Dulles Corridor Special Study
Transportation Results

Presented to:
Route 28 Station South Working Group

Presented by:
Fairfax County Department of Transportation

April 16, 2013

Presentation Outline

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

TRANSPORTATION ANALYSIS PROCESS

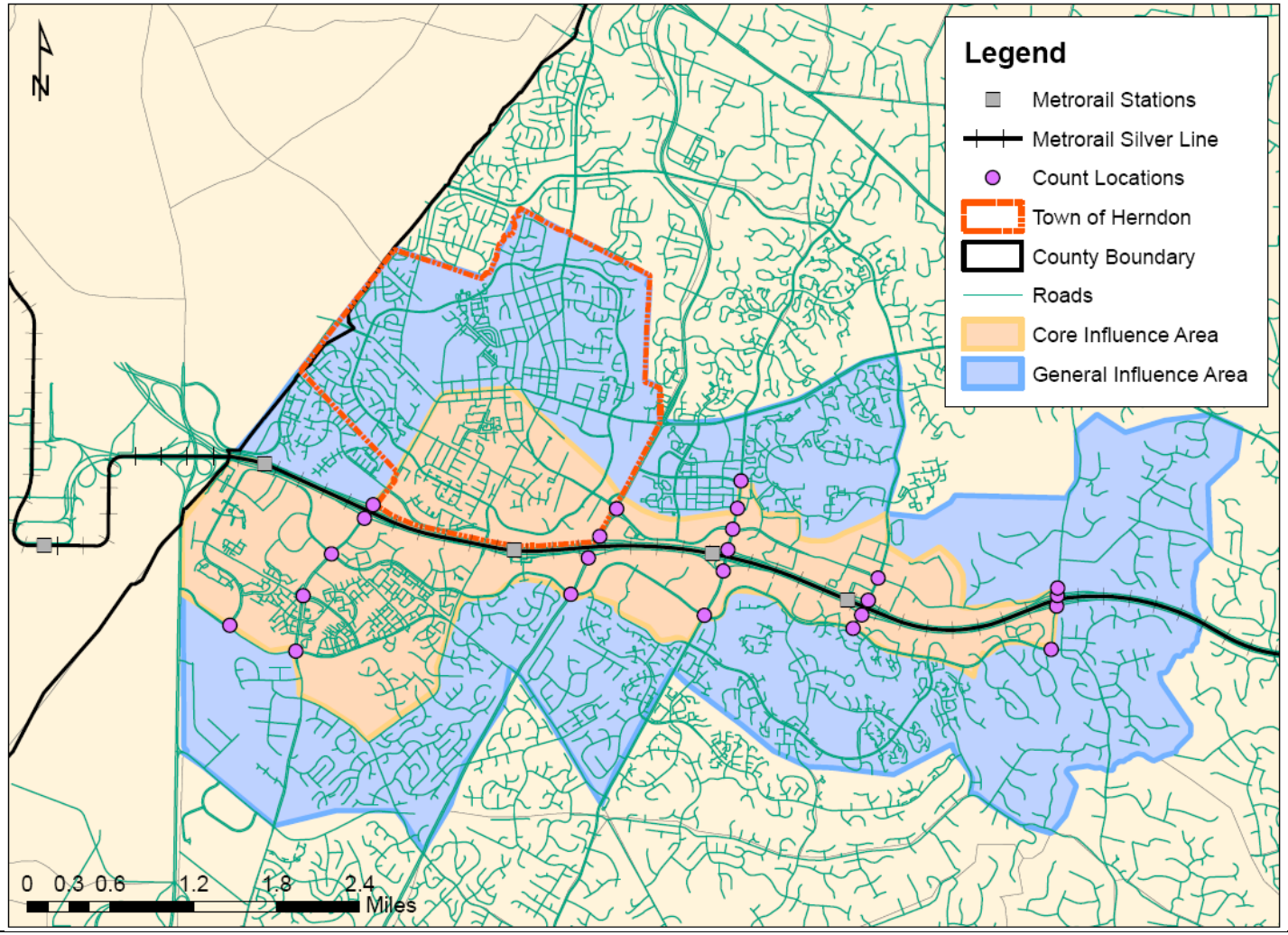
Status Last Presentation

Report on Existing Conditions
↓
Assess 2030 Forecasted Conditions
↓
Informs Change to Comprehensive Plan
↓
Assess Future Scenario
↓
Proposed Plan Amendment
↓
Refine Analysis
↓
Submit Transportation Analysis to VDOT
↓
Public Hearings

Status Now

Report on Existing Conditions
↓
Assess 2030 Forecasted Conditions
↓
Informs Change to Comprehensive Plan
↓
Assess Future Scenario
↓
Proposed Plan Amendment
↓
Refine Analysis
↓
Submit Transportation Analysis to VDOT
↓
Public Hearings

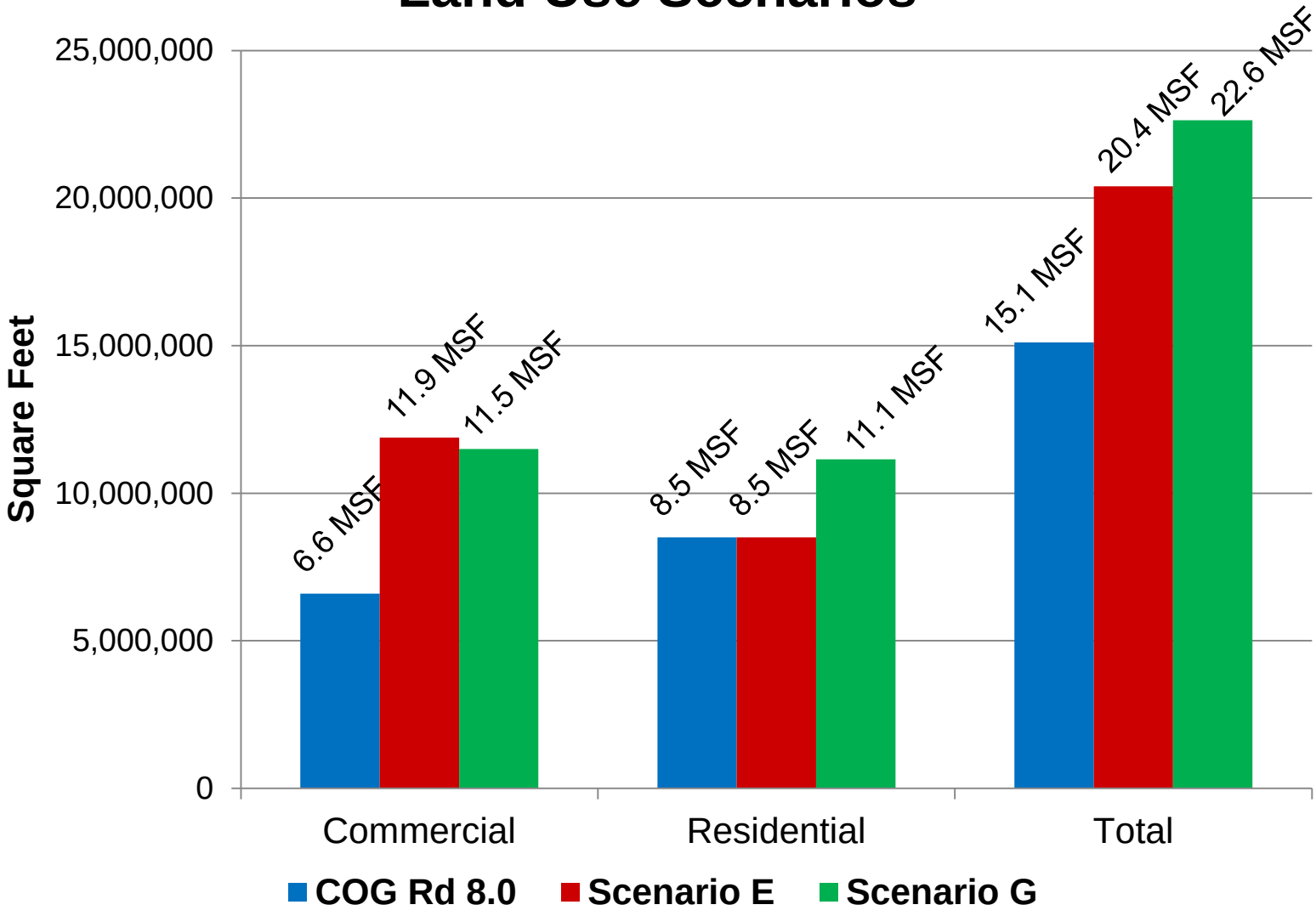
Study Area


Legend
Metrorail Stations
Metrorail Silver Line
Count Locations
Town of Herndon
County Boundary
Roads
Core Influence Area
General Influence Area
N
0 0.3 0.6 1.2 1.8 2.4
Miles

Scenarios Tested

- Existing Conditions – Fall 2010
- **COG Round 8.0 (Future Base) – Summer 2011**
- **Scenario E – 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

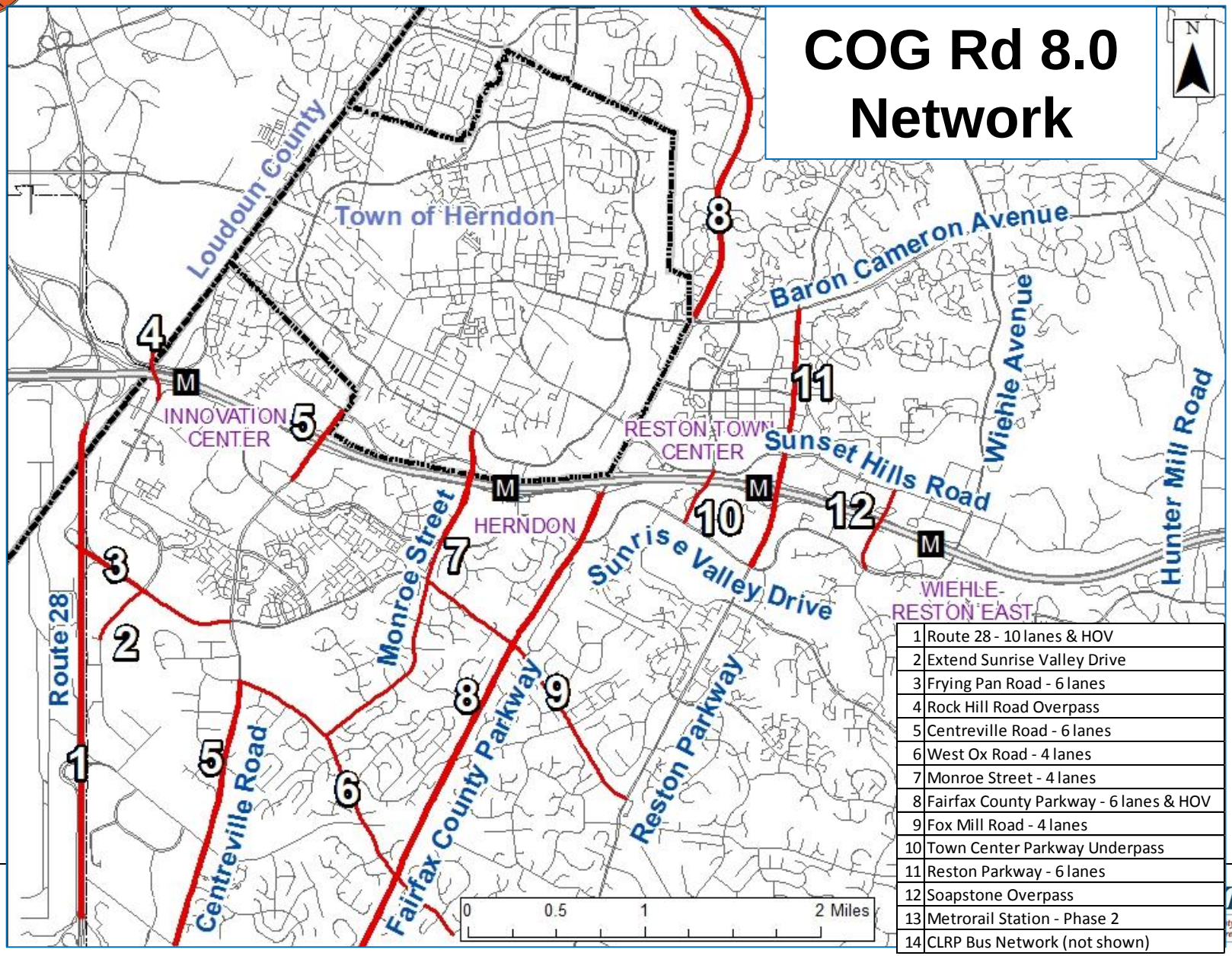
Land Use Type	Base COG Rd 8.0
Office (sf)	5,419,000
Retail (sf)	205,000
Institutional (sf)	281,000
Hotel (sf)	694,000
Nonresidential total (sf)	6,599,000
Residential (units)	7,100

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

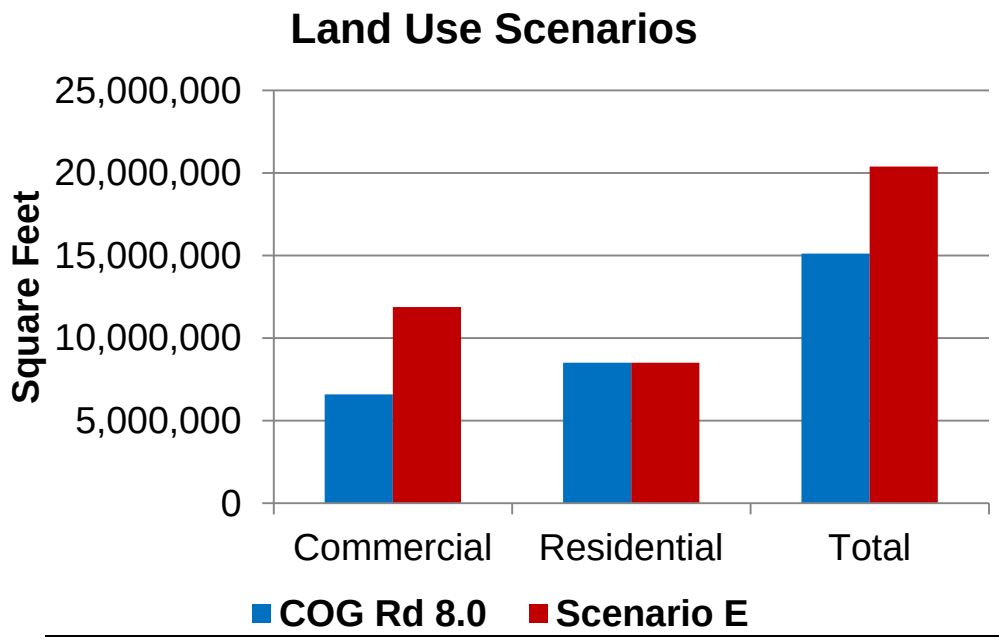


1	Route 28 - 10 lanes & HOV
2	Extend Sunrise Valley Drive
3	Frying Pan Road - 6 lanes
4	Rock Hill Road Overpass
5	Centreville Road - 6 lanes
6	West Ox Road - 4 lanes
7	Monroe Street - 4 lanes
8	Fairfax County Parkway - 6 lanes & HOV
9	Fox Mill Road - 4 lanes
10	Town Center Parkway Underpass
11	Reston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

Scenario E

Land Use

		Scenario E - COG Rd 8.0	
Land Use Type	**Sceario E**	**# Difference**	**% Difference**
Office (sf)	9,417,000	3,998,000	74%
Retail (sf)	531,000	326,000	159%
Institutional (sf)	149,000	-132,000	-47%
Hotel (sf)	1,794,000	1,100,000	159%
Nonresidential total (sf)	11,891,000	5,292,000	80%
Residential (units)	7,100	0	0%

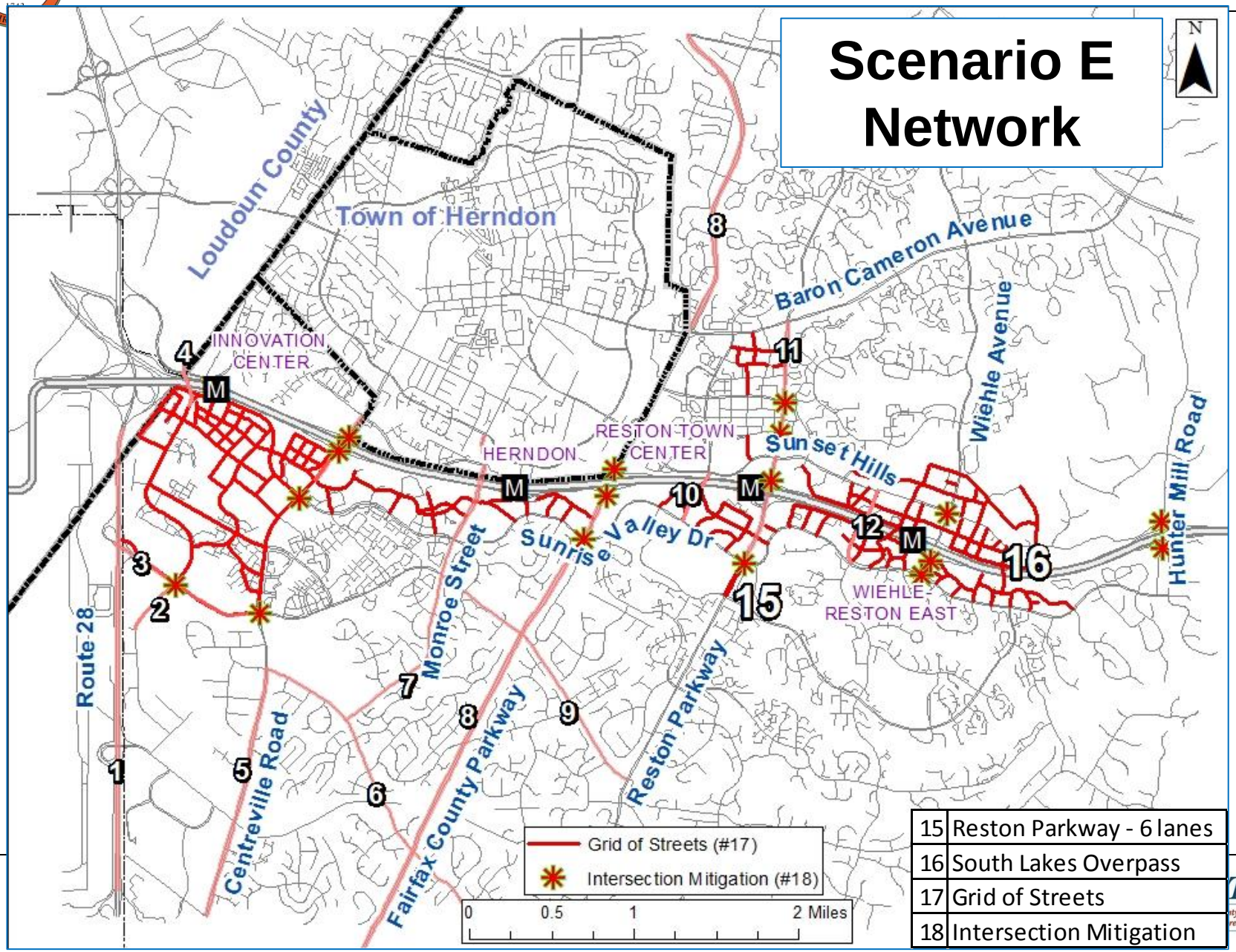


Transportation Network Improvements **Added** onto COG Round 8.0 Network

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

County of Fairfax, Virginia

Transportation Network Improvements Added Above COG Rd 8.0 Network

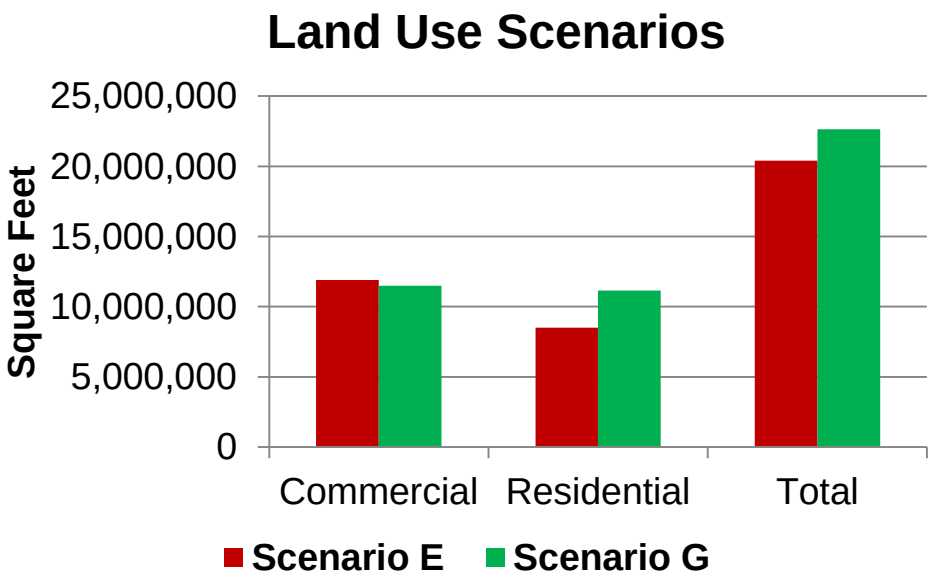


15	Reston Parkway - 6 lanes
16	South Lakes Overpass
17	Grid of Streets
18	Intersection Mitigation

Scenario G

Land Use

		Scenario G - Scenario E	
Land Use Type	**Sceario G**	**# Difference**	**% Difference**
Office (sf)	9,380,000	-37,000	-0.4%
Retail (sf)	786,000	255,000	48.0%
Institutional (sf)	149,000	0	0.0%
Hotel (sf)	1,181,000	-613,000	-34.2%
Nonresidential total (sf)	11,496,000	-395,000	-3.3%
Residential (units)	9,300	2,200	31.0%

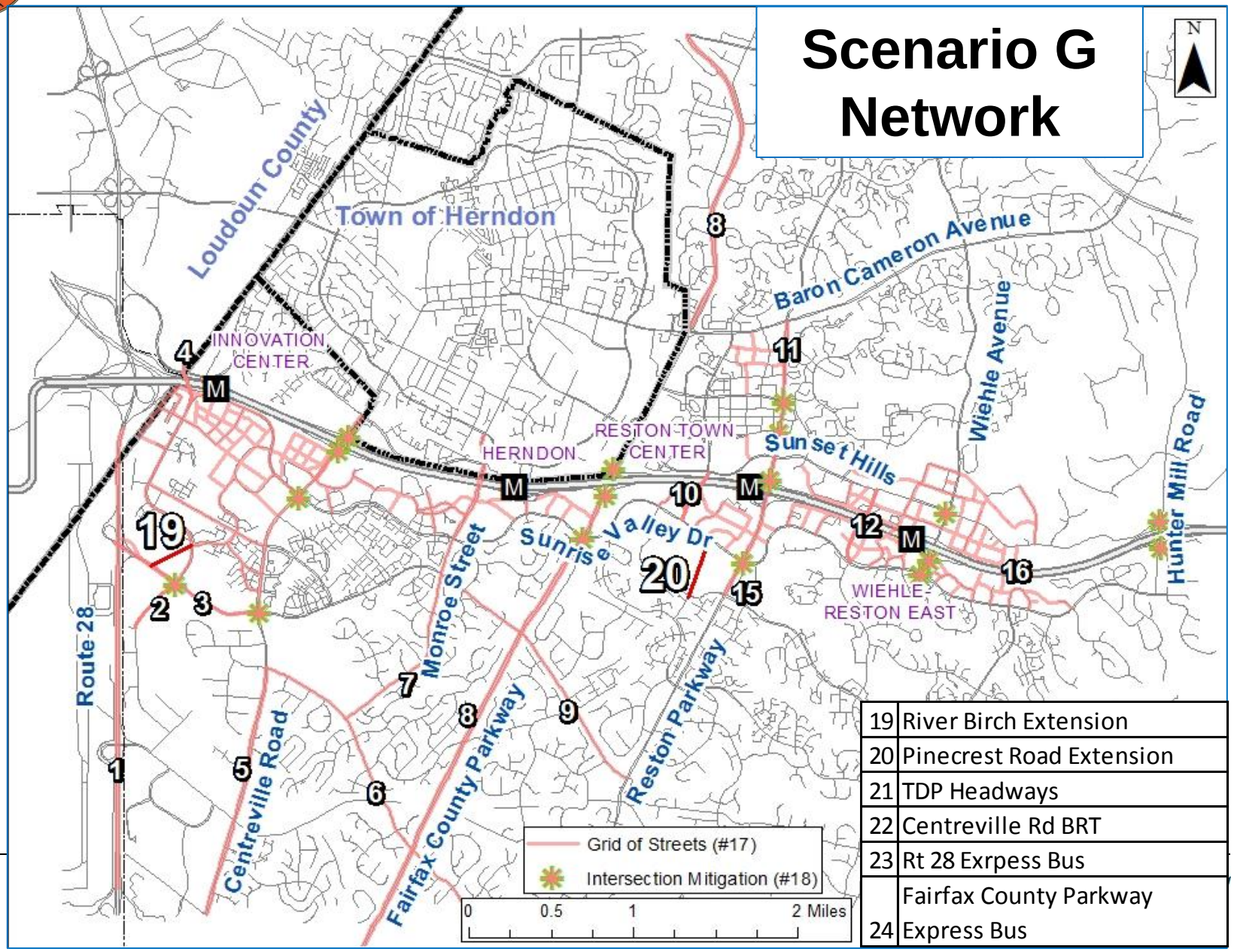


Transportation Network Improvements **Added** Onto Scenario E Network

- 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

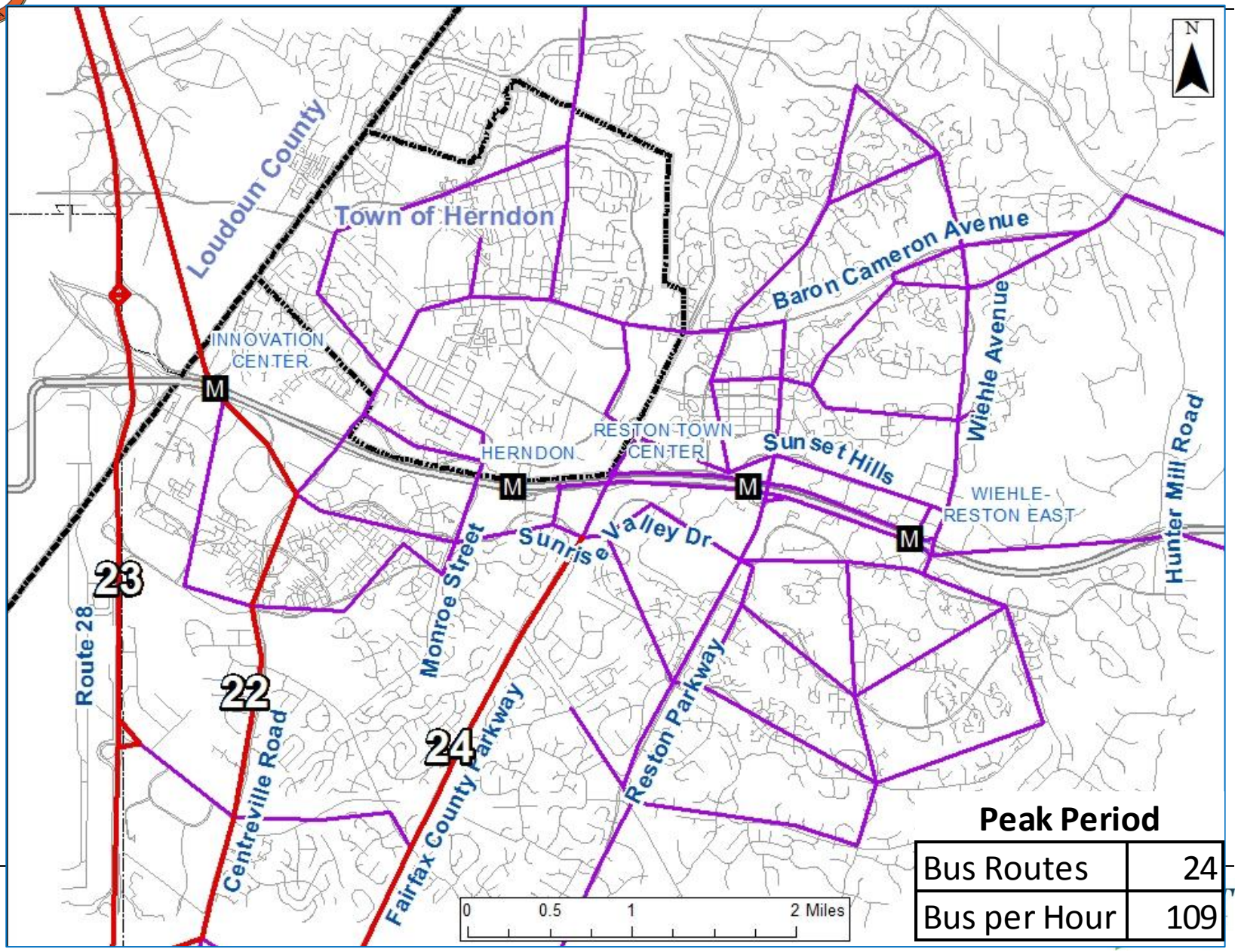
Transportation Network Improvements Added Above Scenario E Network



19	River Birch Extension
20	Pinecrest Road Extension
21	TDP Headways
22	Centreville Rd BRT
23	Rt 28 Exrpess Bus
24	Fairfax County Parkway Express Bus

County of Fairfax, Virginia

Transit Network - Scenario G



Peak Period

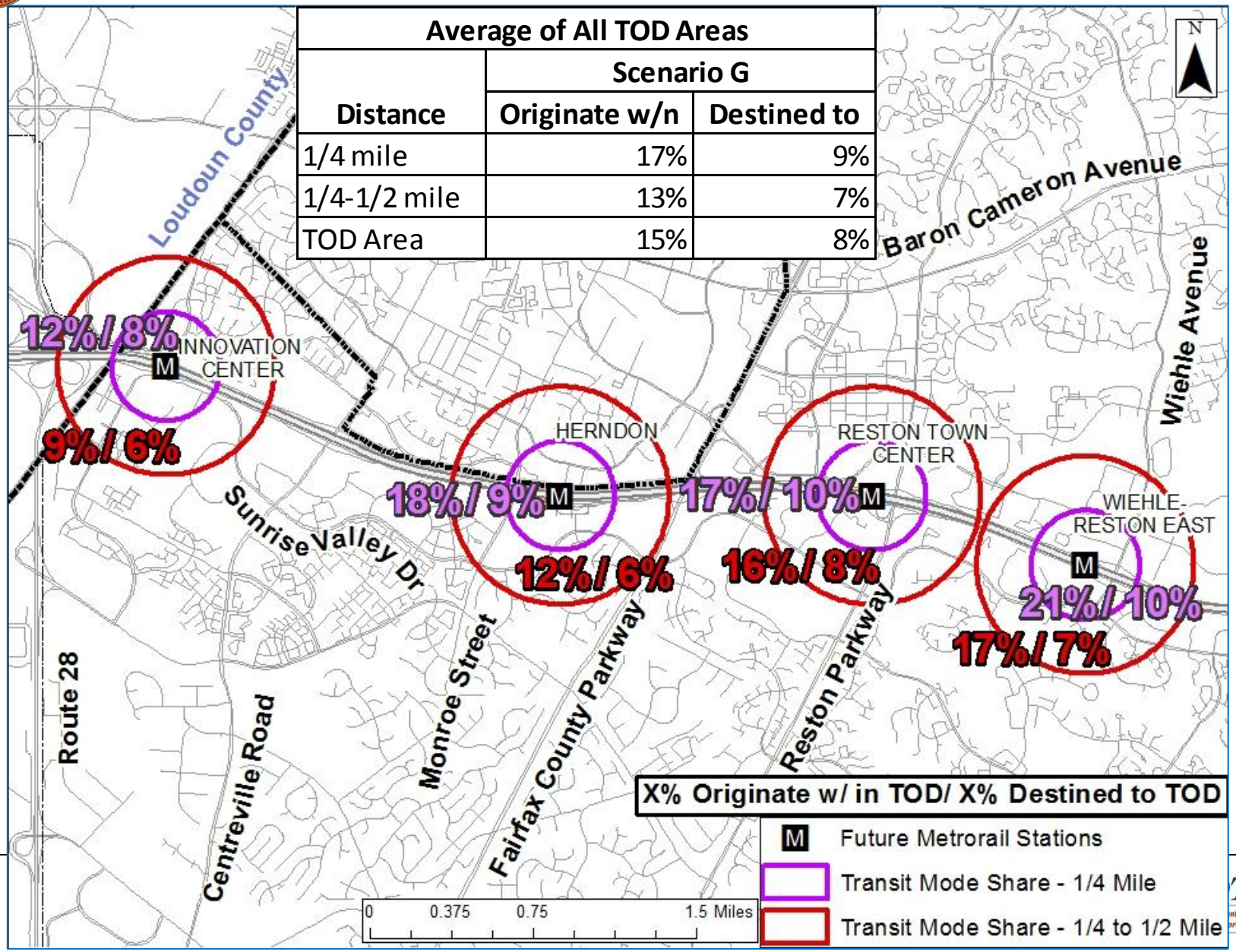
Bus Routes	24
Bus per Hour	109

Transit Use

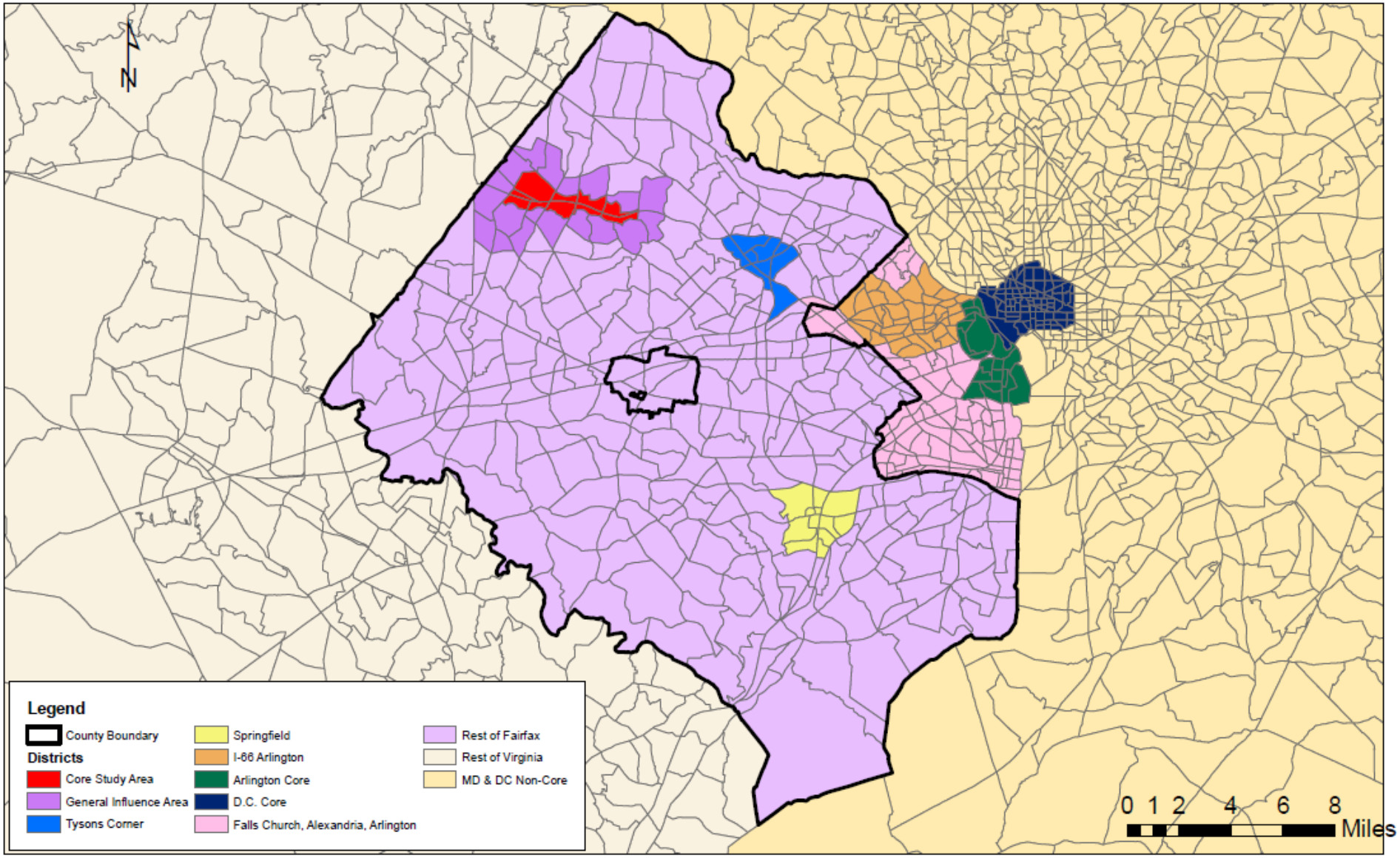
County of Fairfax, Virginia

Transit Mode Share – TOD Area Peak Period

Average of All TOD Areas		
	Scenario G	
Distance	Originate w/n	Destined to
1/4 mile	17%	9%
1/4-1/2 mile	13%	7%
TOD Area	15%	8%



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

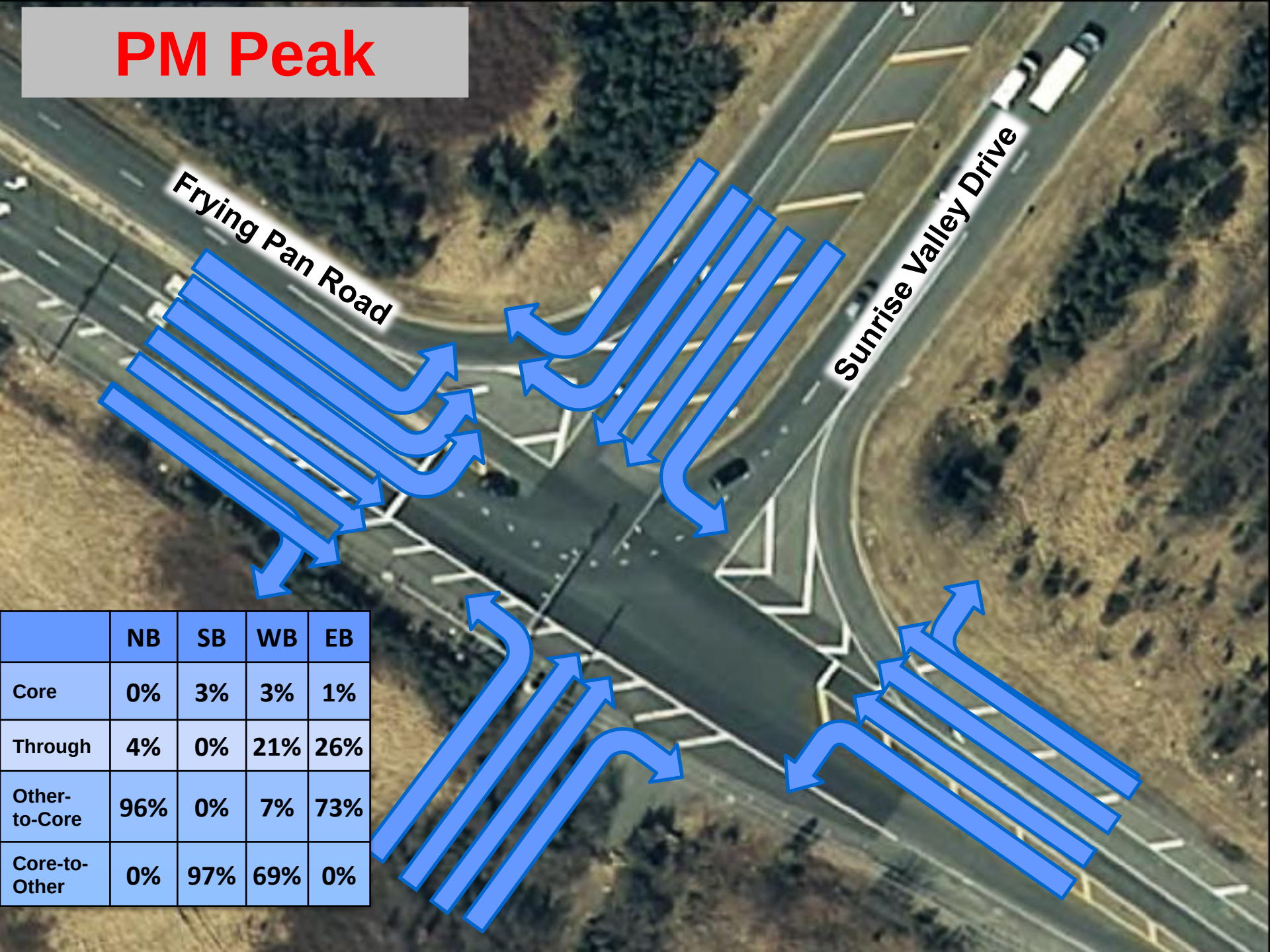
Within the Study Area

- Total trips: 146,300

Note 1: Total trips is all motorized trips including transit
Note 2: Peak period includes AM and PM combined

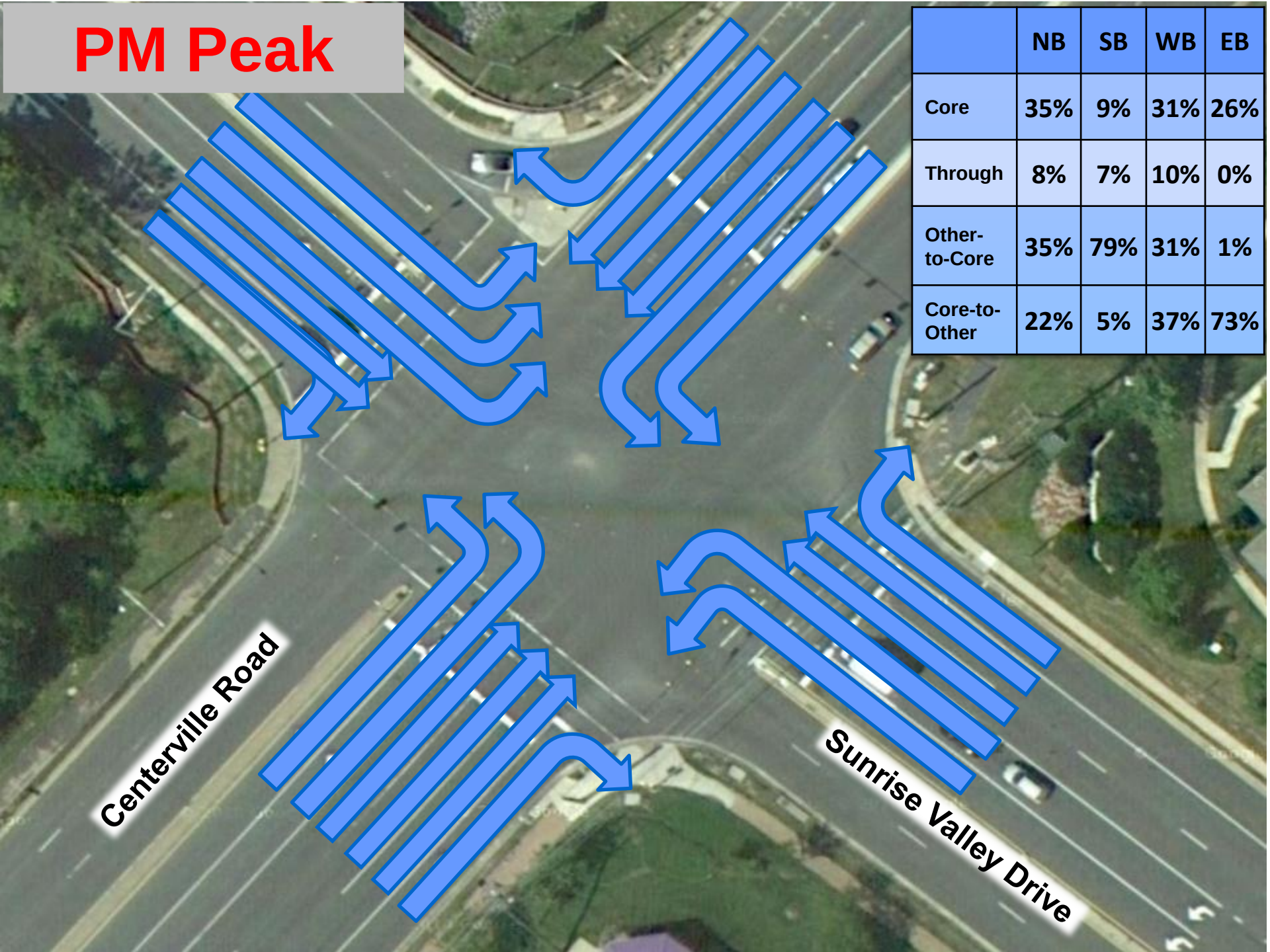
Scenario G
Through vs. Local Traffic

PM Peak



	NB	SB	WB	EB
Core	0%	3%	3%	1%
Through	4%	0%	21%	26%
Other-to-Core	96%	0%	7%	73%
Core-to-Other	0%	97%	69%	0%

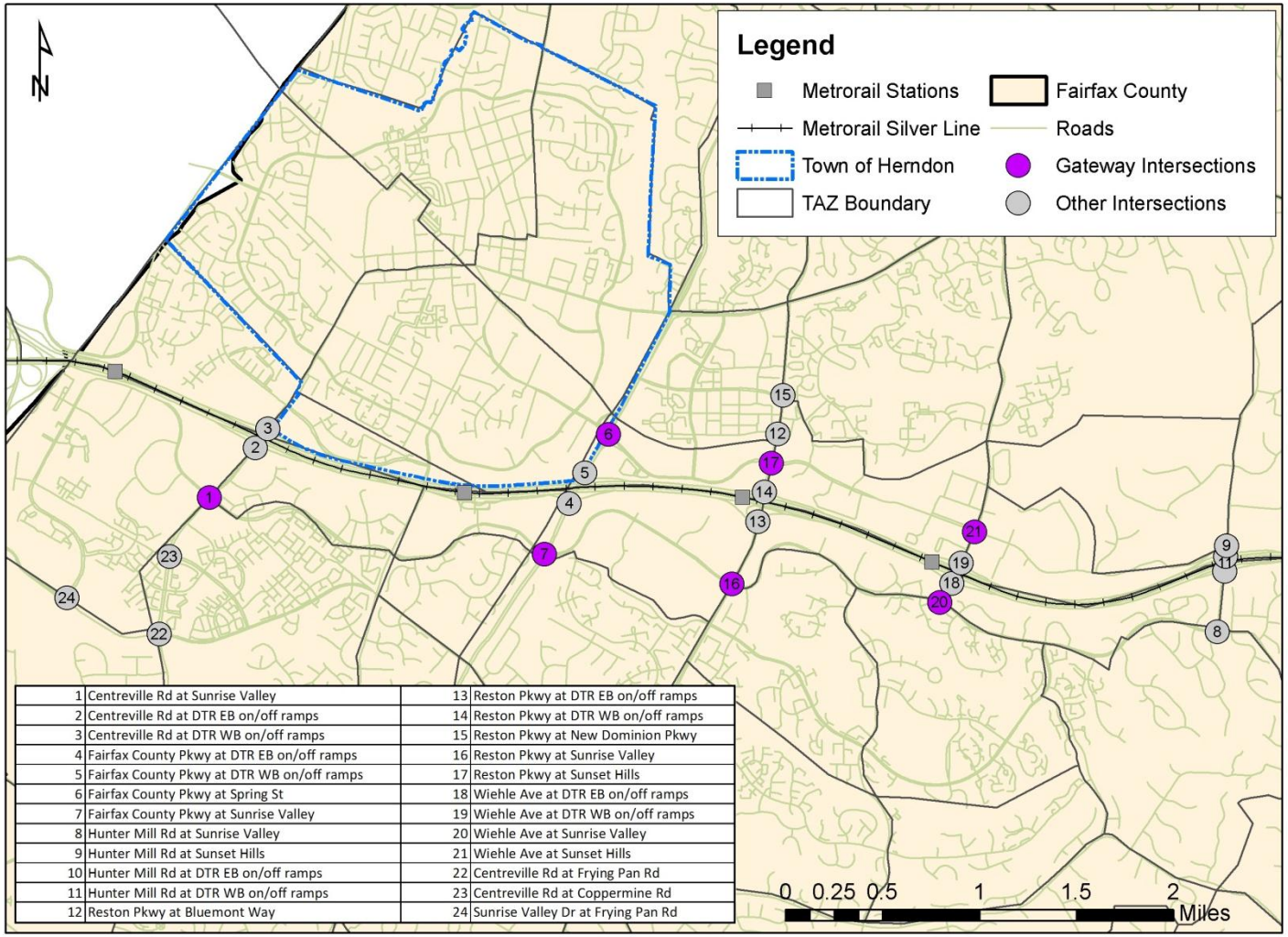
PM Peak



	NB	SB	WB	EB
Core	35%	9%	31%	26%
Through	8%	7%	10%	0%
Other-to-Core	35%	79%	31%	1%
Core-to-Other	22%	5%	37%	73%

Intersection Performance

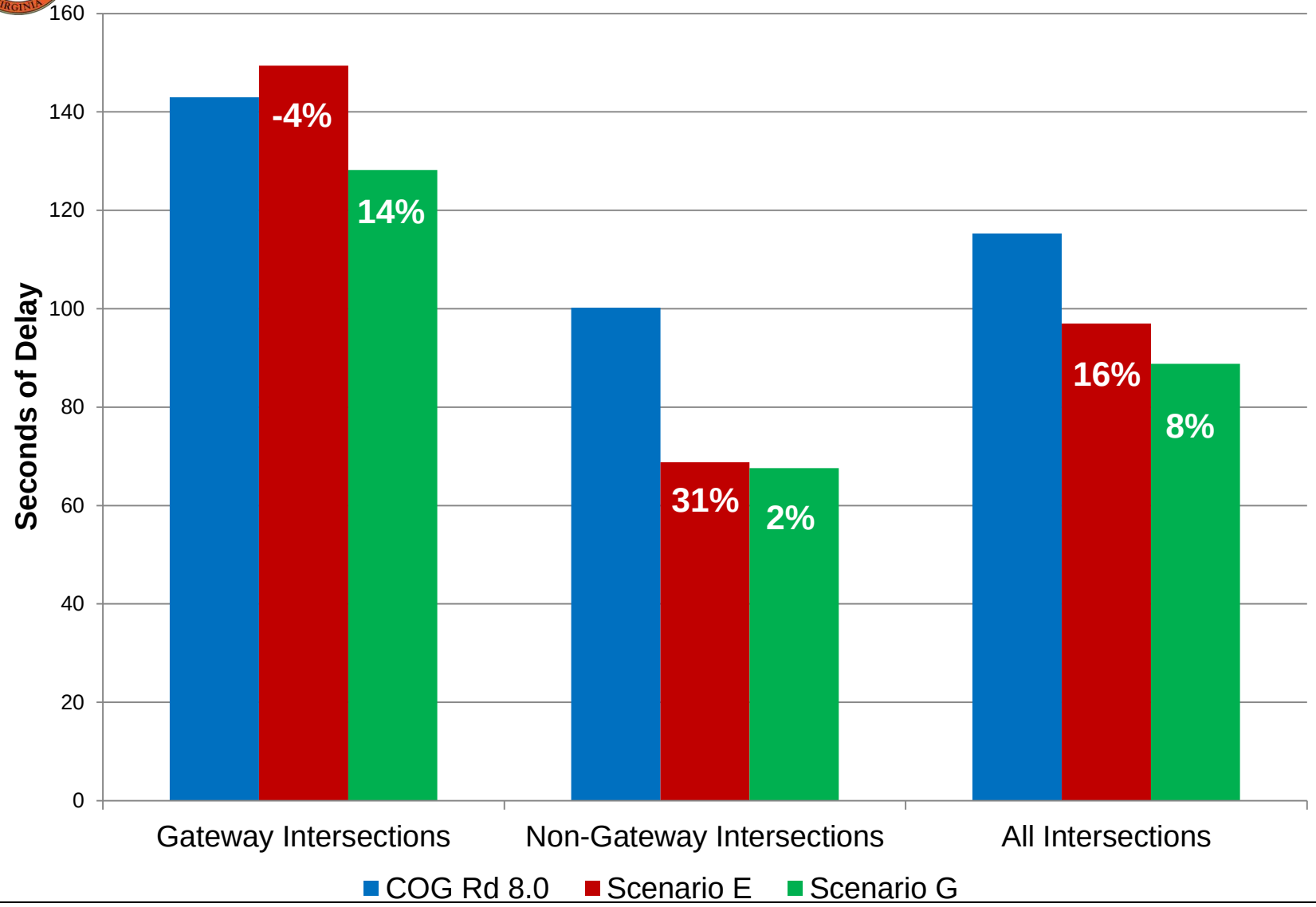
Gateway Intersections



1	Centreville Rd at Sunrise Valley	13	Reston Pkwy at DTR EB on/off ramps
2	Centreville Rd at DTR EB on/off ramps	14	Reston Pkwy at DTR WB on/off ramps
3	Centreville Rd at DTR WB on/off ramps	15	Reston Pkwy at New Dominion Pkwy
4	Fairfax County Pkwy at DTR EB on/off ramps	16	Reston Pkwy at Sunrise Valley
5	Fairfax County Pkwy at DTR WB on/off ramps	17	Reston Pkwy at Sunset Hills
6	Fairfax County Pkwy at Spring St	18	Wiehle Ave at DTR EB on/off ramps
7	Fairfax County Pkwy at Sunrise Valley	19	Wiehle Ave at DTR WB on/off ramps
8	Hunter Mill Rd at Sunrise Valley	20	Wiehle Ave at Sunrise Valley
9	Hunter Mill Rd at Sunset Hills	21	Wiehle Ave at Sunset Hills
10	Hunter Mill Rd at DTR EB on/off ramps	22	Centreville Rd at Frying Pan Rd
11	Hunter Mill Rd at DTR WB on/off ramps	23	Centreville Rd at Coppermine Rd
12	Reston Pkwy at Bluemont Way	24	Sunrise Valley Dr at Frying Pan Rd

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

Centreville Road at Sunrise Valley Drive

2030 COG Rd 8.0 Intersection Performance:

- Morning LOS/Delay: **F/89 s**
- Evening LOS/Delay: **F/136 s**

Scenario E Intersection Performance:

- Morning LOS/Delay: E/61 s
- Evening LOS/Delay: **F/99 s**

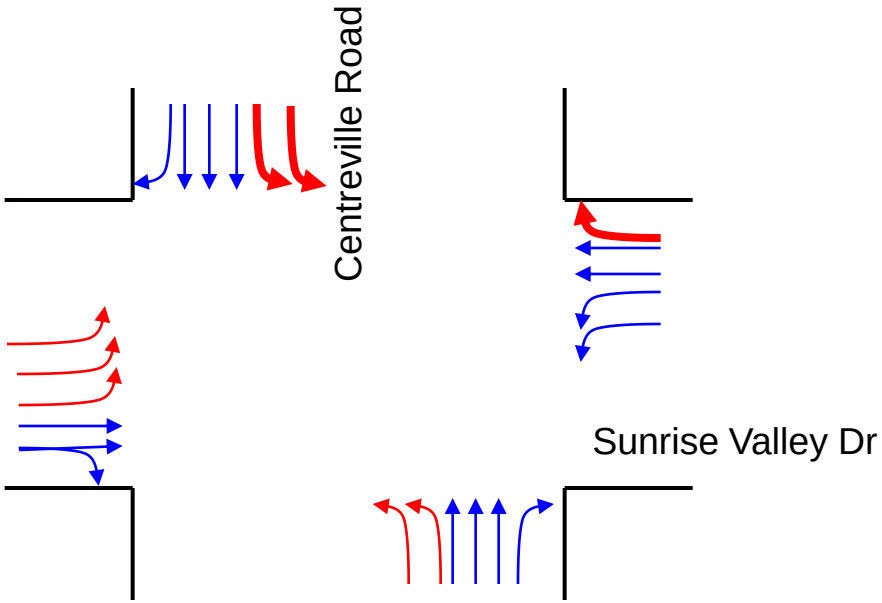
Scenario G Intersection Performance :

- Morning LOS/Delay: D/55 s
- Evening LOS/Delay: **F/85 s**

Scenario G compared to Scenario E:

- Morning LOS/Delay: **10% improvement**
- Evening LOS/Delay: **14% improvement**

Scenario G
Evening Movements with Failing LOS



Note 1: Red Arrow – Failing LOS

Frying Pan Road at Sunrise Valley Drive

2030 COG Rd 8.0 Intersection Performance:

- Morning LOS/Delay: **F/321 s**
- Evening LOS/Delay: **F/297 s**

Scenario E Intersection Performance:

- Morning LOS/Delay: C/26 s
- Evening LOS/Delay: **F/220 s**

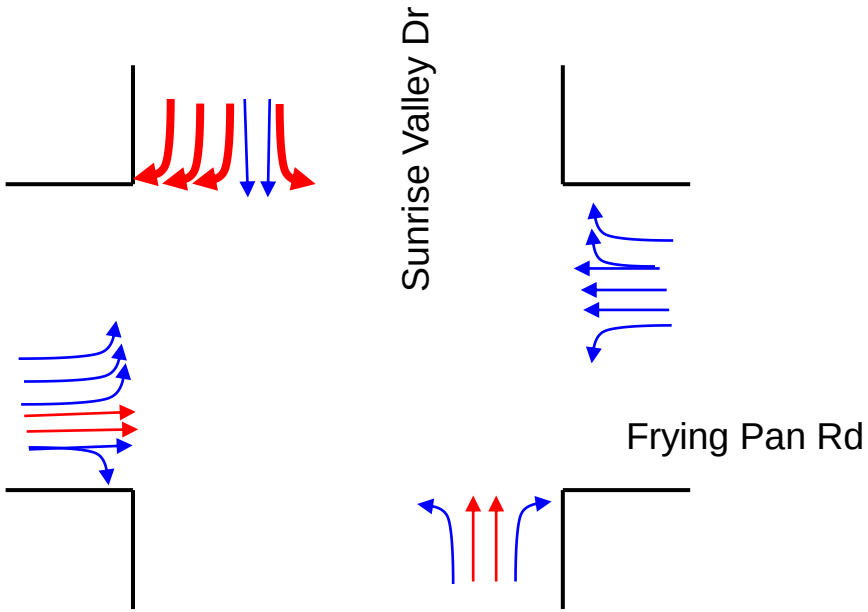
Scenario G Intersection Performance :

- Morning LOS/Delay: C/33 s
- Evening LOS/Delay: **F/151 s**

Scenario G compared to Scenario E:

- Morning LOS/Delay: **-27% improvement**
- Evening LOS/Delay: **31% improvement**

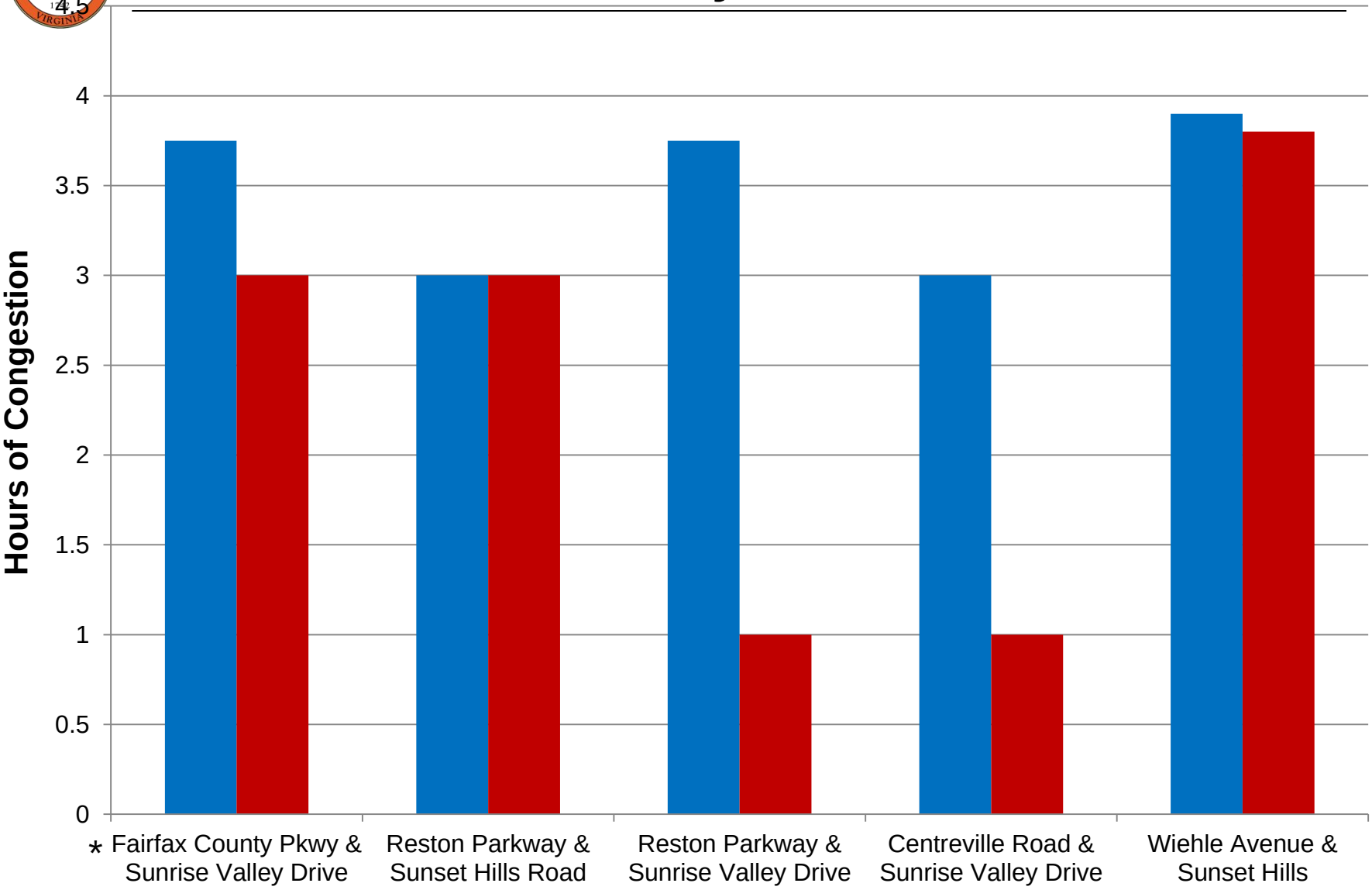
Scenario G
Evening Movements with Failing LOS



Note 1: Red Arrow – Failing LOS

County of Fairfax, Virginia

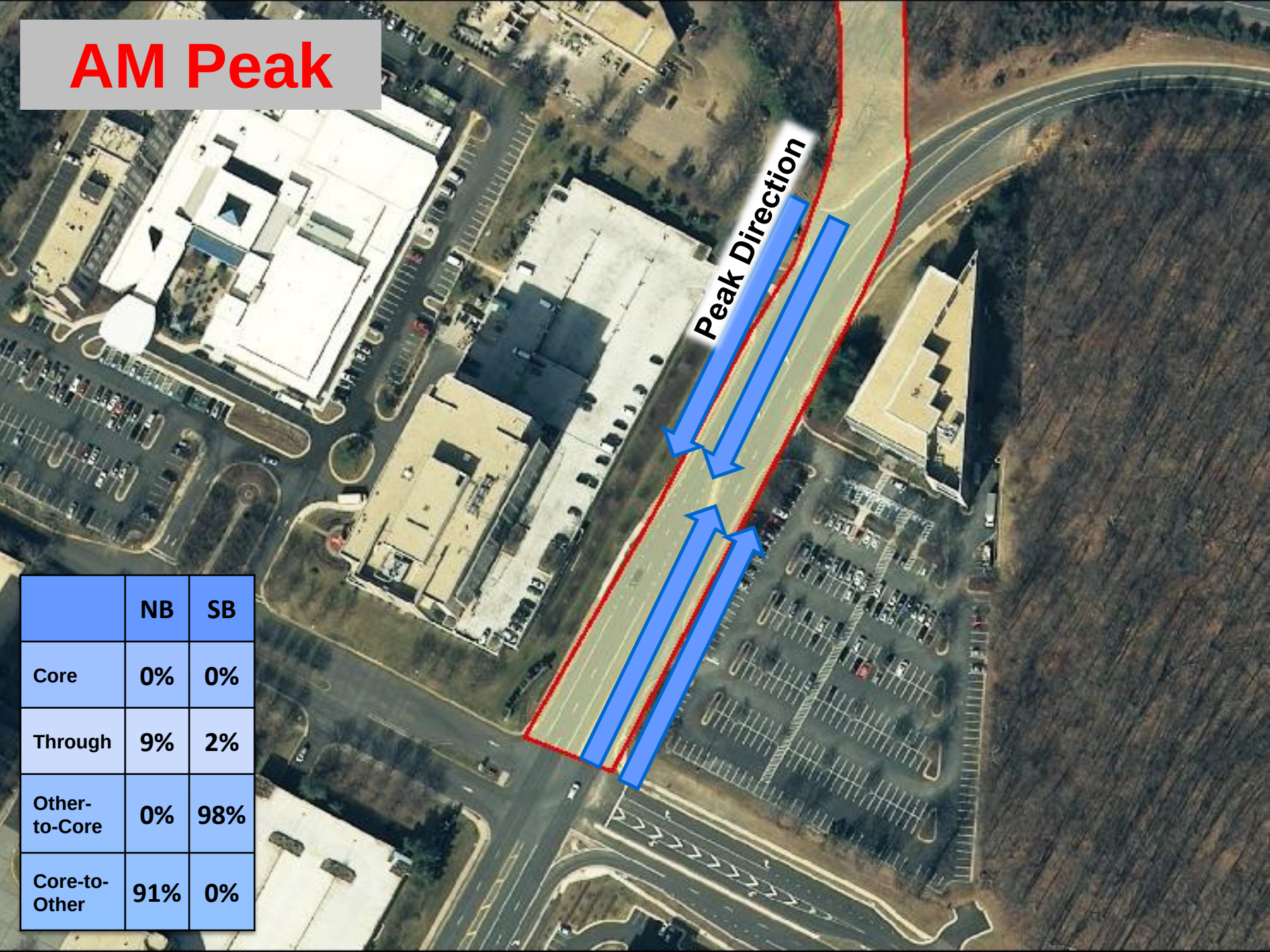
Congested Hours of Delay at Key Intersections – PM Peak



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

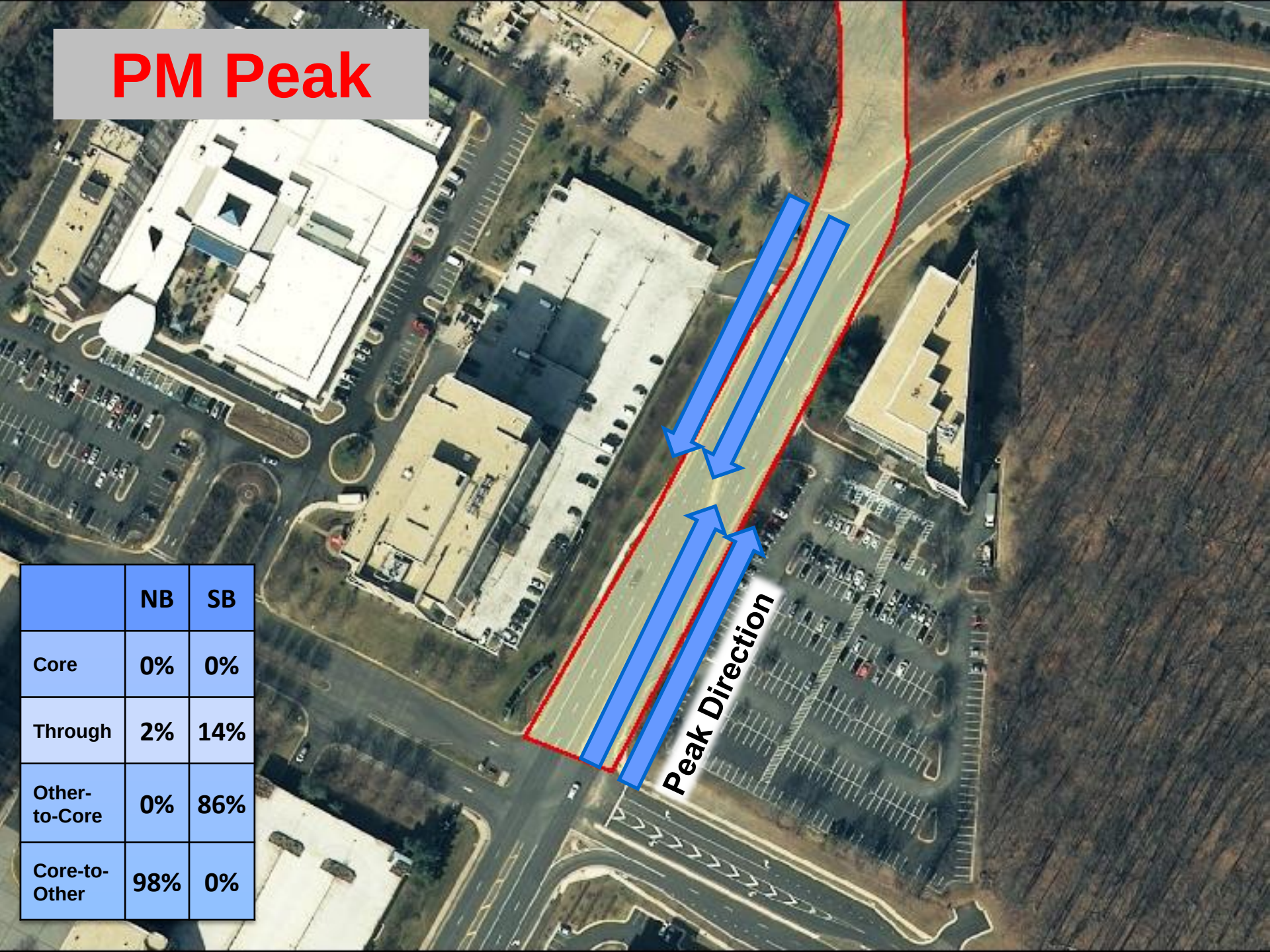
Rock Hill Road Overpass

AM Peak



	NB	SB
Core	0%	0%
Through	9%	2%
Other-to-Core	0%	98%
Core-to-Other	91%	0%

PM Peak



	NB	SB
Core	0%	0%
Through	2%	14%
Other-to-Core	0%	86%
Core-to-Other	98%	0%

Bridge Effect at Three Intersections

Morning Peak (AM)

Intx #	Intersection Name	Existing	2030 Future Base (Rd 8.0)	Scenario E with Bridge	Scenario G NO Bridge	Scenario G with Bridge	Scenario G % Change with Bridge
1	Centreville Rd/Sunrise Valley Dr	D (50 sod)	F (90 sod)	E (61 sod)	D (59 sod)	D (55 sod)	6.8%
22	Centreville Rd/Frying Pan Rd	D (40 sod)	F (92 sod)	D (38 sod)	D (37 sod)	D (36 sod)	2.7%
24	Sunrise Valley Dr/Frying Pan Rd	B (n/a)	F (321 sod)	C (26 sod)	C (31 sod)	C (33 sod)	-6.5%

Afternoon Peak (PM)

Intx #	Intersection Name	Existing	2030 Future Base (Rd 8.0)	Scenario E with Bridge	Scenario G NO Bridge	Scenario G with Bridge	Scenario G % Change with Bridge
1	Centreville Rd/Sunrise Valley Dr	E (70 sod)	F (135 sod)	F (100 sod)	F (96 sod)	F (85 sod)	11.5%
22	Centreville Rd/Frying Pan Rd	D (45 sod)	E (76 sod)	D (44 sod)	D (42 sod)	D (36 sod)	14.3%
24	Sunrise Valley Dr/Frying Pan Rd*	D (n/a)	F (297 sod)	F (220 sod)	F (217 sod)	F (184 sod)	15.2%

* Intersection #24 does not include River Birch Extension. With the extension SOD is 151 (30.4% improvement)

Note 1: SOD = seconds of delay

Note 2: There is no sod for Sunrise Valley Dr/Frying Pan Rd as the intersection was measured before the traffic signal was installed.

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

Frying Pan Road at Sunrise Valley Drive

Scenario G Traffic Conditions (unmitigated):

- Morning LOS/Delay: C/34 s
- Evening LOS/Delay: **F/151 s**

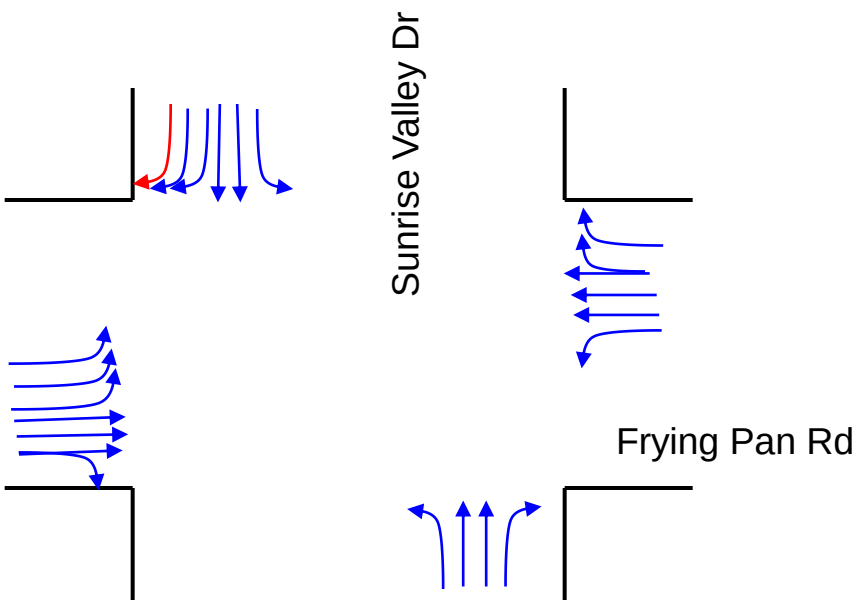
Scenario G Traffic Conditions (mitigated):

- Morning LOS/Delay: C/33 s
- Evening LOS/Delay: E/70 s

Mitigation Added:

- Add a SB right-turn lane

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

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

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

Summary of Findings

- Scenario G has higher transit ridership, less congestion at the key intersections, and more balanced for traffic flow

- The bridge helps with intersection congestion at Sunrise Valley Drive/Frying Pan Road and Centreville Road/Sunrise Valley Drive.

- From a transportation network assessment Scenario G performs better than Scenario E.

Next Steps

- Prepare report and submit for VDOT review
- Grid analysis (currently underway)
- Hold Public Hearings on Plan Amendment
- Rezoning applications will have traffic impact studies submitted to evaluate and mitigate impacts (some will be done and submitted soon)

Questions/Discussion