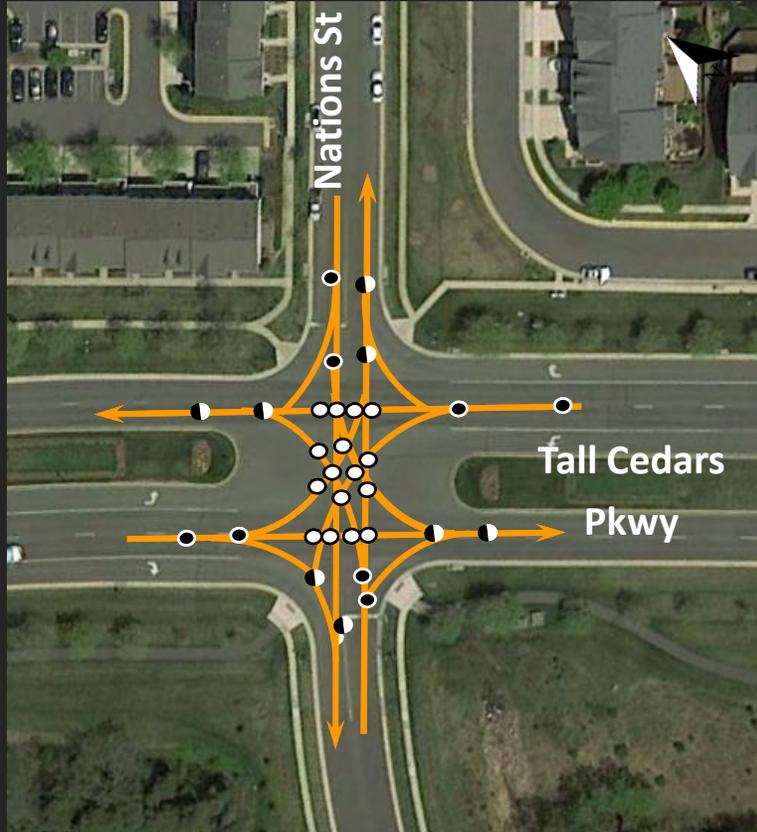
# Tall Cedars Parkway/Nations Street

## 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

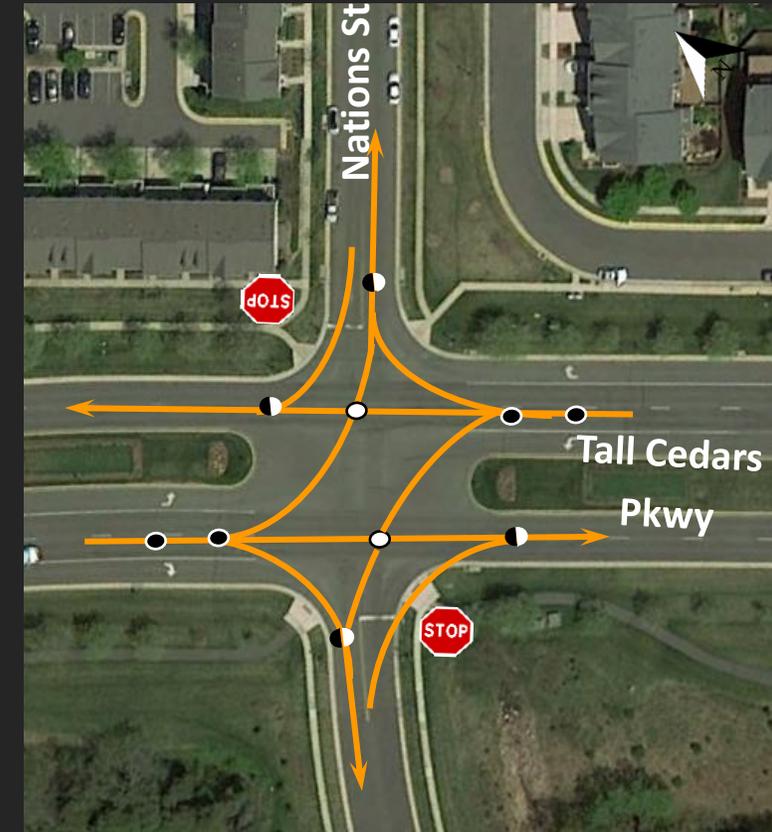
## Conflict Point Reduction (*Right-in, Right-out, Left-in*)



### LEGEND

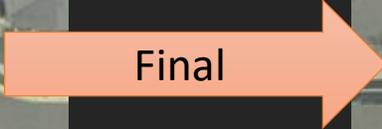
- - Merging
- - Diverging
- - Crossing
- ➔ - Vehicle Path

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*



Planning Level Cost Estimate for Proposed Improvements

\$1,100,000

# Similar Project Example

## Loudoun County Parkway and Center Street



# 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



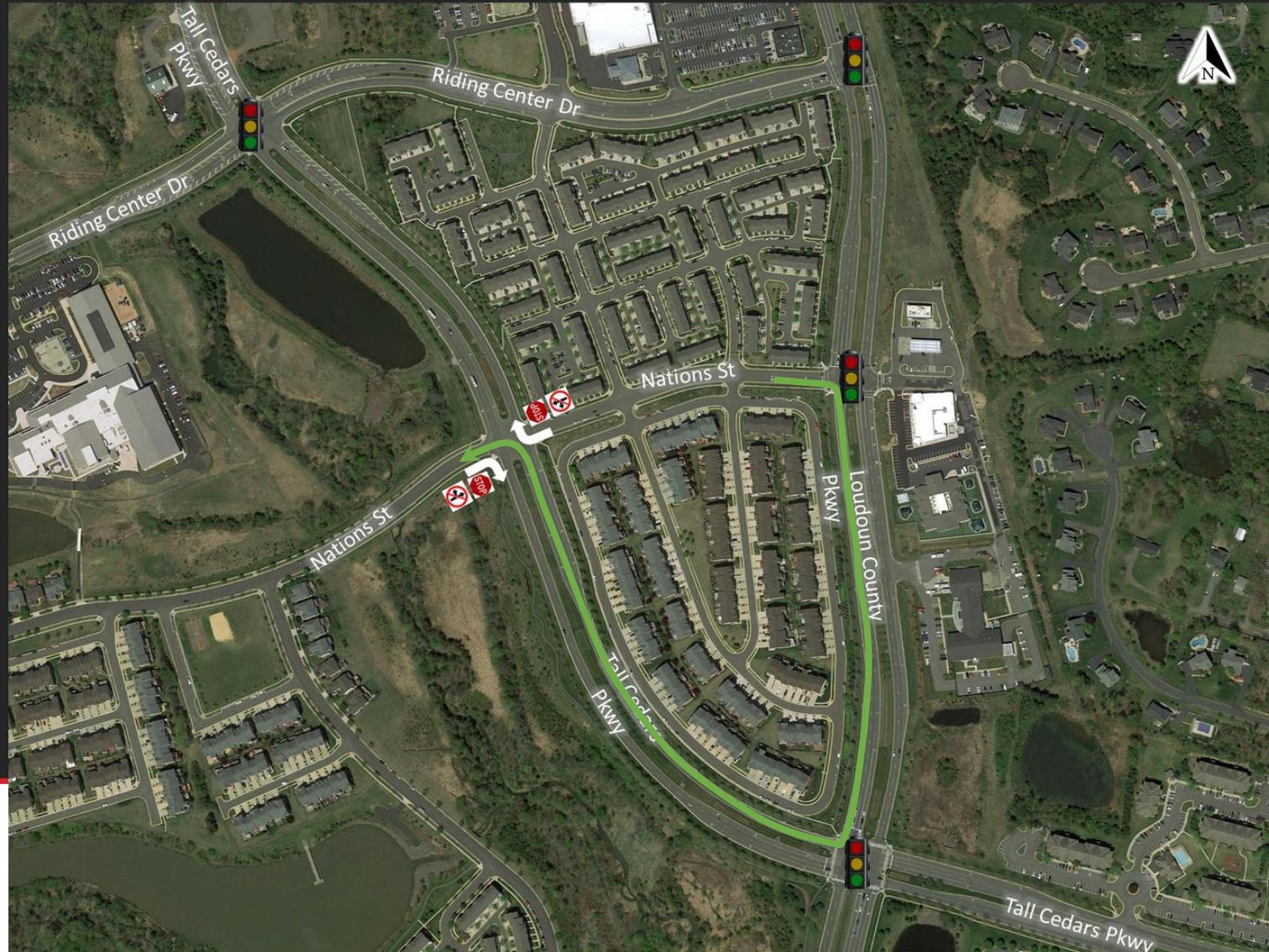
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## Potential Alternative Traffic Routes

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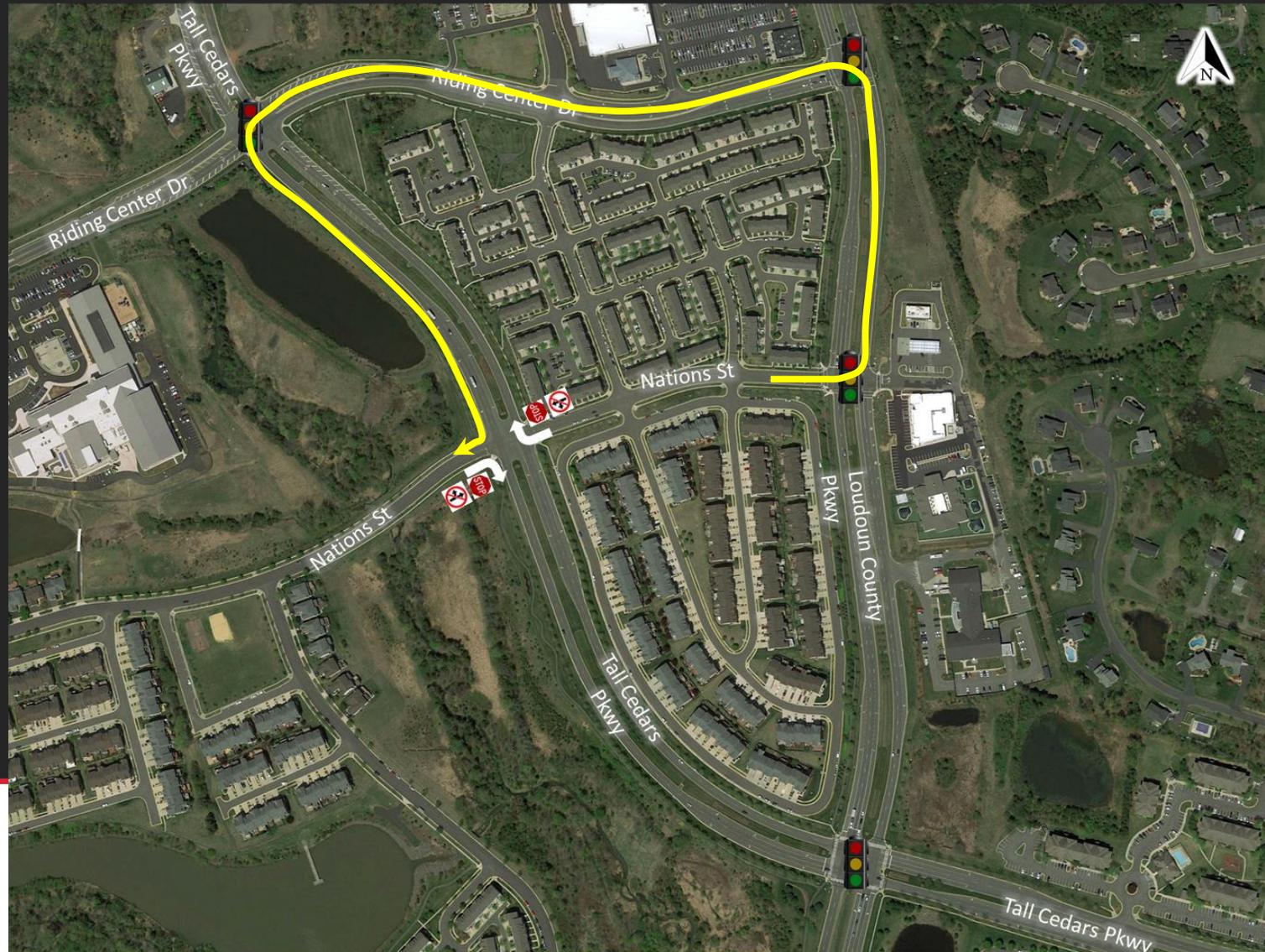
# Proposed Intersection Improvements

## Potential Alternative Traffic Routes

### Southbound Route Choices

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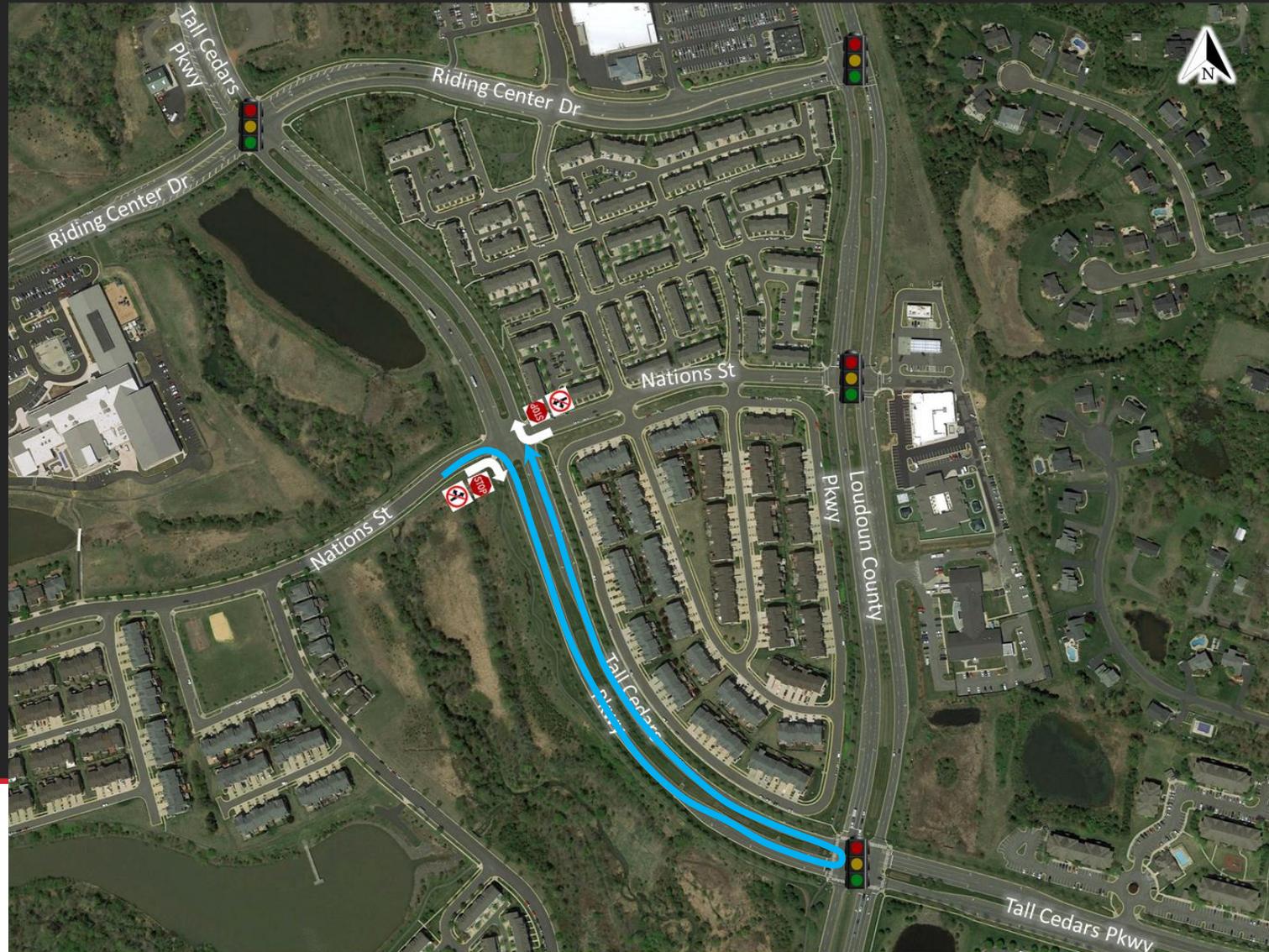
# Proposed Intersection Improvements

## Potential Alternative Traffic Routes

### Northbound Route Choices

#### Alternative Route Choices

-  NB Route Choice 1
-  NB Route Choice 2



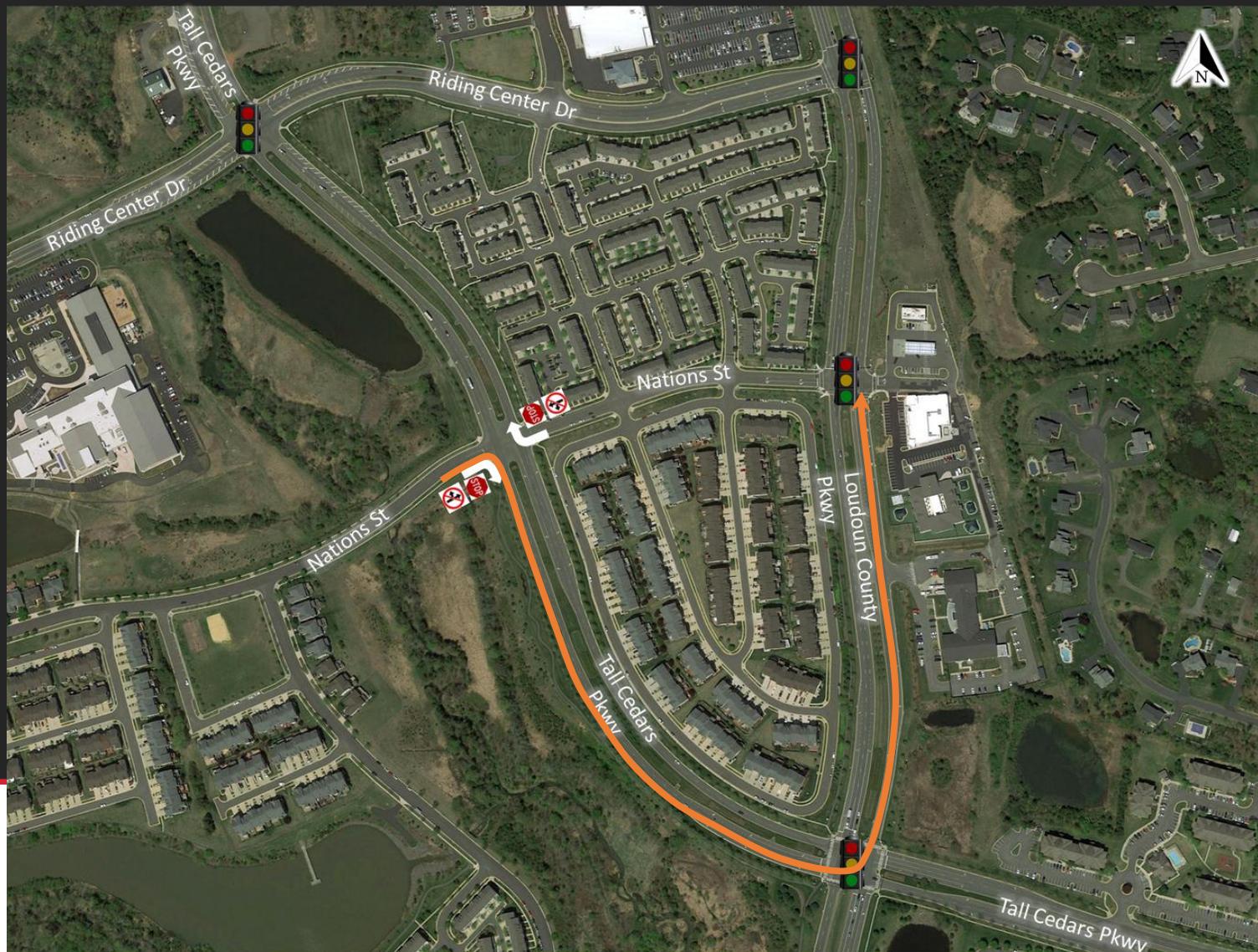
# Proposed Intersection Improvements

## Potential Alternative Traffic Routes

### Northbound Route Choices

#### Alternative Route Choices

-  NB Route Choice 1
-  NB Route Choice 2



# 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](mailto:Matt.Letourneau@loudoun.gov))
  - Legislative Aide: Tom Parker ([Tom.Parker@loudoun.gov](mailto:Tom.Parker@loudoun.gov))