



County of Fairfax, Virginia

Dulles Corridor Special Study Transportation Results

Presented to:
Reston Master Plan Special Study Task Force

Presented by:
Fairfax County Department of Transportation

April 8, 2013



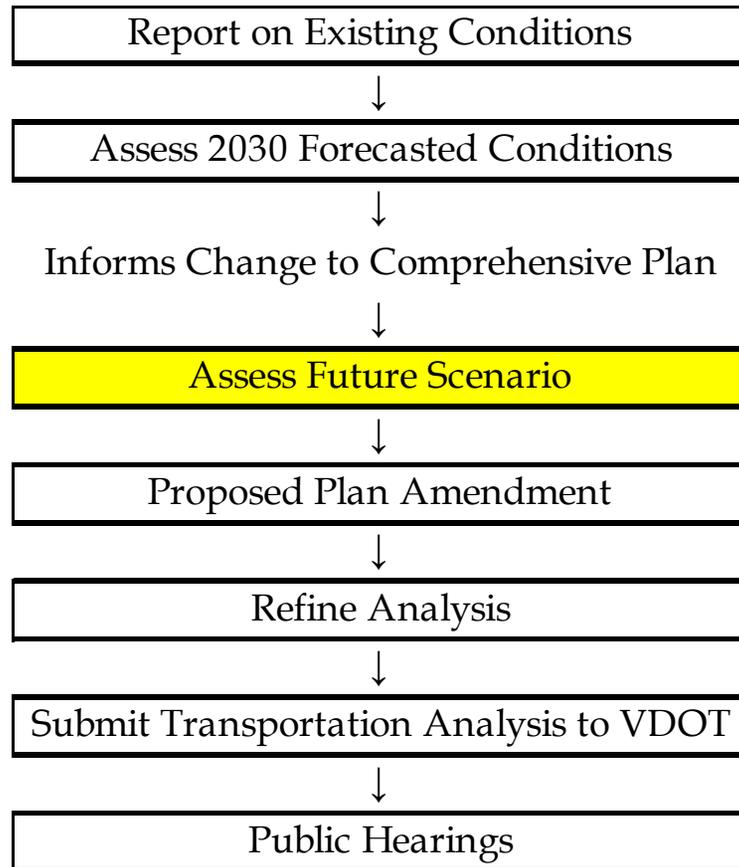
Presentation Outline

- Overview of Scenarios
- Transit Use
- Through vs. Local Traffic
- Intersection Performance
- Assessment of Major Improvements
- Summary of Findings
- Next Steps

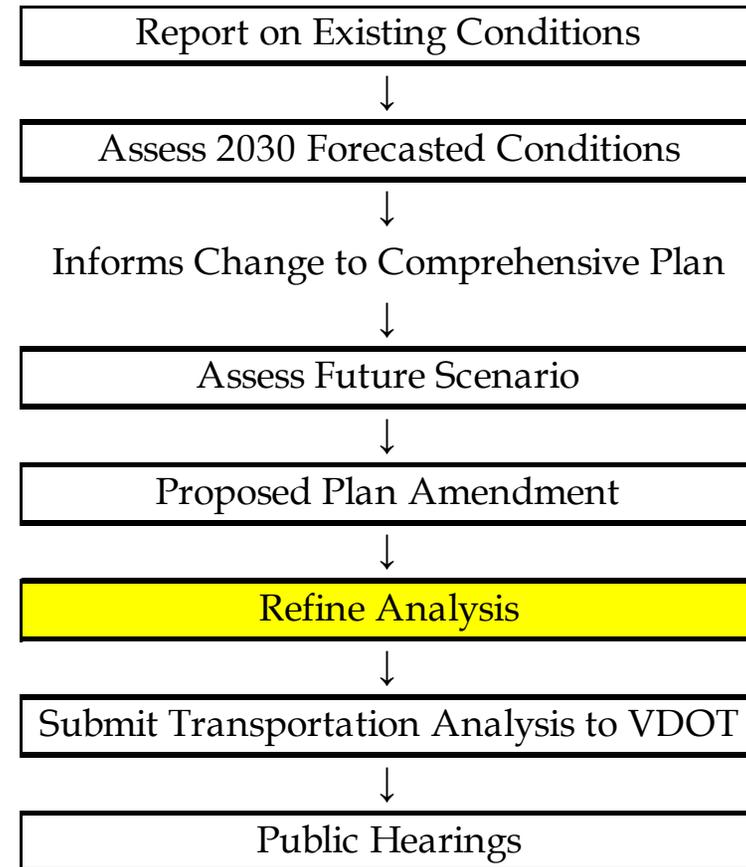


TRANSPORTATION ANALYSIS PROCESS

Status Last Presentation

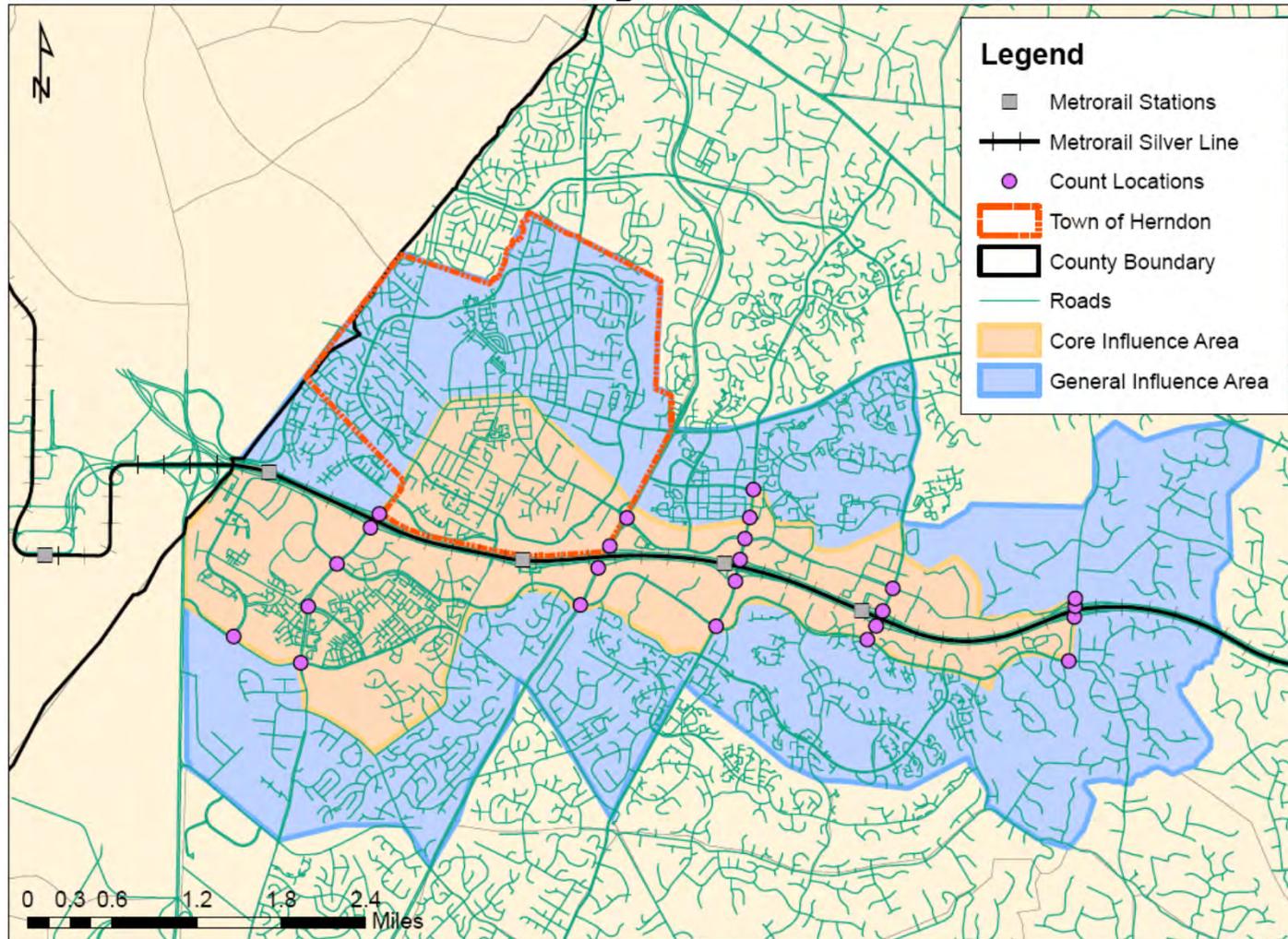


Status Now





Study Area



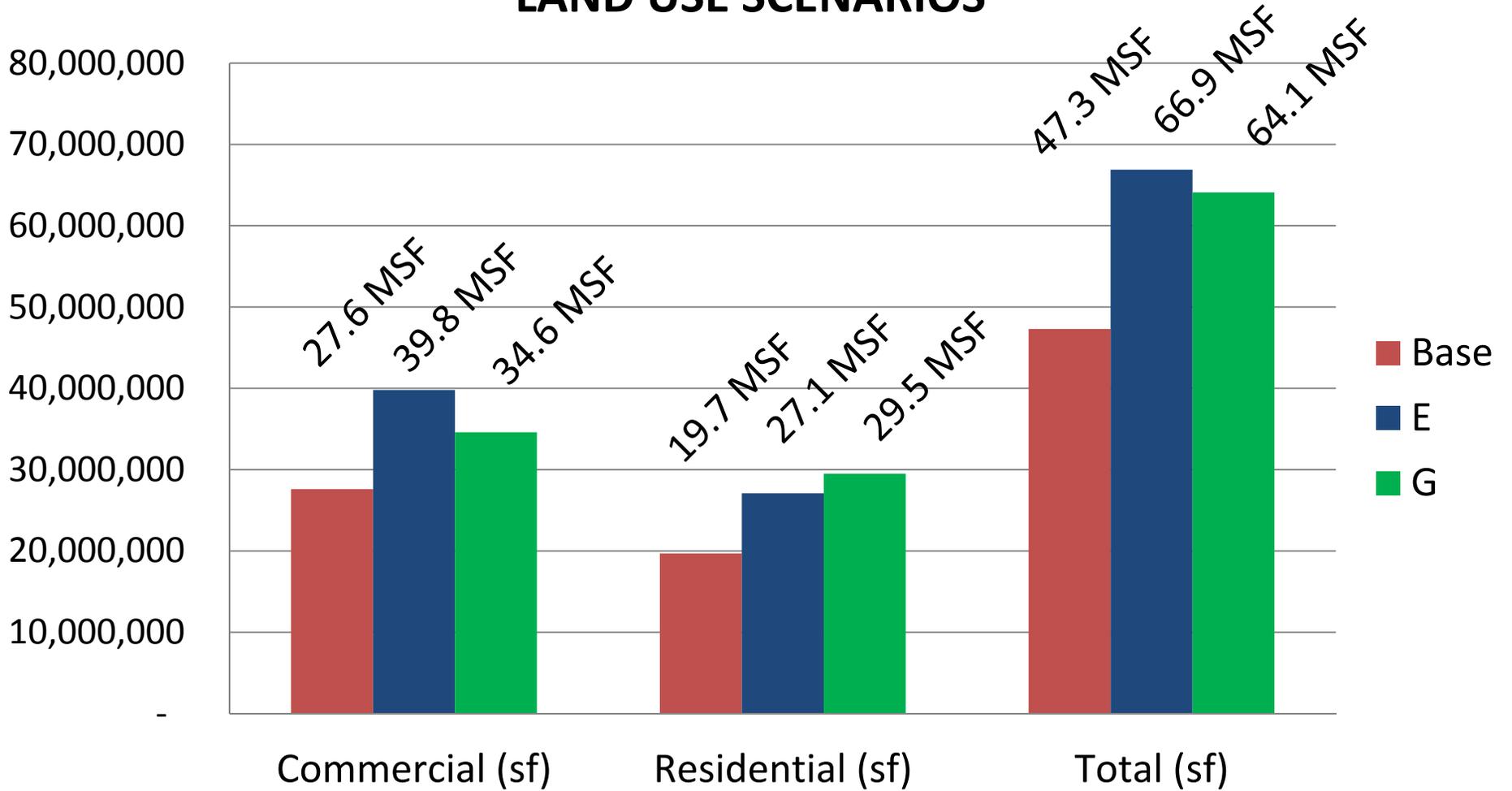


Scenarios Tested

- Existing Conditions – Fall 2010
- **COG Round 8.0 (Future Base) – Summer 2011**
- **Scenario E – Spring 2012**
- Scenario F (residential boost) – Spring 2012
- Modified Scenario E (land use test only) – Fall 2012
- **Scenario G – Spring 2013**



LAND USE SCENARIOS





2030 COG Round 8.0 (Future Base Scenario)

Land Use

| Development Type | Base COG Rd 8.0 |
|----------------------------------|----------------------------|
| Office (sf) | 22,613,000 |
| Retail (sf) | 999,000 |
| Industrial (sf) | 705,000 |
| Institutional (sf) | 1,744,000 |
| Hotel (sf) | <u>1,537,000</u> |
| Nonresidential total (sf) | 27,598,000 |
| Residential (units) | 16,400 |

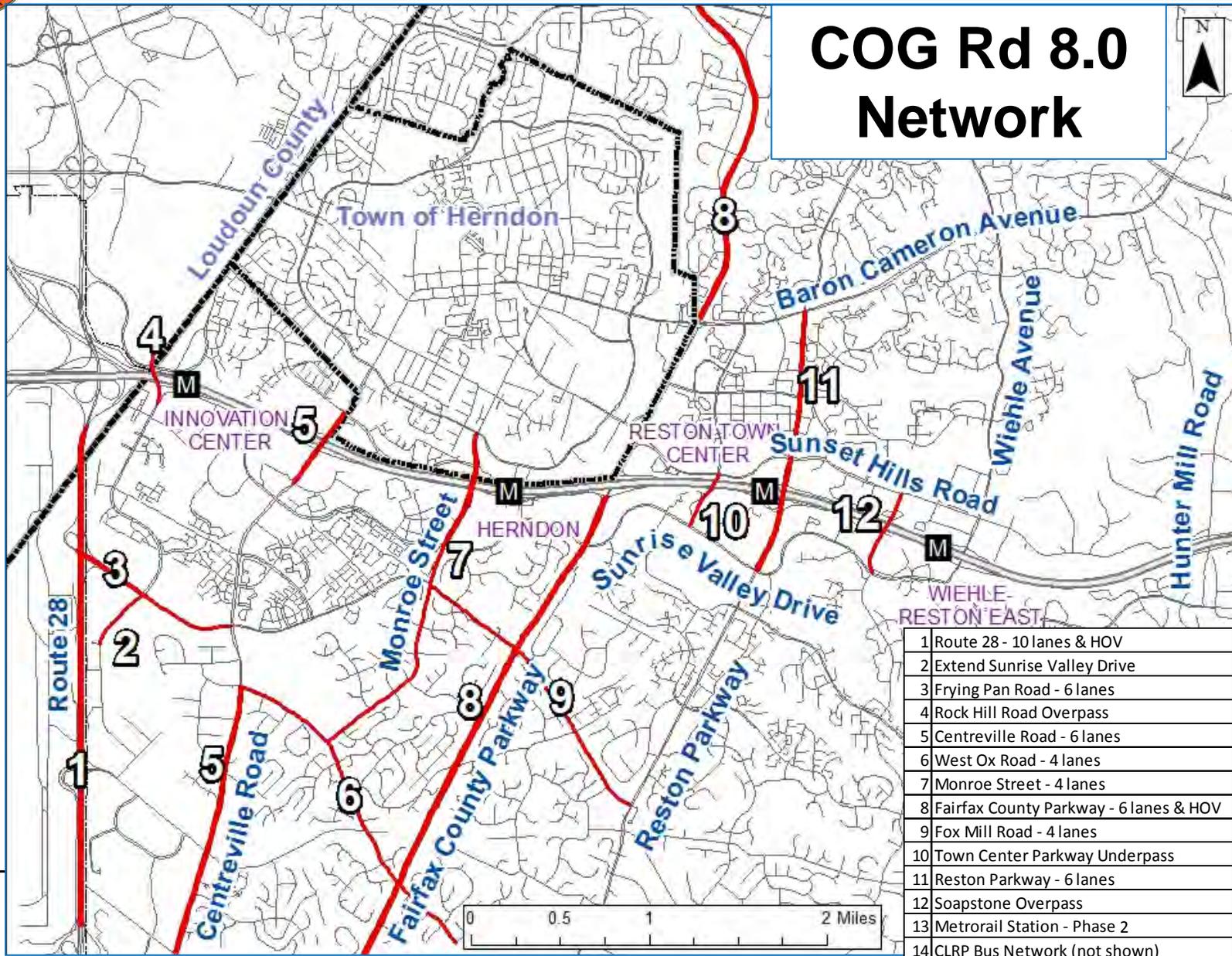
Transportation Network Improvements Added Above Existing Network

1. Route 28 ten lanes with HOV
2. Extend Sunrise Valley Drive south of Frying Pan Road
3. Frying Pan Road six lanes (Rt. 28 to Centreville Rd)
4. Rock Hill Road Overpass
5. Centreville Road six lanes
6. West Ox Road four lanes (Lawyers Rd to Centreville Rd)
7. Monroe Street four lanes (West Ox Rd to Herndon)
8. Fairfax County Parkway six lanes with HOV
9. Fox Mill Road four lanes (Reston Parkway to Monroe St)
10. Town Center Parkway Underpass
11. Reston Parkway six lanes (Sunrise Valley to Baron Cameron)
12. Soapstone Overpass
13. Metrorail Stations in Phase 2 open
14. CLRP bus network (not shown)



County of Fairfax, Virginia

Transportation Network Improvements Added Above Existing Network



COG Rd 8.0 Network

| | |
|----|--|
| 1 | Route 28 - 10 lanes & HOV |
| 2 | Extend Sunrise Valley Drive |
| 3 | Frying Pan Road - 6 lanes |
| 4 | Rock Hill Road Overpass |
| 5 | Centreville Road - 6 lanes |
| 6 | West Ox Road - 4 lanes |
| 7 | Monroe Street - 4 lanes |
| 8 | Fairfax County Parkway - 6 lanes & HOV |
| 9 | Fox Mill Road - 4 lanes |
| 10 | Town Center Parkway Underpass |
| 11 | Reston Parkway - 6 lanes |
| 12 | Soapstone Overpass |
| 13 | Metrorail Station - Phase 2 |
| 14 | CLRP Bus Network (not shown) |



Scenario E

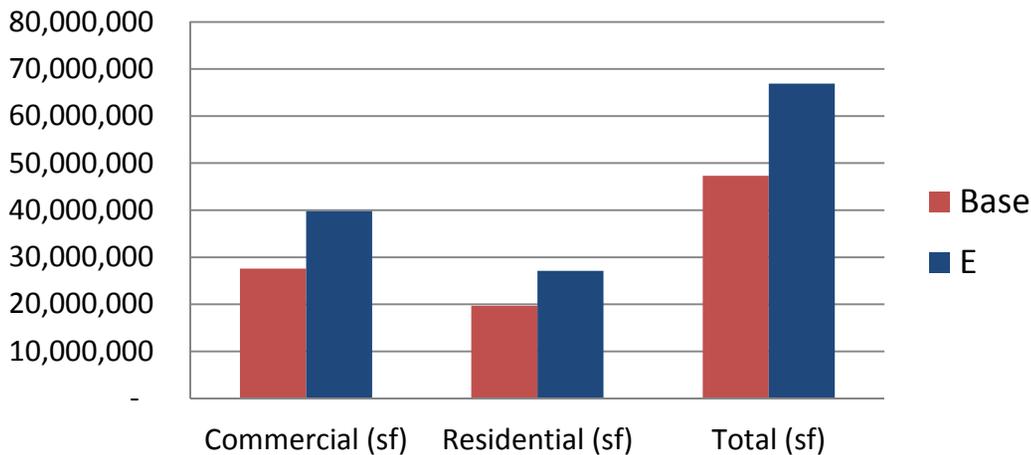
Land Use

| Development Type | Scenario E | Scenario E - COG Rd 8.0 | |
|----------------------------------|-------------------|-------------------------|--------------|
| | | # Difference | % Difference |
| Office (sf) | 30,988,000 | 8,375,000 | 37% |
| Retail (sf) | 1,791,000 | 792,000 | 79% |
| Industrial (sf) | 598,000 | -107,000 | -15% |
| Institutional (sf) | 3,731,000 | 1,987,000 | 114% |
| Hotel (sf) | 2,703,000 | 1,166,000 | 76% |
| Nonresidential total (sf) | 39,811,000 | 12,213,000 | 44% |
| Residential (units) | 22,600 | 6,200 | 38% |

Transportation Network Improvements **Added** onto COG Round 8.0 Network

- 15. Widen Reston Parkway to six lanes from Sunrise Valley Drive to South Lakes Drive
- 16. South Lakes Overpass
- 17. Grid of Streets
- 18. Mitigation at 17 intersections of 24 analyzed within the Reston Study area

LAND USE SCENARIOS

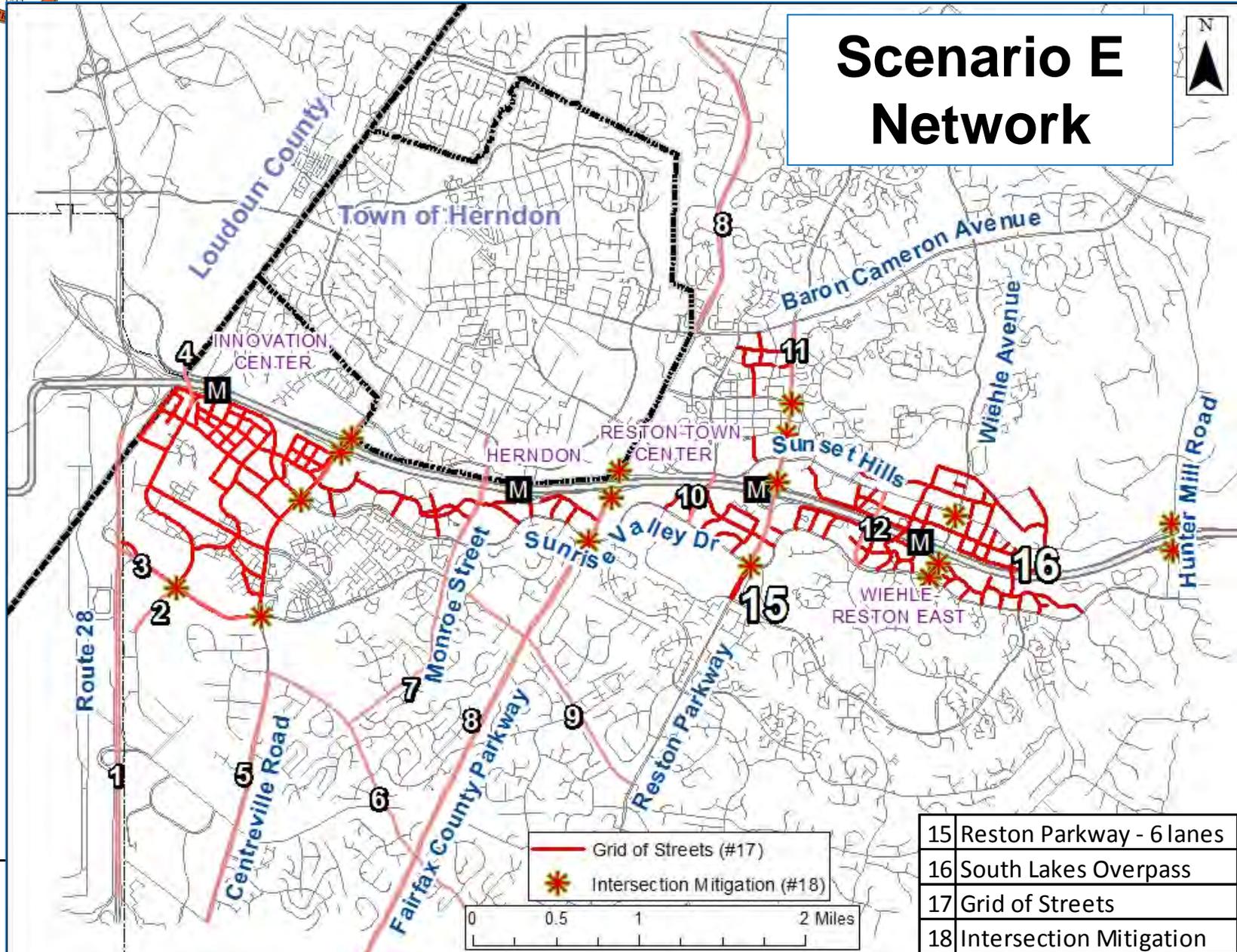




County of Fairfax, Virginia

Transportation Network Improvements Added Above COG Rd 8.0 Network

Scenario E Network



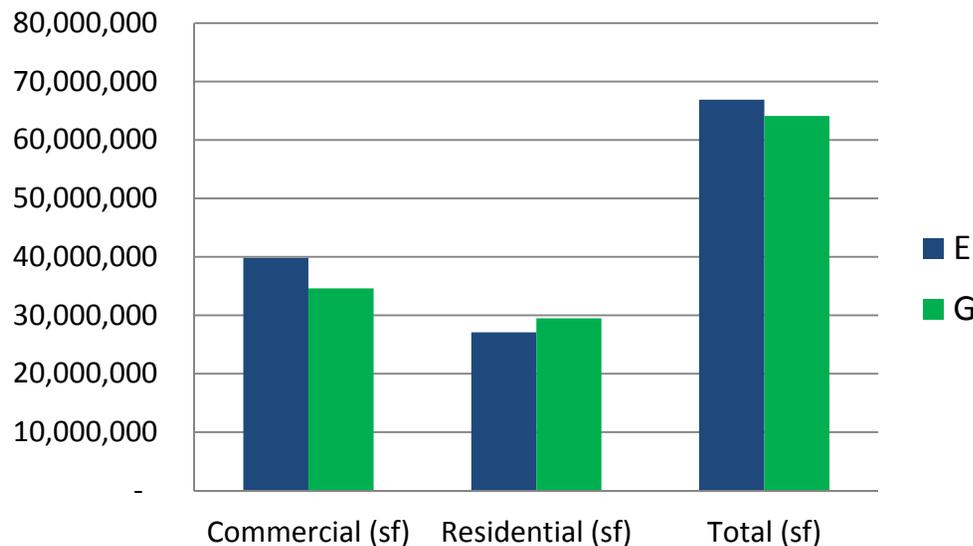


Scenario G

Land Use

| Development Type | Scenario G | Scenario G - Scenario E | |
|----------------------------------|-------------------|-------------------------|--------------|
| | | # Difference | % Difference |
| Office (sf) | 27,322,000 | -3,666,000 | -12% |
| Retail (sf) | 1,633,000 | -158,000 | -9% |
| Industrial (sf) | 513,000 | -85,000 | -14% |
| Institutional (sf) | 2,094,000 | -1,637,000 | -44% |
| Hotel (sf) | 2,998,000 | 295,000 | 11% |
| Nonresidential total (sf) | 34,560,000 | -5,251,000 | -13% |
| Residential (units) | 24,600 | 2,000 | 9% |

LAND USE SCENARIOS



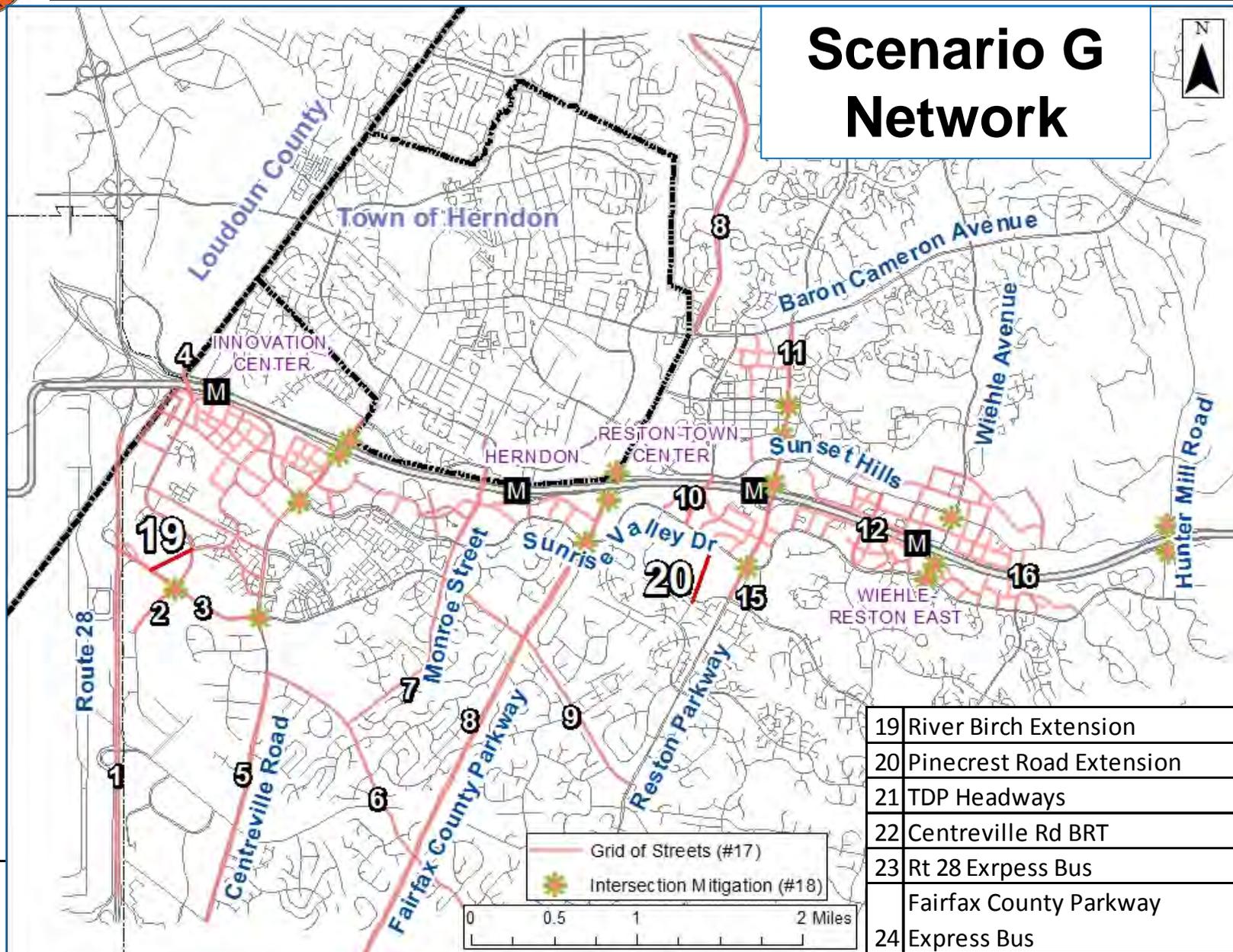
Transportation Network Improvements Added Onto Scenario E Network

- Two streets added to the grid of streets
 - 15. One in the Route 28 area – River Birch extension
 - 16. One in the Reston Station area – Pinecrest Road at USGS
- Transit
 - 15. Transit Development Plan Recommendations (Frequency)
 - 16. BRT Centreville Road corridor
 - 17. Express Bus on Route 28
 - 18. Express Bus on Fairfax County Parkway



County of Fairfax, Virginia

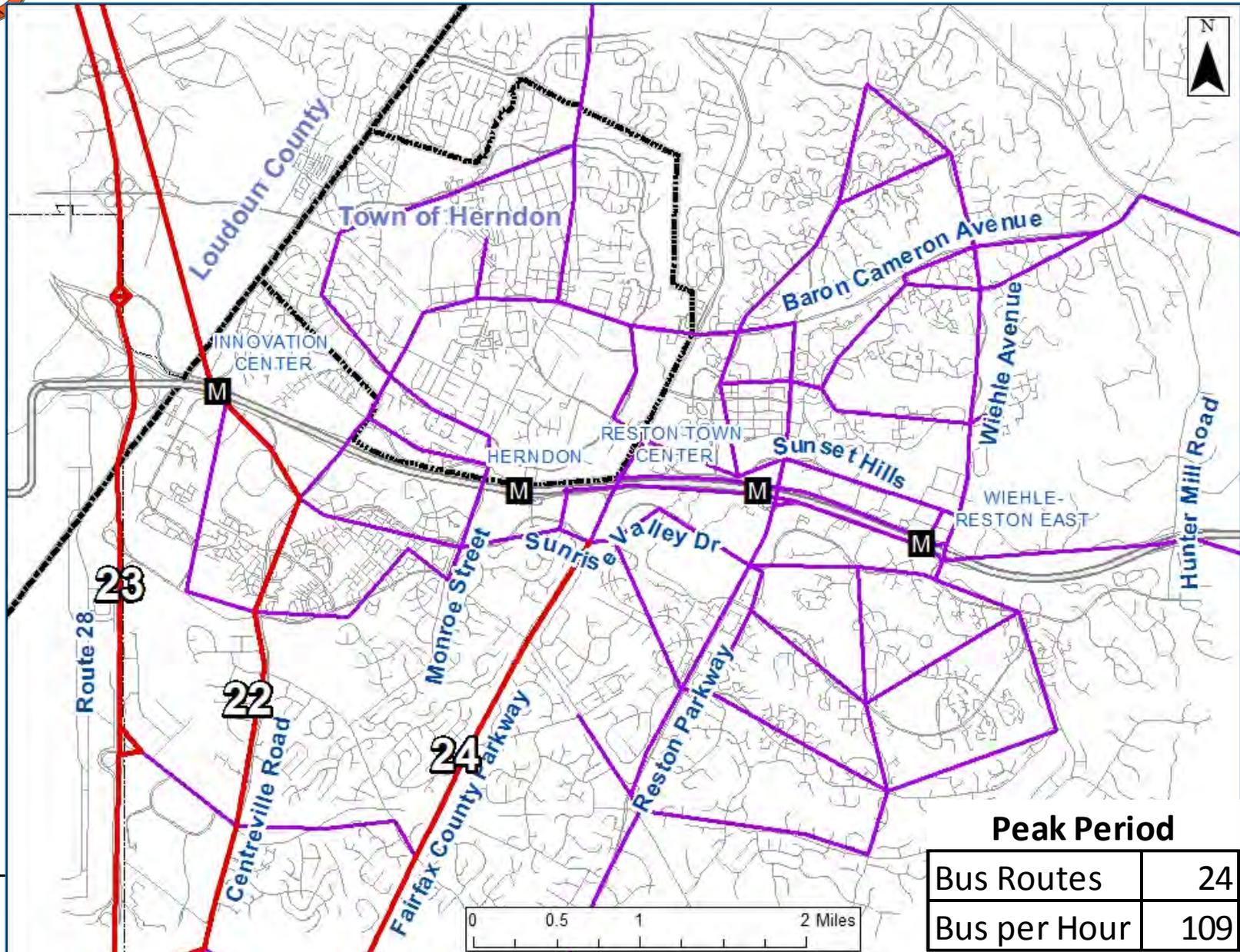
Transportation Network Improvements Added Above Scenario E Network





County of Fairfax, Virginia

Transit Network - Scenario G



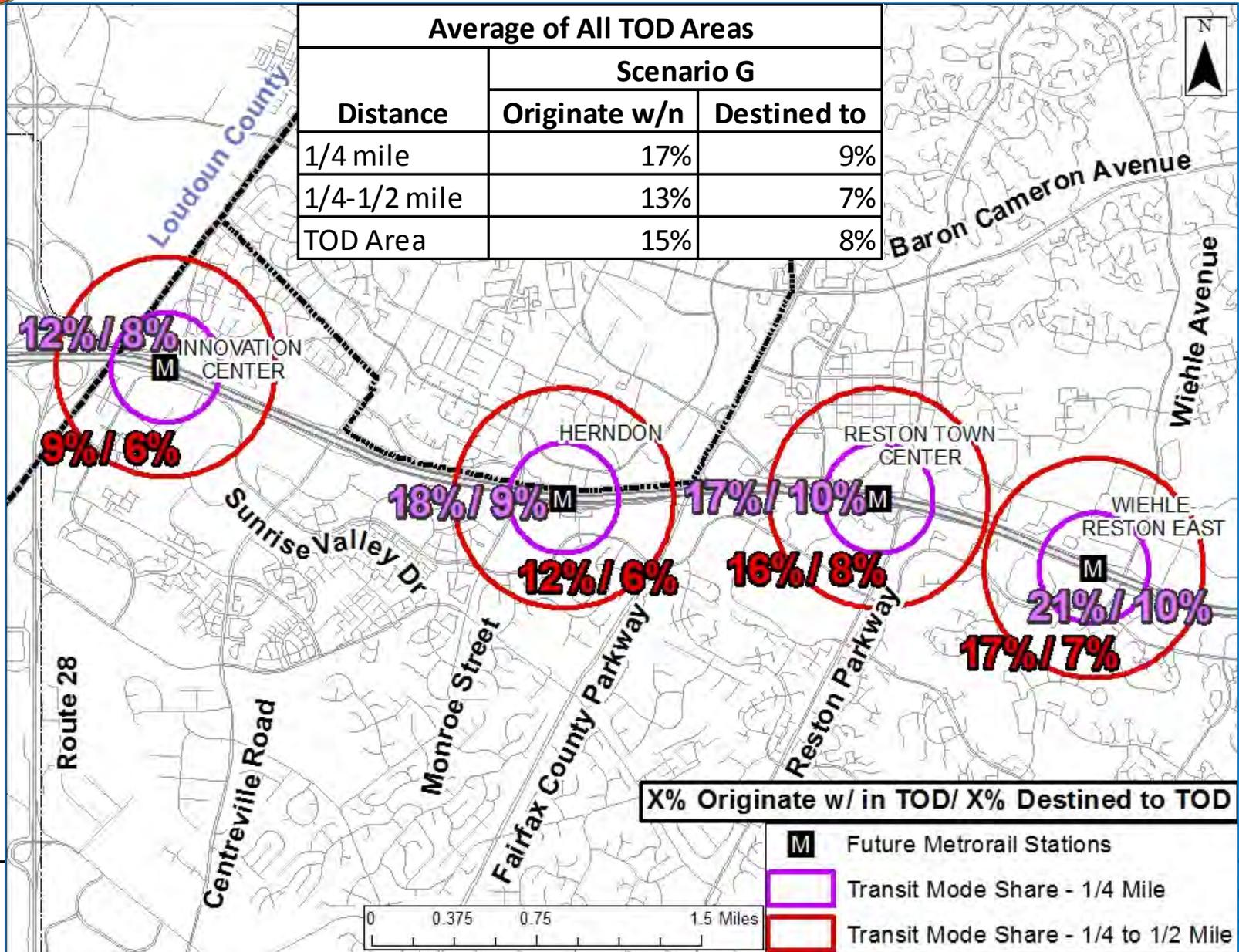


Transit Use



County of Fairfax, Virginia

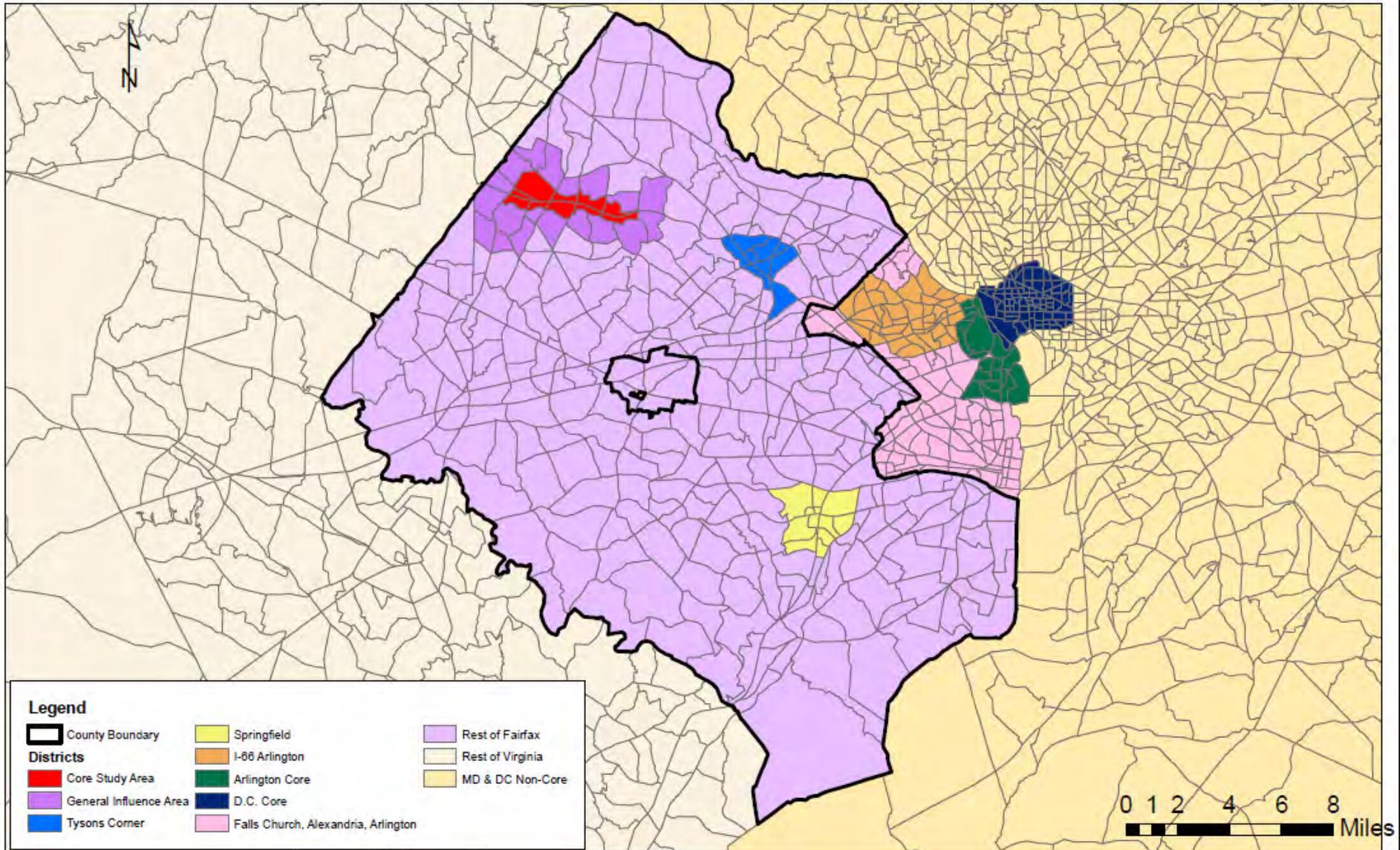
Transit Mode Share – TOD Area Peak Period





County of Fairfax, Virginia

Dulles Corridor Districts





Transit Mode Share From & To Study Area

From the Study Area

- Highest mode share are to DC Core and Arlington core:
 - DC Core – 69% (2,425)
 - Arlington Core – 32% (185)
- Highest number of transit trips are to DC Core and Tysons
 - DC Core – 2,425 (69%)
 - Tysons – 2,050 (12%)

To the Study Area

- Highest mode share are from DC Core and Arlington core
 - DC Core – 62% (200)
 - Arlington Core – 26% (125)
- Highest number of transit trips are from Fairfax (excluding Tysons) and Virginia (outer Counties)
 - Fairfax (excluding Tysons) – 2,275 (2%)
 - Virginia (outer Counties) – 650 (1%)

Within the Study Area

- Transit percentage: 2%
- Transit trips: 3,500

Note 1: Peak period includes AM and PM combined



Total Trips From & To Study Area

From the Study Area

- From the Study Area the highest total trips are to Fairfax (excluding Tysons), Virginia (outer Counties), and Tysons
 - Fairfax (excluding Tysons) – 55,800
 - Virginia (outer Counties) – 55,000
 - Tysons – 17,600

To the Study Area

- To the Study Area the highest total trips are from Fairfax (excluding Tysons), Virginia (outer Counties), and MD & DC Non-Core
 - Fairfax (excluding Tysons) – 96,500
 - Virginia (outer Counties) – 55,900
 - MD & DC Non-Core – 7,800

Within the Study Area

- Total trips: 146,300

Note 1: Total trips is all motorized trips including transit

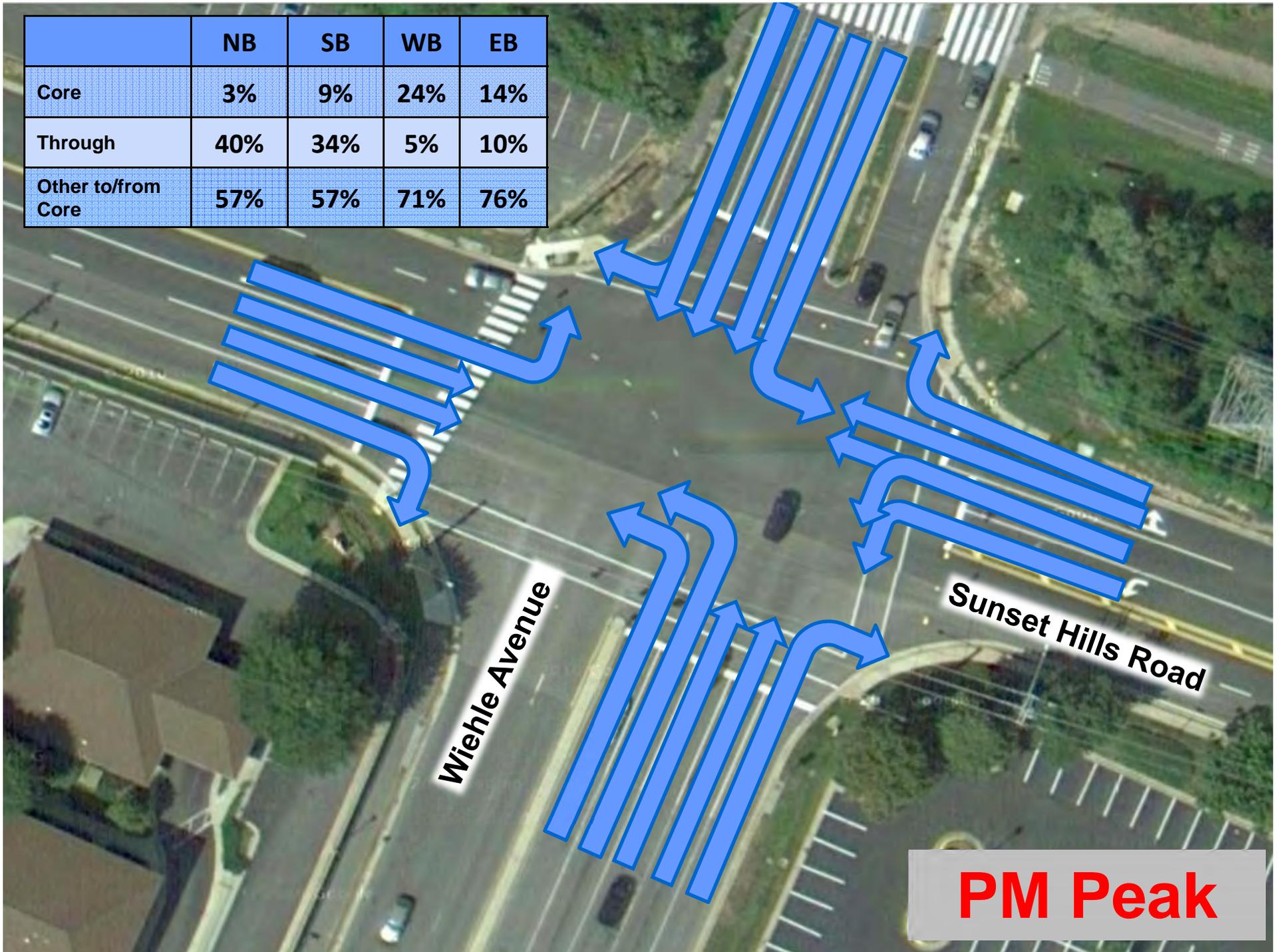
Note 2: Peak period includes AM and PM combined



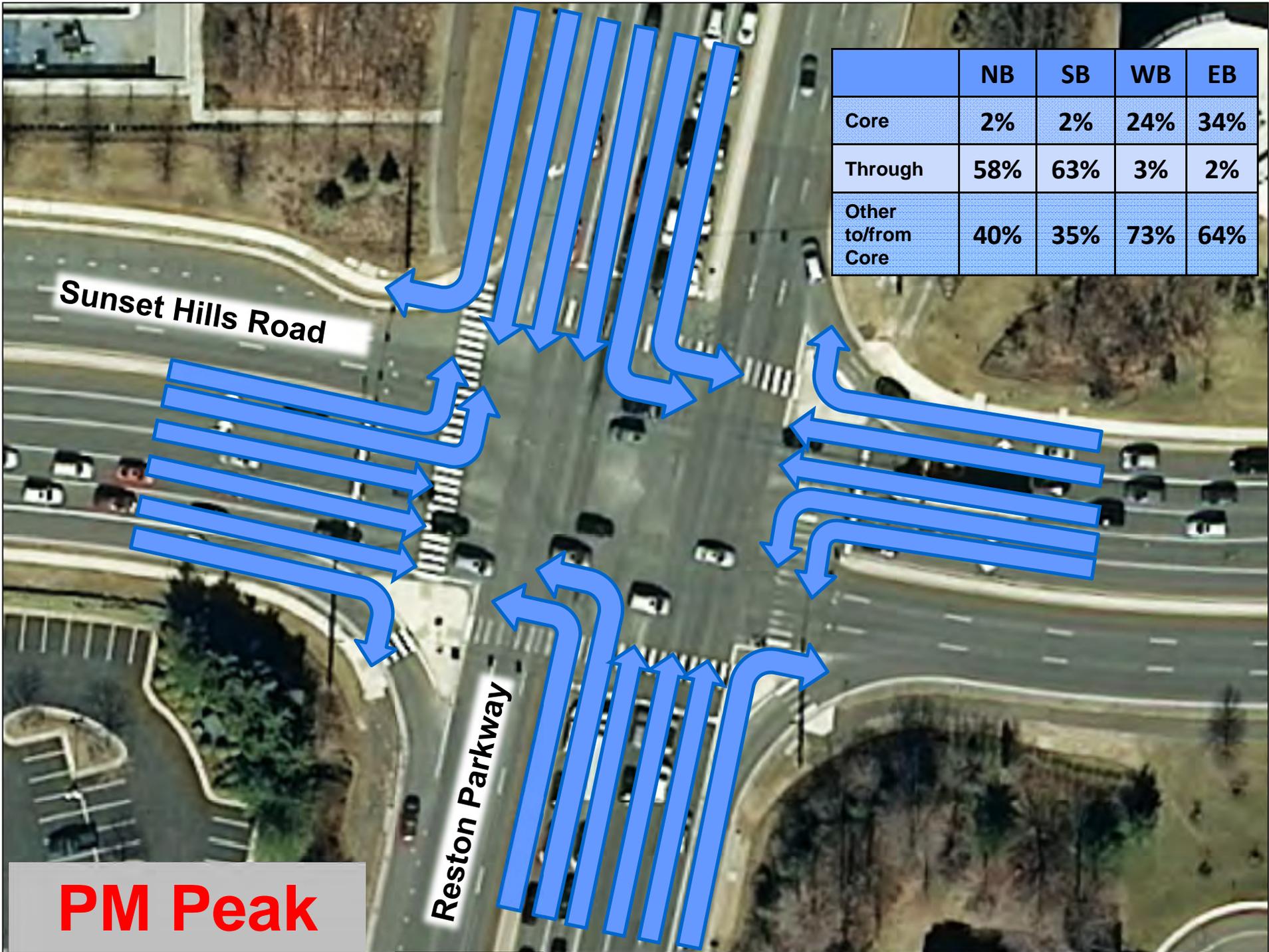
Scenario G

Through vs. Local Traffic

| | NB | SB | WB | EB |
|--------------------|-----|-----|-----|-----|
| Core | 3% | 9% | 24% | 14% |
| Through | 40% | 34% | 5% | 10% |
| Other to/from Core | 57% | 57% | 71% | 76% |



PM Peak



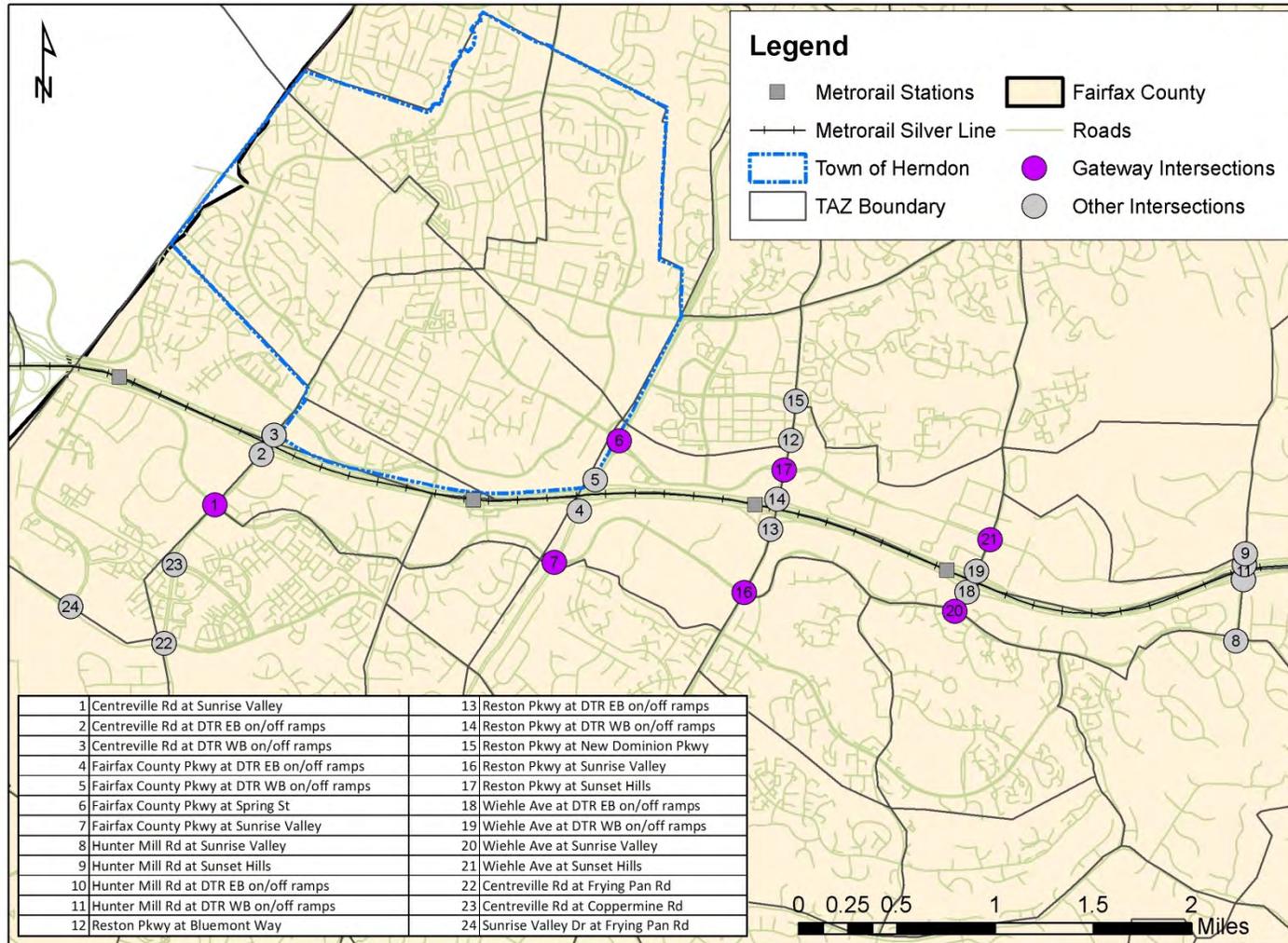
PM Peak



Intersection Performance



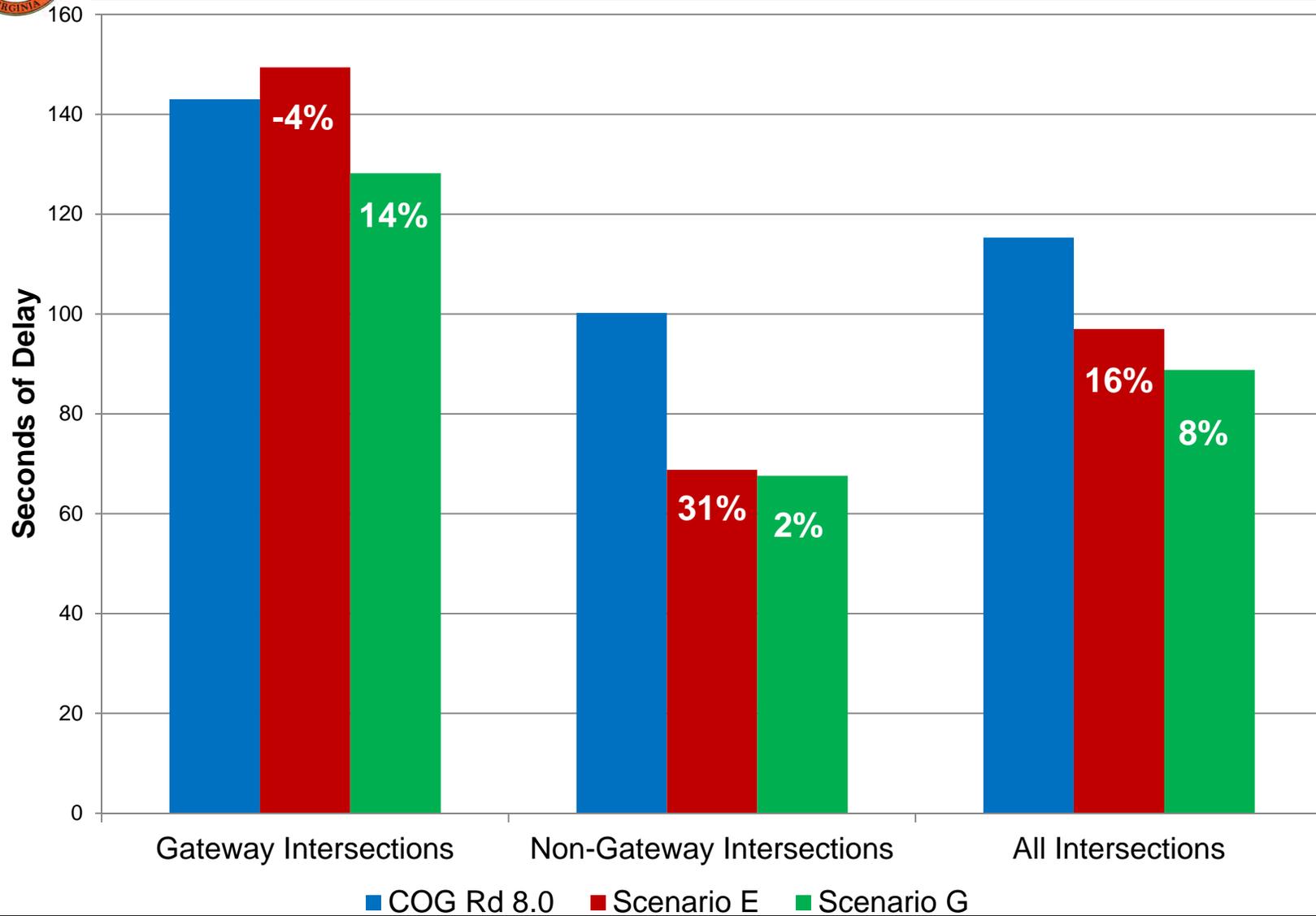
Gateway Intersections





County of Fairfax, Virginia

Average Peak Period Intersection Delay– PM Peak



Note: Percent shown is improvement from Rd 8.0 to Scenario E and Scenario E to Scenario G



Wiehle Avenue at Sunset Hills Road

2030 COG Rd 8.0 Intersection
Performance:

- Morning LOS/Delay: E/79 s
- Evening LOS/Delay: **F/184 s**

Scenario E Intersection Performance:

- Morning LOS/Delay: **F/163 s**
- Evening LOS/Delay: **F/303 s**

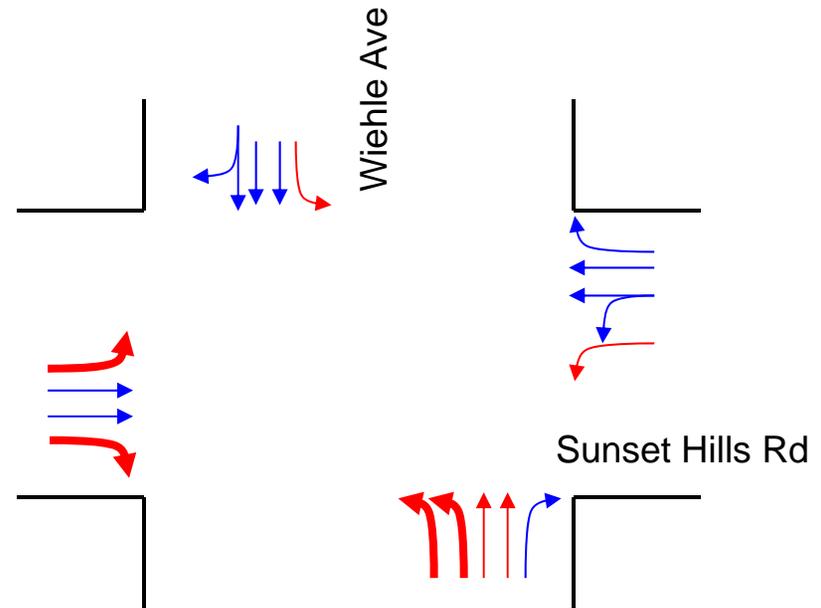
Scenario G Intersection Performance :

- Morning LOS/Delay: **F/145 s**
- Evening LOS/Delay: **F/253 s**

Scenario G compared to Scenario E:

- Morning LOS/Delay: **11% improvement**
- Evening LOS/Delay: **17% improvement**

Scenario G Evening Movements with Failing LOS



Note 1: Red Arrow – Failing LOS



Wiehle Avenue at Sunrise Valley Drive

2030 COG Rd 8.0 Intersection Performance:

- Morning LOS/Delay: **F/87 s**
- Evening LOS/Delay: D/50 s

Scenario E Intersection Performance:

- Morning LOS/Delay: **F/157 s**
- Evening LOS/Delay: E/58 s

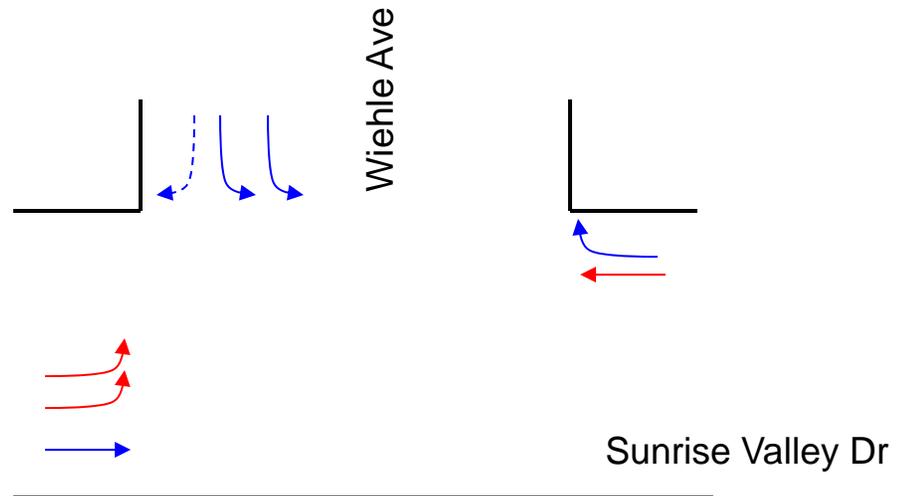
Scenario G Intersection Performance :

- Morning LOS/Delay: **F/140 s**
- Evening LOS/Delay: D/53 s

Scenario G compared to Scenario E:

- Morning LOS/Delay: **11% improvement**
- Evening LOS/Delay: **9% improvement**

Scenario G Evening Movements with Failing LOS



Note 1: Red Arrow – Failing LOS



Reston Parkway at Sunset Hills Road

2030 COG Rd 8.0 Intersection Performance:

- Morning LOS/Delay: **F/149 s**
- Evening LOS/Delay: **F/212 s**

Scenario E Intersection Performance:

- Morning LOS/Delay: **F/167 s**
- Evening LOS/Delay: **F/232 s**

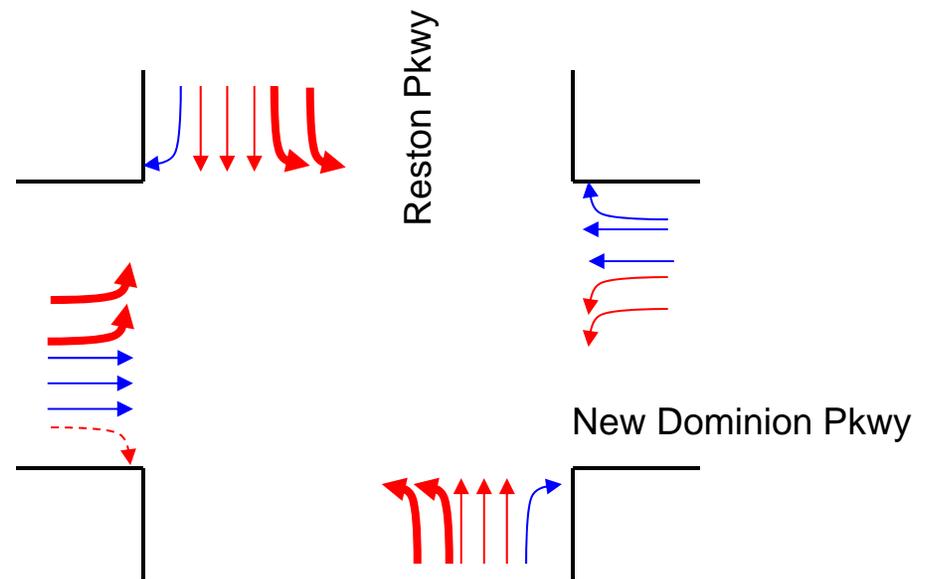
Scenario G Intersection Performance :

- Morning LOS/Delay: **F/153 s**
- Evening LOS/Delay: **F/217 s**

Scenario G compared to Scenario E:

- Morning LOS/Delay: **8% improvement**
- Evening LOS/Delay: **6% improvement**

Scenario G Evening Movements with Failing LOS



Note 1: Red Arrow – Failing LOS



Reston Parkway at Sunrise Valley Drive

2030 COG Rd 8.0 Intersection Performance:

- Morning LOS/Delay: **F/175 s**
- Evening LOS/Delay: **F/161 s**

Scenario E Intersection Performance:

- Morning LOS/Delay: **F/158 s**
- Evening LOS/Delay: **F/199 s**

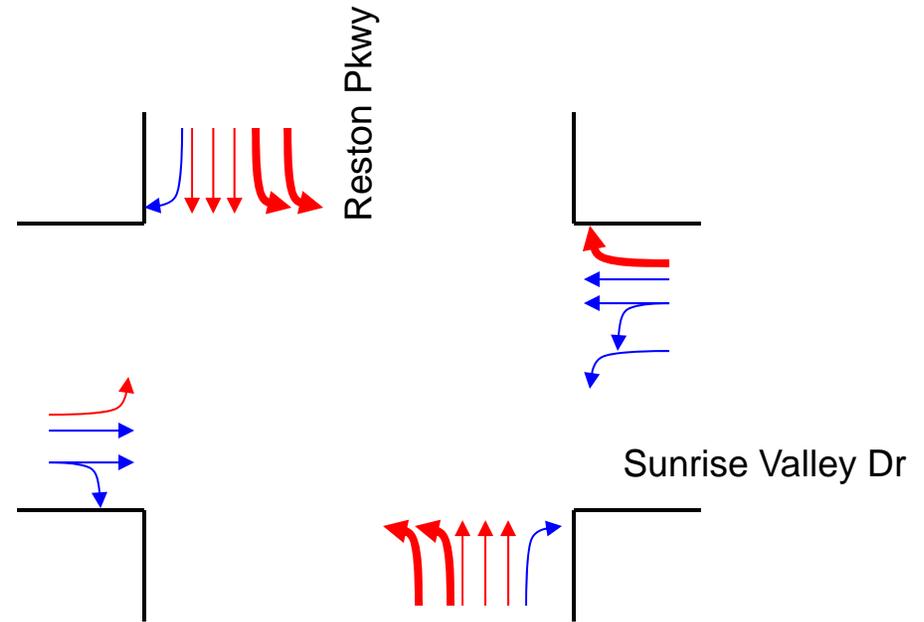
Scenario G Intersection Performance :

- Morning LOS/Delay: **F/102 s**
- Evening LOS/Delay: **F/155 s**

Scenario G compared to Scenario E:

- Morning LOS/Delay: **35% improvement**
- Evening LOS/Delay: **22% improvement**

Scenario G Evening Movements with Failing LOS

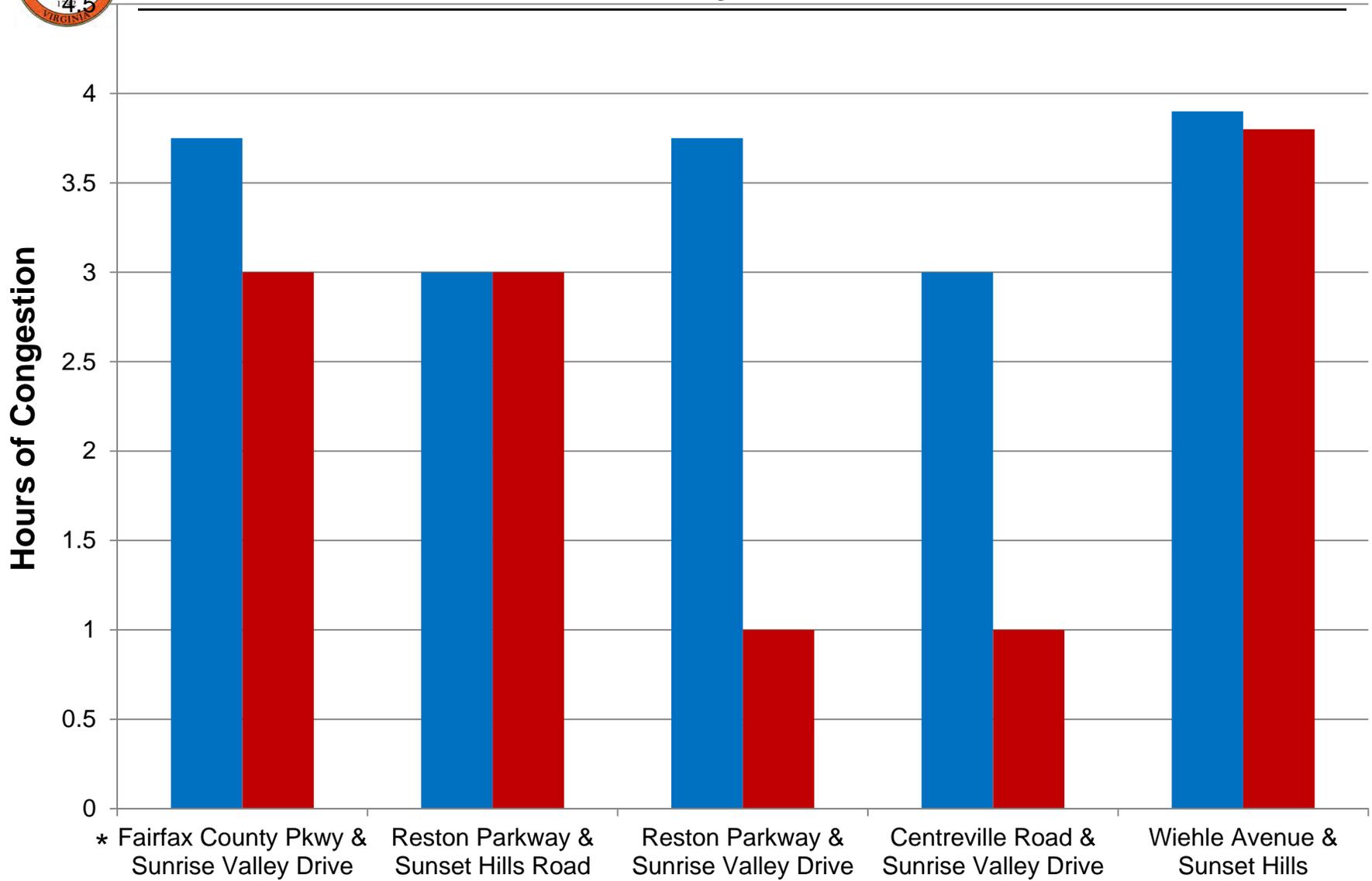


Note 1: Red Arrow – Failing LOS



County of Fairfax, Virginia

Congested Hours of Delay at Key Intersections – PM Peak



*Note: Ffx Pkwy/Sunrise Valley does not include grade separation

■ Scenario E PM ■ Scenario G PM





Full Mitigation of Scenario G



Intersection Mitigation – Scenario G

- 10 of the 24 intersections have a failing level of service
 - AM only - 3 intersections
 - PM only - 3 intersections
 - AM and PM – 4 intersections
- 6 of the intersections would require right-of-way to mitigate the failing level of service
- 4 would need an adjustment in the signal timing



Wiehle Avenue at Sunset Hills Road

Scenario G Traffic Conditions (unmitigated):

- Morning LOS/Delay: **F/145 s**
- Evening LOS/Delay: **F/253 s**

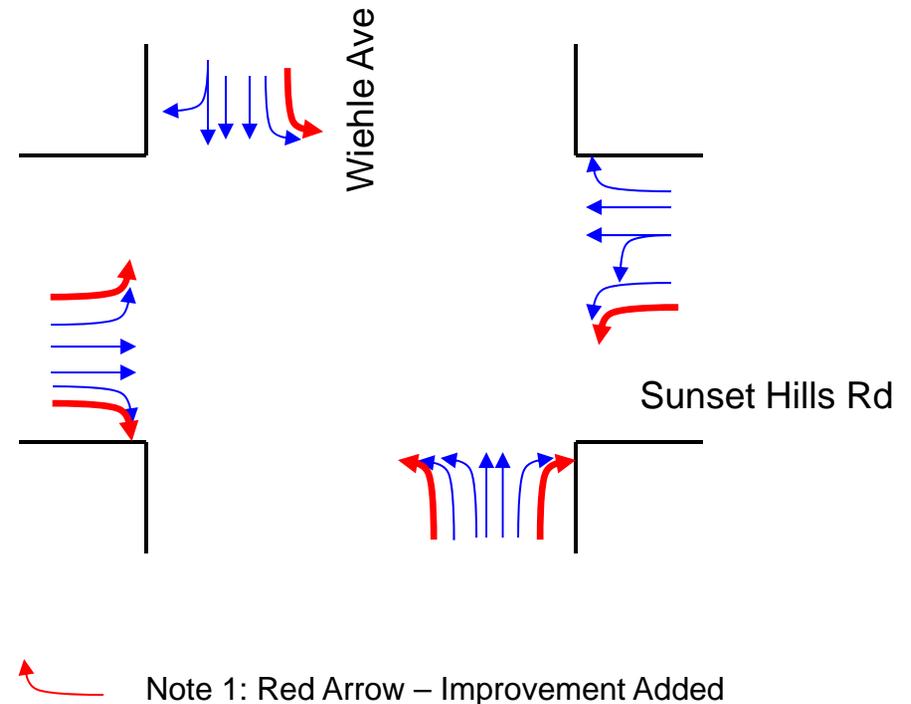
Scenario G Traffic Conditions (mitigated):

- Morning LOS/Delay: E/67 s
- Evening LOS/Delay: E/76 s

Mitigation Added:

- Add a WB left-turn lane
- Add a NB left-turn lane
- Add a NB right-turn lane
- Add a SB left-turn lane
- Add an EB left-turn lane
- Add an EB right-turn lane

Mitigations Added





Reston Parkway at Sunset Hills Road

Scenario G Traffic Conditions (unmitigated):

- Morning LOS/Delay: **F/153 s**
- Evening LOS/Delay: **F/217 s**

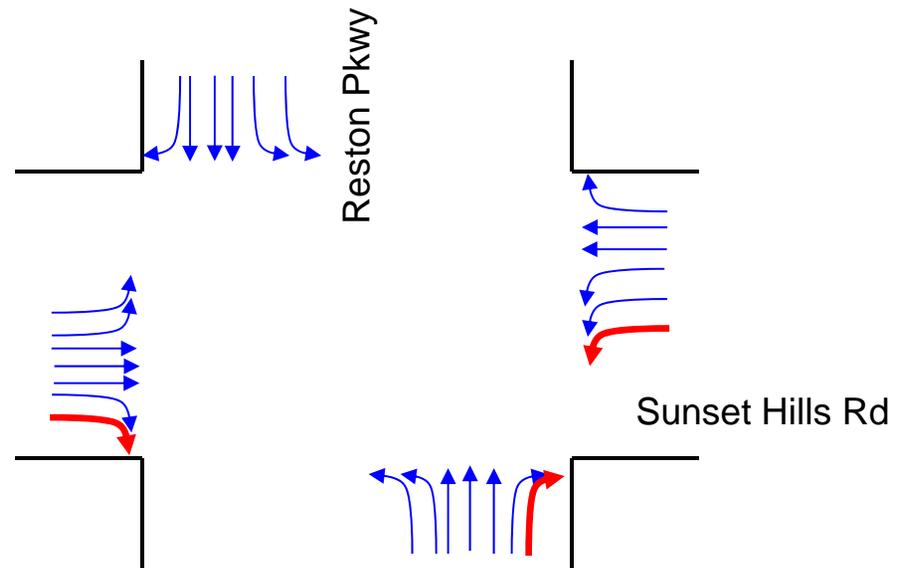
Scenario G Traffic Conditions (mitigated):

- Morning LOS/Delay: **E/79 s**
- Evening LOS/Delay: **E/77 s**

Mitigation Added:

- Add a NB right-turn lane
- Add a WB left-turn lane
- Add an EB right-turn lane
- Overlap phases and permitted left turn

Mitigations Added



 Note 1: Red Arrow – Improvement Added



Assessment of Major Improvements



Dulles Corridor Major Improvements

- 4 crossings of the Toll Road evaluated
 - Rock Hill Road Overpass
 - Town Center Parkway Underpass
 - Soapstone Drive Overpass
 - South Lakes Drive Overpass
- 1 grade separation evaluated
 - Fairfax County Parkway/Sunrise Valley Drive



Prioritization of Major Improvements

Daily Vehicle Hours of Congestion Comparison (All Modes)

| Improvements | Over Capacity | Ratio | Rank |
|---|---------------|-------|------|
| Town Center Parkway Underpass | 8,999 | 1.12 | 1 |
| Soapstone Overpass | 9,035 | 1.12 | 1 |
| Rock Hill Road Overpass | 9,134 | 1.13 | 3 |
| South Lakes Overpass | 9,637 | 1.19 | 4 |
| Ffx Parkway/Sunrise Valley Dr. Grade Separation | 9,971 | 1.24 | 5 |
| Scenario G | 8,065 | 1.00 | --- |

Scenario G: All five improvements in with a ratio of 1.0



Assessment of Crossings

General

- Crossings enhance local connectivity
- Help decrease trips on existing parallel crossings

Soapstone Drive (2030 Daily Traffic 20,000)

- Draws a high traffic volume whether Town Center Parkway is extended or not

Town Center Parkway (2030 Daily Traffic 30,000)

- Highest volume and with Soapstone would provide the highest traffic relief in central area

South Lakes Drive (2030 Daily Traffic <10,000)

- Draws least amount of traffic but offers local connectivity

Rock Hill Road (2030 Daily Traffic <20,000)

- Acts independent of the other crossings due to distance
- Offers time and/or distance savings for trips by avoiding out of direction travel on Route 28



Summary of Findings

- Scenario G has higher transit ridership, less congestion at the key intersections, and more balanced for traffic flow
- All major transportation improvements (i.e. crossings and/or critical grid streets) not on the Transportation Plan Map and used for mitigation in the study should be added to the Comprehensive Plan.
- From a transportation network assessment Scenario G performs better than Scenario E.



Next Steps

- Prepare report and submit for VDOT review
- Hold Public Hearings on Plan Amendment
- Detailed grid analysis (after plan adoption)
- Rezoning applications will have traffic impact studies submitted to evaluate and mitigate impacts



Questions/Discussion