



Duke Street Service Road & West Taylor Run Parkway

December 2023

Presentation Overview

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**Presentation
Purpose**

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**Duke
Street
Transitway
Recap**

▶ **03.**

**West Taylor
Run Parkway
Project
Recap**

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Options

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**Next Steps
and Q&A**

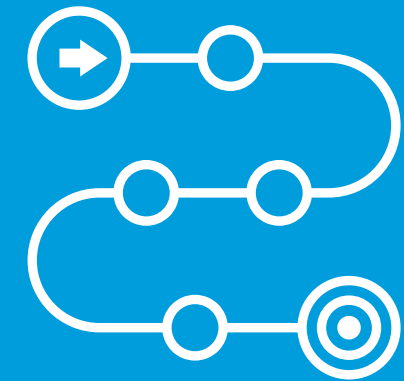
Presentation purpose



Follow-up on design options from the Duke Street Transitway and West Taylor Run projects



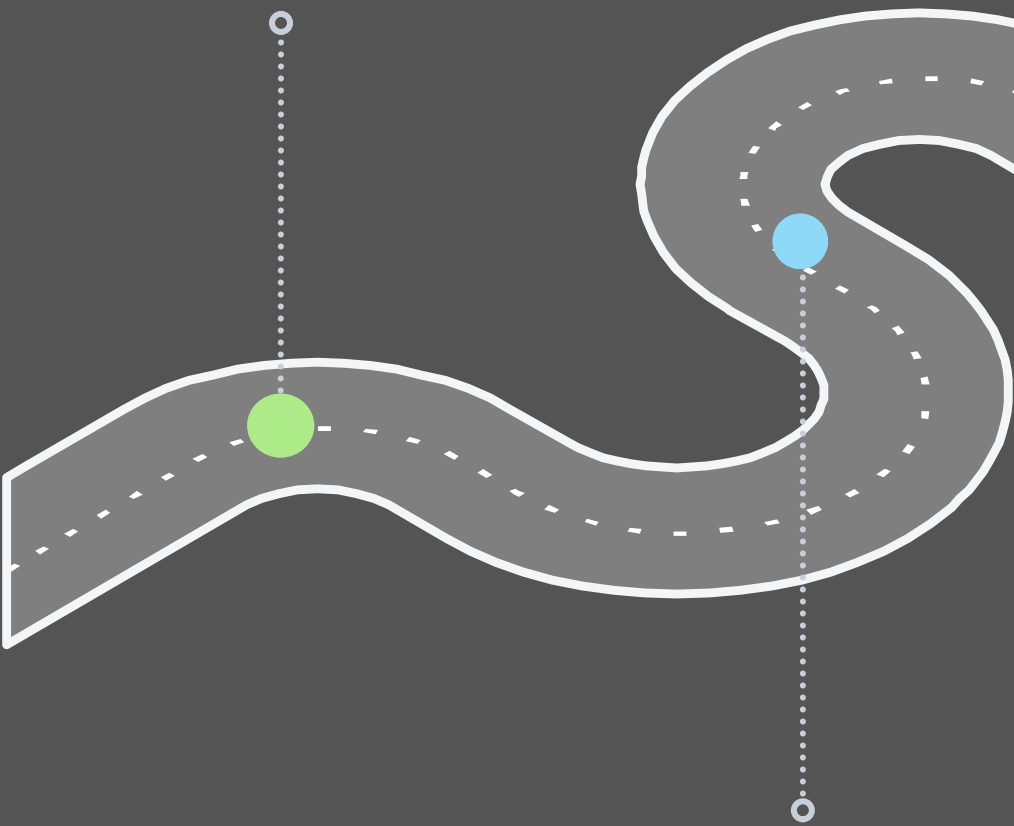
Get Community feedback on design options and priorities



Provide process and timeline for future discussions and decisions

Central Alexandria Traffic Study 2017

Recommendations to reduce cut-through traffic on local streets and advance capital projects



Intersection Project Funding

Developed concepts based on community feedback about issues to apply for project funding.

Traffic Mitigation Pilots 2022

Change signals to shift cut-through traffic off neighborhood streets and restrict access to Telegraph from WTR

Duke Street Transitway

- Full corridor redesign of Duke Street to provide high capacity transit along the corridor
- Construct improvements at West Taylor Run

Duke Street Adaptive Traffic Control

- Smart signal project to reduce congestion on Duke Street

Duke & West Taylor Run Intersection & Access Ramp Design

- Discuss intersection and ramp concepts with the community and select final configurations
- Determine scope and coordination of intersection project and Duke BRT

Project Roadmap

Duke Street Transitway Recap - What happened?

- City Council approved Concept A
- If cost becomes an issue near term, Quaker-Roth could become mixed traffic
- Continue discussions with community in Segment 3 regarding service road design



Duke at West Taylor Run Intersection

Project Goals

The project purpose is focused on enhancing safety and access for people who walk, drive, bike and take transit.



Improve safety for all people at the intersections



Reduce cut-through traffic on neighborhood streets

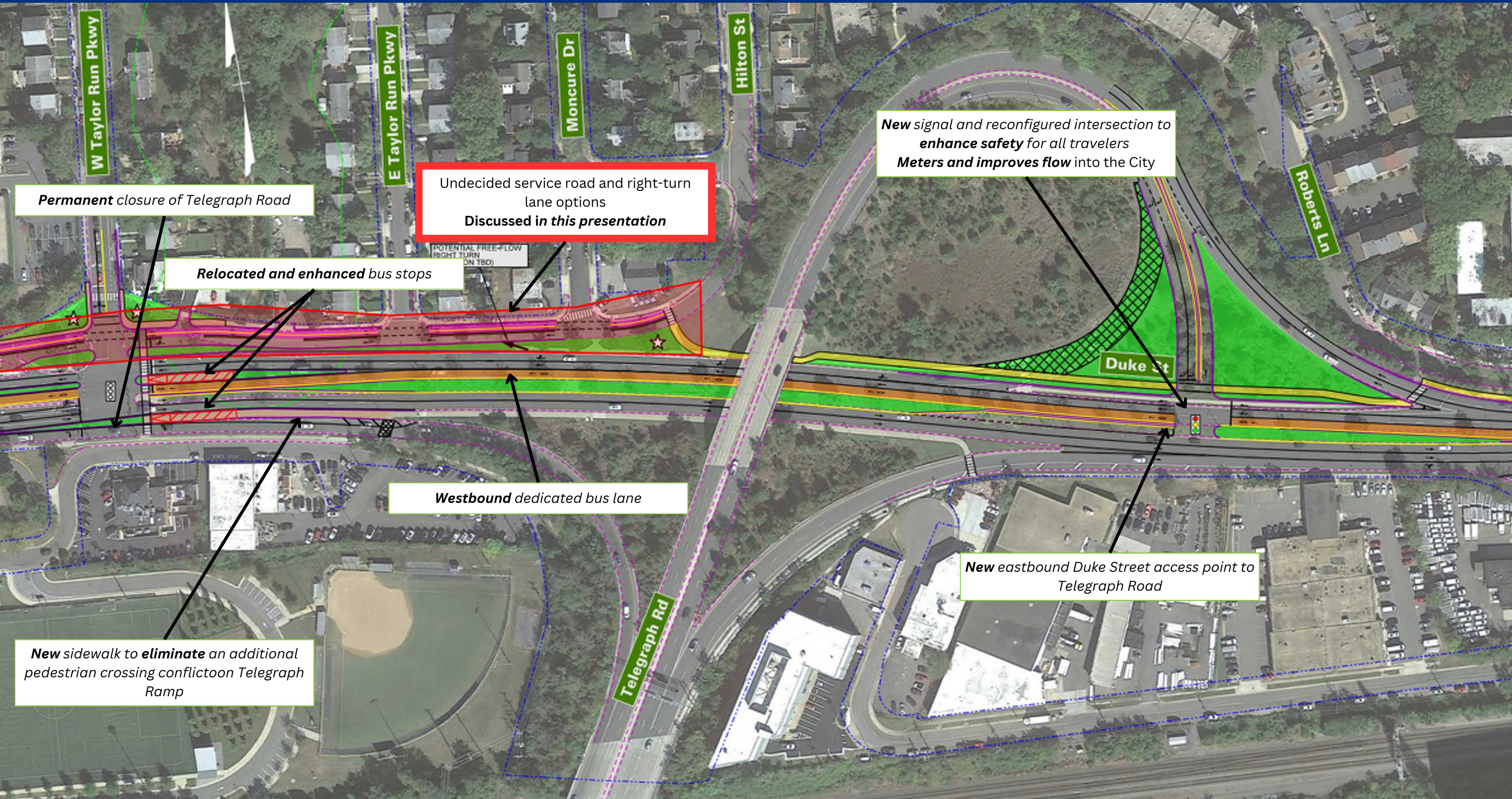


Reduce congestion on Duke Street



Improve the quality of life for residents

Current Proposed Plan



Permanent closure of Telegraph Road

Undecided service road and right-turn lane options
Discussed in this presentation

Relocated and enhanced bus stops

Westbound dedicated bus lane

New sidewalk to **eliminate** an additional pedestrian crossing conflict on Telegraph Ramp

New signal and reconfigured intersection to **enhance safety** for all travelers
Meters and improves flow into the City

New eastbound Duke Street access point to Telegraph Road

Duke at West Taylor Run Intersection

Service Road and Right-turn Lane Comparision

Safety

Neighborhood Access

Pedestrian

Cyclist

Vehicle

Travel Times

Direct Access to Neighborhood Roads

- OPTION 1**
Right-turn east of East Taylor Run with Two-way Service Road
- OPTION 2**
Right-turn east of East Taylor Run with Cycle Track and One-way Service Road
- OPTION 3**
Right-turn east of Moncure Drive with Cycle Track and One-way Service Road
- OPTION 3A**
Right-turn east of Moncure Drive with partial Two-way Service Road
- OPTION 4**
Dual Right-turn lanes with One-way Service Road



HOW TO READ EACH OPTION SLIDE?

Taylor Run Pkwy.

X represents the number of impacted vehicles for this road during a typical "peak hour"
 Blue represents impacted right-turning vehicles from Westbound Duke street
 Red represents impacted left-turning vehicles from Eastbound Duke street

East Taylor Run Pkwy.

Moncure Dr.


Hilton St.


Impacted movements as a result of service road and right-turn location
 Arrows are based on how drivers access roads east of West Taylor Run Parkway as it is **today**.

Objective metrics to compare differences between each option
 See Slide X For more details about methodology

QUICK FACT AREA ABOUT EACH OPTION
 TEXT AND METRICS ONLY PERTAIN TO THE DIFFERNCES BETWEEN THE SERVICE ROAD AND RIGHT TURN LCOATIONS

Impacted Movements East of West Taylor Run Parkway.

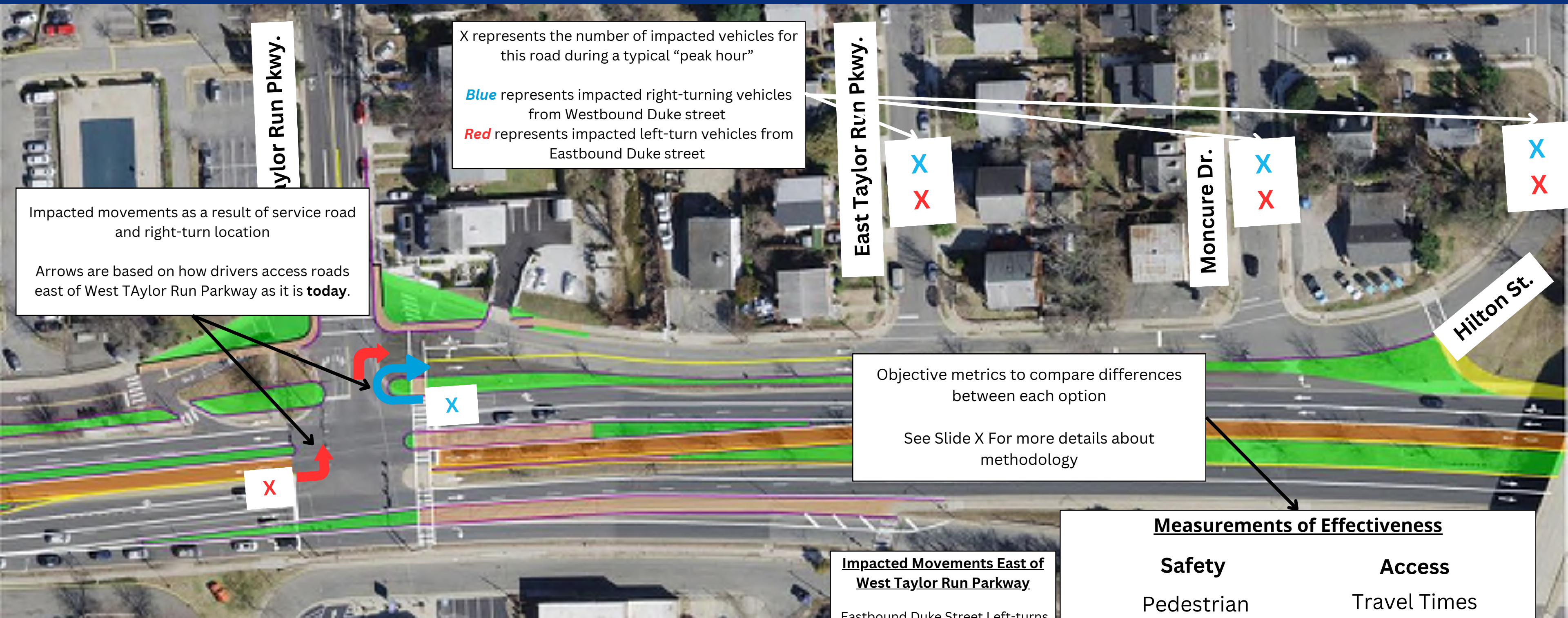
Eastbound Duke Street Left-turns
 # *Peak* vehicles per hour

Westbound Duke Street Right-turns
 # *Peak* vehicles per hour

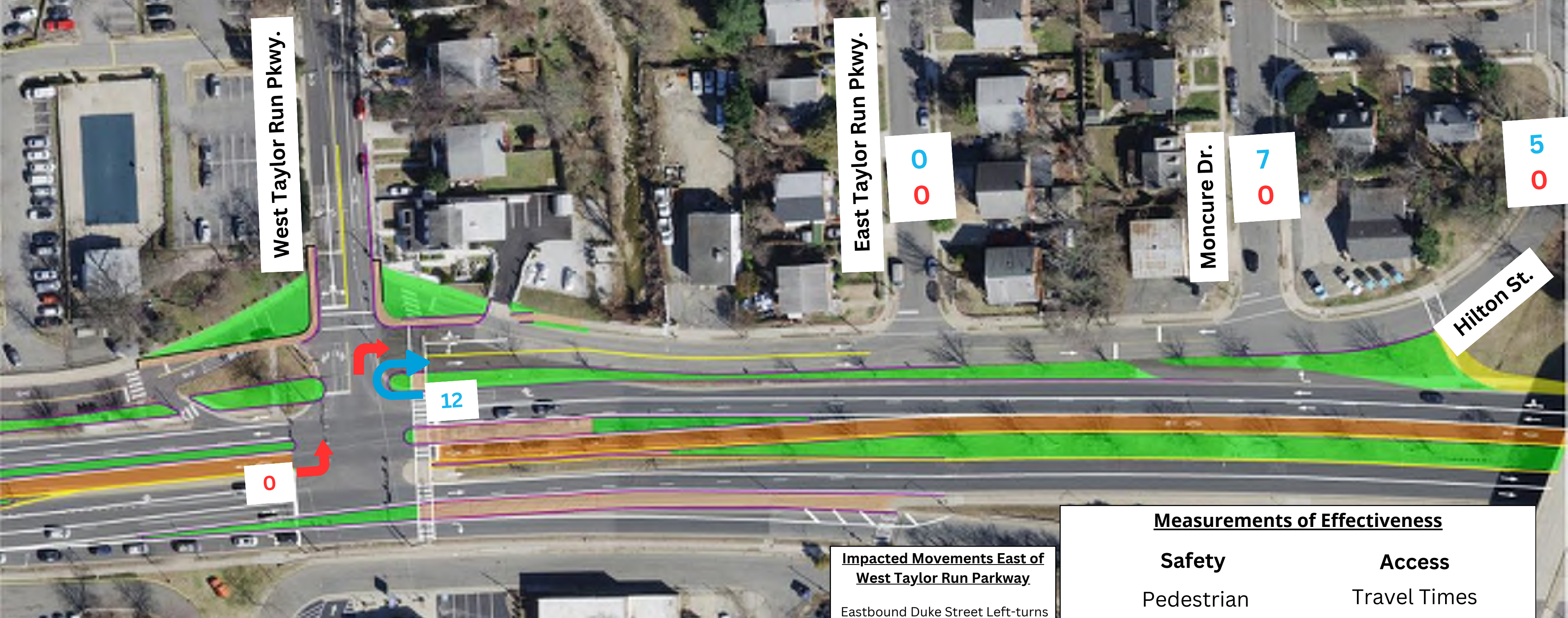
If a 0 is represented, then that movement has direct access

Measurements of Effectiveness

Safety	Access
Pedestrian	Travel Times
Cyclist	Direct Access to Neighborhood Roads
Vehicle	



Option 1



West Taylor Run Pkwy.

East Taylor Run Pkwy.

Moncure Dr.

Hilton St.

0
0

7
0

5
0

12

0

- The two-way road configuration maintains similar conflicts as today with the addition of the right-turn lane on the service road
- No buffer is provided for the sidewalk and cycling facilities
- Travel times are the same or faster to residences because no waiting is required at the West Taylor Run parkway light
- Eastbound Duke Street access to the service road remains the same

Impacted Movements East of West Taylor Run Parkway.

Eastbound Duke Street Left-turns

Peak vehicles per hour

Westbound Duke Street Right-turns

Peak vehicles per hour

If a 0 is represented, then that movement has direct access

Measurements of Effectiveness

Safety	Access
Pedestrian	Travel Times
Cyclist	Direct Access to Neighborhood Roads
Vehicle	

Option 2



- The service road becomes one-way and offsets the new right-turn lane and results in the same amount of conflicts
- A dedicated cycletrack is provided that also acts as a buffer for pedestrians
- Travel times are longer primarily for vehicles who access the service road from eastbound Duke St

Impacted Movements East of West Taylor Run Parkway.

Eastbound Duke Street Left-turns
Peak vehicles per hour

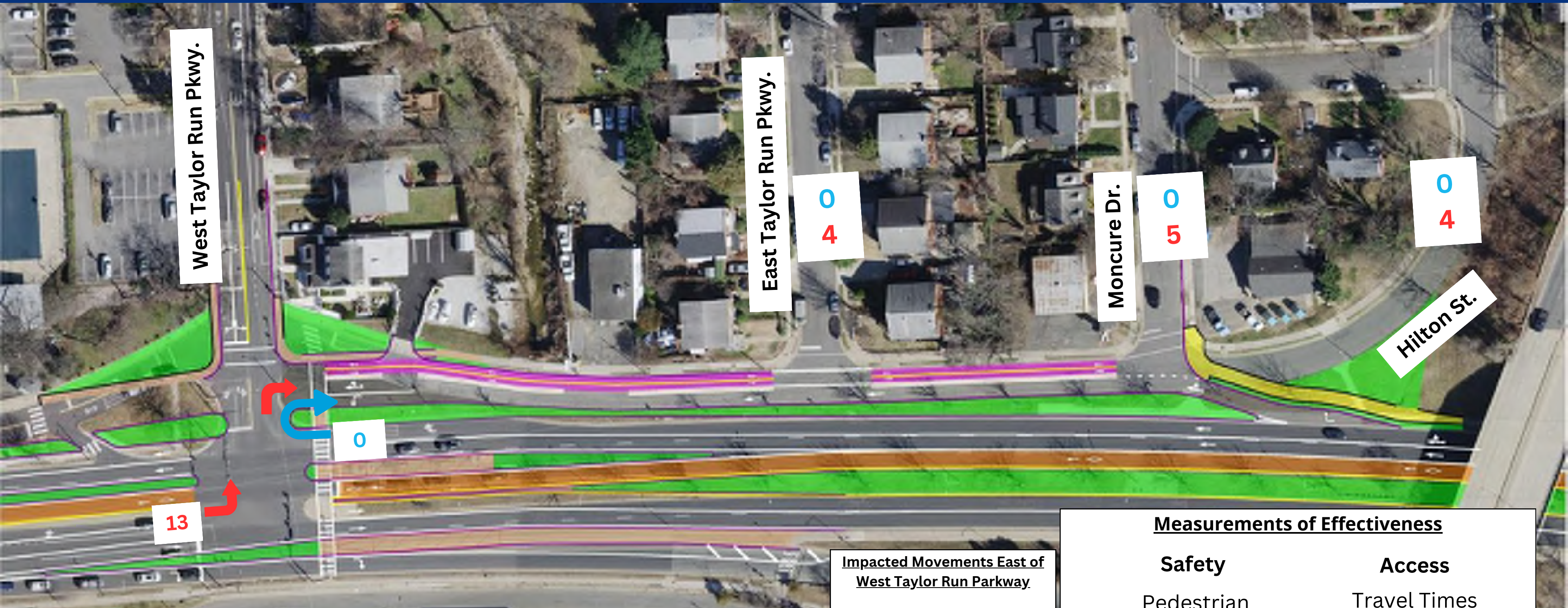
Westbound Duke Street Right-turns
Peak vehicles per hour

If a 0 is represented, then that movement has direct access

Measurements of Effectiveness


Safety	Access
Pedestrian 	Travel Times
Cyclist 	Direct Access to Neighborhood Roads
Vehicle 	


Option 3



- The service road becomes one-way and offsets the new right-turn lane and results in the same amount of conflicts
- A dedicated cycle track is provided that also acts as a buffer for pedestrians
- Travel times are longer primarily for vehicles who used to access the service road from eastbound Duke St
- No change and faster access to residents along East Taylor Run, Moncure, and Hilton who access the roads from westbound Duke Street

Impacted Movements East of West Taylor Run Parkway.

Eastbound Duke Street Left-turns
 # *Peak* vehicles per hour

Westbound Duke Street Right-turns
 # *Peak* vehicles per hour

If a 0 is represented, then that movement has direct access

Measurements of Effectiveness

Safety	Access
Pedestrian	Travel Times
Cyclist	Direct Access to Neighborhood Roads
Vehicle	

Option 3A



West Taylor Run Pkwy.

East Taylor Run Pkwy.

Moncure Dr.

Hilton St.

9

0

0
0

0
5

0
4

- The service road becomes partial two-way but with an increase of conflict points due to the new right-turn lane
- A contra-flow lane is provided between East Taylor Run and Moncure Drive
- Limited change and faster access to residents along East Taylor Run, Moncure, and Hilton

Impacted Movements East of West Taylor Run Parkway.

Eastbound Duke Street Left-turns
Peak vehicles per hour

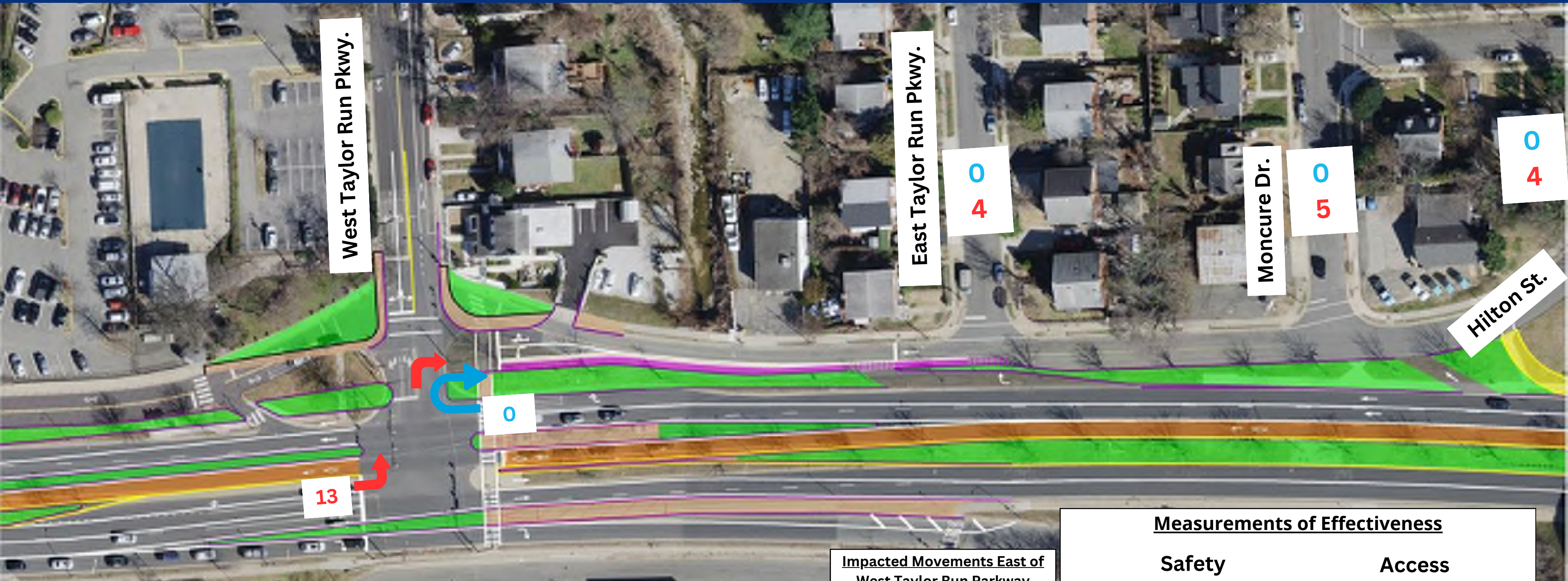
Westbound Duke Street Right-turns
Peak vehicles per hour

If a 0 is represented, then that movement has direct access

Measurements of Effectiveness


Safety	Access
Pedestrian	Travel Times
Cyclist	Direct Access to Neighborhood Roads
Vehicle	


Option 4



- The service road becomes one-way and results in more conflicts due to both right-turn lane additions
- A partial contra flow lane is provided from West Taylor Run to East Taylor Run
 - Sharrows will be provided between East Taylor Run and Moncure Drive
- Travel times are longer primarily for vehicles who access the service road from eastbound Duke St
- No change and faster access to residents along East Taylor Run, Moncure, and Hilton who access the roads from westbound Duke Street

Impacted Movements East of West Taylor Run Parkway

Eastbound Duke Street Left-turns
 # Peak vehicles per hour

Westbound Duke Street Right-turns
 # Peak vehicles per hour

If a 0 is represented, then that movement has direct access

Measurements of Effectiveness

Safety	Access
Pedestrian	Travel Times
Cyclist	Direct Access to Neighborhood Roads
Vehicle	

Duke at West Taylor Run Intersection

Service Road and Right-turn Lane Comparision

Safety

Neighborhood Access

Pedestrian

Cyclist

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Travel Times

Direct Access to Neighborhood Roads

- OPTION 1**
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Right-turn east of Moncure Drive with partial Two-way Service Road
- OPTION 4**
Dual Right-turn lanes with One-way Service Road



Neighborhood Calming and Safety

Taylor Run Association

Goal: To mitigate concerns about speeding and cut-through

Scope: To be determined with the Taylor Run Association but tentatively targeting East Taylor Run Parkway, Moncure Drive, and Hilton Drive.

Schedule: In tandem with projects on Duke Street.

Measures and implementation will be determined once scope is finalized.

To see a list of **potential** measures see the City's Complete Street Design Guidelines at:

<https://www.alexandriava.gov/transportation-planning/complete-streets-design-guidelines>



Next Steps

Fall 2023

Community Discussions & Feedback on service road design

Narrow down options

December

Community meeting 12/7
Analysis of feedback

Preferred Option

Winter 2024

City Council update
Recommendation to Traffic & Parking Board

Move into Design Phase

2024-2026

Continue community and Council updates

CONTACT AND PROJECT INFORMATION

DUKE STREET IN MOTION BUS RAPID TRANSIT

DUKE STREET
IN MOTION



703.746.4017

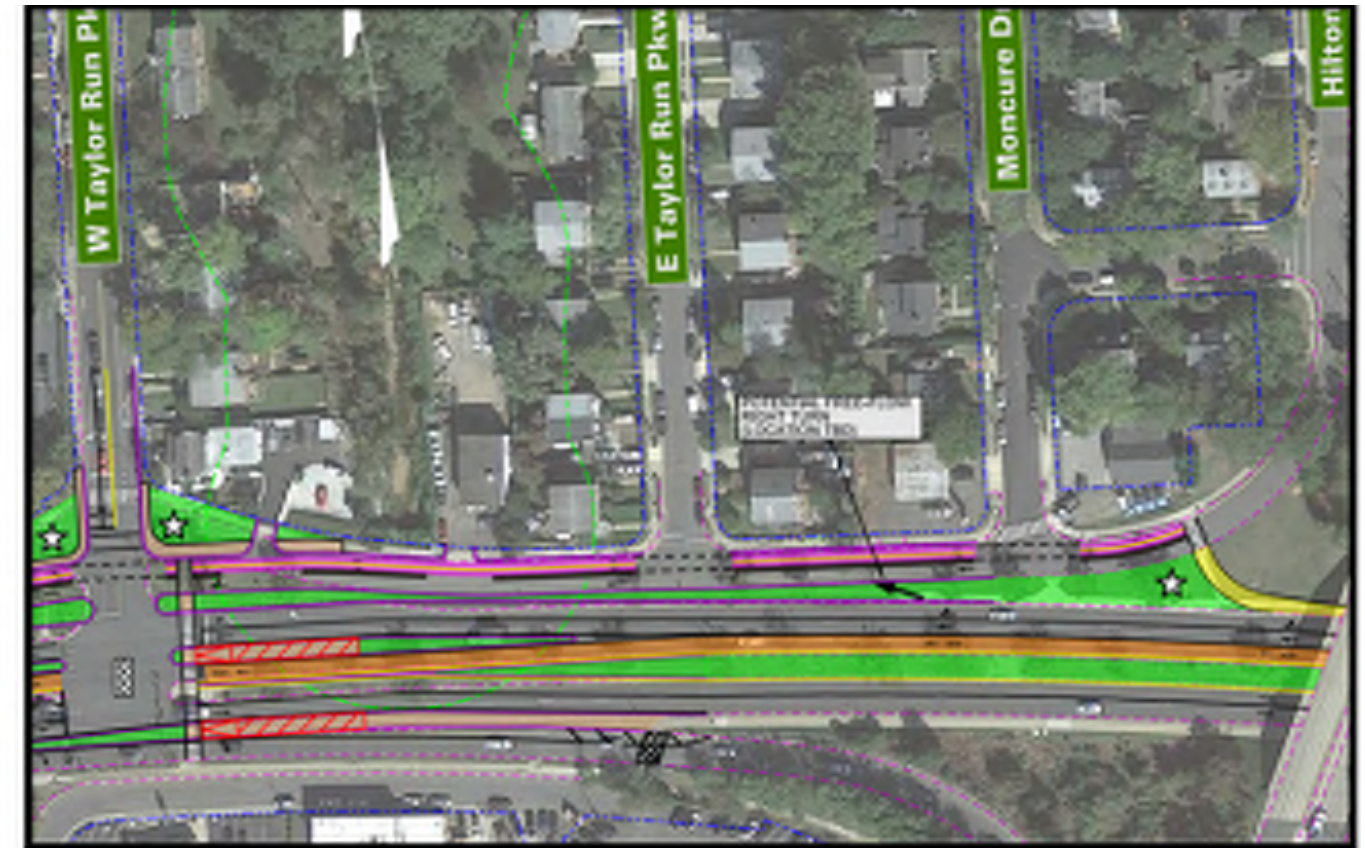


hillary.orr@alexandriava.gov



<https://www.alexandriava.gov/DukeInMotion>

WEST TAYLOR RUN IMPROVEMENT PROJECT



703.746.4266



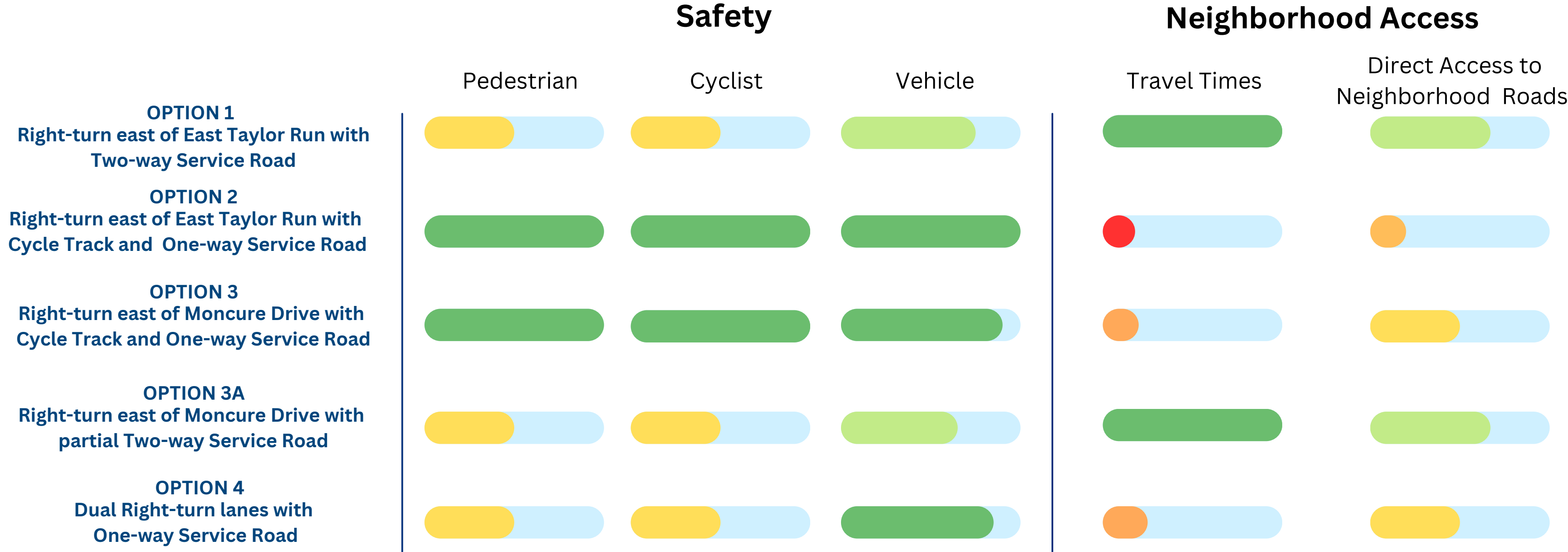
daniel.scolese@alexandriava.gov



<https://www.alexandriava.gov/transportation-planning/duke-street-and-west-taylor-run-project>

Duke at West Taylor Run Intersection

Service Road and Right-turn Lane Comparision



Safety Metrics



Pedestrian

The pedestrian metrics are based on the number of vehicle lanes a pedestrian could potentially cross on the service road and if a buffer space is provided (i.e. cycle-track).

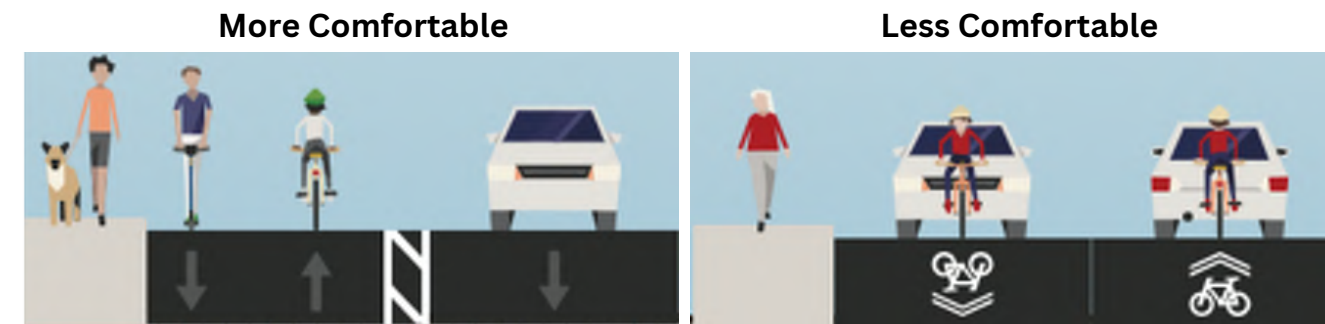
Less lanes to cross mean less risk of conflicts and less multiple threats (i.e. two directions of travel to be concerned about). As well, a buffer space makes a more comfortable environment for pedestrians while also separating all modes of transportation.



Cyclists and E-mobility



The cyclist and e-mobility metrics are based on if a dedicated facility is provided or not. A dedicated facility has been shown to be safer and more comfortable for all users since spaces are defined and well-understood. In the case of these proposals, it does mean that there is little to no conflict with the proposed new right-turn lane.



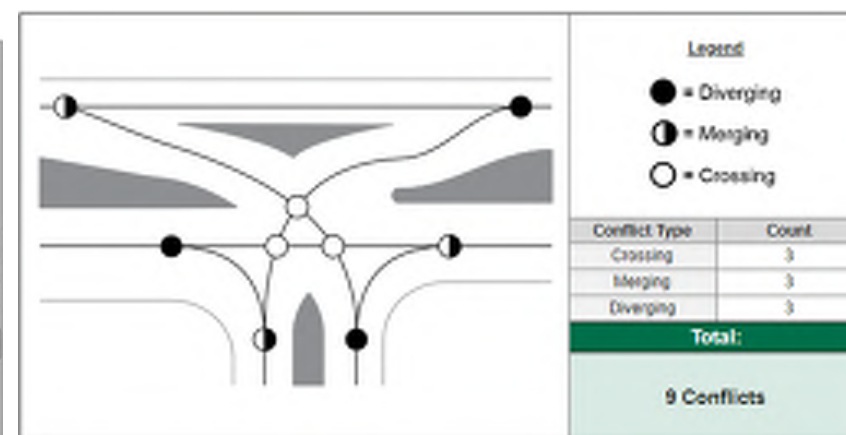
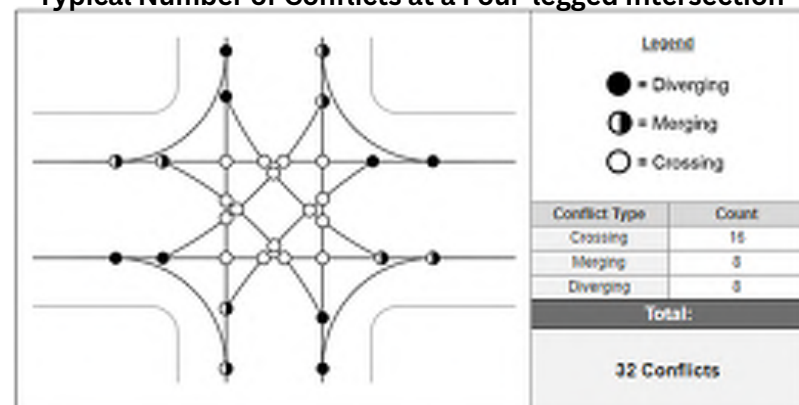
Less experienced cyclists may be inclined to use sidewalk



Vehicles

A key tenant of safety in transportation is to reduce the amount of vehicle conflict points when possible. A conflict point are potential locations of where vehicle travel paths intersect and a collision risk occurs. Therefore reducing that number reduces risk. In the case of the service road we are measuring the number of conflict points between West Taylor Run Parkway and the location of the **new** right-turn lane. In general a one-way road will have less conflict points than a two-way road because one direction of travel is omitted. As well, the further the right-turn lane is located east, the number of conflicts increase.

Typical Number of Conflicts at a Four-legged Intersection



Example of Two-way versus One-Way at East Taylor Run Parkway



Our Sources: Virginia Department of Transportation Bicycle and Pedestrian Treatments, AASHTO Design Guidelines, Maryland Department of Transportation (MDOT) Level of Traffic Stress Methodology

Some sites to visit to better understand these concepts are at

https://www.virginiadot.org/programs/bikeped/biking_and_pedestrian_treatments.asp

https://virginiadot.org/info/innovative_intersections_and_interchanges/virginia_icap.asp

Neighborhood Access Metrics

The most recent data used for the volumes shown on the presentation are from February and May 2023 data during the weekday

Travel Times

The travel time metrics are based on the amount of time a relocated vehicle would need to get back to a certain roadway. The three slides following this one show more detail about the assumed re-routes. In general, we assumed the most conservative (or longest reasonable route) to get to a roadway (East Taylor Run Parkway, Moncure Drive, or Hilton Street). The travel times assume that drivers are traveling 20 MPH AND additional peak delay from stopping associated with that movement.

Duke Street Eastbound Left-turn	Existing or Proposed Two-Way Options	Proposed Options One-way
East Taylor Run Parkway	1.5 - 2 min	5 - 6 min
Moncure Drive	2 - 2.25 min	5.5 - 6 min
Hilton Street	2 - 2.5 min	6 - 6.25 min

Duke Street Westbound Right-turn	Existing	Option 1 or 2	Option 3, 3A or 4
East Taylor Run Parkway	1-1.5 min	<1 min	<1 min
Moncure Drive	1- 1.5min	1- 1.5min	<1 min
Hilton Street	1- 1.5min	1- 1.5min	<1 min

Why is Option 1 or 2 faster or same as existing?

The current traffic signal requires that the right-turn lane be stopped more frequently due to conflicts with the service road and cut-through control. The future right-turn location is closer to neighborhood roads with less delay and improved operations and control with new signal equipment.

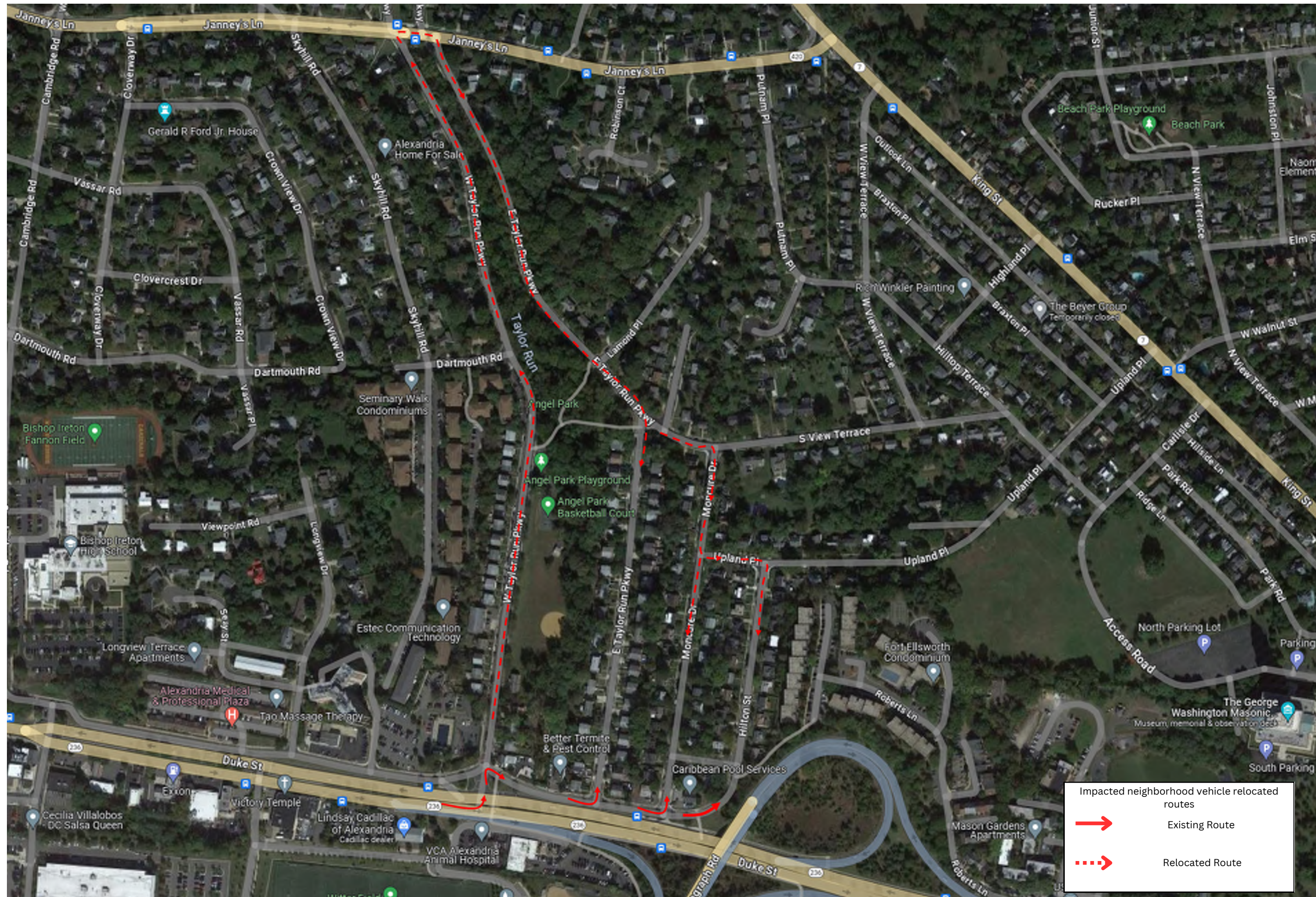
All delay is calculated using VISSIM and Synchro software calibrated with existing conditions.

Direct Access to Neighborhood Roads

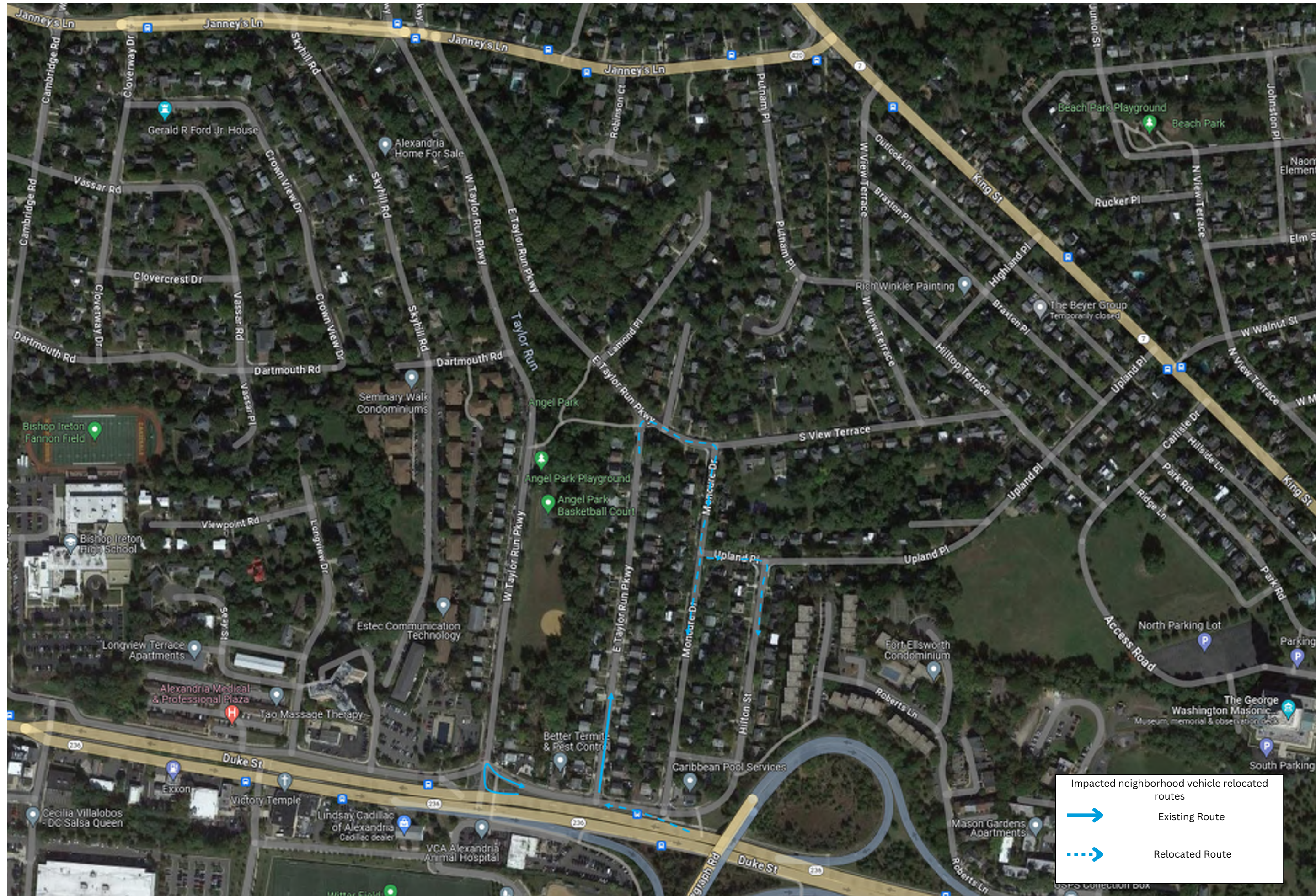
We also evaluated the amount of direct access points to East Taylor Run Parkway, Moncure Drive, or Hilton Street as it is today. We recognize that not all residents enter or exit those roads only during the peak times, therefore outside of the peak periods, drivers could access their homes quicker than some of the existing travel times during non-peak hours (as shown above). Therefore, we want to show the amount of direct access points compared to today and proposed. There are no egress changes from these roads, all users will be able to access West Taylor Run Parkway and Duke Street as they can today.



Relocated Route for Neighborhood vehicles Access their homes from Eastbound Duke Street



Option 1 & 2 Only: Relocated Route for Neighborhood vehicles Access their homes from Westbound Duke Street



Option 3, 3A & 4 Only: Relocated Route for Neighborhood vehicles Access their homes from Westbound Duke Street

