Preliminary Transportation Analysis
Goals of a Robust, Multimodal Transportation Network

- Safe
- Accessible/Connected
- Efficient
- Comfortable
- Context-Sensitive
**Motor Vehicle:**
- Continue to analyze the data to make recommendations for improving network **safety** and **efficiency**.

**Pedestrian:**
- Launch the pilot for the Pedestrian Level of Comfort analysis tool
- Work with MCDOT to coordinate potential BiPPA **concepts**, **assessments** and **recommendations**.

**Bicycle:**
- Build on analysis already completed for the Bicycle Master Plan
- Confirm and potentially suggest **additional recommendations** for improve bicycle safety and connectivity

**Transit:**
- Analyze **access** to existing and planned stops and stations with the Pedestrian Level of Comfort Tool
- Review recommendations for **BRT stops and route alignment**
- Coordinate with WMATA and RideOn on known issues feedback from the public
Typical Process for Plan Development

- Low density
- Medium density
- High density

Develop Land Use Scenarios

Traffic Analysis
- Existing conditions
- Approved but unbuilt
- Growth rate
- Future scenarios (x3)

Staff Recommendations
- Land Scenario X
- Identify mitigation if necessary
Revised Process for Plan Development

- Existing conditions
- Approved but unbuilt
- Growth rate
- Future scenarios

Traffic Analysis

Land Use Scenarios
- Low
- Medium
- High

Land Scenario X
- Identify mitigation if necessary

Staff Recommendations
Scenarios for Preliminary Traffic Analysis

1. **Existing**
   - Traffic Counts

2. **2040 “No-build”**
   - Applies growth rate for regional traffic
   - Assumes **no changes** within Plan Area Boundary

3. **2040 “Zoning Potential”**
   - Applies growth rate for regional traffic
   - Assumes non-residential zones achieve **maximum density permitted by existing zoning**
Preliminary Results
Current Traffic Volumes

**Georgia Avenue (MD 97)**
- **Outer Loop Ramps**: 125 (600) to 155 (600)
- **Inner Loop Ramps**: 300 (330)
- **2630 (1790)** to **1090 (310)**
- **2065 (1770)** to **720 (620)**
- **3090 (2140)** to **175 (125)**
- **530 (705)** to **1880 (2820)**
- **2120 (2975)**
- **245 (885)** to **70 (70)**
- **5 (10)** to **1820 (2620)**
- **975 (1230)**

**Colesville Road (US 29)**
- **280 (540)** 150 (240) 200 (10)
- **15 (20)** 905 (2250) 0 (10)
- **160 (230)** 125 (135) 75 (10)
- **290 (125)**
- **2540 (1115)**
- **325 (65)**
- **215 (110)**
- **1935 (920)**
- **425 (110)**
- **60 (70)**
- **495 (275)**
- **1305 (635)**
- **85 (60)**
- **10 (25)**
- **505 (1075)**
Historical Traffic Volumes

- A significant amount of regional through traffic travels through the MD 97 corridor to and from Silver Spring and Washington DC.

Source: State Highway Administration - Internet Traffic Monitoring System
Vehicle Speeds & Travel Times

- Peak direction automobile speeds have decreased in recent years along the MD 97 corridor.

Source: INRIX
Existing Traffic Operations

• The 28 study intersections were evaluated based on the average delay per vehicle for all intersection approaches during the morning and evening peak hours.

• Delay is the additional time experienced by a roadway user, typically motorists, as a result of constrained movements and deviation from ideal or free flow speed travel speeds.

• Average vehicle delay was calculated using Highway Capacity Methodologies which accounts for traffic volumes, number of lanes, and signal timing/phasing and represents a weighted average for all approaches.

• Current Policy Area Standards
  – The Silver Spring Central Business District (CBD), generally bounded by Spring Street to the north, has a delay standard of 120 seconds per vehicle.
  – All remaining study intersections have an 80 seconds per vehicle delay standard.
**Existing Traffic Operations**

**Level of Service A**
- STOPPED DELAY PER VEHICLE
  - ≤ 10 SECONDS

**Level of Service B**
- STOPPED DELAY PER VEHICLE
  - > 10 – 20 SECONDS

**Level of Service C**
- STOPPED DELAY PER VEHICLE
  - > 20 – 35 SECONDS

**Level of Service D**
- STOPPED DELAY PER VEHICLE
  - > 35 – 55 SECONDS

**Level of Service E**
- STOPPED DELAY PER VEHICLE
  - > 55 – 80 SECONDS

**Level of Service F**
- STOPPED DELAY PER VEHICLE
  - > 80 SECONDS
Existing Traffic Operations

• What other factors impact traffic congestion?
  – Latent Demand
    • Intersection traffic counts only count vehicles which are processed through the intersection. This means that the delays attributed to vehicles who do not get processed through the intersection may not be fully accounted for.
  – Lane Utilization
    • An unequal distribution of vehicles among travel lanes.
  – Access Points
    • Business driveways and minor streets cause reductions in travel speeds due to turning vehicles.
  – Bus Stops
    • Bus blockages temporarily impede traffic flow in a travel lane during the boarding and alighting process.
  – Vehicle Composition and Driver Characteristics
    • A higher composition of heavy vehicles, such as buses and trucks, typically results in a reduction in capacity due to reduced acceleration and deceleration rates, as well as generally slower travel speeds.
    • Similarly, driver aggressiveness in an area can impact capacity through increased acceleration and deceleration rates.
2040 Land Use Scenarios

• No-Build Scenario
  – The No-Build Scenario assumes that no new developments occur within the Plan Area Boundary between 2017 and 2040.

• Zoning Potential Scenario
  – The Zoning Potential Scenario assigns parcels the maximum permitted density under the existing zone.
How we Determined Growth Rates

- Annual Growth Rates (AGR) for each roadway link were taken from the traffic forecast model outputs and applied to existing traffic volumes.
- The average growth rates between the origin and destination links were applied to individual turning movements at each intersection then balanced.
- Annual growth rates ranged from 0.25% to 2.00%.
2040 Zoning Potential Scenario

Legend

- Plan Boundary

AM/PM

Average Vehicle Delay

- 0 - 35
- 35 - 55
- 55 - 80
- 80 - 120
- > 120

* Intersection exceeds existing congestion standard

Intersection Exceeding Congestion Standard

- Forest Glen Rd at Sligo Creek Pkwy
- George Ave at the Beltsway (I-495)
- Myers Mill Rd at Connecticut Ave
- Sligo Creek Pkwy at Colesville Rd
- Spring St at Colesville Rd
- Gale Dr at Colesville Rd
- Forest Glen Rd at George Ave
- Seminary Rd at Georgia Ave/Columbia Blvd

0 0.25 0.5 1 Miles
Traffic Management & Mitigation Tools

• Mode Shift
  – Incentivizing non-auto modes of transportation can reduce traffic volumes on a roadway reducing congestion.
  – May also include increasing the congestion standard.

• Traffic Redistribution
  – Redistributing traffic from roadways operating over capacity to roadways operating under capacity can reflect real world adjustments drivers make to their typical routes as they find the quickest path to their destination.

• Traffic Management
  – Traffic management such as turn restrictions can eliminate signal phases increasing green time for other movements.

• Geometric Improvements
  – The addition of travel lanes increase capacity at an intersection.
Multi-Modal Considerations

AM Peak Pedestrian Counts at MD 97 Intersections
Forest Glen Road to Colesville Road

PM Peak Pedestrian Counts at MD 97 Intersections
Forest Glen Road to Colesville Road

Legend
Pedestrian Counts
- 0 - 50
- 50 - 100
- 100 - 250
- > 250

Plan Boundary
Multi-Modal Considerations

Example Enhanced Bicycle Facilities

Forest Glen will be a bike/ped priority area
Multi-Modal Considerations

Bus Routes, Stops, and Boarding Totals
MD 97 Intersections
Forest Glen Rd. to Colesville Rd.

Legend
Boarding Totals at Metrobus Stops
- 0 - 50
- 50 - 100
- 100 - 250
- > 250

Metrobus routes along study area
Plan Boundary
Background Roadway Improvements

Seminary Road, Seminary Lane, Second Avenue, Linden Lane, and Brookville Road
Potential Mitigation Considerations

Connecticut Avenue at Plyers Mill Road

Signal Phasing Improvements:
Installation of a westbound right overlap phase.
• Provides a right turn arrow for the westbound right turn movement which operates concurrently with the protected southbound left turn phase.

Geometric Improvements:
Addition of a northbound right turn lane to reduce the amount of vehicles in the three existing northbound through lanes.
Potential Mitigation Considerations

Colesville Road at Dale Drive

Traffic Management:
- Southbound left turn restriction during PM peak period.
- Diversions were assumed to take southbound left turns at Sligo Creek Parkway and Dale Drive.

Signal Timing Improvements:
Signal timing splits optimized.
Potential Mitigation Considerations

Colesville Road at Sligo Creek Parkway

Traffic Management:
• Morning and evening phase shut down for St. Andrew’s Way approach
• Traffic diversions were assumed to be via Lorain Avenue and Brunett Avenue

Signal Timing Improvements:
Signal timing splits optimized.
SHA Montgomery Hills Project Update
Forest Glen Metro Station

Washington Metropolitan Area Transit Authority
Office of Real Estate and Parking
December 18, 2017
Why Land Use Matters

Silver Spring
Weekday Passenger Entries: 12,000
Weekday Average Revenue: $39,500

Deanwood
Weekday Passenger Entries: 1,300
Weekday Average Revenue: $3,300
Metro-Owned Property
Forest Glen Metro Station

- 8-acre site
- Zoned R-60
- 596 all-day spaces
  - 80% average utilization
- 45 short-term spaces
- 2,181 daily ridership
  - One of least used stations in system
- No Metrobus service
### Background

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>March 2014</td>
<td>Metro adopted 2014 joint development work program, to issued a RFP for developable parcels at Forest Glen</td>
</tr>
<tr>
<td>June 2015</td>
<td>Metro started community engagement for station redevelopment</td>
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<tr>
<td>2015</td>
<td>Development studies completed; test fits included</td>
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<tr>
<td>Present</td>
<td>Joint development financial feasibility study underway</td>
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Scope of Financial Feasibility Study

• Develop site specific goals and criteria
  – Maximize ridership potential
  – Explore potential for higher density, mix of uses
  – Recommend investments to maximize pedestrian connections to the Metro station

• Complete market analysis and implementation plan

• Incorporate information and/or analysis resulting from Montgomery County’s planning study

• Reach an informed “Go/No Go” decision for joint development
Questions?
Corrections and Clarifications

Existing Conditions:
Outside the plan area, five three intersections exceed the standard and they include:
• Sligo Creek Parkway and Colesville Road (evening peak hour)
• Dale Drive and Colesville Road (evening peak hour)
• Spring Street and Colesville Road (evening peak hour)
• Plyers Mill Road and Connecticut Avenue (evening peak hour)
• Dennis Avenue and Sligo Creek Parkway (morning and evening peak hours, stop-controlled intersection)

Two intersections experience a level of service F, but do not exceed the standard set by the SSP
• Spring Street and Colesville Road (evening peak hour)
• Dennis Avenue and Sligo Creek Parkway (morning and evening peak hours, stop-controlled intersection).
Corrections and Clarifications

2040 No Build:
Within the Plan Area Boundary, four three intersections are forecasted to exceed the standard
• Georgia Avenue and Forest Glen Road (both morning and evening peak hours)
• Georgia Avenue and the Inner Beltway off-ramp (both morning and evening peak hours)
• Georgia Avenue and Seminary Place (evening peak hour)
• Georgia Avenue and Seminary Road/Columbia Boulevard (morning peak hour)

While Georgia Avenue and Seminary Place Road is forecasted to approach the standard in the morning peak hour, there is a very small margin before it exceeds the standard in the evening peak hour.

Two intersections are forecasted to have a level of service F, but do not exceed the standard for the SSP
• Spring Street and Colesville Road (morning peak hour)
• Dennis Avenue and Sligo Creek Parkway (morning and evening peak hours, stop-controlled intersection.)