



County of Fairfax, Virginia

Reston Network Analysis

Existing Conditions

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Reston Transportation Recommendations

Improvements from Reston Phase I Plan Amendment

- An Enhanced Street Network to increase connectivity
- Town Center Parkway Underpass
- Soapstone Drive Overpass
- South Lakes Drive Overpass
- Grade Separate Fairfax County Parkway/Sunrise Valley Drive



Enhanced Street Network

- Maintains a balance between land use and transportation
- Provide alternate routes through the TSAs for all modes
- Ensures pedestrian mobility throughout the Transit Station Areas (TSAs)
- Provides connectivity for bikes
- Support bus service to Metrorail
- Strengthened by a strong Transportation Demand Management (TDM) program in the TSAs



Purpose of Study

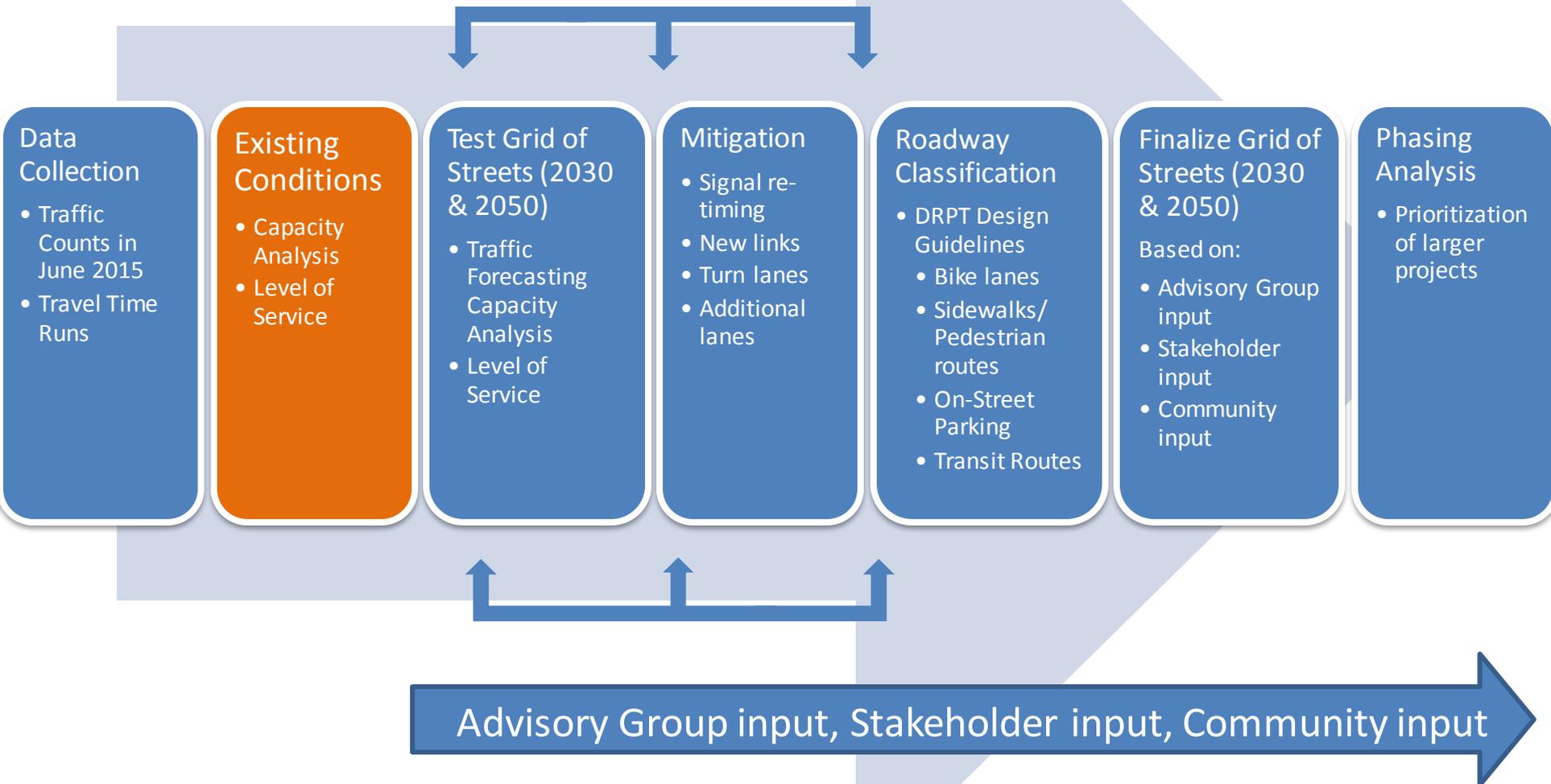
- Conduct a detailed analysis of the grid of streets to determine:
 - Number of lanes between and at intersections
 - How to best serve pedestrians, bikes and transit
 - Right-of-way needs
- Assign urban street types and modal emphasis based on Department of Rail and Public Transportation Multimodal System Design Guidelines
- Conduct a phasing analysis of when larger projects are needed



Reston Network Analysis Tasks

1. Data Collection – done
2. Existing Conditions – being finalized
3. Future Conditions – coordination beginning
 - Determine Grid of Streets
4. Phasing Analysis
5. DRPT Classifications
6. Specific location improvements for additional study
 - Reston Parkway
 - Sunrise Valley Drive @ Fairfax County Parkway
 - Spring Street @ Fairfax County Parkway
 - Rock Hill Bridge

Network Analysis Project Process





Overview of Existing Conditions

- Data Collection
- Vehicular Level of Service
- Existing Pedestrian Facilities
- Existing Bike Facilities
- Existing Transit Service
- Future Trip Generation
- Next Steps



Analysis Needs for Existing Conditions

Data Needs

- Intersections Counts:
May 2015: Vehicles & Pedestrians
- Intersections Queue Measurement: May 2015
- Travel Time Runs: May 2015
- Synchro Networks: From VDOT
- Driveway locations: Aerial Survey
- VISSIM DTR Network: MWAA
- VISUM Network: Created for project

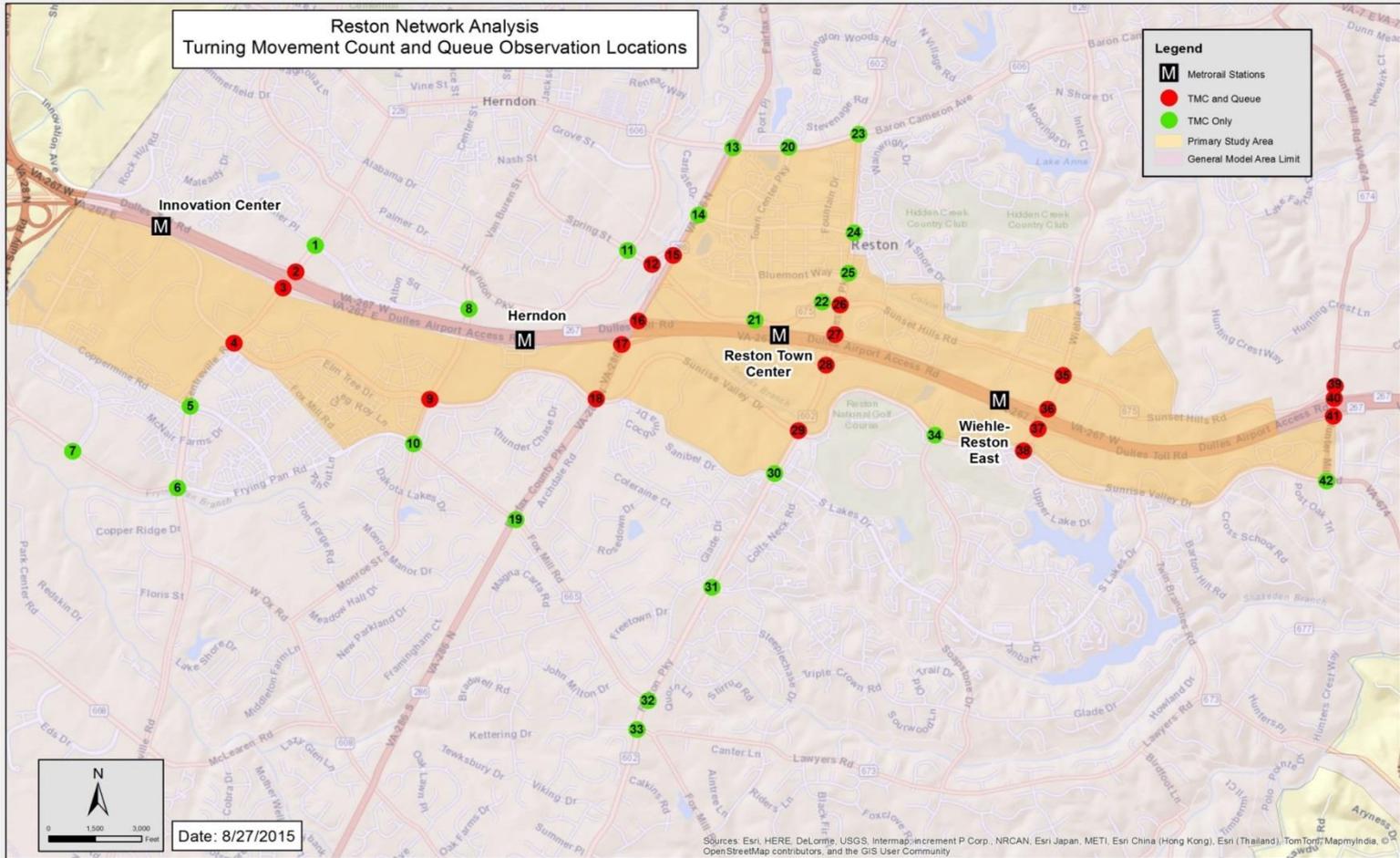


Data Collection

- 42 intersection turning movement counts
 - 20 Queue Counts
- 7 corridor travel time runs
 1. Dulles Toll Road
 2. Sunrise Valley Drive
 3. Sunset Hills Road
 4. Centreville Road
 5. Fairfax County Parkway
 6. Reston Parkway
 7. Wiehle Ave

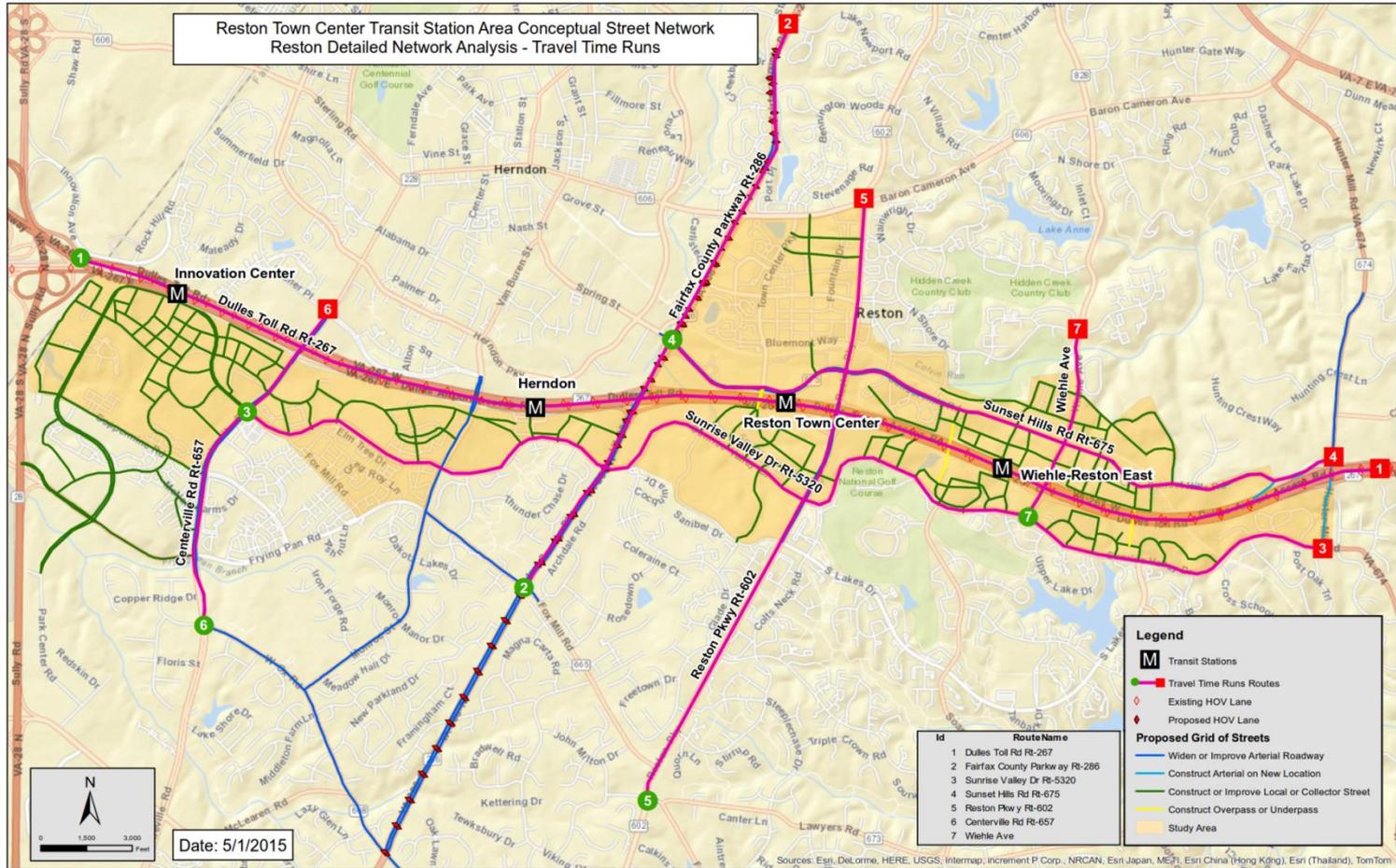


Data Collection: Counts





Data Collection: Travel Time Runs





Level of Service (LOS)

- LOS measures peak hour delay at an intersection or how well traffic moves along a roadway. LOS is generally defined in terms of speed and travel time, freedom to maneuver, safety, and traffic interruptions.
- **LOS E** is considered acceptable for the Reston Network Analysis

| LOS | Delay (s/veh) | |
|-----|--------------------------|----------------------------|
| | Signalized Intersections | Unsignalized Intersections |
| A | ≤ 10 | ≤ 10 |
| B | > 10 - 20 | 10 - 15 |
| C | > 20 - 35 | 15 - 25 |
| D | > 35 - 55 | 25 - 35 |
| E | > 55 - 80 | 35 - 50 |
| F | > 80 | ≥50 |





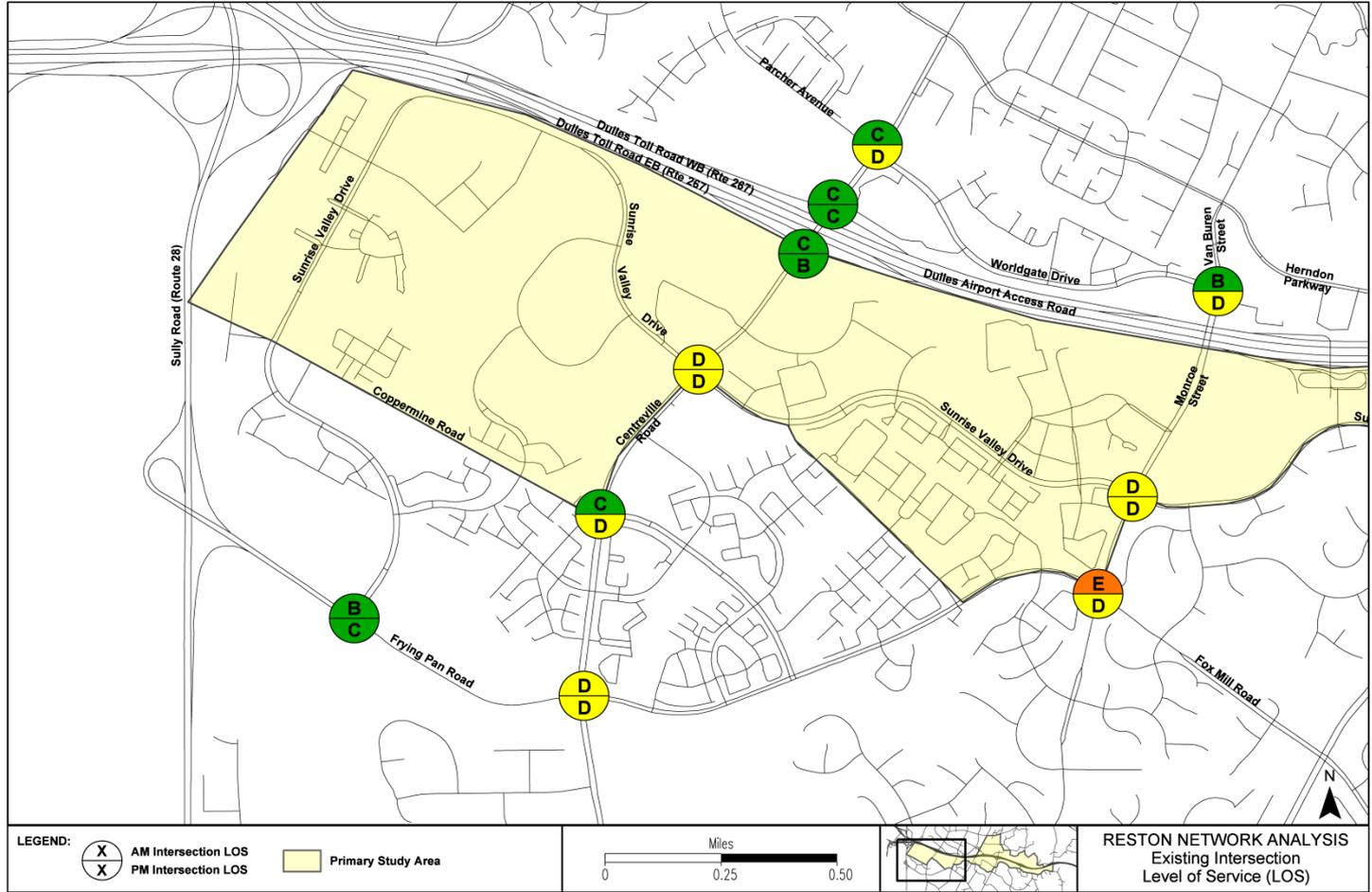
Existing Level of Service

42 Critical Intersections with 310 movements

- AM Peak
 - Two intersections at LOS E
 - 41 Movements operate at LOS F (13%)
- PM Peak
 - Five intersections at LOS E
 - One intersection at LOS F
 - 70 movements operate at LOS F (22%)

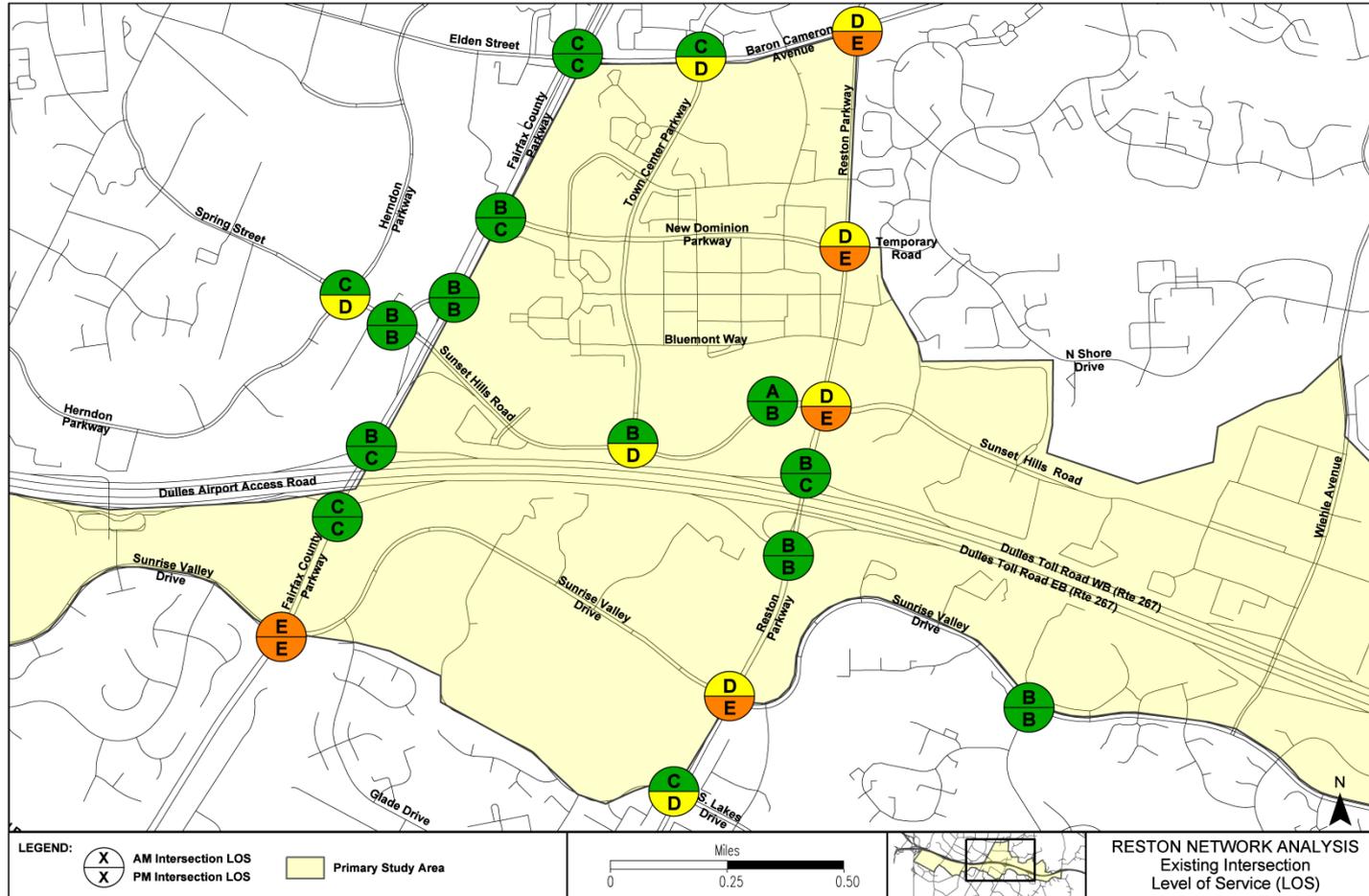


Existing Intersection LOS



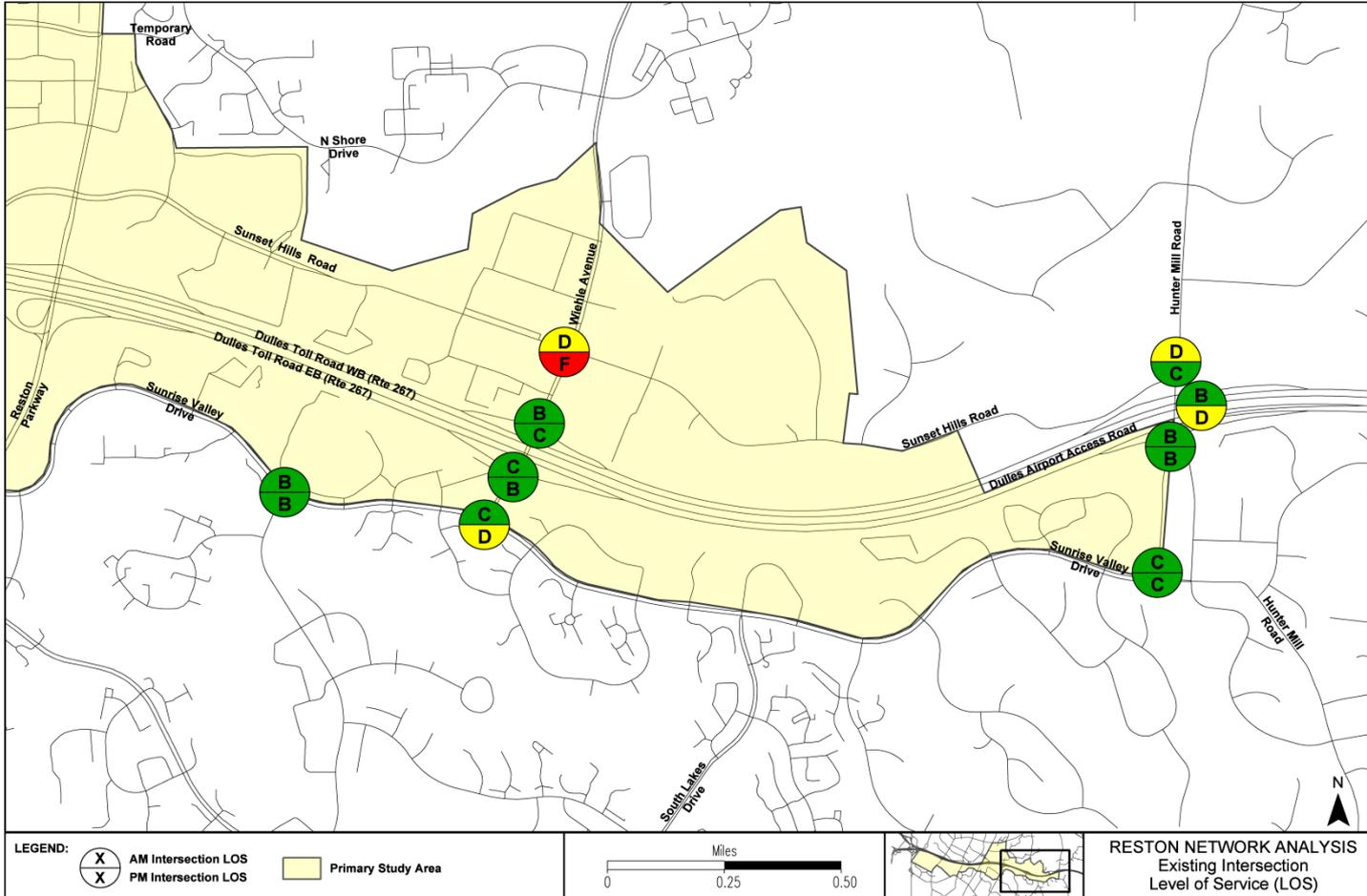


Existing Intersection LOS (Cont'd)



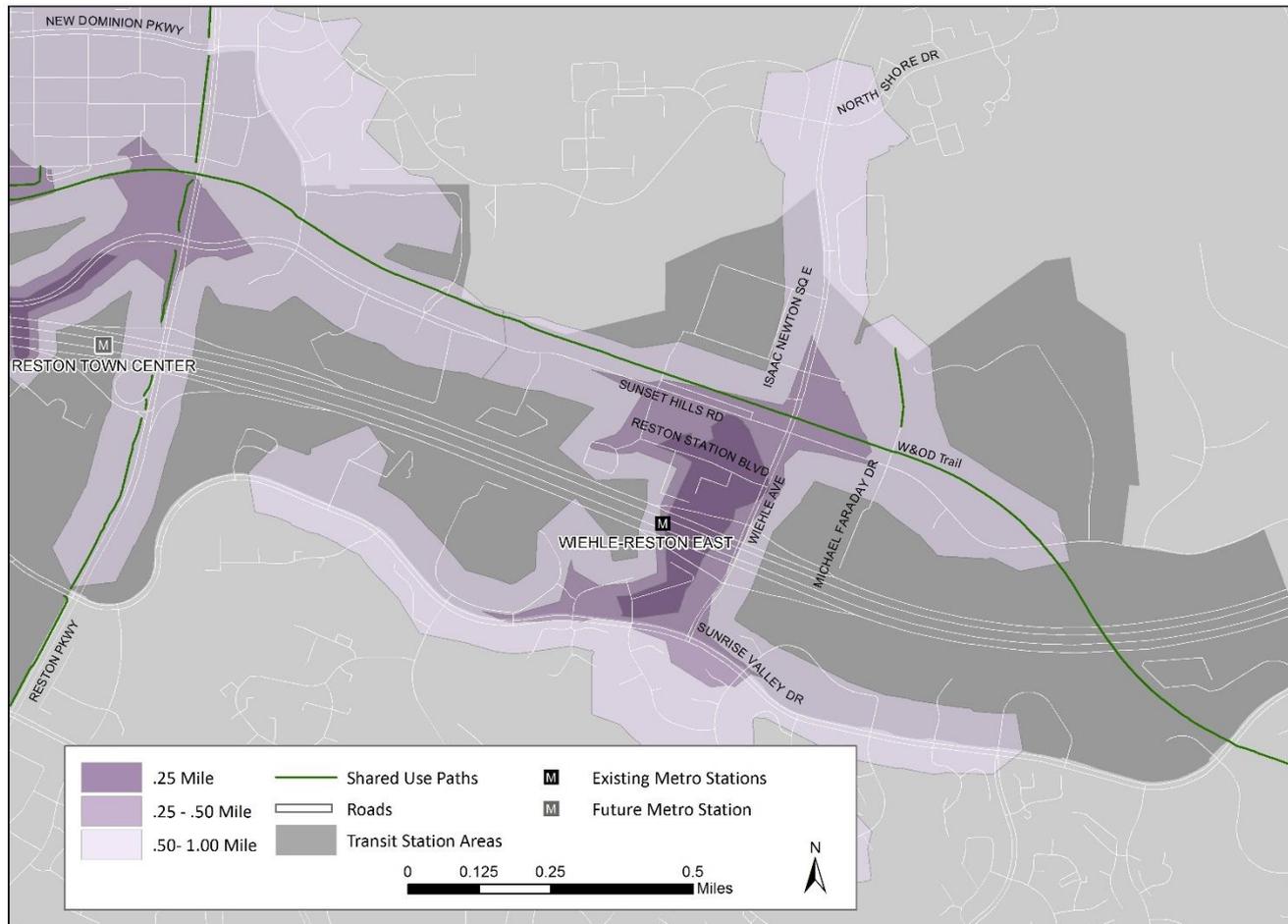


Existing Intersection LOS (Cont'd)





Existing Wiehle-Reston East Walkshed





Existing Reston Town Center Walkshed



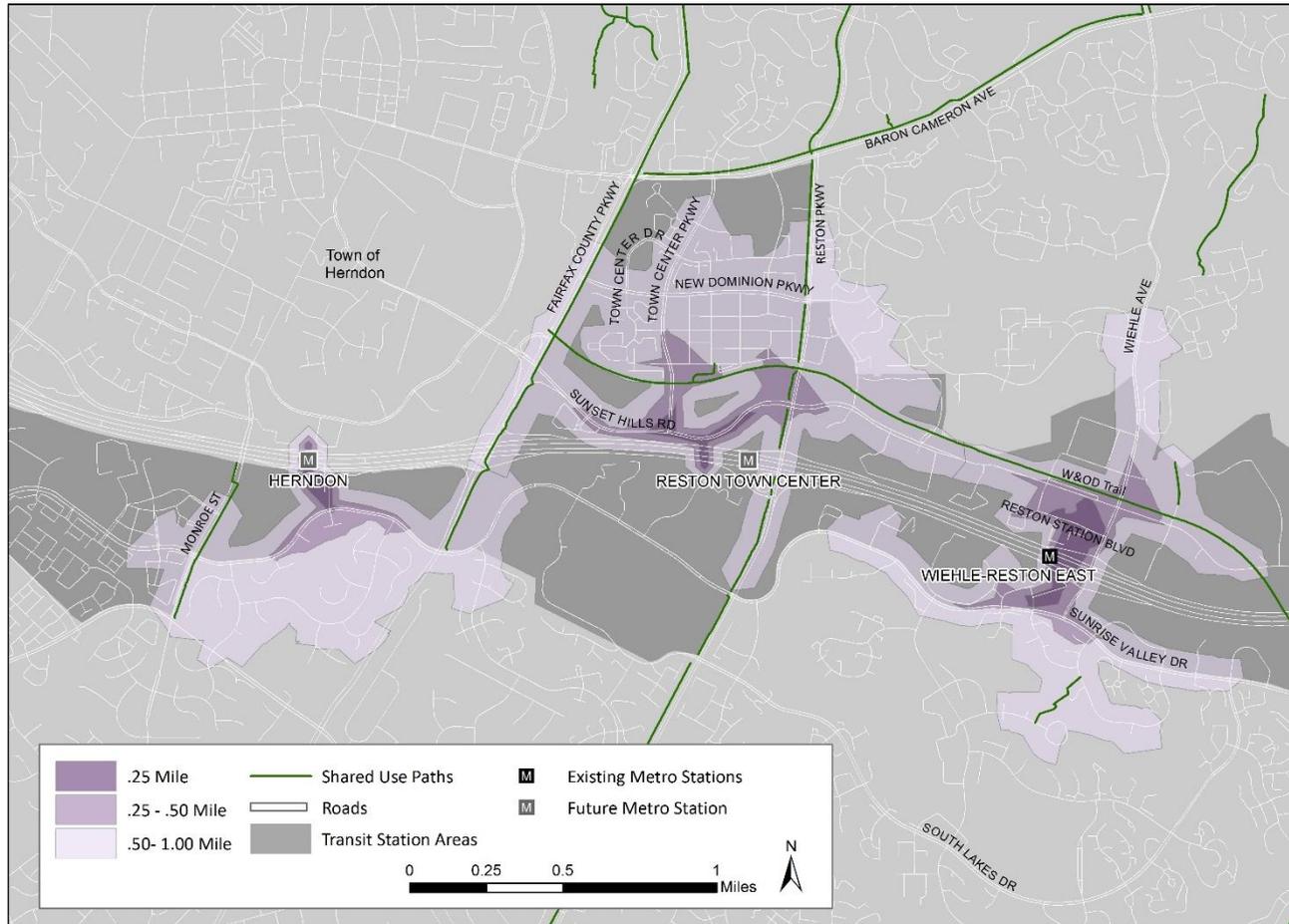


Existing Herndon Walkshed



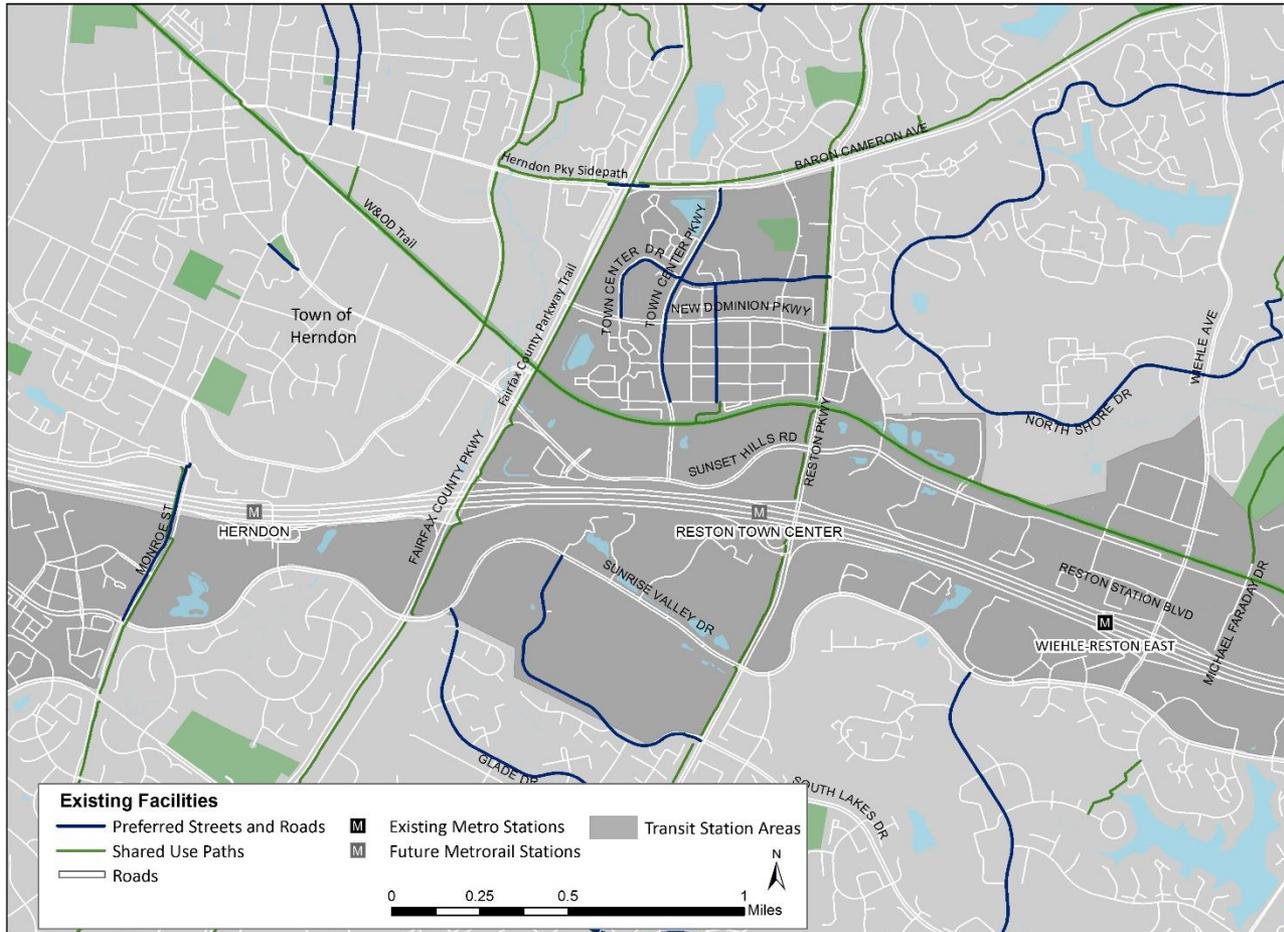


Existing Reston TSA Walk-shed



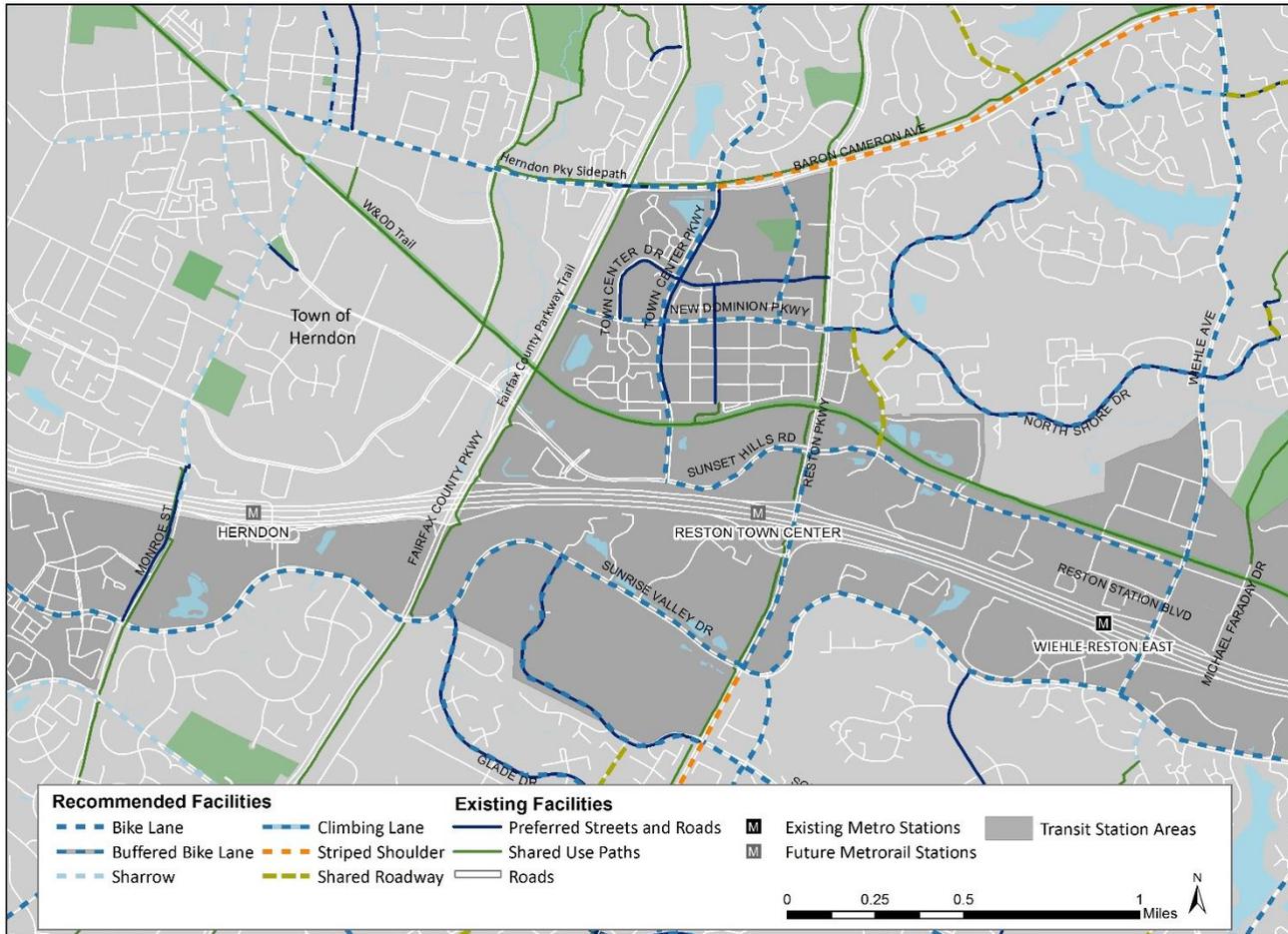


Existing Bike Facilities





Planned Bike Facilities



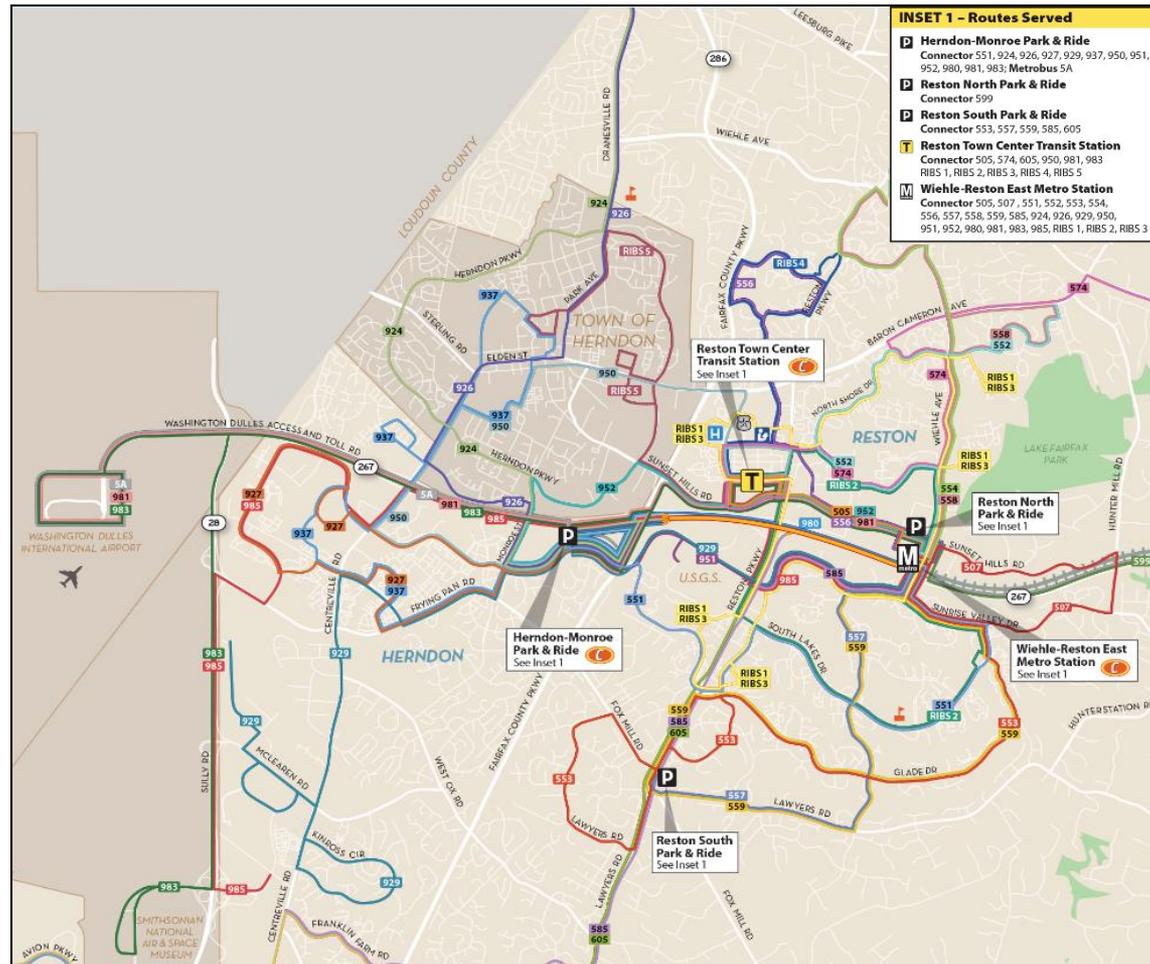


Existing Bus Routes

- Buses oriented toward serving the Wiehle Reston-East Metrorail Station
- 5 existing RIBS Routes serving internal Reston Trips
- 28 total bus routes in Reston and Herndon



Existing Bus Routes (Cont'd)





2050 Conditions

- Test Build out of the Reston Phase I Comprehensive Plan Land Use
- Assume build out of roadway improvements
- Assume complete grid of streets
- Account for vehicle trip reductions due to improved bike/pedestrian and transit connections in the TSAs



Inputs into Modeling Process

- MWCOCG / Fairfax County Models
- GIS Layers: Traffic Analysis Zones; Parcels; Aerial Imagery
- Land use by Transportation Analysis Zone (TAZ)
- Parcels
- Traffic Counts: Freeways & Arterials
- Other Available Traffic Counts
- Traffic Signal Timings
- SYNCHRO for Signal Optimization



TDM Vehicle Trip Reduction Goals

| Development | Peak Hour – Future Trips | | | | | |
|--|--------------------------|------|-----------------|------|-----------------|------|
| | 0-1/4 Mile | | 1/4 to 1/2 Mile | | Beyond 1/2 Mile | |
| | 2030 | 2050 | 2030 | 2050 | 2030 | 2050 |
| Office | 40% | 45% | 35% | 40% | 30% | 35% |
| Residential | 40% | 45% | 35% | 40% | 20% | 25% |
| Technological Advancement for all Trips | - | 7.5% | - | 7.5% | - | 7.5% |

Reductions based off of ITE Trip Generation Rates



Next Steps

- Test 2050 Comp Plan Build Out
- Mitigation Measures - Tiered Approach
 - No right of way impact
 - Trip Re-assignment
 - Optimize Signal Timing and Phasing
 - Modify the Lane Configuration
 - Evaluate 4-way Stop vs. 2-way Stop
 - Traffic Signal Addition
 - Some right of way impact
 - Turn lanes
 - Additional through lane
 - Additional grid link
 - Large scale mitigations if needed
 - Discussion with Advisory Group and Stakeholders Group



Next Steps (Cont'd)

- DRPT Guidelines Roadway Classification
- Phasing Analysis
- Reston Comprehensive Plan Amendment
 - If needed to integrate finalized grid of streets
- Four Specific Study Locations
 - Reston Parkway
 - Fairfax County Parkway at Spring Street
 - Fairfax County Parkway at Sunrise Valley Drive
 - Rock Hill Bridge



Questions & Comments

For questions and comments about the study please contact:

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