

Traffic Operations and Safety Study: Route 50 and Elk Lick Road Tall Cedars Parkway and Elk Lick Road

**DULLES DISTRICT
TOWN HALL MEETING
January 24, 2017**

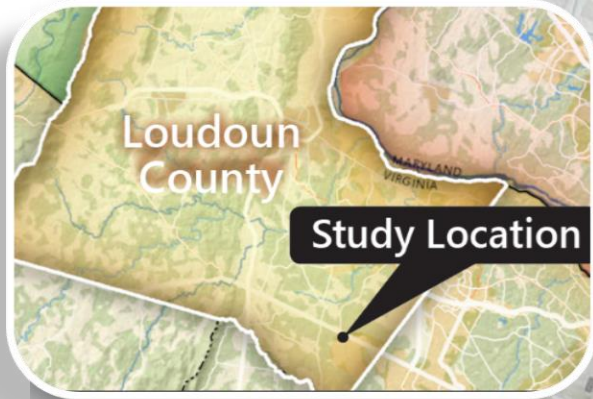


ELK LICK ROAD STUDY AREA AND PROJECT BACKGROUND



Loudoun County VIRGINIA

WHERE TRADITION MEETS INNOVATION



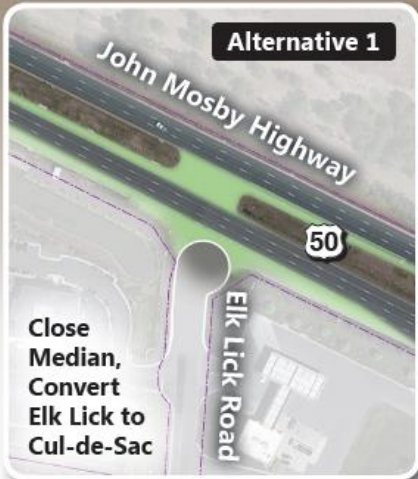
Project Summary

- Board Member Initiative introduced by Sup. Letourneau
 - High crashes at both intersections
 - Long delays at both intersections
 - Heavy cut-through traffic reported on Elk Lick Road
- Interim and long term improvements were studied for improved safety and operations
- After discussion with the County, VDOT, and LCSO, two alternatives at each intersection were moved forward for microsimulation analysis

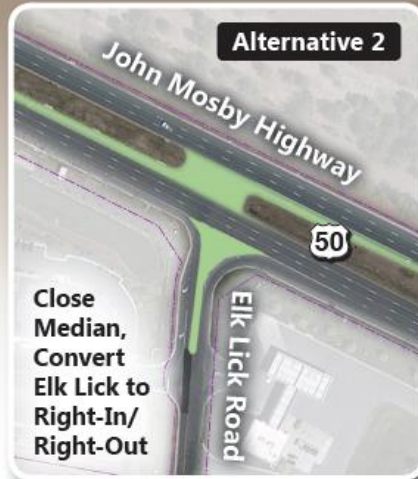


U.S. Route 50 at Elk Lick Road Alternatives

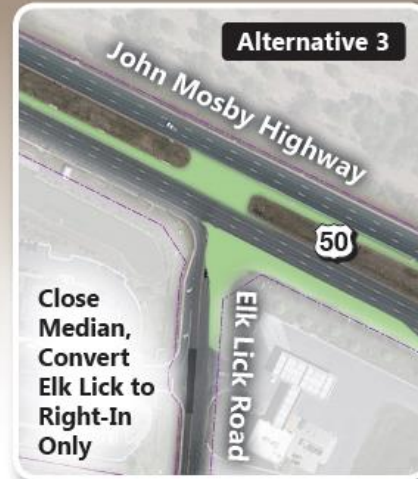
Alternative 1



Alternative 2



Alternative 3



Alternative 4



Tall Cedars Parkway at Elk Lick Road Alternatives

Restrict Turning Movements, Remove Stop Signs on Tall Cedars

Alternative 5



Traffic Signal

Alternative 6



Single Lane Roundabout

Alternative 7



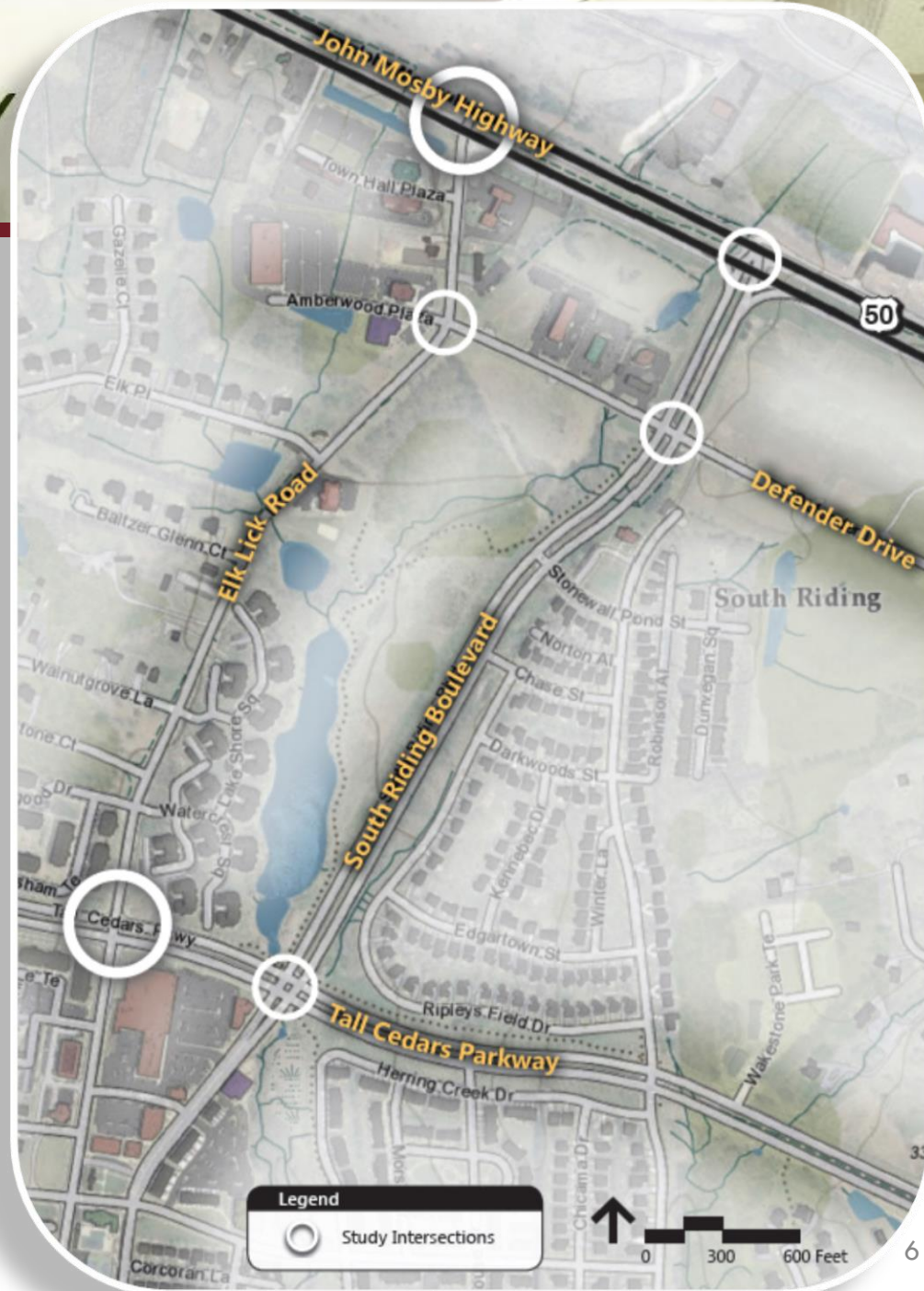
Two Lane (on Tall Cedars) Roundabout

Alternative 8



Six Network Intersections

- **Route 50 & Elk Lick Road**
- **Route 50 & South Riding Boulevard**
- **Elk Lick Road & Defender Drive**
- **South Riding Boulevard & Defender Drive**
- **Tall Cedars Parkway & Elk Lick Road**
- **Tall Cedars Parkway & South Riding Boulevard**



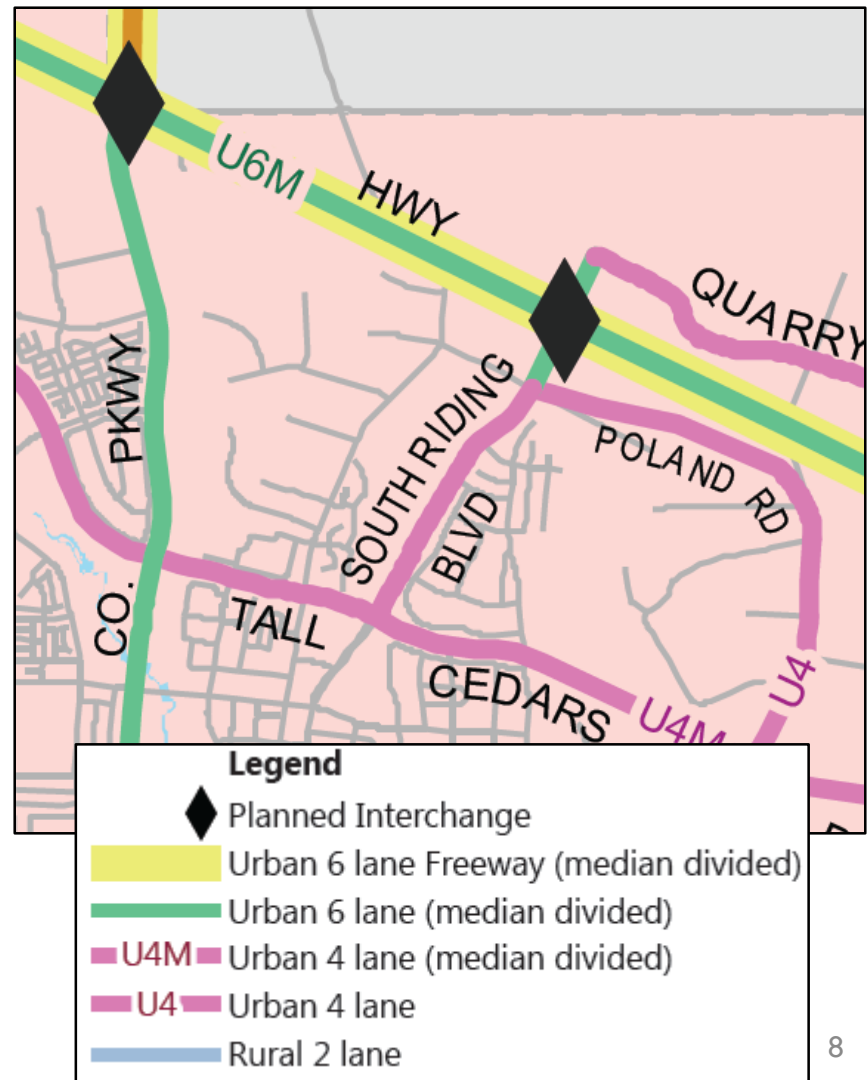
Microsimulation Alternatives Analysis

- VHB redistributed volumes throughout 6 network intersections for four combinations of alternatives
- Each of the four combinations of alternatives were modeled using microsimulation software
 - 4 time periods studied for each network Improvement Alternative model (16 models total):
 - 2015 AM peak,
 - 2015 PM peak,
 - 2025 AM peak and
 - 2025 PM peak



Current 2030 Countywide Transportation Plan (CTP)

- Route 50: 6 lane freeway
 - At-grade access terminated
 - 5 interchanges planned: Willard/Tall Cedars, South Riding, Loudoun County Parkway, Arcola Blvd/Gum Spring, & Northstar
- Tall Cedars Parkway: 4 lane collector



US 50 AND ELK LICK ROAD





Existing Conditions

- High speeds, high volumes, & numerous lanes on Route 50
- NB left-turners experience excessive delays (LOS F) during AM peak and PM peak periods
- Does not meet VDOT signal spacing requirements



Loudoun County

VIRGINIA
WHERE TRADITION MEETS INNOVATION

Types of Collision

- Rear End
- Fixed Object
- Angle Crash

Injury Severity

- K** Fatal
 - A** Incapacitating Injury
 - B** Non-Incapacitating Injury
 - C** Non-Visible Injury
 - No Injury / Property Damage Only (PDO)
 - Vehicle at Fault
- DOC# VDOT Document Number



Collision Summary

Year	Type of Collision							Time of Day			Lighting			Weather				Surface				Severity					Total		
	Right Angle	Rear-End	Head-On	Left Turn	Side Swipe	Fixed Object	Pedestrian	Other	AM Peak (7am-10am)	PM Peak (4-7pm)	Off Peak	Daylight	Dawn/Dusk	Darkness	Cloudy/ Clear	Mist	Rain	Snow	Dry	Wet	Snowy	Icy	People					PDO Crash	
																							K(1)	A(2)	B(3)	C(4)			
2013	3	1		1		1				2	4	3		3	5		1		5	1					3	3	3	6	
2014	2			2					2	1	1	4			3		1		3	1					1	1	2	2	4
2015	6	1		2					2	2	5	6	1	2	9				9							5	4	5	9
Total	11	2		5		1			4	5	10	13	1	5	17		2		17	2					1	9	9	10	19

0 20 40 Feet



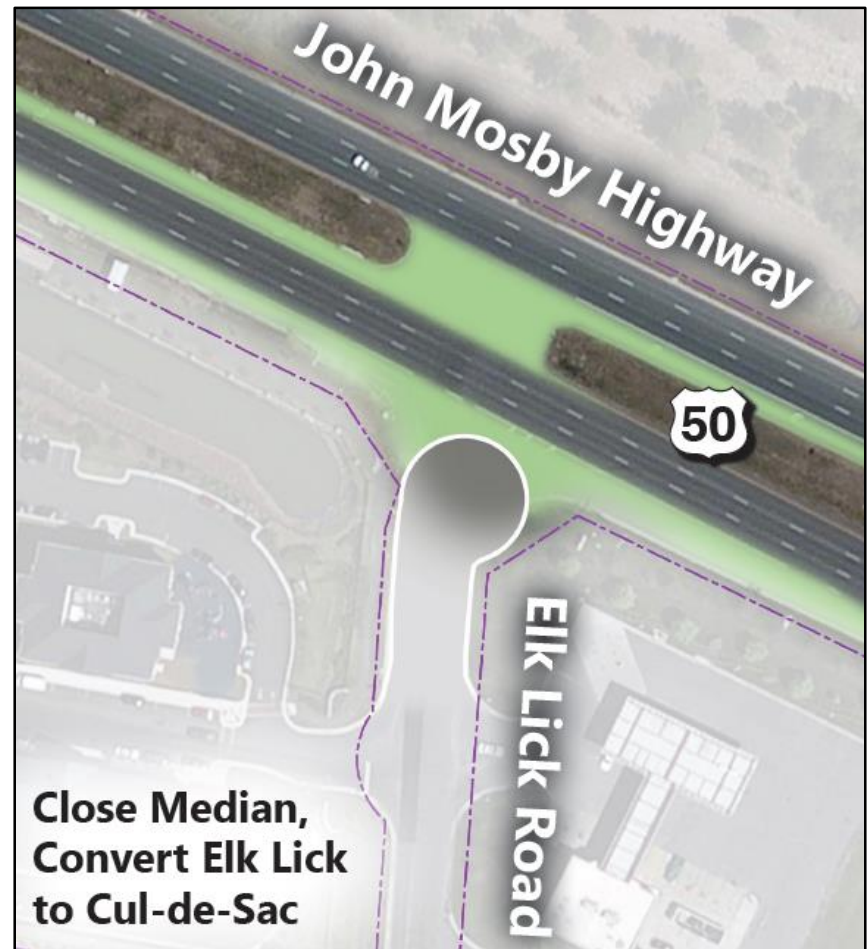
3 Year Crash Summary (Jan 2013 – Dec 2015)

- 19 total crashes
- 13 crashes a result of left-turns from NB Elk Lick
 - 2 during weekday AM Peak, 2 during weekday PM Peak
- 1 severe injury crash; 10 non-injury crashes
- Observations of “near miss” crashes between EB through vehicles and WB lefts on Route 50



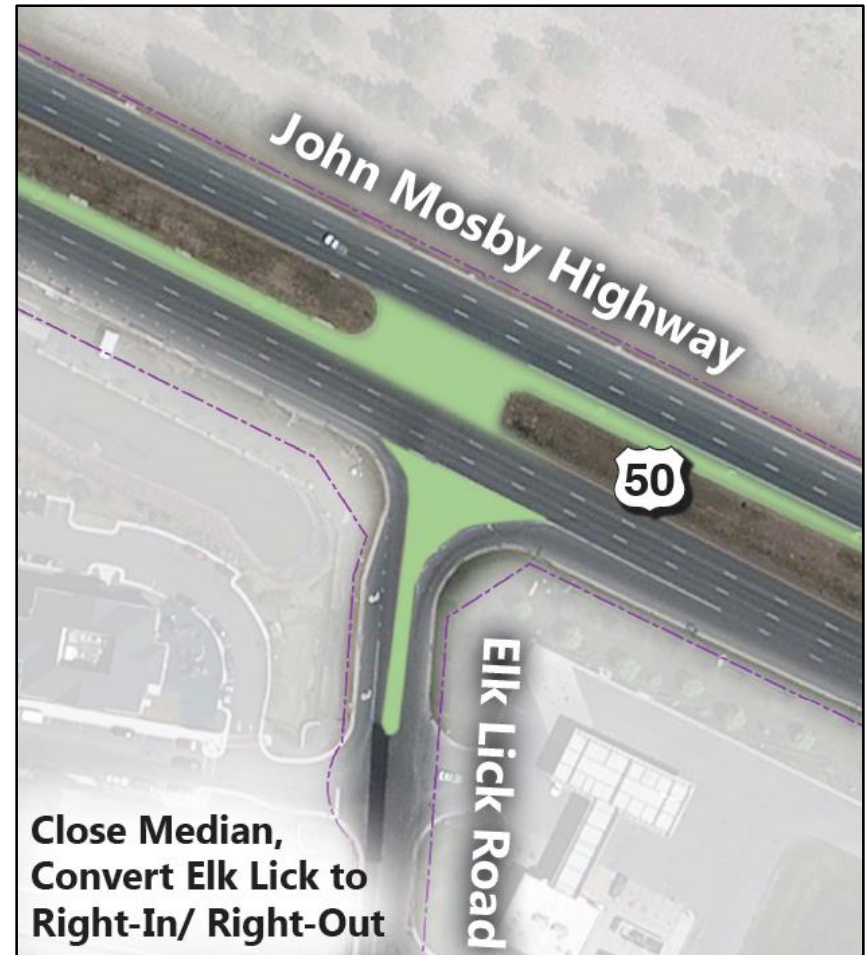
Alternative 1: Cul-de-Sac

- Eliminates all access between Elk Lick Road and Route 50 for safety (15 of 19 crashes)
- Corresponds to 2030 CTP ultimate conditions of Route 50 (all at-grade access terminated)
- Operational impacts: increased traffic on Defender Drive
- Additional Right-of-Way may be needed



Alternative 2: Right-In/Right-Out

- Eliminates access between Elk Lick Road and WB Route 50 for safety (15 of 19 crashes)
- No additional Right-of-Way is anticipated
- Provides interim solution before 2030 CTP ultimate conditions of Route 50
- Minor impacts to operations at surrounding intersections
- Additional future project needed to align with 2030 CTP



TALL CEDARS PARKWAY AND ELK LICK ROAD





Existing Conditions

- Signals are being added to other all-way stops on Tall Cedars corridor
- Multi-lane approaches creates driver confusion about vehicular right-of-way
- Intersection LOS:
 - 2015 AM Peak = LOS C
 - 2015 PM Peak = LOS D
 - 2025 AM Peak = LOS C
 - 2025 PM Peak = LOS E
- No existing pedestrian crosswalks; moderate pedestrian activity observed

Loudoun County VIRGINIA

WHERE TRADITION MEETS INNOVATION

Types of Collision

- Rear End
- Bike
- Angle Crash

Injury Severity

- K** Fatal
- A** Incapacitating Injury
- B** Non-Incapacitating Injury
- C** Non-Visible Injury
- No Injury / Property Damage Only (PDO)
- Vehicle at Fault
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Collision Summary

Collision Summary																													
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2013	4	1		1					1	1	4	5		1	6					5	1					1	4	4	6
2014	5			1				1	3	1	3	6		1	6		1			6	1					2	3	4	7
2015	4			1					1	3	1	3	1	1	4	1				4	1							5	5
Total	13	1		3				1	5	5	8	14	1	3	16	1	1			15	3					3	7	13	18

0 15 30 Feet



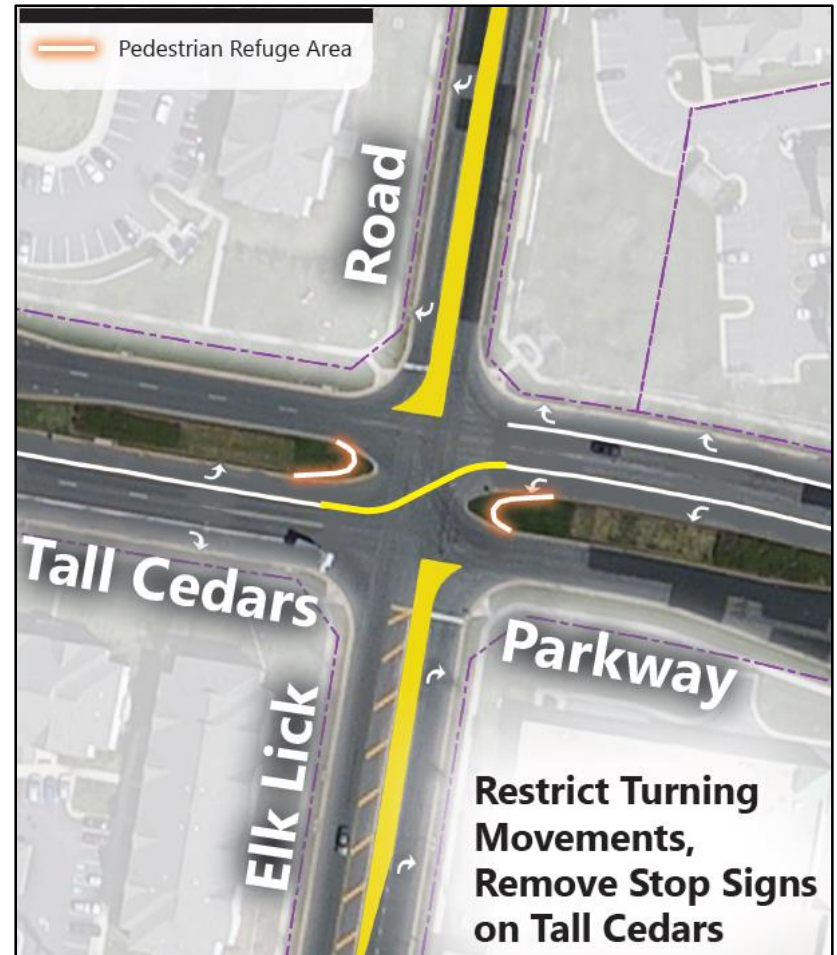
3 Year Crash Summary (Jan 2013 – Dec 2015)

- 18 total crashes
- 13 angle crashes, 3 left-turn crashes
 - Vehicle at fault: 6 WB, 6 EB, 3 SB, 1 NB
 - 3 during weekday AM Peak, 5 during weekday PM Peak
- 1 bicycle crash
- No severe injury crashes; 13 non-injury crashes



Alternative 1: Restrict Turns

- Eliminates lefts and thru-movements from Elk Lick Road for safety (14 of 18 crashes)
- Intersection improves to LOS B for 2015 and 2025 time periods
- Existing turn bays on Tall Cedars can be utilized
- Reduces Elk Lick Road cut through traffic
- No additional Right-of-Way is anticipated
- Requires vehicle rerouting
- Marked crosswalks across Tall Cedars Pkwy are not proposed



Alternative 2: Traffic Signal

- Clearly assigns right-of-way for safety (13 of 18 crashes)
- No traffic rerouting
- Signalized pedestrian crossings
- Intersection LOS C or better for 2015 and 2015 time periods
- Existing turn bays on Tall Cedars can be utilized
- Higher construction cost
- Additional Right-of-Way may be necessary



PREFERRED ALTERNATIVES



Route 50 and Elk Lick Road

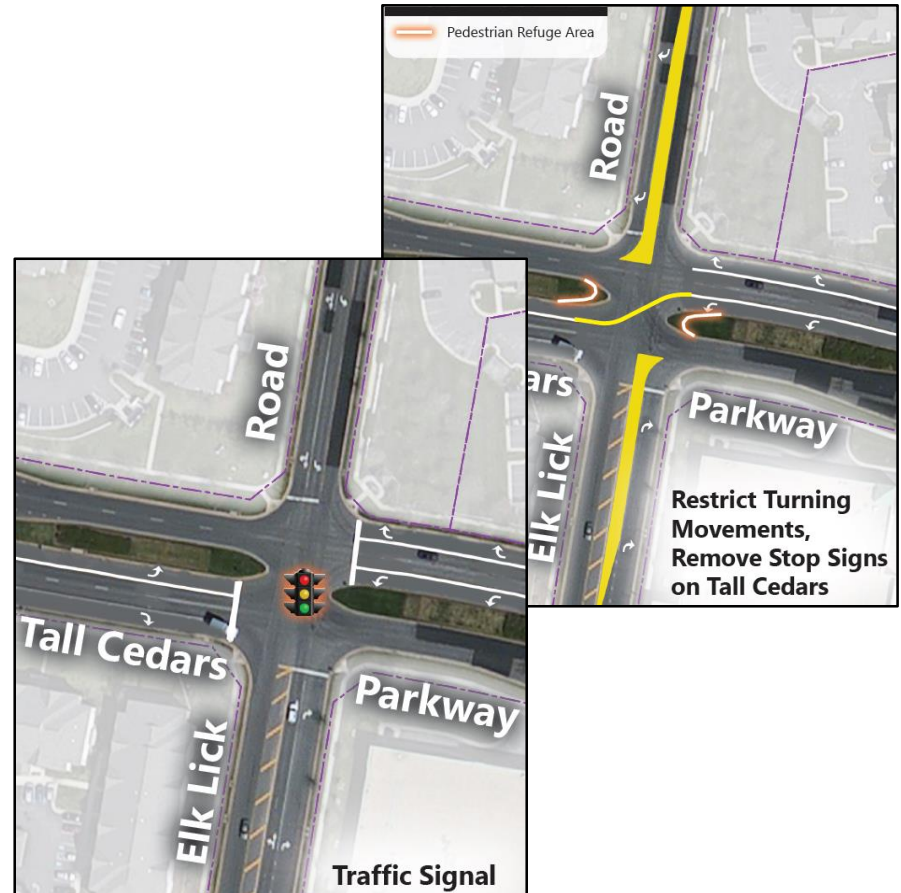
Preferred Alternative: Right-In/Right-Out

- Streamlined implementation for interim term
- Implemented within existing right-of-way
- No significant impacts to traffic operations at study intersections



Tall Cedars Parkway and Elk Lick Road

- Phased implementation for improvements
- Volumes at intersection are expected to change after improvements are in place at Route 50 and Elk Lick Road
- New counts to be obtained after construction of Route 50 and Elk Lick Road as well as Tall Cedars Parkway extension





Proposed Improvements to Defender Drive

- Install pavement markings to create three-lane cross-section:
 - Exclusive left-turn lanes at Elk Lick and South Riding intersections
 - Continuous two-way left-turn lane for commercial entrances
- Remove on-street parking along segment
- Long term phased option: consider widening Defender Dr.

Next Steps

- Receive feedback from the community
- Identify preferred alternative
- Report back to the Loudoun County Board of Supervisors to request funding for design



Additional Questions or Feedback?

Following the meeting, please provide any additional questions or feedback directly to Supervisor Letourneau's Staff Aides:

- Monica Filyaw (Monica.Filyaw@loudoun.gov)
- Tom Parker (Tom.Parker@loudoun.gov)

