



County of Fairfax, Virginia

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# Dulles Corridor Special Study Transportation Analysis

Presented to:  
Route 28 Station – South Study Group

Presented by:  
Fairfax County Department of Transportation

June 20, 2012

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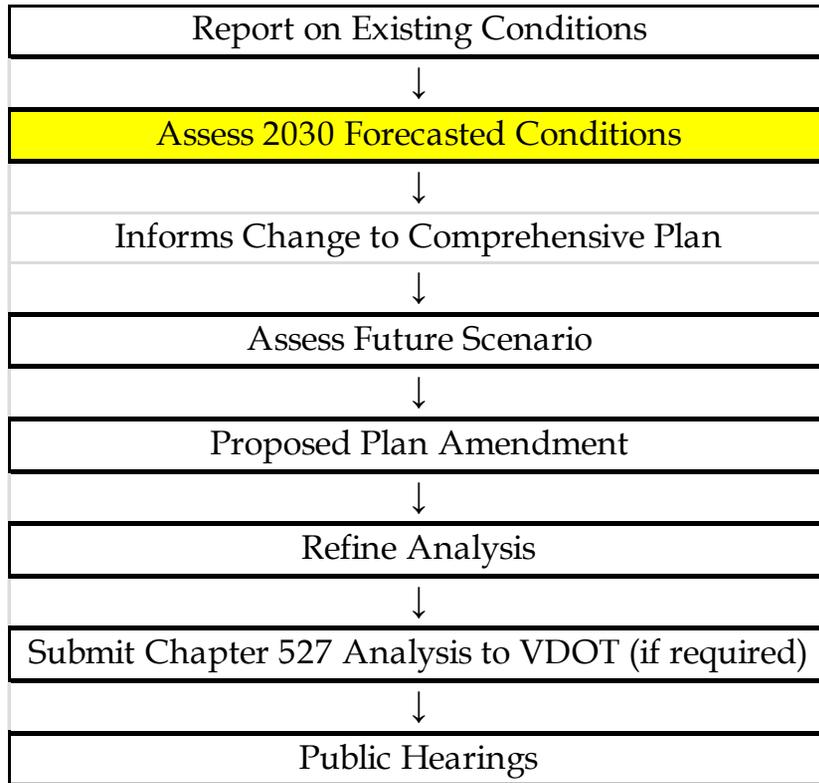
# Presentation Outline

- Brief Recap of Prior Study Activities/Presentations
- Current Work Effort
  - Land Use Scenario Assumption
  - Street Connections Assessment
  - Intersection Mitigations
  - Dulles Toll Road Crossings - Feasibility Studies
- Transportation Impact Results
- Summary/Next Steps
- General Discussion: Questions/Work Group Input

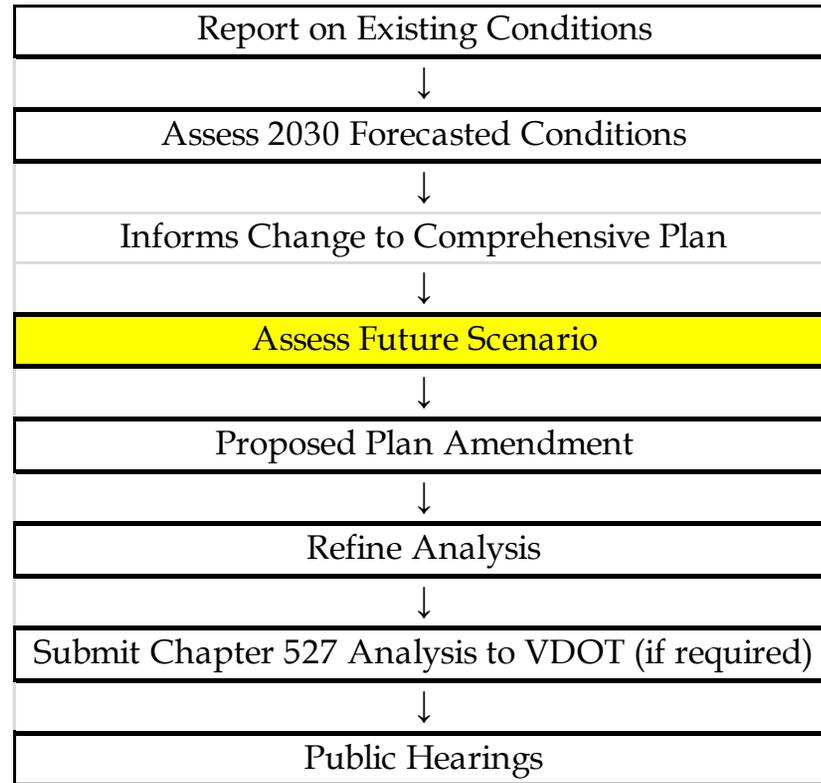


# TRANSPORTATION ANALYSIS PROCESS

## Status Last Presentation

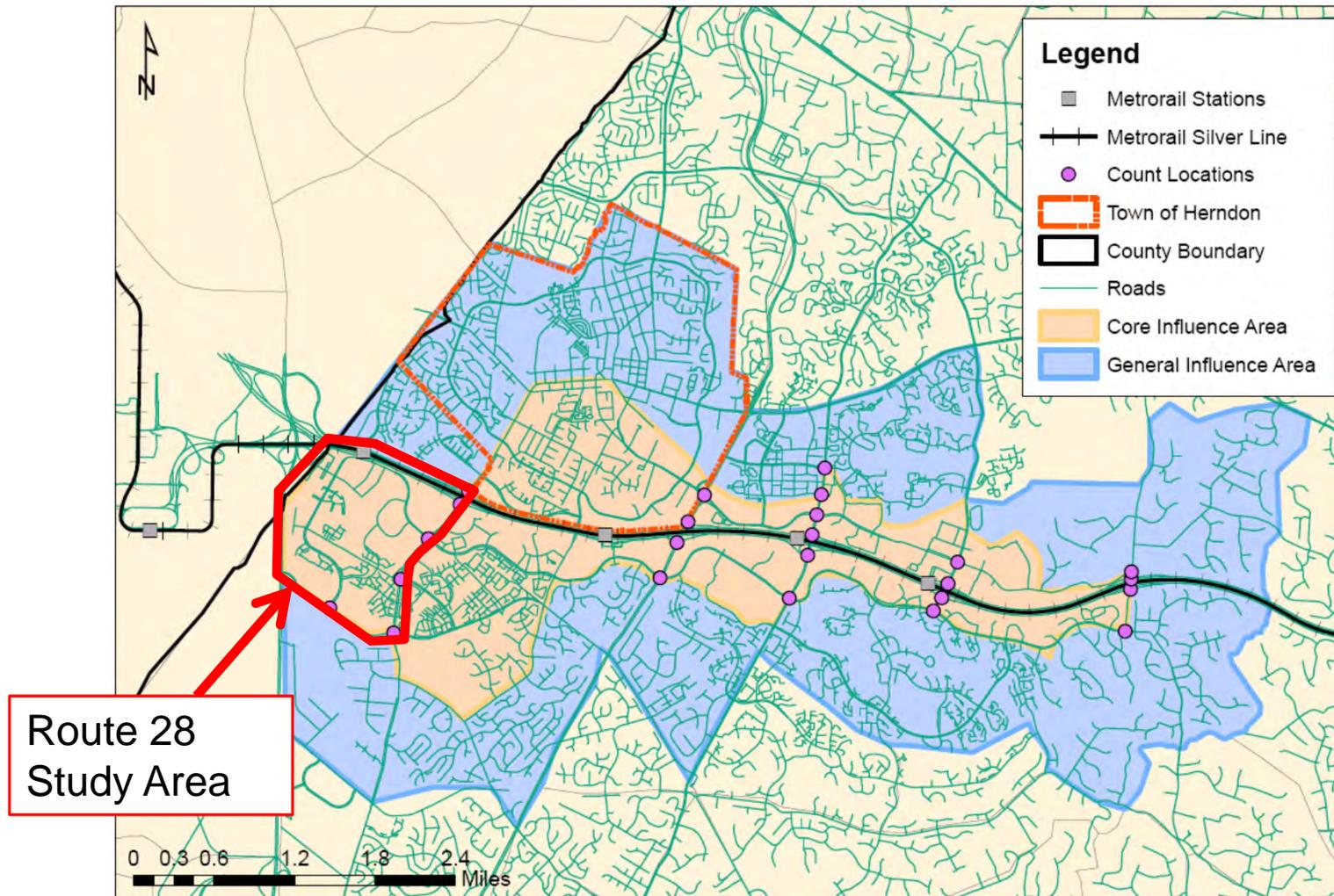


## Status Now





# Transportation Study Area





## Model Assumptions

- Region and Study Area
- **Land Use – MWCOG Round 8.0**
- Road network improvements for 2030  
(Transportation Plan Map)
- Transit (from Constrained Long Range Plan)
  - Stations along Phase II of Dulles Rail are open
  - Bus service is reoriented to serve rail stations and local area

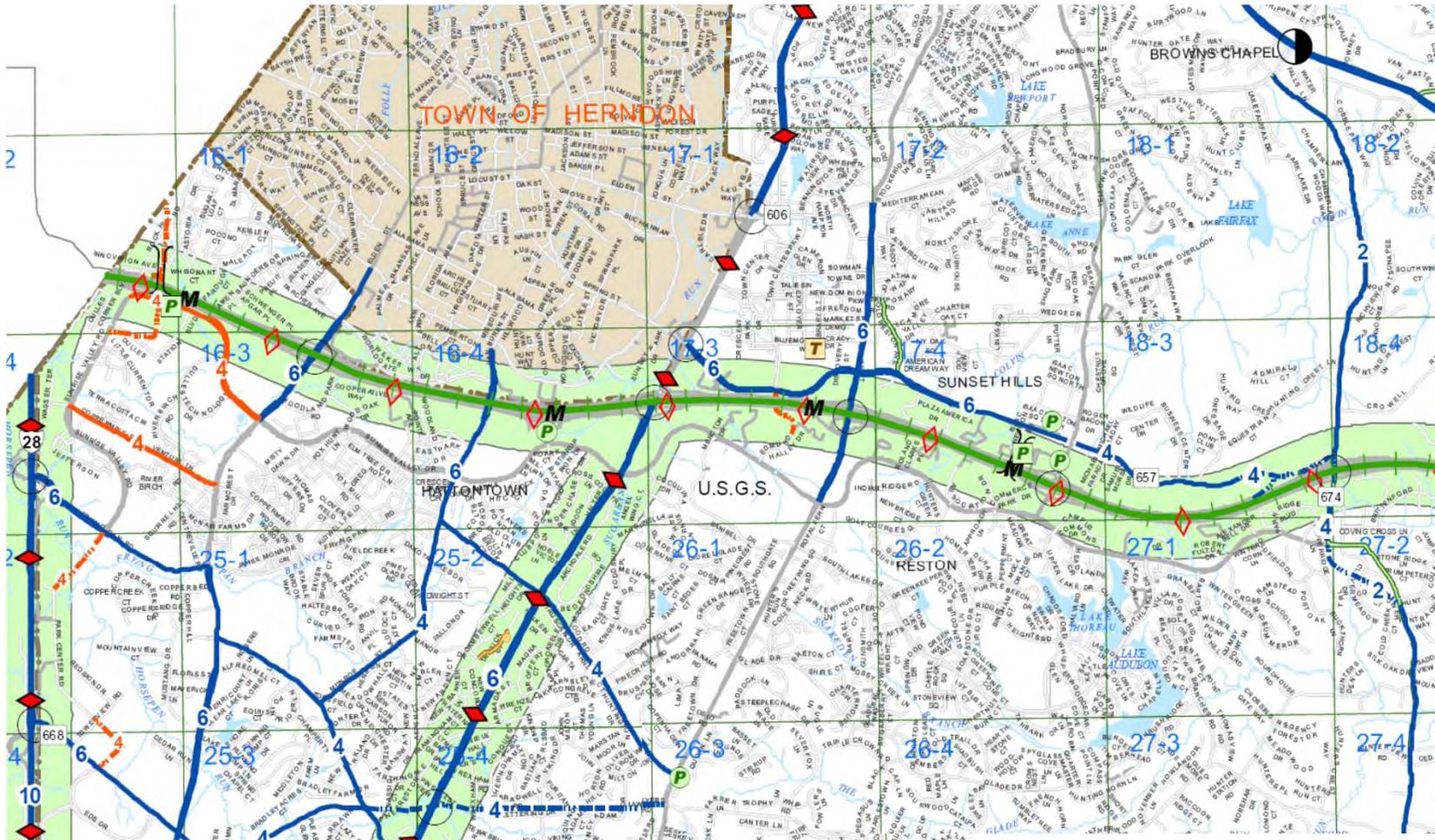


## Road Improvements Assumed in 2030 Base From Transportation Plan Map

- Widening of Route 28 to ten lanes including an HOV lane in each direction
- Widening of the Fairfax County Parkway to six lanes including an HOV lane in each direction
- An overpass across the Dulles Toll Road near the County line (Rock Hill Road Overpass)
- An overpass across the Dulles Toll Road west of Wiehle Avenue (Soapstone Overpass)
- Widening of Centreville Road to six lanes per County Transportation Plan
- The extension of Sunrise Valley Drive south of Frying Pan Road, completion of improvements to West Ox Road and Reston Parkway, and widening/improvement of Fox Mill Road, Monroe Street, and Frying Pan Road



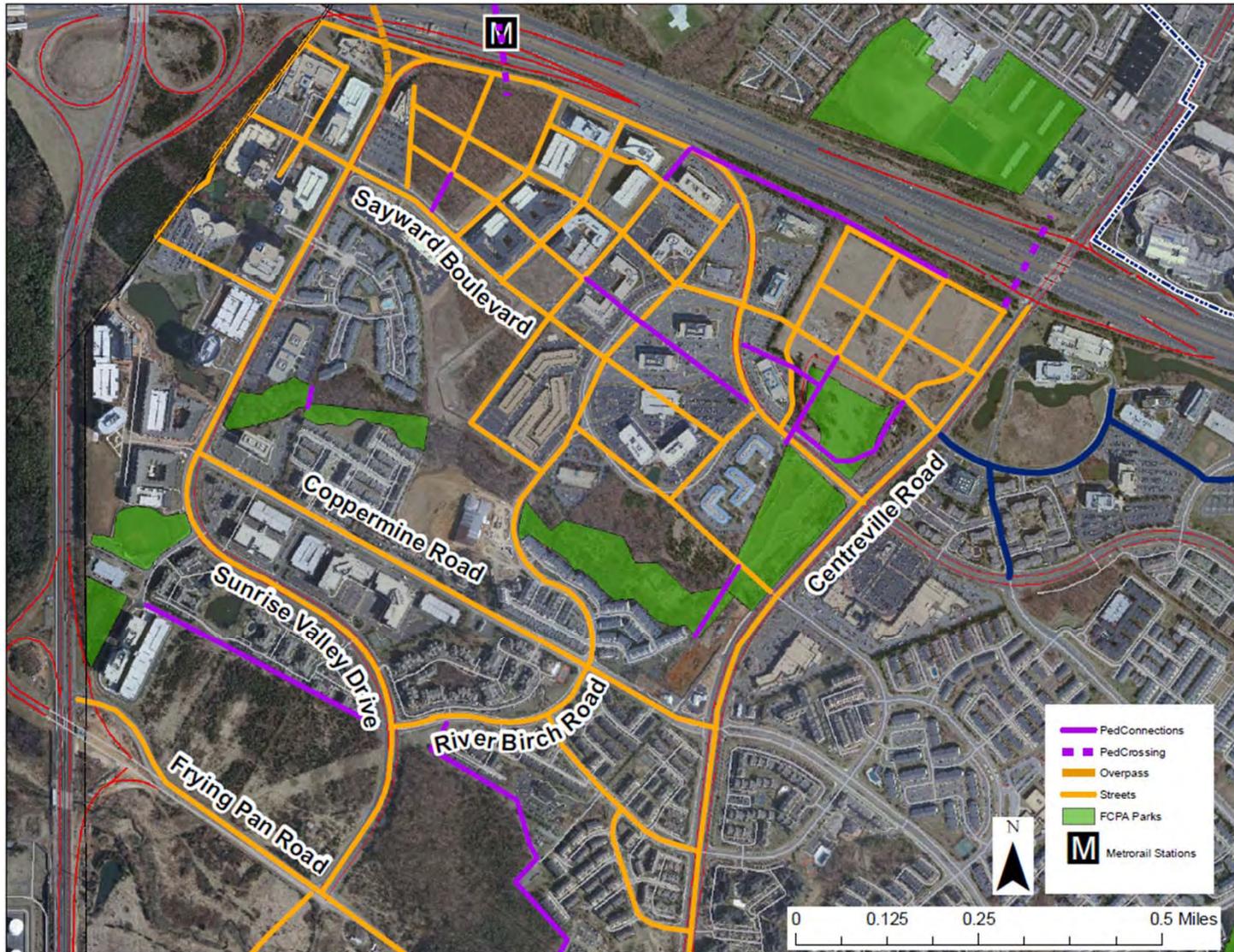
# 2030 Road Network Assumed





## General Mitigation Strategies

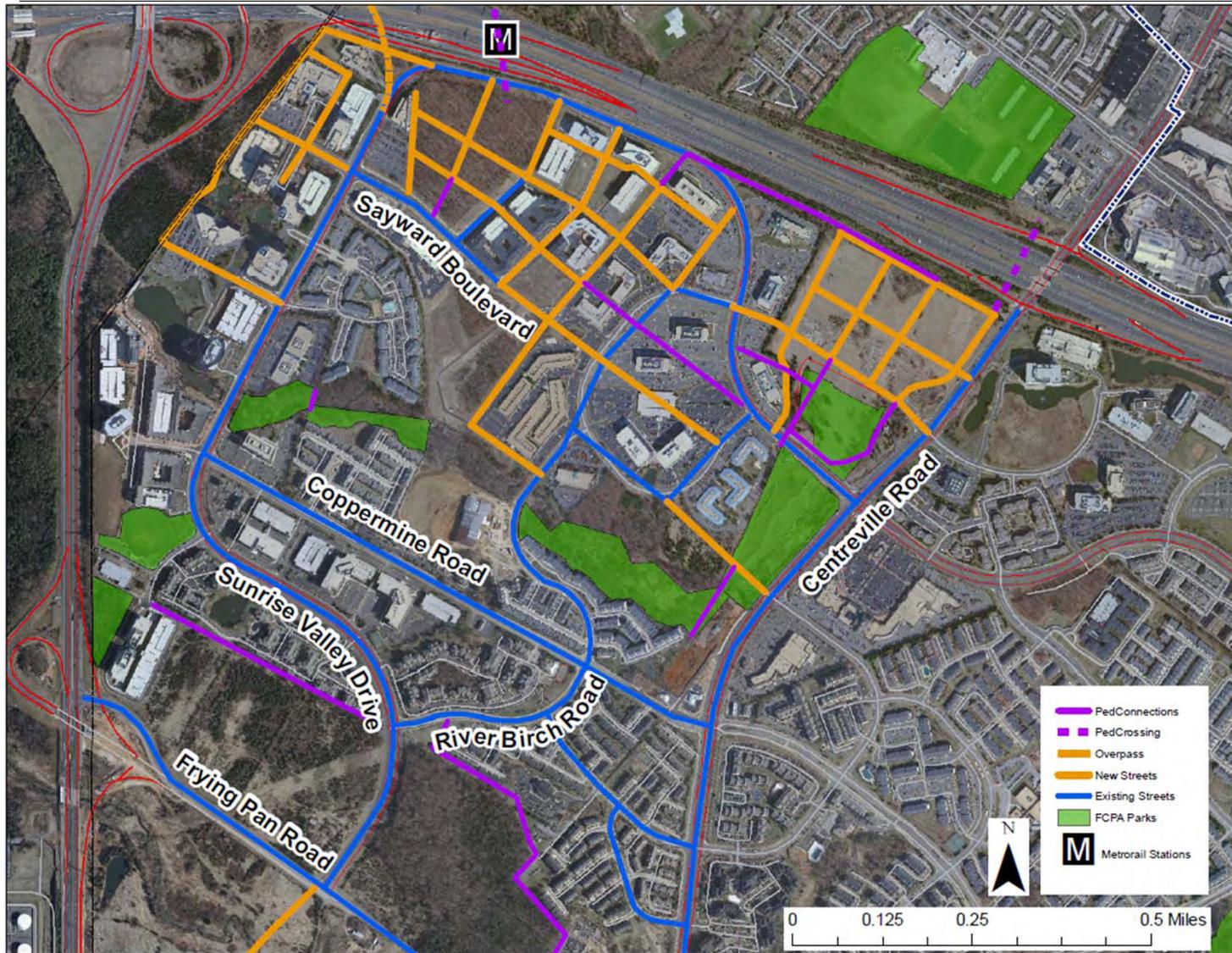
- Strategic Land Use (TOD)
- Local Connections and Grid of Streets
- Enhanced Pedestrian and Bicycle Access
- Enhanced Transit Service and TDM
- Traffic Operations and Intersection Improvements





County of Fairfax, Virginia

# Innovation Center Station – New Streets







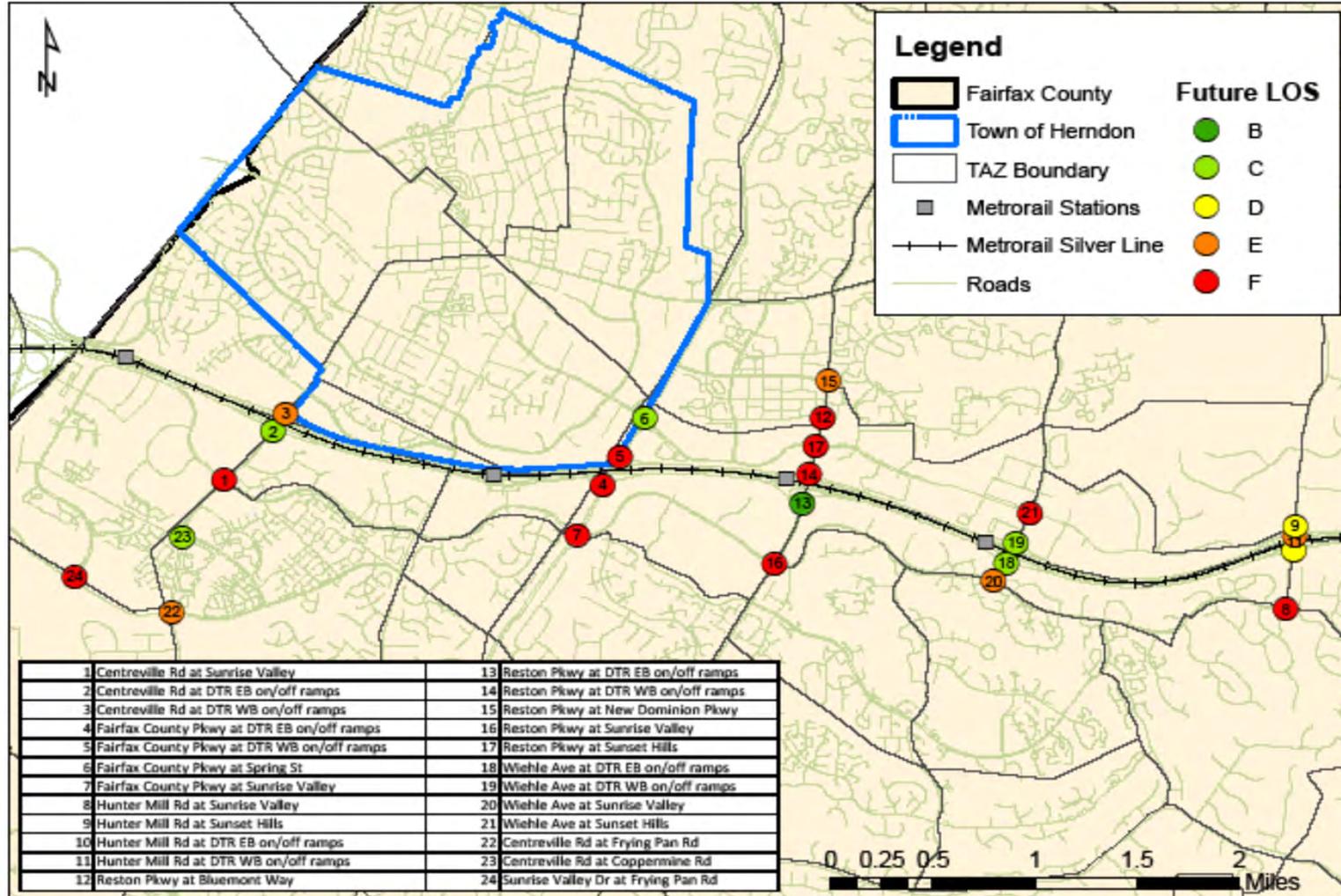
## Intersection Mitigations

- 24 major intersections analyzed in transportation study (6 are in the Route 28 Study Area)
  - Mitigation added at 17 intersections (5 are in the Route 28 Study Area)
  - Includes improvements at Dulles Toll Road ramps as proposed by the Metropolitan Washington Airport Authority
- Evaluated intersection improvements considering pedestrian and bicycle access issues



# County of Fairfax, Virginia

## 2030 Evening Peak Hour Level of Service (Round 8.0 Land Use) -Unmitigated





# Centreville Road at Sunrise Valley Drive

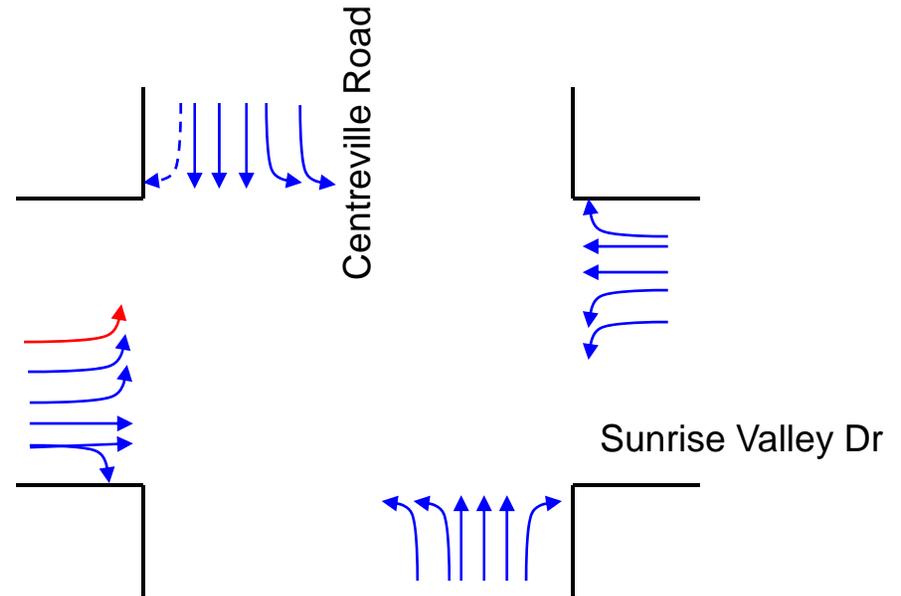
## Mitigations Added

2030 Traffic Conditions (unmitigated):

- Morning LOS/Delay: **F/90 seconds**
- Evening LOS/Delay: **F/135 seconds**

Mitigation Added:

- Add 3rd EB left turn



Note 1: Red Arrow – Improvement Added

Note 2: Dashed line indicates a free right turn



# Centreville Road at Frying Pan Road

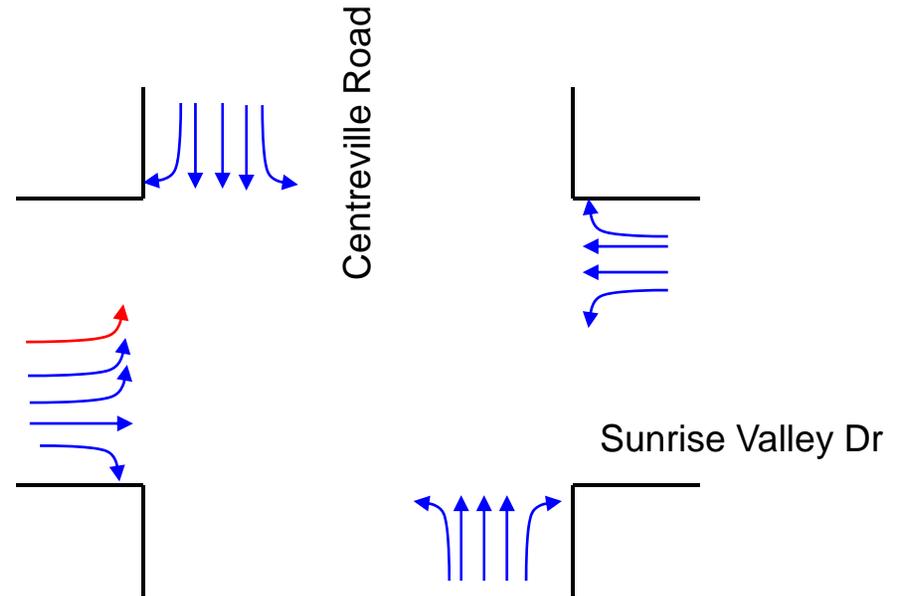
2030 Traffic Conditions (unmitigated):

- Morning LOS/Delay: **F/90 seconds**
- Evening LOS/Delay: **E/75 seconds**

Mitigation Added:

- Add 3rd EB left turn

## Mitigations Added



Note 1: Red Arrow – Improvement Added

Note 2: Dashed line indicates a free right turn



# Sunrise Valley Drive at Frying Pan Road

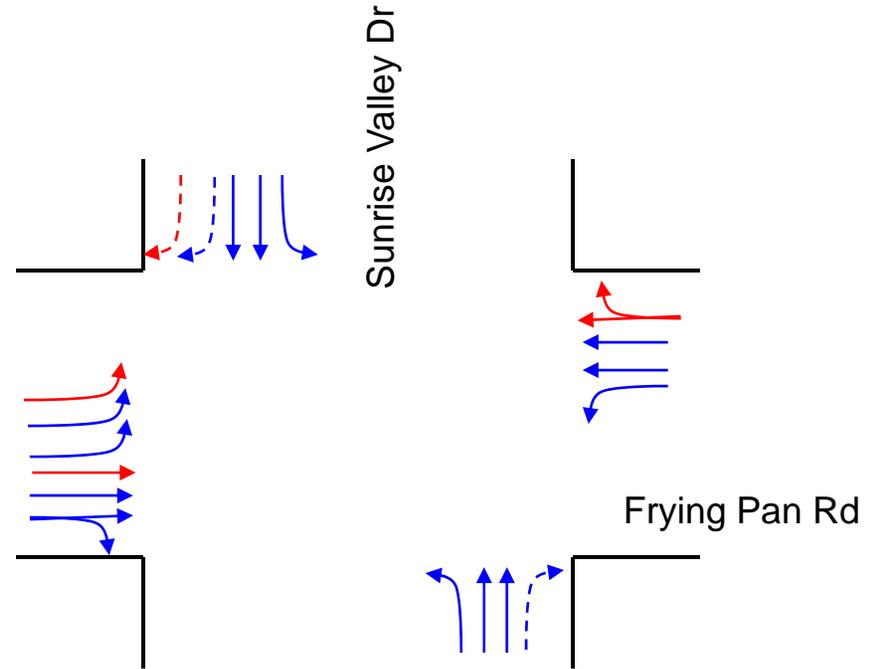
2030 Traffic Conditions (unmitigated):

- Morning LOS/Delay: **F/320 seconds**
- Evening LOS/Delay: **F/300 seconds**

Mitigation Added:

- Add 2<sup>nd</sup> SB left turn lane
- Add a WB thru/right lane
- Add a 3<sup>rd</sup> EB left turn lane
- Add a 3<sup>rd</sup> EB thru lane

## Mitigations Added

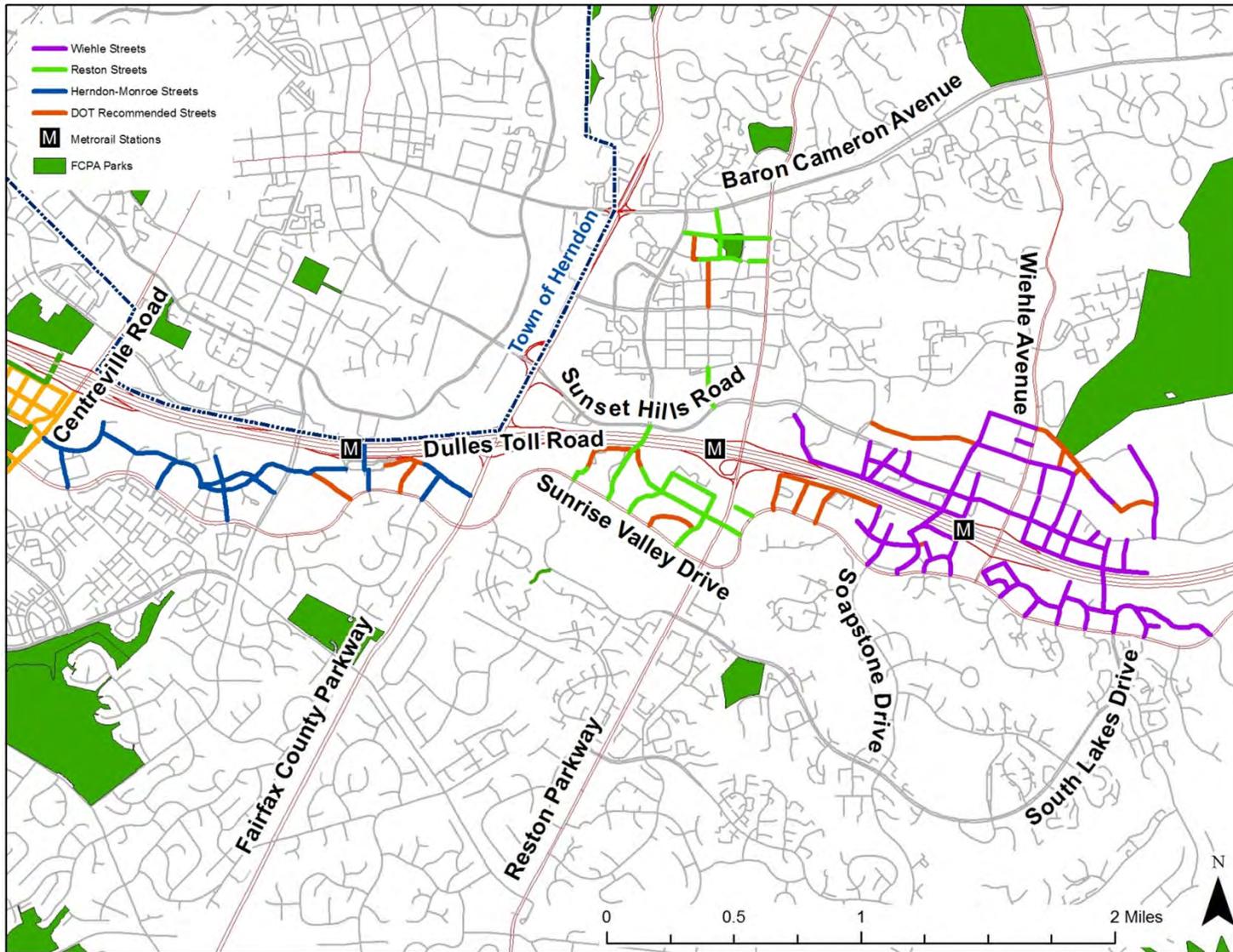


-  Note 1: Red Arrow – Improvement Added
-  Note 2: Dashed line indicates a free right turn



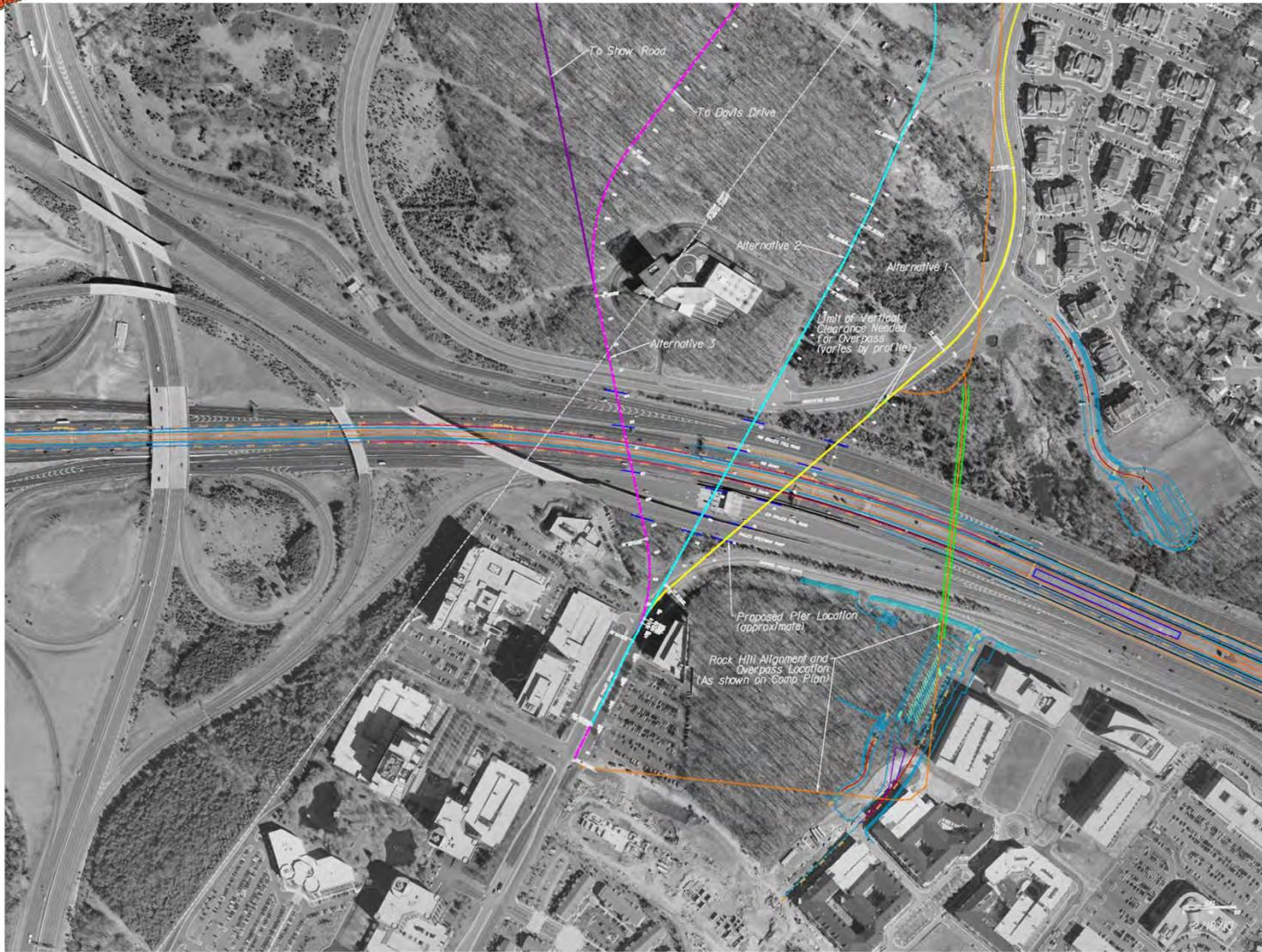
## Dulles Toll Road Crossings – Feasibility Studies

- 4 Crossings of the Toll Road being studied
  - East of Wiehle Avenue (South Lakes Drive)
  - West of Wiehle Avenue (Soapstone Drive)
  - West of Reston Parkway (Town Center Parkway)
  - East of Route 28 (Rock Hill Road)





# County of Fairfax, Virginia **Rock Hill Road Feasibility Study**





## Evaluation Measures

- The following are measures that will be used to assess/evaluate the transportation network:
  - Intersection Level of Service (LOS)
  - Intersection Peak Spreading
  - System-wide congestion
  - Link Level of Service

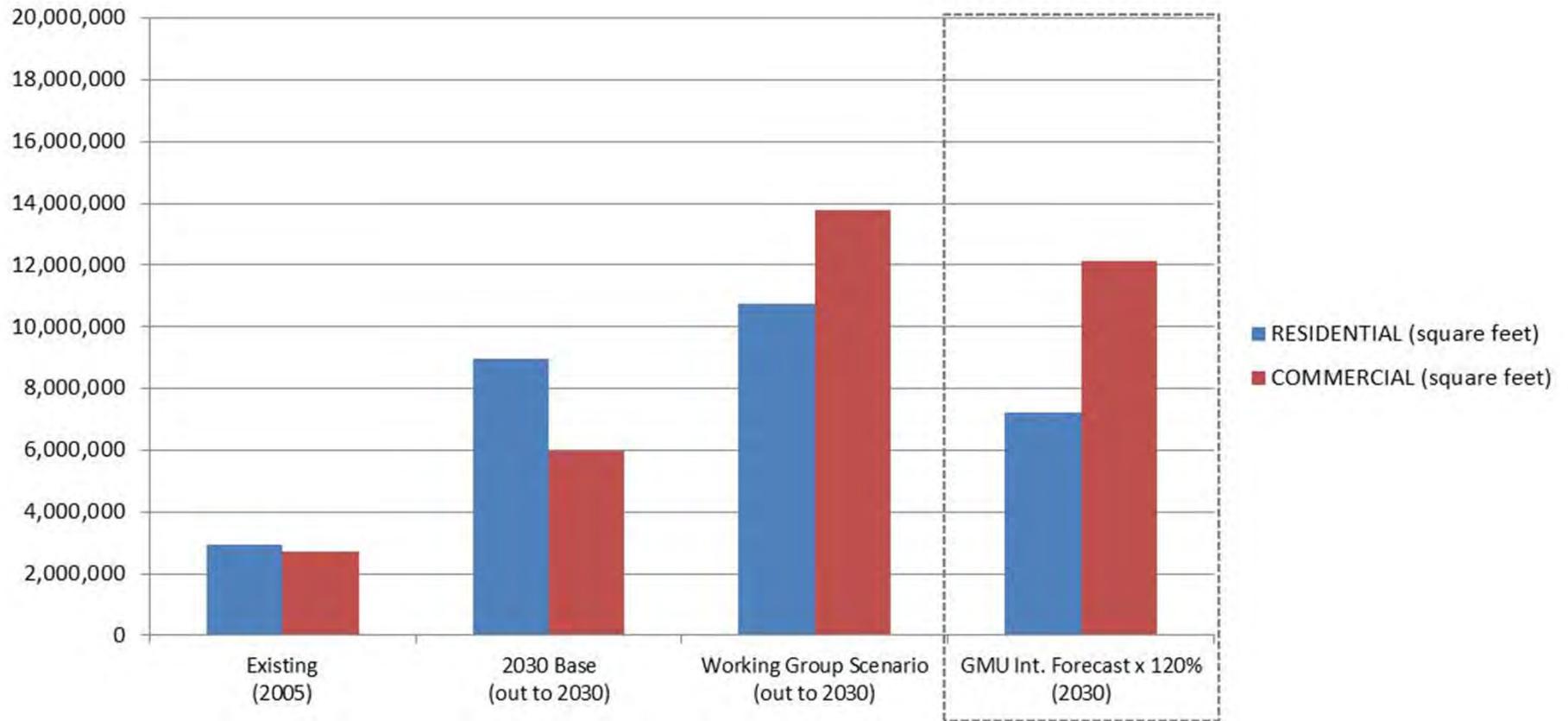


## Scenarios and Network

- Scenario E: Land use scenarios compared to existing and future 2030 base (Round 8.0)
- Network:
  - Partial Build Network:
    - Transportation Plan Map Roadway Improvements
    - Soapstone Overpass
    - Enhanced Street Network
    - Intersection Mitigations
  - Full Build Network:
    - 3 Additional Crossings of the Toll Road
      - South Lakes Drive
      - Town Center Parkway
      - Rock Hill Road
    - Grade Separation at Sunrise Valley Drive and Fairfax County Parkway



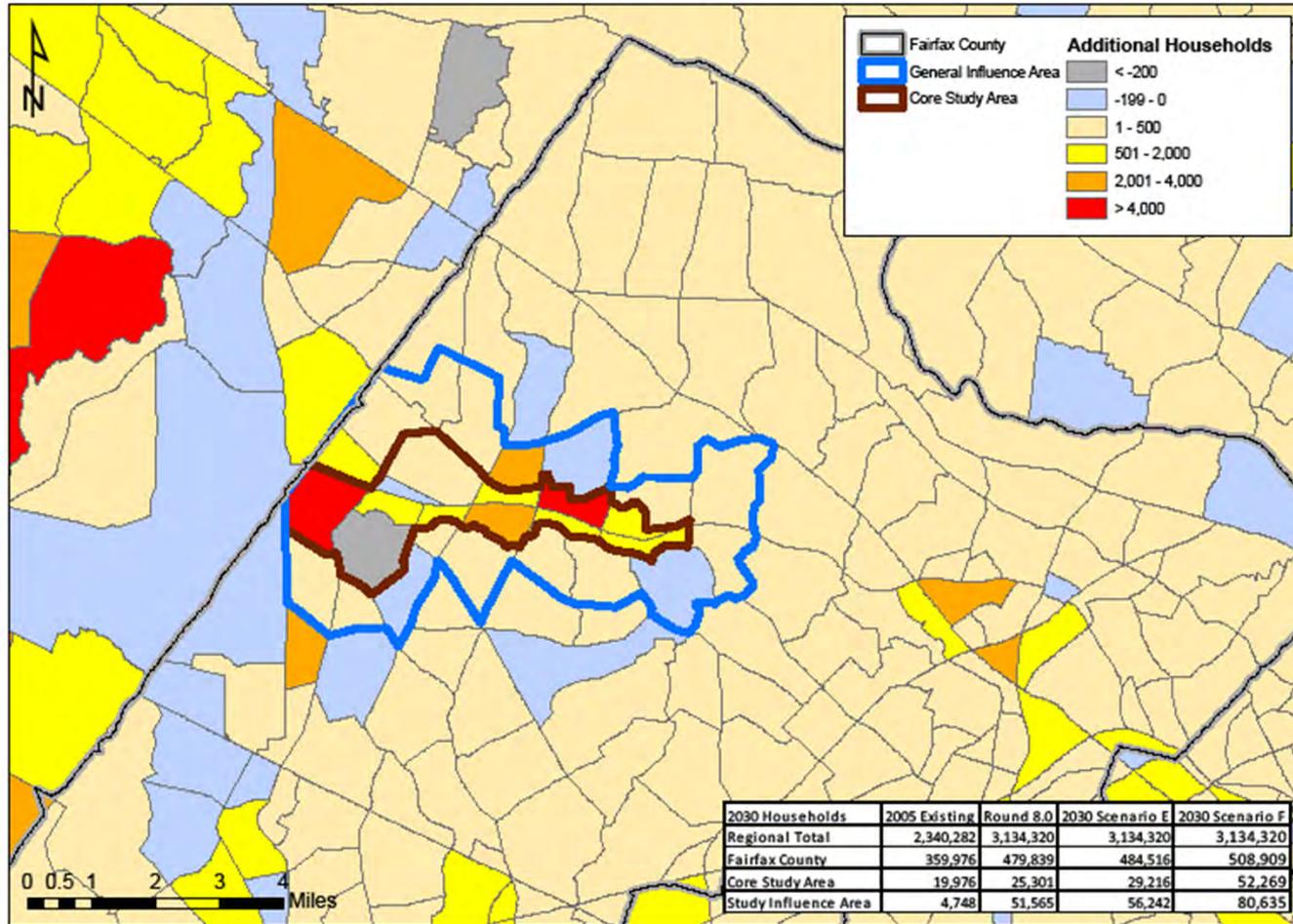
## Route 28 Station South Special Study Area + CIT Area Land Uses Tested by FCDOT



Note: The GMU forecast was not tested by FCDOT. It is shown for reference purposes.

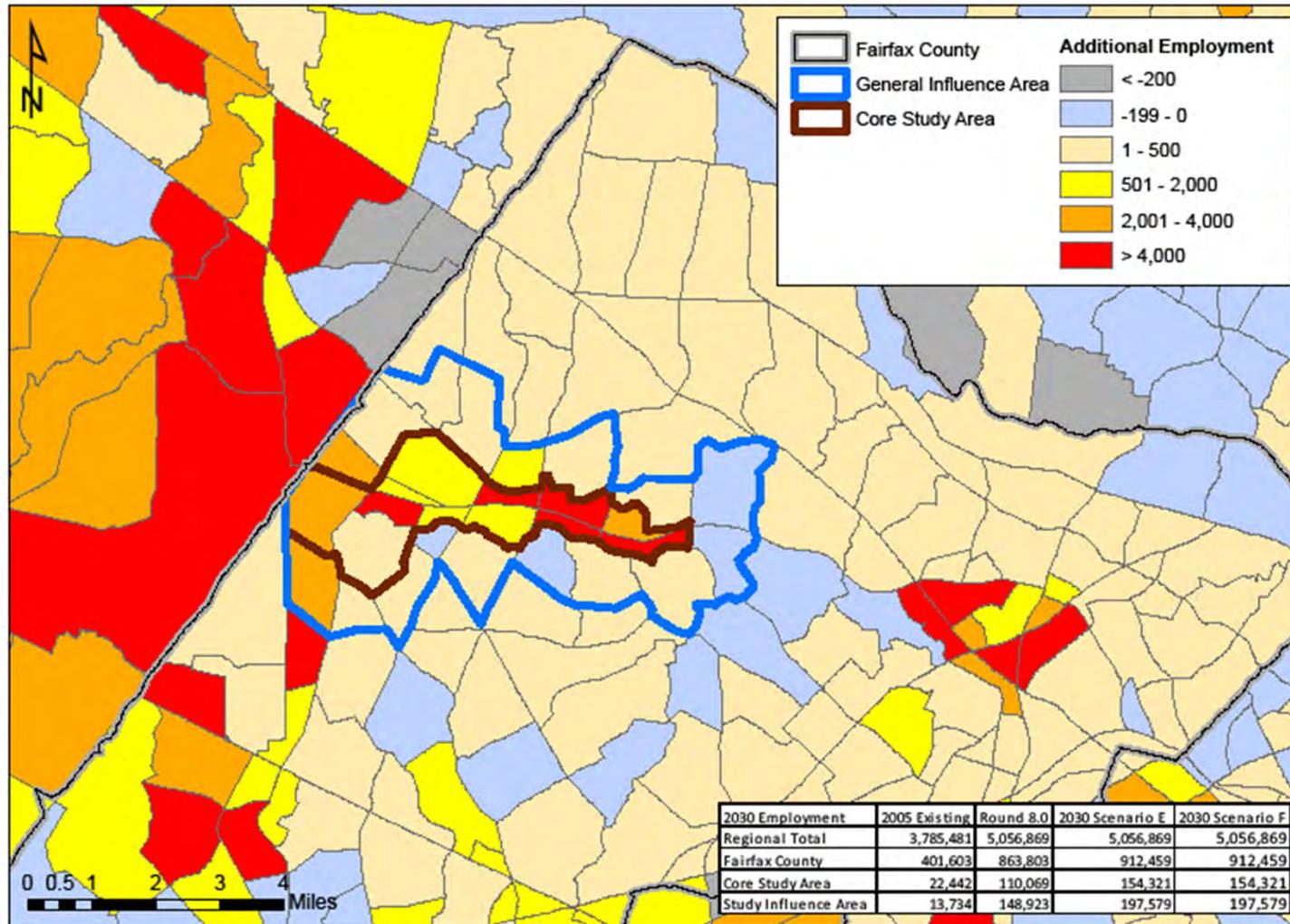


# Scenario E Increase in Households (Existing to 2030)





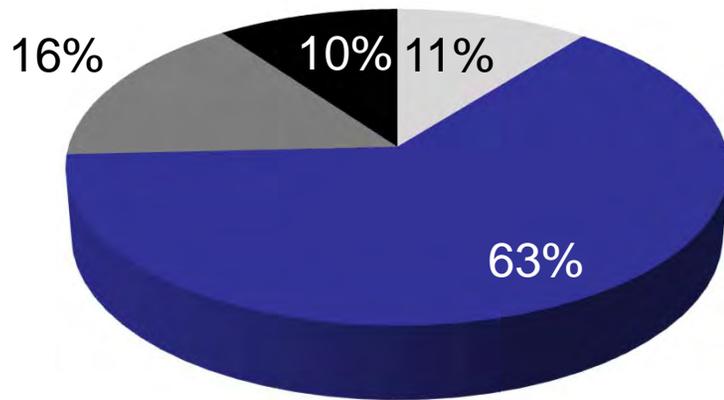
# Increase in Employment (Existing to 2030)



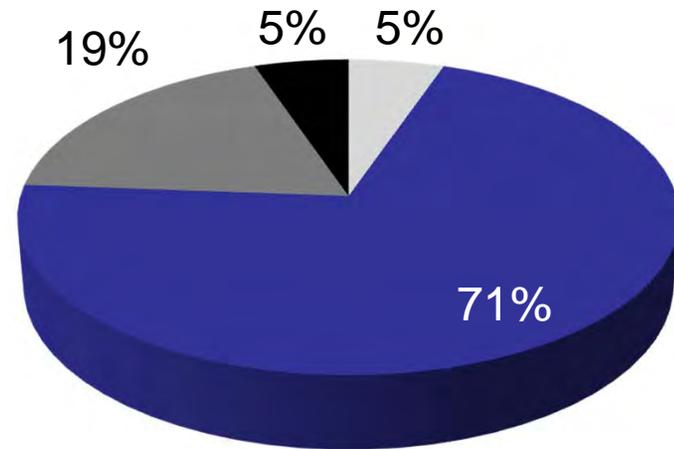


# Mode Choice Work Trips Year 2030 Scenario E

From Home in the Study Area



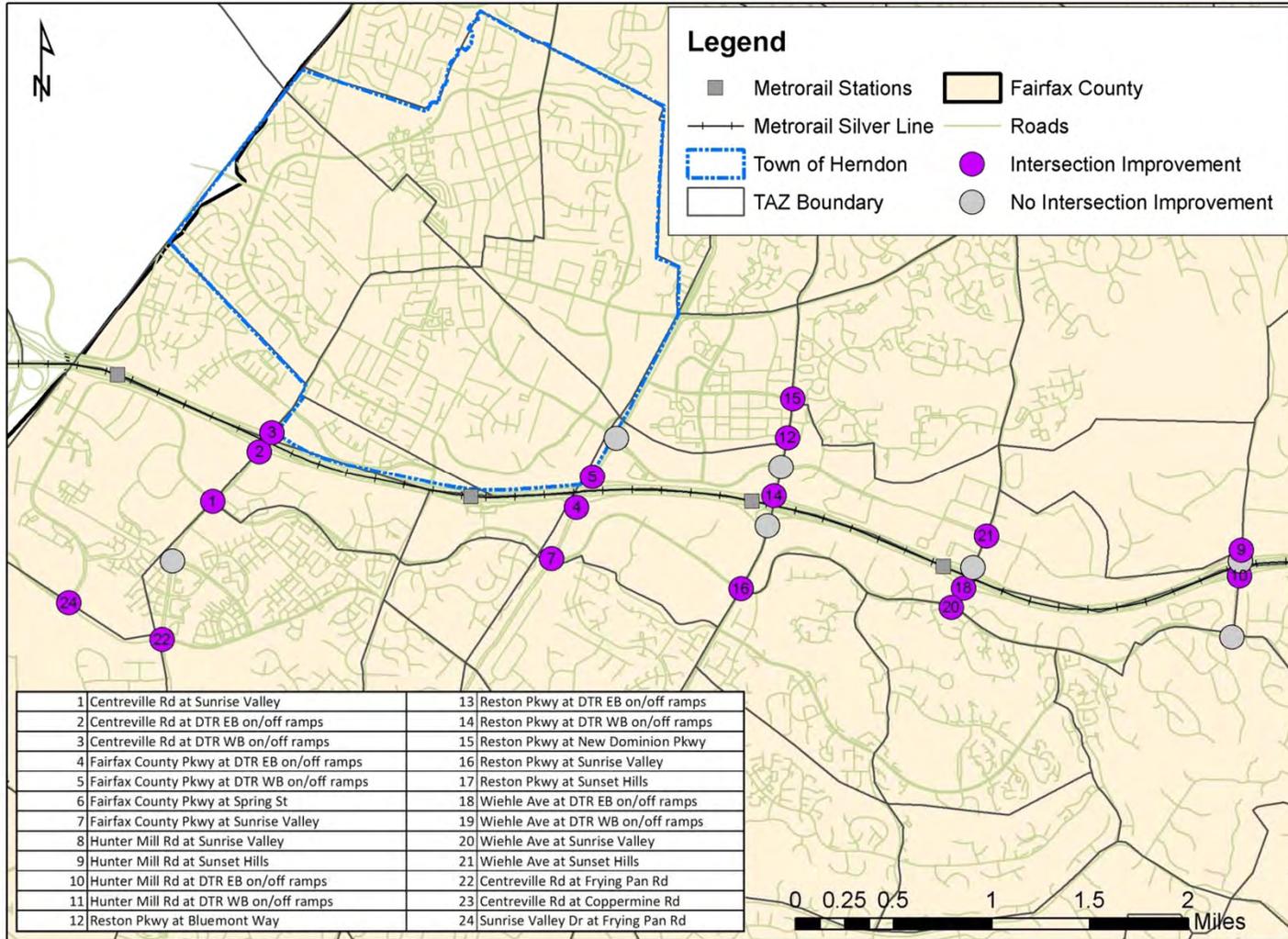
To Work in the Study Area



- Transit
- Drive Alone
- Carpool
- Non-Motorized

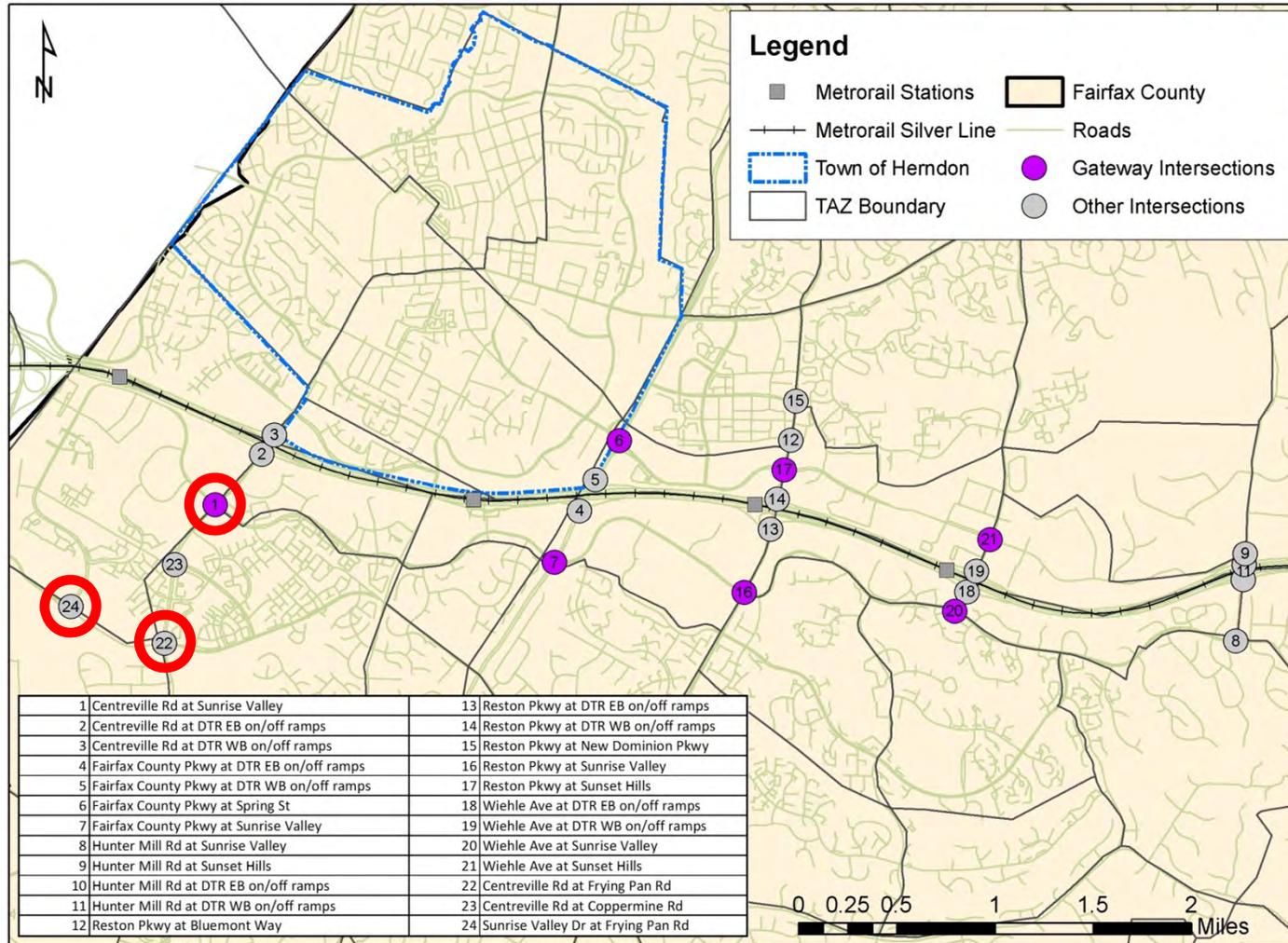


# Location of Intersection Mitigations





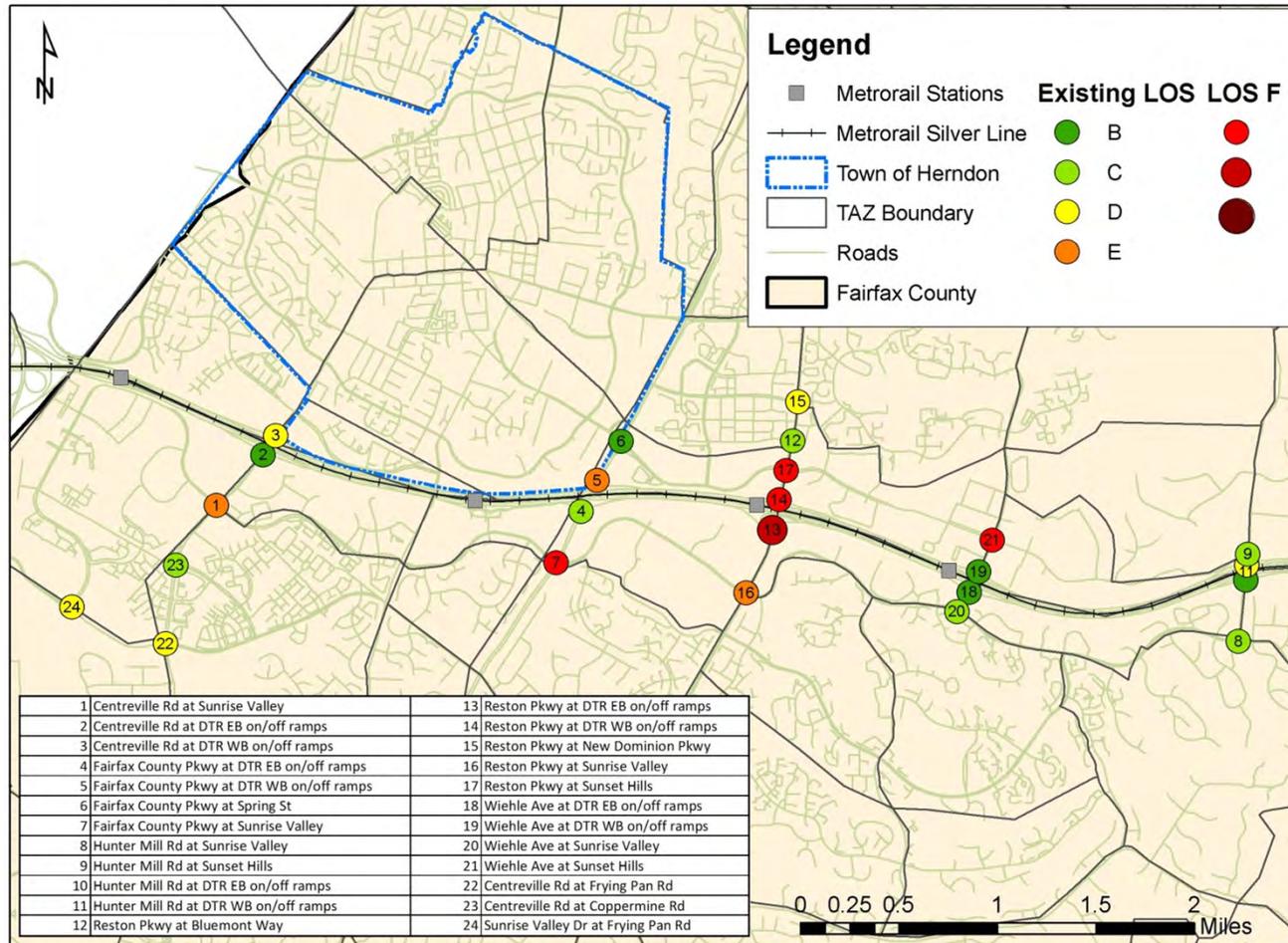
# Gateway Intersections



 Route 28 Gateway Intersections

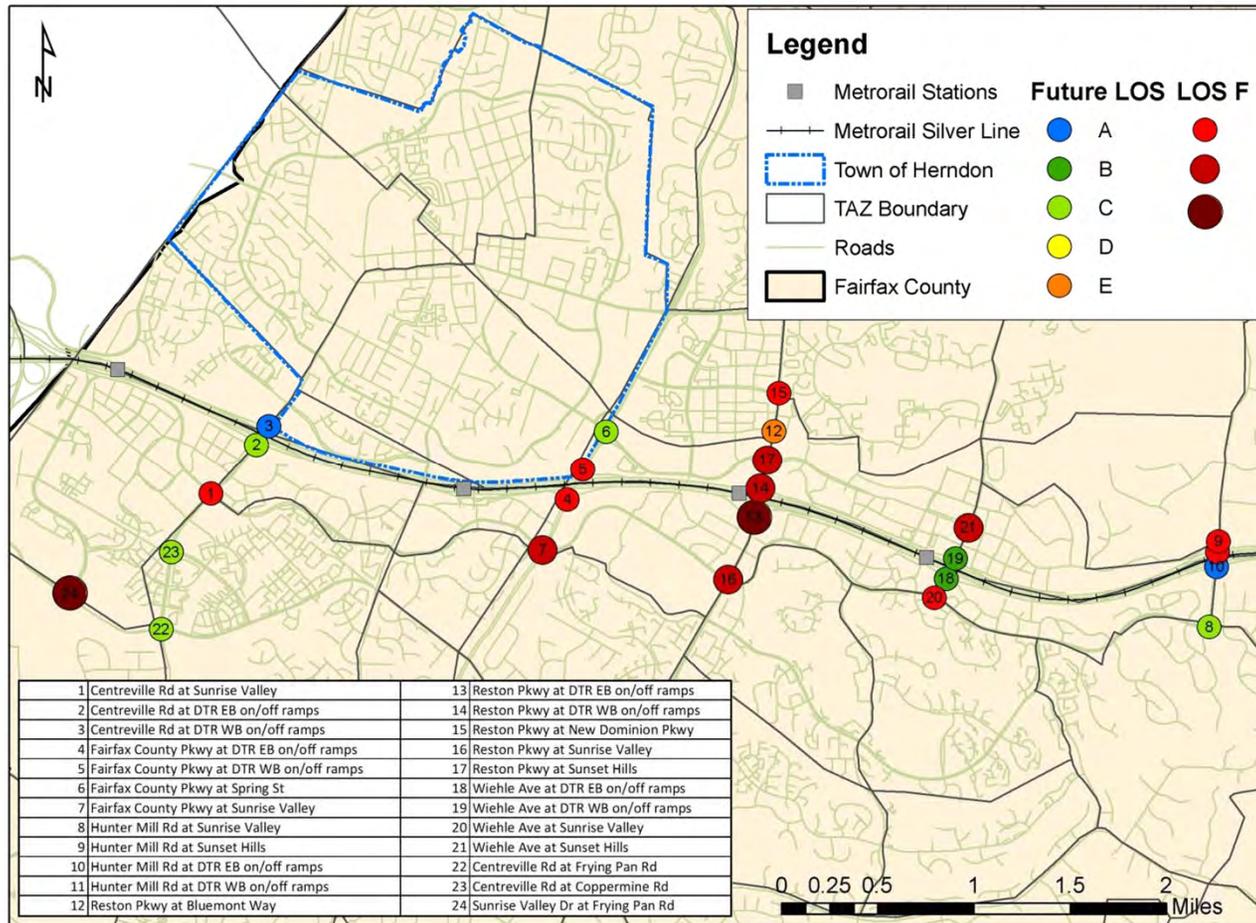


# Existing Evening Peak Intersection Level of Service



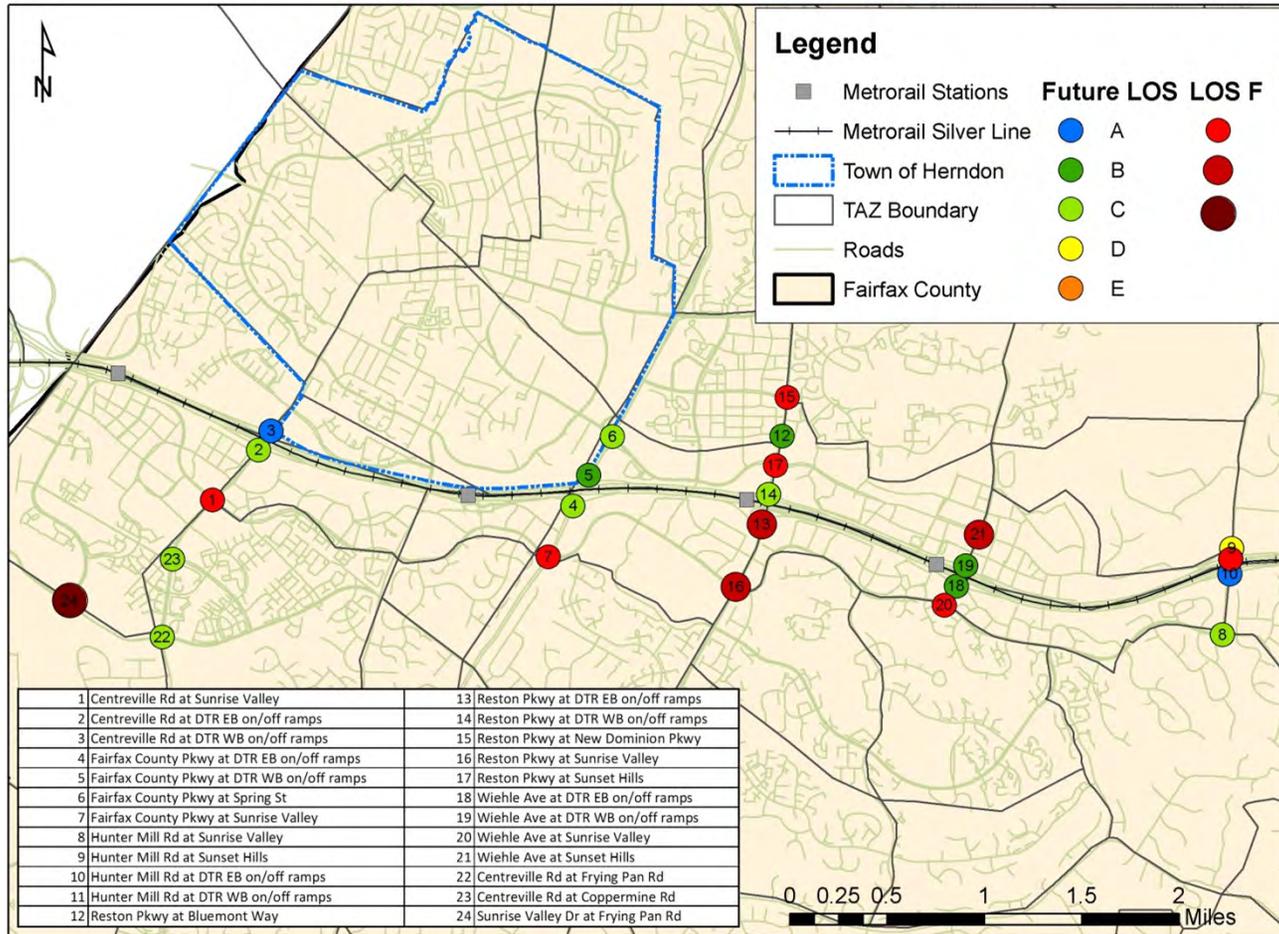


# Future Evening Peak Intersection Level of Service – Partial Build Network – Scenario E



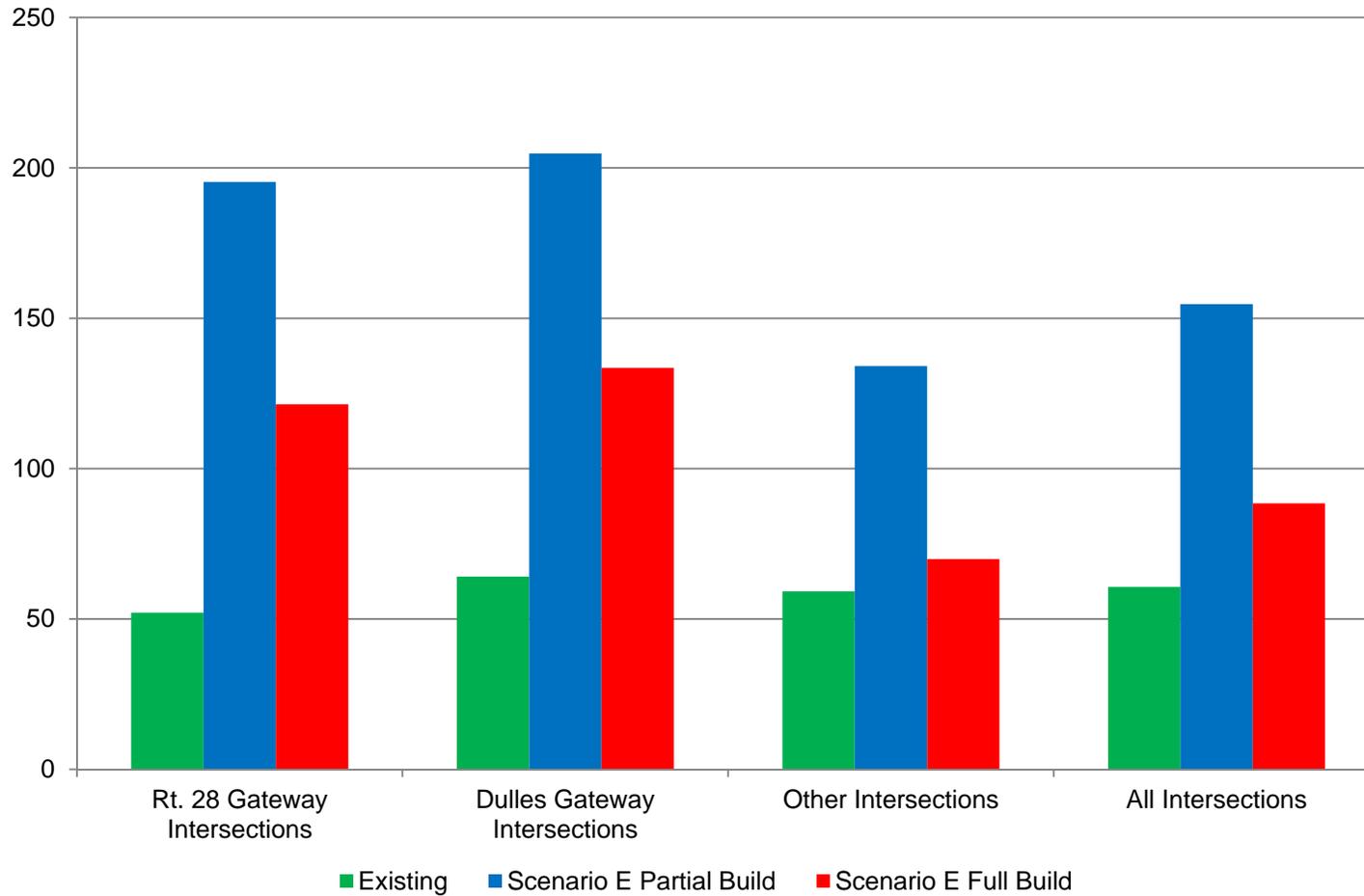


# Future Evening Peak Intersection Level of Service – Full Build Network – Scenario E



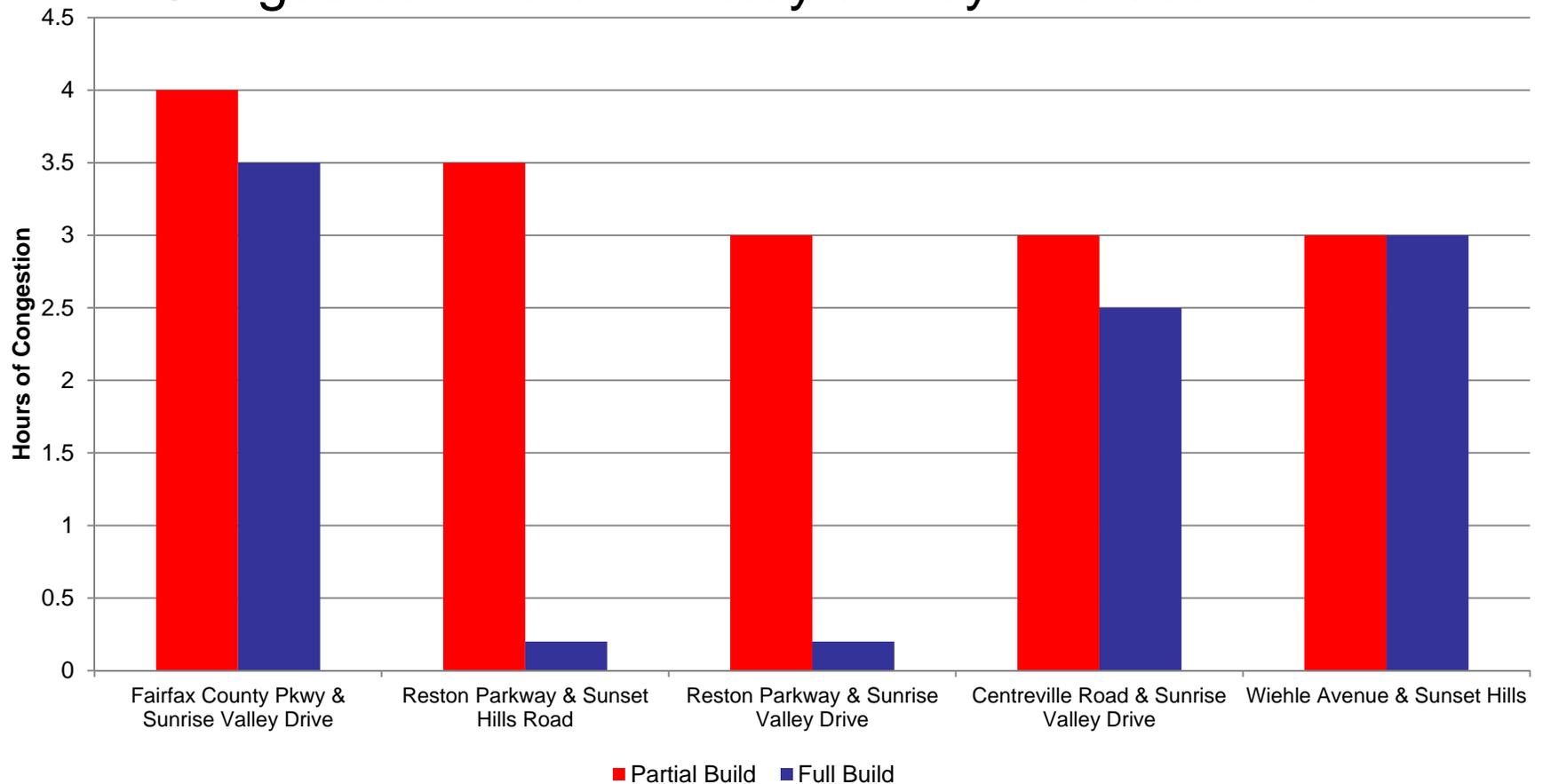


# Average Peak Period Intersection Delay





## Congested Hours of Delay at Key Intersections



Full Build on this slide does not include the Fairfax County Parkway & Sunrise Valley Drive grade separation. The grade separation reduces congested hours of delay to under an hour.

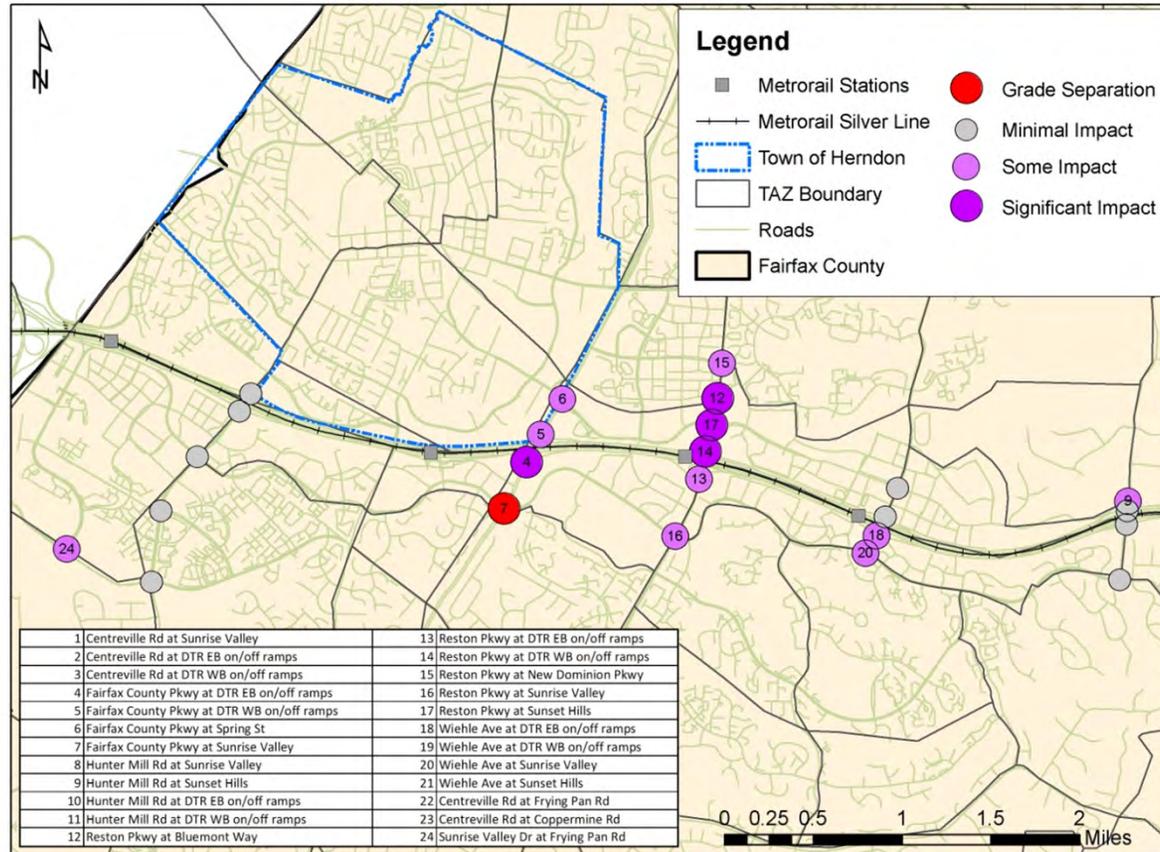


## Impacts of Individual Full Build Improvements

- Four Major Improvements were tested individually:
  - Town Center Parkway Underpass
  - Grade Separation at Fairfax County Pkwy and Sunrise Valley Dr
  - South Lakes Crossing
  - Rock Hill Overpass
- Highlighted locations where changes in intersection volumes are forecast
- New LOS were not calculated



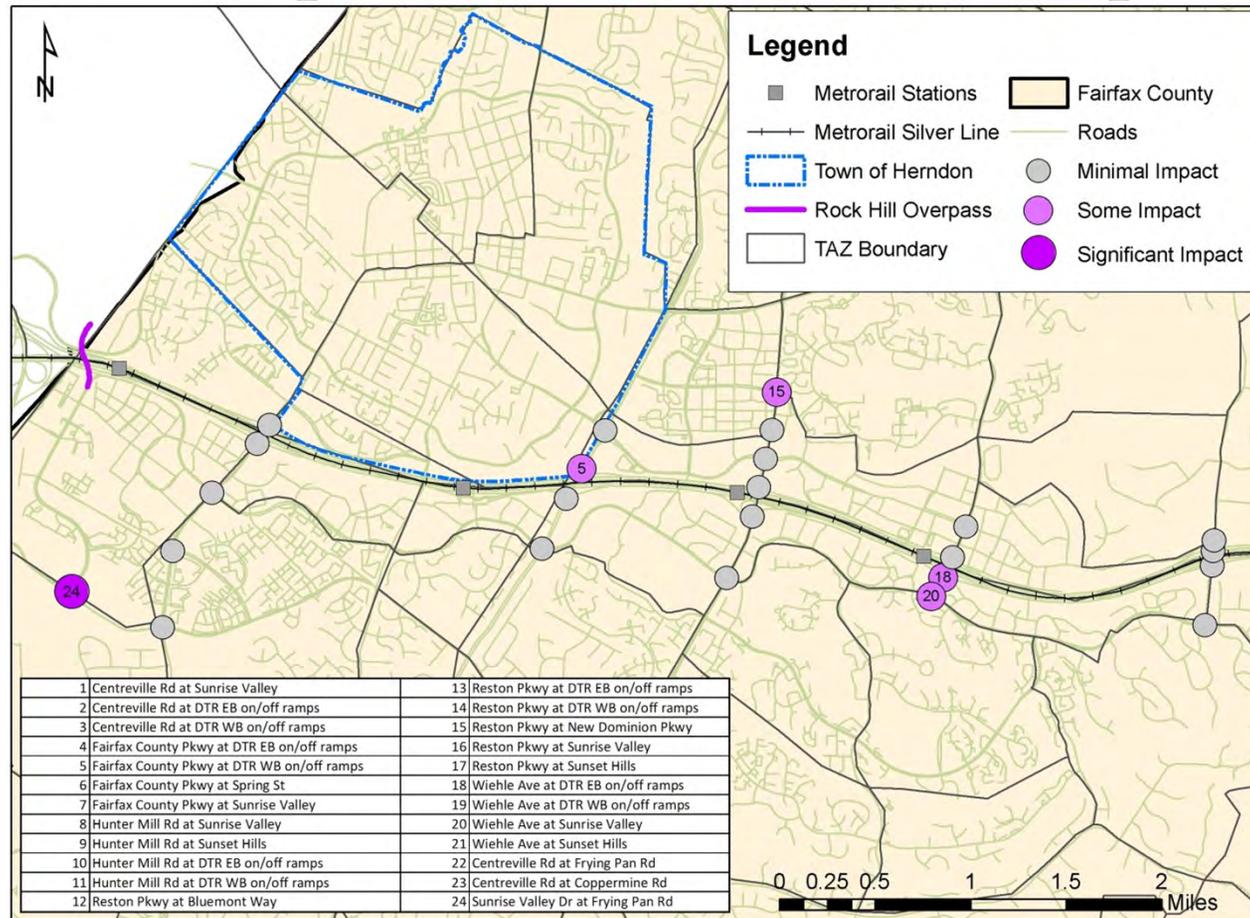
# LOS Impacts of Grade Separation



The grade separation of this intersection significantly improves its LOS while increasing traffic flow through the intersection and other adjacent intersections. Major impacts occur along Fairfax County Pkwy and Reston Pkwy.



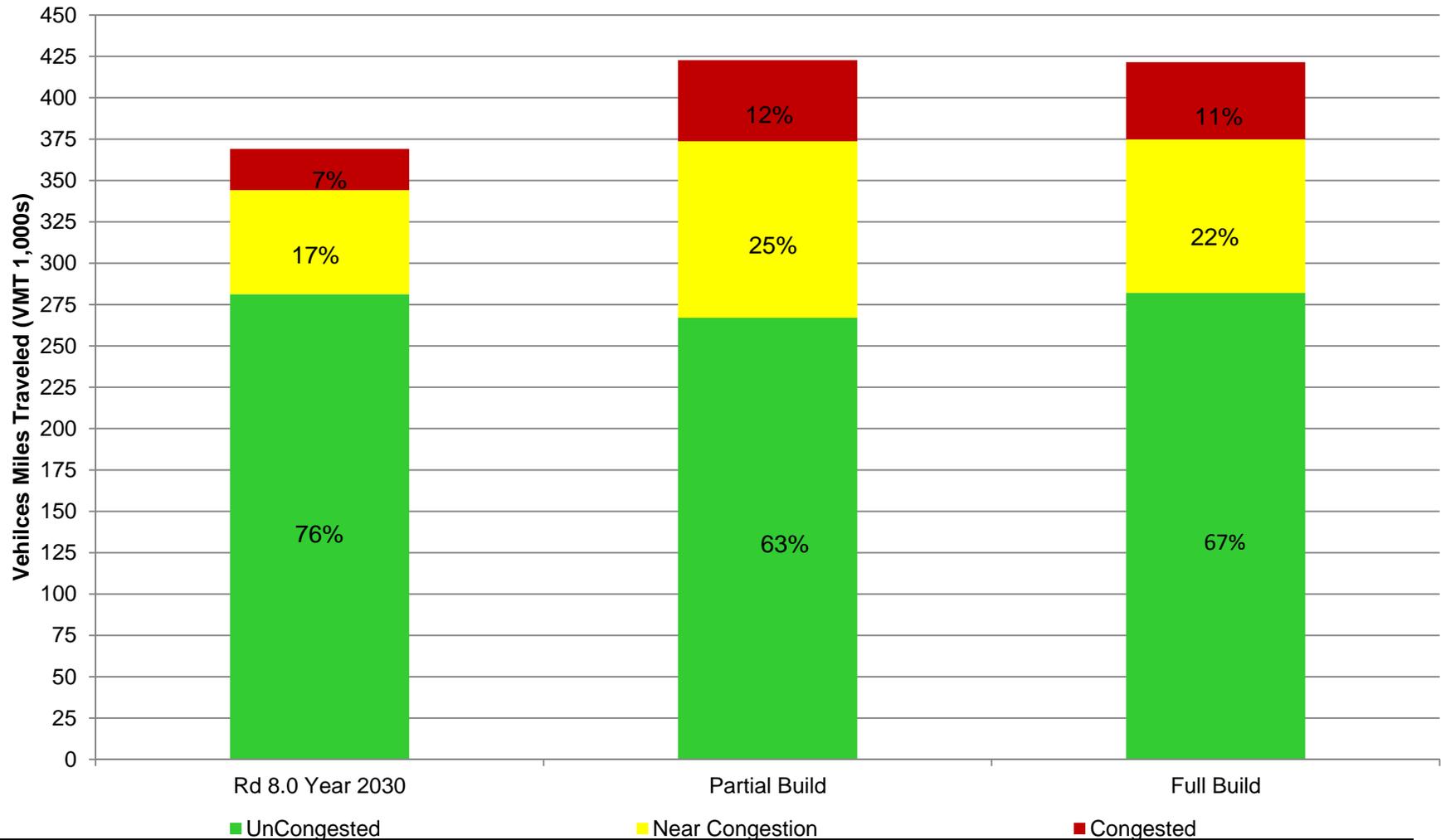
# LOS Impacts of Rock Hill Overpass



The Rock Hill Overpass is forecast to have mostly moderate improvements on intersections throughout the study area, but may have greater impacts to the west and along VA 28.



# Evening Peak Period Congested VMT





## Summary

- Scenario E has increased land density significantly above the Round 8.0 Cooperative Forecast. There are 12% more trips produced in the study area and 36% more trips attracted to the study area.
- The enhanced street network and intersection mitigation improvements increase mobility in the Partial Build and Full Build. These improvements alone are not enough to mitigate the transportation impacts.
- The major Full Build roadway improvements (overpasses, underpass, and grade separation) significantly improve the highway network performance over the Partial Build.



## Next Steps

- FCDOT staff to further assess the results of the traffic analysis
- FCDOT and DPZ staff to review intersection information to better evaluate land use zone density locations and use mix
- Concurrent with these assessments, FCDOT and DPZ to discuss results of transportation analysis in terms of potential refinements of Scenario E land use and transportation network



# General Discussion/Questions/ Work Group Input