

**Route 7 (East Market Street) Interchange at  
Battlefield Parkway**

**Town of Leesburg**

**Project No: 0007-253-109 UPC 106573**

**Presentation to Town Council**

June 26, 2017

## Council Decisions

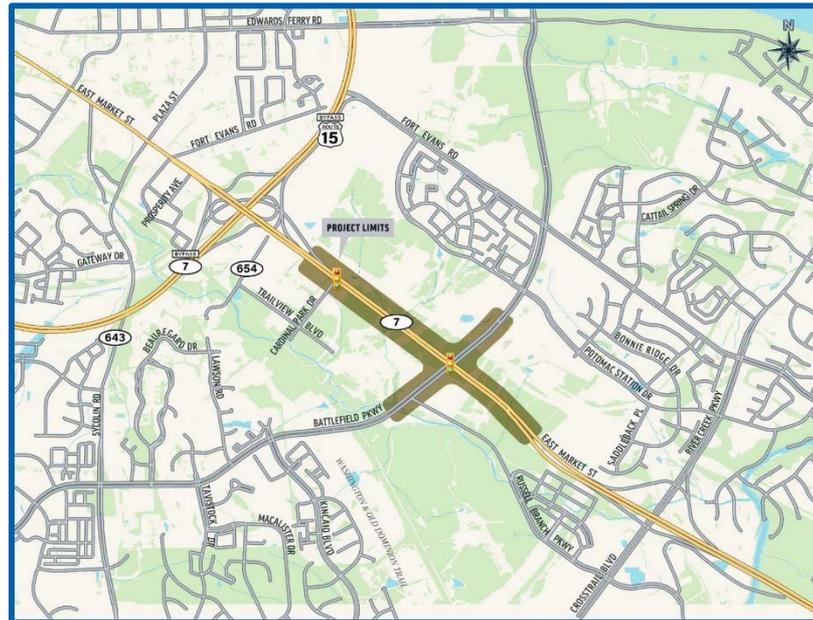
- East Market Street / Battlefield Parkway Interchange  
Locally Preferred Alternative
- Cardinal Park Drive Intersection Locally Preferred  
Alternative
- Endorse Project Delivery Method

## Project Purpose

- Improve safety
- Improve vehicle operations / reduced congestion
- Improve pedestrian access

## Project Scope

Construct a grade-separated interchange at Battlefield Parkway and modify the intersection of Cardinal Park Drive to allow Route 7 to become a limited-access highway within the project limits



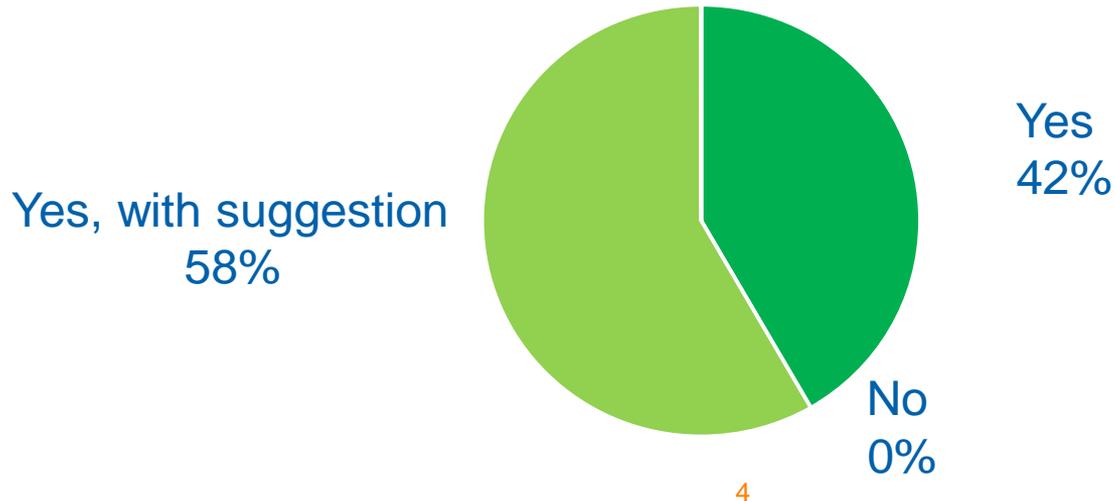
## Public Information Meeting

May 16, 2017

- 26 attendees signed in
- 10 comment sheets received
- 2 comment letters received

### Comment responses

*Do you support this project?*



## Route 7 at Battlefield Pkwy Interchange Alternatives

- Alternative 1 – Single Loop Hybrid Interchange
- Alternative 2 – Compressed Diamond Interchange
- Alternative 3 – Diverging Diamond Interchange (DDI)
- Alternative 4 – Single Point Urban Interchange (SPUI)

# Alternative 1

## Single Loop Hybrid Interchange



### Advantages

- Good traffic Level of Service
- Minimized number of lanes on bridge
- Desirable spacing between Interchange Ramps and Russell Branch Pkwy
- Improved pedestrian and bicycle accommodations

### Disadvantages

- Greater right of way impacts
- Less opportunities for access to properties north of Route 7
- Less desirable spacing between Interchange Ramps and Potomac Station Shopping Center
- One additional signal compared to Alternate 4

# Alternative 2 Compressed Diamond Interchange



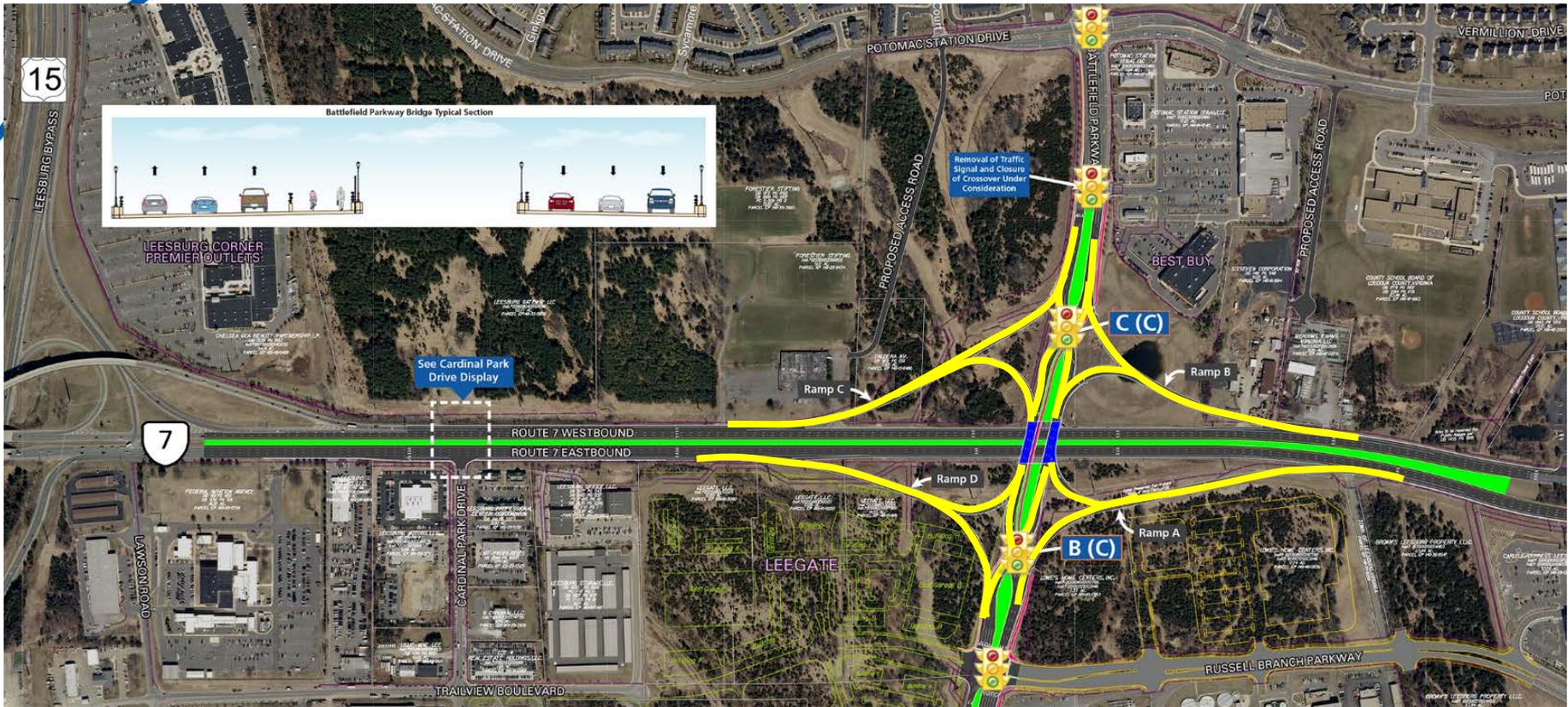
## Advantages

- Less right of way impacts
- Desirable spacing between interchange ramps and Russell Branch Parkway and Potomac Station Shop Center
- Improved pedestrian and bicycle accommodations

## Disadvantages

- **Poor traffic Level of Service**
- **10-lane Battlefield Parkway bridge over Route 7**
- **One additional signal compared to Alternate 4**

**NOT RECOMMENDED FOR FURTHER CONSIDERATION**



### Advantages

- Good traffic Level of Service
- Minimized number of lanes on Battlefield Parkway bridge

### Disadvantages

- Impacts undeveloped portions of Leegate and Lowe's developments
- Inadequate spacing between Ramps A/D and Russell Branch Pkwy
- Pedestrian and bicycle accommodations less desirable
- One additional signal compared to Alternate 4
- Transmission utility poles will be located inside of Ramps A and D

**NOT RECOMMENDED FOR FURTHER CONSIDERATION**

# Alternative 4 Single Point Urban Interchange (SPUI) Leesburg



- Less right of way impacts compared to Alternate 1
- Maximized distance between interchange ramps and Russell Branch Pkwy and Potomac Station Shopping Center
- Adequate traffic Level of Service at interchange ramp traffic signal
- Greater flexibility for access to properties on north side of Route 7
- One less signal compared to other Alternatives

## Disadvantages

- Larger, more complex, and more expensive bridge
- Pedestrian and bicycle accommodations less desirable

# Property Access and Impacts

- Three businesses currently have access directly to Route 7:
  - ✓ Meadows Farms Nurseries
  - ✓ This n' That Amish Outlet
  - ✓ Consignment Solutions
- All** Alternatives will eliminate their current access



- Tolbert Elementary School proffer provides future access road to Potomac Station Drive for alternate access to properties east of Battlefield Parkway.
- Consignment Solutions is part of larger development tract. Several access options are available.
- VDOT and Town will work with impacted businesses as part of the design and right-of-way acquisition process.



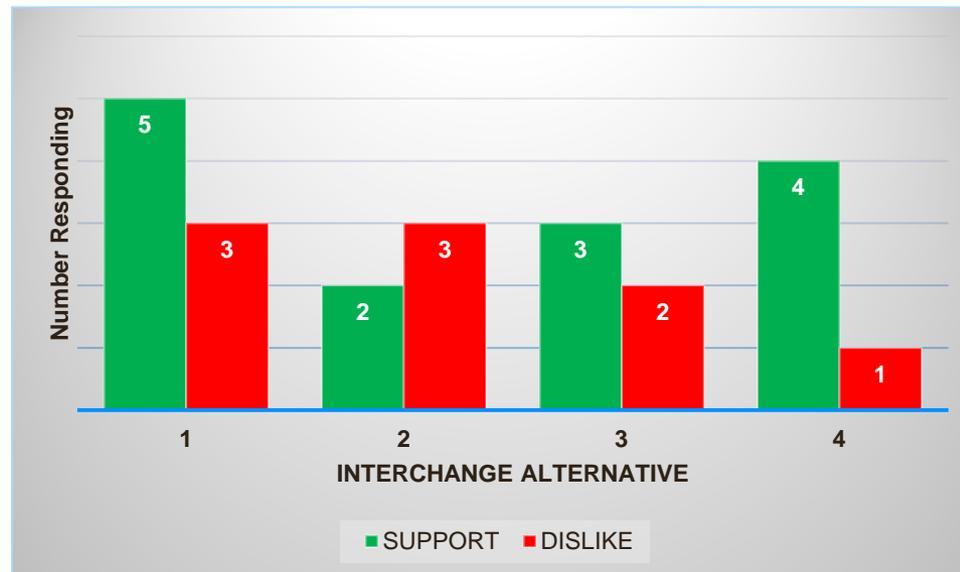
**Alternative 4 – SPUI** results in the least property impacts and greatest opportunity for future access improvements

# Public Comments

## Interchange Alternatives

*What interchange alternatives do you support most and why?*

*Which do you dislike?*



## Route 7 at Battlefield Pkwy Interchange Alternatives

- Alternative 1 – Single Loop Hybrid Interchange
- Alternative 2 – Compressed Diamond Interchange  
Not recommended due to poor LOS
- Alternative 3 – Diverging Diamond Interchange (DDI)  
Not recommended due to right of way impacts and intersection spacing to Russell Branch Parkway
- Alternative 4 – Single Point Urban Interchange (SPUI)

# Route 7 at Battlefield Pkwy Alternatives Comparison

**RECOMMENDED  
ALTERNATIVE**



Criteria	Alt 1: Single Loop Hybrid	Alt 4: Single Point Urban
Intersection Design Year Level of Service (LOS)	○ LOS C	○ LOS D
Weave operations along WB Route 7	○	○
Distance between interchange ramps and Russell Branch Pkwy	○	●
Distance between interchange ramps and Potomac Station Shop Ctr	○	●
Number of interchange signals along Battlefield Pkwy	○ 2 signals	○ 1 signal
Right of way impacts	○	○
Compatibility with developments on the north side of Route 7	●	○
Pedestrian and bicycle facilities	○	○
Size/complexity of bridge	○	●

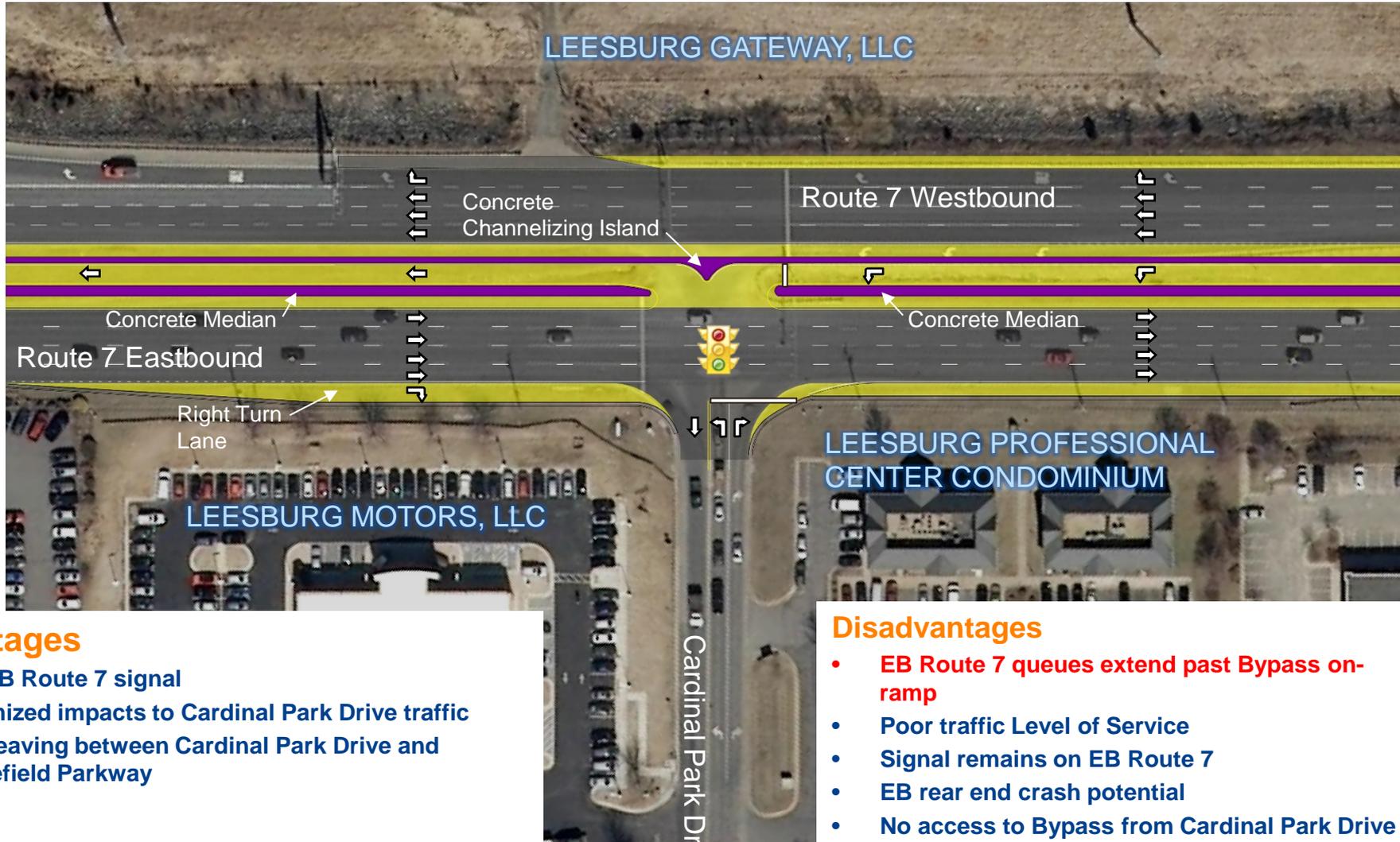
Legend				
●	○	○	○	●
Excellent	Favorable	Fair	Unfavorable	Poor

## Route 7 at Cardinal Park Drive Intersection Options

- Option A: Green T
- Option B: Left In/Right In/Right Out
- Option C: Right In/Right Out
  - Option C-1: Stop Control
  - Option C-2: Traffic Signal
  - Option C-3: Auxiliary Lane
- Option D: Right In

# Route 7 at Cardinal Park Drive

## Option A: Green T



### Advantages

- No WB Route 7 signal
- Minimized impacts to Cardinal Park Drive traffic
- No weaving between Cardinal Park Drive and Battlefield Parkway

### Disadvantages

- EB Route 7 queues extend past Bypass on-ramp
- Poor traffic Level of Service
- Signal remains on EB Route 7
- EB rear end crash potential
- No access to Bypass from Cardinal Park Drive

**NOT RECOMMENDED FOR FURTHER CONSIDERATION**

# Route 7 at Cardinal Park Drive

## Option B: Left In/Right In/Right Out



### Advantages

- No WB Route 7 signal
- Allows left turns to Cardinal Park Drive
- Reduces diversion to Battlefield Pkwy and Russell Branch Pkwy
- No weaving between Cardinal Park Drive and Battlefield Pkwy

### Disadvantages

- EB Route 7 queues extend past Bypass on-ramp
- Poor traffic Level of Service
- Signal remains on EB Route 7
- EB rear end crash potential
- Prohibits left turns from Cardinal Park Drive

**NOT RECOMMENDED FOR FURTHER CONSIDERATION**

# Route 7 at Cardinal Park Drive

## Option C-1: Right In/Right Out – STOP CONTROL



### Advantages

- Eliminates all Route 7 signals
- Reduced potential for rear end crashes
- EB Route 7 queues do not extend to Bypass on-ramp
- No weaving between Cardinal Park Drive and Battlefield Pkwy

### Disadvantages

- **Safety - high potential for angle crashes**
- Poor LOS and long delays for right turns from Cardinal Park Drive
- Diverts Cardinal Park Drive left turns to Russell Branch Pkwy and Battlefield Pkwy

**NOT RECOMMENDED FOR FURTHER CONSIDERATION**

# Route 7 at Cardinal Park Drive

## Option C-2: Right In/Right Out – TRAFFIC SIGNAL



### Advantages

- Eliminates the WB Route 7 signal
- EB Route 7 queues do not extend to Bypass
- Prevents weaving from Battlefield Pkwy to Cardinal Park Drive

### Disadvantages

- Signal remains on EB Route 7
- EB rear end crash potential
- Diverts Cardinal Park Drive left turns to Russell Branch Pkwy and Battlefield Pkwy

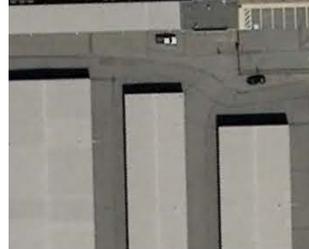
# Route 7 at Cardinal Park Drive

## Option C-3: Right In/Right Out – AUXILIARY LANE



### Advantages

- Eliminates all signals on Route 7
- Reduces the potential for rear end crashes
- EB Route 7 queues do not extend to Bypass
- Prevents weaving from Battlefield Pkwy to Cardinal Park Drive

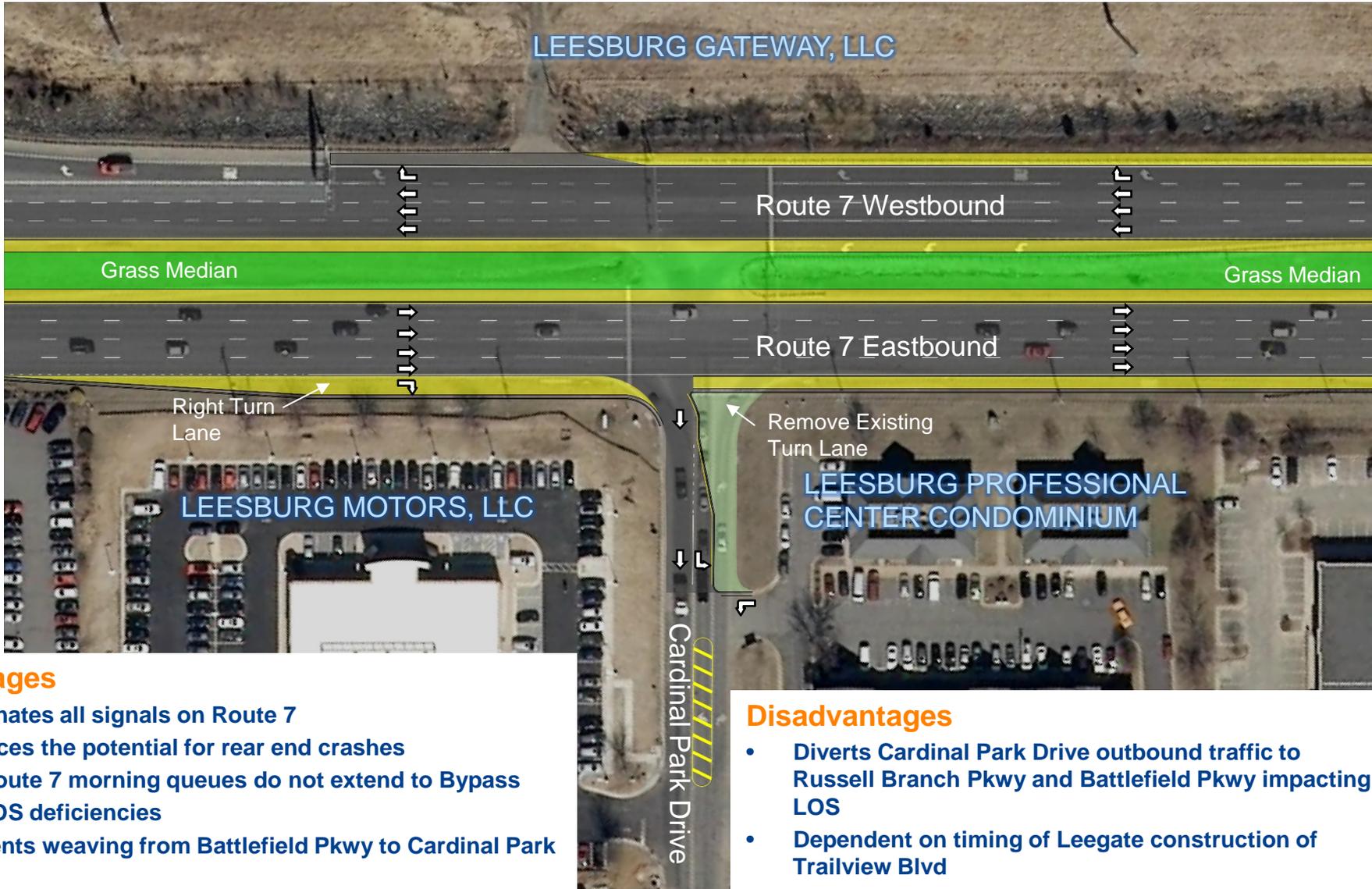


### Disadvantages

- Diverts Cardinal Park Drive left turns to Russell Branch Pkwy and Battlefield Pkwy
- Creates a weave on EB Route 7 between Cardinal Park Drive and Ramp D

# Route 7 at Cardinal Park Drive

## Option D: Right In



### Advantages

- Eliminates all signals on Route 7
- Reduces the potential for rear end crashes
- EB Route 7 morning queues do not extend to Bypass
- No LOS deficiencies
- Prevents weaving from Battlefield Pkwy to Cardinal Park Drive

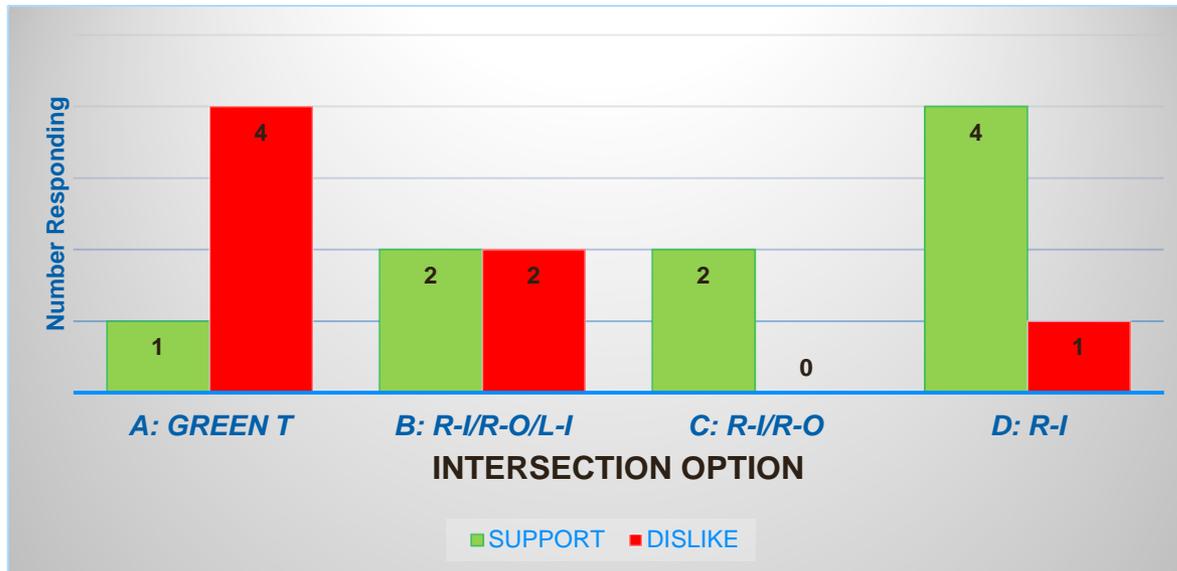
### Disadvantages

- Diverts Cardinal Park Drive outbound traffic to Russell Branch Pkwy and Battlefield Pkwy impacting LOS
- Dependent on timing of Leegate construction of Trailview Blvd

# Public Comments

## Cardinal Park Drive Options

*Which Cardinal Park Drive options do you support most and why? Which do you dislike?*



## Route 7 at Cardinal Park Drive Intersection Options

- Option A: Green T - *Not recommended*
- Option B: Left In/Right In/Right Out - *Not recommended*
- Option C: Right In/Right Out
  - Option C-1: Stop Control - *Not recommended*
  - Option C-2: Traffic Signal
  - Option C-3: Auxiliary Lane
- Option D: Right In

# Route 7 at Cardinal Park Drive Options Comparison

**RECOMMENDED OPTION**



Criteria	Option C-2: Right In/ Right Out with Traffic Signal	Option C-3: Right In/ Right Out with Auxiliary Lane	Option D: Right In
Removal of signals along Route 7	○	●	●
Minimizes the potential for EB queues to extend to the Bypass	○	●	●
Intersection Level of Service (LOS) and delays	○	○	●
Reduces the potential for rear end and angle crashes along Route 7	○	○	○
Accommodates existing turning movements at Route 7 and Cardinal Park Drive intersection	○	○	●
Dependent on timing of Leegate development	○	○	●
Emergency access	○	○	○
Weave/conflicts along EB Route 7 between Cardinal Park Drive and Ramp D	○	○	●
Project cost	○	○	○

Legend				
●	○	○	○	●
Excellent	Favorable	Fair	Unfavorable	Poor

# Project Funding



Construction Phase	Budget
Preliminary Engineering	\$4 million
Right-of-Way & Utilities	\$9 million
Construction	\$45 million
<b>TOTAL</b>	<b>\$58 million</b>
Funding Source	Amount
NVTA Funding to Date	\$33 million
Additional Funding Needed	\$25 million

# Project Schedule

Milestone	Date
Council Endorse Locally Preferred Alternative	June 27
Conditional IJR Approval	Fall 2017
NVTA Funding Application	Fall 2017
VDOT Request Design-Build Qualifications	Fall 2017
Public Hearing	Early 2018
Town and County Endorsements	Early 2018
VDOT Approve Major Design Elements	Spring 2018
VDOT Award Design-Build Contract	Summer 2019
Begin Construction	Early 2020

# Project Delivery Method

## Options

### 1. Design – Bid – Build

- Sequential process, complete each phase prior to starting next phase
- More control, more responsibility, more risk for contracting agency
- Longer overall schedule

### 2. Design/Build

- Phases completed concurrently
- Responsibilities and risk transferred to design-build contractor
- Potential to significantly reduce schedule
- Typically higher cost
- Common delivery method used by VDOT and other jurisdictions on larger projects. Recent local examples include:
  - ✓ Belmont Ridge Road interchange
  - ✓ Sycolin Road Overpass
  - ✓ Battlefield Parkway from Kincaid Blvd to Route 7
  - ✓ Route 7 Truck Climbing Lane

## Council Decisions

- East Market Street / Battlefield Parkway Locally Preferred Alternative  
*Recommend Alternate 4: Single Point Urban Interchange*
- Cardinal Park Drive Intersection Locally Preferred Alternative  
*Recommend Option 3-C: Right In / Right Out with Auxiliary Lane*
- Endorse Delivery Method  
*Recommend Design-Build Process to complete project on schedule*

**Questions ?**

# Thank you

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