White Oak Science Gateway (WOSG)
Master Plan Preliminary Transportation Analysis

Presentation to the White Oak Science Gateway CAC
May 22, 2012
Transportation Modeling Process Overview
Regional Model/Local Model Relationship

Regional Model

- Same tool as that used by Metropolitan Washington Council of Governments
- Reflects county-wide and regional traffic effects (including those from Howard and Prince Georges Counties)
- Output – Policy Area Mobility Review (PAMR) results (used to evaluate area-wide land use/transportation balance and transportation adequacy)

Local Model

- More Detailed/Fine Grain Analysis
- Output – Critical Lane Volumes (CLVs) for intersections (including “Four Corners” @ US 29/MD 193)
- Compare with established policy area standard (1475 CLV in this case)
- Regional model “feeds” though trips into Local Area Model
Relationship Between Regional and Local Models

• Regional and local models work in tandem
• Local model tool is pragmatic for Plan area where local planning/zoning recommendations will be made
• Process works for master plan level decision making as in Germantown, Great Seneca Science Center and White Flint
Regional Model Framework
Regional Model Framework

- **Trip Generation**: How may trips are produced?
- **Trip Distribution**: Where are people going?
Regional Model Framework

- **Mode Choice**: What method/mode of travel are people using?
- **Trip Assignment**: What route are people taking?
Current Traffic – US 29

US 29 Mobility

- Problems are generally at failing intersections
- Definition of future relative arterial mobility can be determined with the regional model
Transportation Network Assumptions: Constrained Long Range Transportation Plan (CLRP)

Highways

Transit
WOSG Area Bus Rapid Transit (BRT) Network

- Five Stations
- Connections to:
  - Silver Spring
  - Burtonsville P&R
  - Takoma/Langley
  - Greenbelt Metro
  - Murkirk MARC
WOSG Land Use/Transportation Scenarios:

1. **Existing Conditions:** 2010 Land Use/2010 Network

2. **Base Future Year:** 2040 Round 8.0 Land Use/CLRP Network

3. **Master Plan Alternative:** Master Plan Alternative Scenario Land Use /CLRP Network + Master Planned interchanges + local roadway network improvements + BRT

<table>
<thead>
<tr>
<th>Development Scenario</th>
<th>Commercial (sq. ft.)</th>
<th>Single Family Dwellings</th>
<th>Multi-Family Dwellings</th>
<th>Total Dwelling Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Conditions (Built)</td>
<td>11,187,298</td>
<td>2,260</td>
<td>4,858</td>
<td>7,118</td>
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<tr>
<td>Base Future Year (2040 Rnd 8.0)</td>
<td>15,854,064</td>
<td>2,404</td>
<td>5,194</td>
<td>7,598</td>
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<tr>
<td>Master Plan Alternative Scenario</td>
<td>25,434,851</td>
<td>2,785</td>
<td>12,903</td>
<td>15,688</td>
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</table>
Area-wide Transportation Analysis:
Policy Area Mobility Review
2010 PAMR Analysis

Year 2010 PAMR Chart - WOSG Existing Conditions

Relative Arterial Mobility: (Congested Arterial Speed Relative to Arterial Free Flow Speed)

- In Balance for Land Use/Transportation
- Not in Balance for Land Use/Transportation

Relative Transit Mobility: (Overall Transit Speed Relative to Overall Speed Using Arterials)
WOSG Master Plan Alternative Scenario PAMR Analysis

Year 2040 PAMR Chart - WOSG Master Plan Alternative Scenario w/BRT

Relative Arterial Mobility: (Congested Arterial Speed Relative to Arterial Free Flow Speed)

Relative Transit Mobility: (Overall Transit Speed Relative to Overall Speed Using Arterials)

In Balance for Land Use/Transportation

Not in Balance for Land Use/Transportation

Year 2040
Local Area Model Analysis: Intersections
Assumptions

• Auto Driver Mode Share

  – 2040 Base Future Year Scenario
    • 86% of commuters drive to jobs in plan area

  – 2040 Master Plan Alternative
    • 75% of commuters drive to jobs in five locations:
      – Site 2 / Percontee
      – Hillandale Shopping Center
      – White Oak Shopping Center
      – Labor College
    • 86% of commuters drive to jobs in all other locations
Assumptions

• Network for Master Plan Alternative Scenario
  – Three BRT routes
    • US 29
    • New Hampshire Ave
    • Randolph Rd
  – Old Columbia Pike bridge over Paint Branch
  – Planned interchanges
    • Fairland Rd / Musgrove Rd
    • Tech Rd / Industrial Pkwy
    • Stewart Ln
    • Briggs Chaney Rd
    • Blackburn Rd / Greencastle Rd
Assumptions

• Trip Generation Rates per 1,000 GSF
  – Same as Great Seneca Science Corridor

<table>
<thead>
<tr>
<th>Land Use</th>
<th>AM Peak Hour</th>
<th>PM Peak Hour</th>
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<tbody>
<tr>
<td>Office</td>
<td>1.30</td>
<td>1.20</td>
</tr>
<tr>
<td>Retail</td>
<td>1.00</td>
<td>3.00</td>
</tr>
<tr>
<td>Industrial</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Other</td>
<td>1.00</td>
<td>1.00</td>
</tr>
</tbody>
</table>
AM Peak Hour Trips

- Reduction in “through trips”
- Increase in “in/out trips”
- Large increase in “internal trips”
• Reduction in “through trips”
• Increase in “in/out trips”
• Large increase in “internal trips”
## Internal Trips as % of Total Trips

<table>
<thead>
<tr>
<th>Scenario</th>
<th>AM Peak Hour</th>
<th>PM Peak Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010 Existing Conditions</td>
<td>7%</td>
<td>9%</td>
</tr>
<tr>
<td>2040 Base Future Year</td>
<td>15%</td>
<td>12%</td>
</tr>
<tr>
<td>2040 Master Plan Alternative</td>
<td>25%</td>
<td>25%</td>
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</table>
Critical Lane Volume

• A “planning level” tool to assess overall intersection adequacy
• Does not assess individual lane capacity
• Does not consider signal timing
Critical Lane Volume

the maximum sum of conflicting movements that can be moved through the intersection

Northbound / Southbound

Eastbound / Westbound
Critical Lane Volume Evaluation

<table>
<thead>
<tr>
<th>LOS</th>
<th>Critical Lane Volume Range</th>
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<tbody>
<tr>
<td>A</td>
<td>0.00 - 0.60</td>
</tr>
<tr>
<td>B/C</td>
<td>0.61 - 0.80</td>
</tr>
<tr>
<td>D/E</td>
<td>0.81 - 1.00</td>
</tr>
<tr>
<td>F</td>
<td>1.00+</td>
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</table>

Standard for plan area: 0.92
Critical Lane Volume Standards by Policy Area

<table>
<thead>
<tr>
<th>CLV Congestion Standards</th>
<th>Policy Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>1800</td>
<td><em>Central Business Districts/Metro Station Locations</em>: Bethesda, Silver Spring, Friendship Heights, Wheaton, Glenmont, White Flint, Grosvenor, Shady Grove, Twinbrook, Rockville Town Center</td>
</tr>
<tr>
<td>1600</td>
<td>Bethesda/Chevy Chase, Silver Spring/Takoma Park, Kensington/Wheaton, Germantown Town Center</td>
</tr>
<tr>
<td>1550</td>
<td>North Bethesda</td>
</tr>
<tr>
<td>1500</td>
<td>Rockville City</td>
</tr>
<tr>
<td><strong>1475</strong></td>
<td><strong>Fairland/White Oak</strong>, Aspen Hill, Derwood</td>
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<tr>
<td>1450</td>
<td>Cloverly, Olney, Potomac, North Potomac, R&amp;D Village</td>
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<tr>
<td>1425</td>
<td>Clarksburg, Germantown West, Germantown East, Montgomery Village/Airpark, Gaithersburg City</td>
</tr>
<tr>
<td>1400</td>
<td>Damascus</td>
</tr>
<tr>
<td>1350</td>
<td>Rural East, Rural West</td>
</tr>
<tr>
<td>Intersection level of Service</td>
<td>AM Peak CLV</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>LOS A</td>
<td></td>
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<tr>
<td>LOS B/C</td>
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<td>LOS D/E</td>
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<tr>
<td>LOS F</td>
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2040 Master Plan Alternative Scenario
Intersection Level of Service

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<th>AM Peak CLV</th>
<th>PM Peak CLV</th>
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<tbody>
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2040 Base Future Year Scenario With Interchanges
Intersection Level of Service

- LOS A
- LOS B/C
- LOS D/E
- LOS F
2040 Master Plan Alternative Scenario
With Interchanges
Intersection Level of Service
Questions?

“I think you should be more explicit here in step two.”