Today’s Meeting Purpose

• Project Status Update

• Major Findings & Recommendations from Fatal Flaw Analysis

• Overview of Screen 1 Analysis
  – Transit Technologies
  – Screen 1 Alternatives
  – Preliminary Findings

• Small Group Session
Where We Are
Connect 400 Alternatives Analysis Schedule

**DISCOVERY**
- Goals and Objectives
- Purpose and Need
- Existing Conditions

**DISCUSSION**
- Evaluation Methodology
- Definition of Alternatives
- Refine Ridership Model

**DEVELOPMENT**
- Evaluation of Alternatives
- Identify Locally Preferred Alternative
- Develop Financial Plan
- Develop Implementation Plan

**DOCUMENTATION**
- Final Alternatives Analysis Report

2011
- Winter

2012
- Spring
- Summer-Winter

2013
- Spring

We are Here
Summary of Community/Stakeholder Input

Alignments:
• GA 400 & SR 9 most appropriate for high capacity transit
• Need east-west transit service to enhance access & increase potential ridership
• Consider use of Encore Parkway to serve the west side of GA 400

Transit Technologies:
• HRT on SR 9 infeasible due to major ROW constraints & community impacts

Stations:
• Potential stations at Holcomb Bridge, North Point Mall, & Windward
  – No large park-and-ride at Holcomb Bridge
• Large park-and-ride is appropriate at the northern terminus
• Need park-and-ride lots along study area periphery

Other:
• Need improvements to the existing bus service
• Stay consistent with local & regional initiatives
Screening Process
Technical Screening Process

Fatal Flaw Analysis considers at a high level:
• Purpose & Need
• Constructability & right-of-way impacts
• Generalized Technology Assessment

Defined alternatives (combinations of alignment & transit technology) for Screen 1

Screen 1 applies both quantitative & qualitative evaluation criteria to reduce the number of alternatives
Smaller set of alternatives advance into Screen 2

Screen 2 involves a more in-depth analysis using additional performance measures
Screen 2 identifies the LPA

MARTA Board to adopt LPA
Overview of Fatal Flaw Analysis

Step 1: Technology Assessment

- Heavy Rail (HRT)
- Light Rail/Streetcar (LRT/SC)
- Automated Guideway Transit (AGT)
- Bus Rapid Transit (BRT)
- Bus
- Diesel Multiple Unit (DMU)
Overview of Fatal Flaw Analysis

Step 1: Technology Assessment

- Heavy Rail (HRT)
- Diesel Multiple Unit (DMU)
- Light Rail/Streetcar (LRT/SC)
- Automated Guideway Transit (AGT)
- Bus Rapid Transit (BRT)
- Bus
Overview of Fatal Flaw Analysis

Step 2: Universe of Alternatives

- 3 modes + 9 alignments / GA 400 & SR 9

- GA 400 – 1 (A, B, C, D)
- GA 400 – 3
- GA 400 – 6
- SR 9 – 1
- SR 9 – 2
- SR 9 – 3
Overview of Fatal Flaw Analysis

Step 1: Technology Assessment
- Independent review of 6 modes
- Most appropriate - Bus Rapid Transit (BRT); Light Rail/Streetcar (LRT/SC); Heavy Rail (HRT)

Step 2: Universe of Alternatives
- 3 modes + 9 alignments along GA 400 & SR 9

Step 3: Fatal Flaw Analysis
- Reduce ‘universe’ to a smaller set for Screen 1
- High-level based on purpose/need & constructability
# Fatal Flaw Analysis Matrix

<table>
<thead>
<tr>
<th>Corridor</th>
<th>Name</th>
<th>Alignment</th>
<th>Purpose and Need</th>
<th>Constructibility</th>
<th>Fatality</th>
<th>Alternatives Advancing to Screen 1</th>
<th>Rationale for Elimination and/or Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Technology</td>
<td>High Capacity Transit</td>
<td>Transit Access</td>
<td>Engineering Constraints/ Costs</td>
<td>Potential Community Impact</td>
</tr>
<tr>
<td>GA 400-1</td>
<td>North Springs MARTA Station - GA 400 - Windward Parkway</td>
<td>BRT</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>GA 400-2</td>
<td>North Springs MARTA Station - GA 400 - Mansell Road - North Point Parkway - Haynes Bridge Road - GA 400 - Windward Parkway</td>
<td>BRT</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>GA 400-3</td>
<td>North Springs MARTA Station - GA 400 - SR 140 - SR 9 - Mansell Road - North Point Parkway - Windward Parkway</td>
<td>BRT</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>GA 400-4</td>
<td>North Springs MARTA Station - GA 400 - SR 140</td>
<td>BRT</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>GA 400-5</td>
<td>North Springs MARTA Station - GA 400 - Mansell Road - North Point Parkway - Windward Parkway</td>
<td>BRT</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>GA 400-6</td>
<td>North Springs MARTA Station - GA 400 - SR 140 - SR 9 - Windward Parkway</td>
<td>BRT</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>SR 9-1</td>
<td>Sandy Springs MARTA Station - Mt Vernon Highway - Windward Parkway</td>
<td>BRT</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>SR 9-2</td>
<td>Dunwoody MARTA Station - Hammond Drive - SR 9 - Mansell Road - North Point Parkway - Windward Parkway</td>
<td>BRT</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>SR 9-3</td>
<td>Sandy Springs MARTA Station - Mt Vernon Highway - Chamblee Dunwoody Road - Pitts Road - SR 9 - Windward Parkway</td>
<td>BRT</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
</tbody>
</table>

**Rating Scheme**

- **High**: 2
- **Medium**: 1
- **Low**: 0

**Threshold Score**: 4

**Alternatives to move forward to Screen 1**
Fatal Flaw Analysis Recommendations
Screen 1 Analysis
Introduction/Overview of Screen 1

- Applicable qualitative & quantitative measures to address goals and objectives of AA
  - Mobility
  - Accessibility & Connectivity
  - Land Use & Development
  - Potential for TOD
  - Costs
  - Environmental Quality
  - Community Impacts

- Data & tools used
  - U.S. Census & ARC 2040 Socioeconomic Forecasts
  - Geographic Information System (GIS)
  - Adopted Local Land Use Plans
  - Order of Magnitude Transit Unit Costs
  - Department of Natural Resources
  - Fulton County Parcel Data
Screen 1 Alternatives
## Screen 1 Transit Technologies

### Transit Technologies Considered for Georgia 400*

<table>
<thead>
<tr>
<th>WHAT IS IT?</th>
<th>HEAVY RAIL</th>
<th>LIGHT RAIL/STREETCAR</th>
<th>BUS RAPID TRANSIT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High-speed rail cars powered by electric fixed guideway.</strong></td>
<td><strong>Rail cars powered by overhead catenaries.</strong></td>
<td><strong>Enhanced bus using technology to improve speed and reliability.</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WHERE DOES IT GO?</th>
<th>Typically used to travel to and from urban locations.</th>
<th>Typically used to travel to and from urban locations.</th>
<th>Typically used to travel to and from urban locations.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Corridor with concentrated urban centers</strong></td>
<td><strong>Corridor with concentrated urban centers and/or suburban centers</strong></td>
<td><strong>Corridor with dispersed suburban and urban centers</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WHAT IS CONTEXT? / HOW OFTEN DOES IT STOP?</th>
<th>800 - 1,400 passengers (8-car train)</th>
<th>200 - 500 passengers (single streetcar or 2-car light rail)</th>
<th>45 - 150 passengers</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>HOW FAST DOES IT GO? (AVERAGE SPEED)</th>
<th>35-50 mph</th>
<th>10 - 30 mph</th>
<th>5-15 mph</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>WHAT ARE THE BALLPARK CAPITAL COSTS? (MILLIONS/MILE)</th>
<th>$200-$600</th>
<th>$80-$300</th>
<th>$10-$120</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>WHAT DOES IT LOOK LIKE?</th>
<th><img src="image1.png" alt="Image" /></th>
<th><img src="image2.png" alt="Image" /></th>
<th><img src="image3.png" alt="Image" /></th>
</tr>
</thead>
</table>

| WHERE CAN I SEE IT? | Atlanta, Georgia; New York City, New York; Washington, D.C. | Phoenix, Arizona; Dallas, Texas; Charlotte, North Carolina; Portland, Oregon | Boston, Massachusetts; Cleveland, Ohio; Pittsburgh, Pennsylvania |

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* Other technologies considered included: diesel multiple unit, automated fixed guideway, and bus. These technologies were eliminated in the Fatal Flaw Analysis and outlined in the Technology Assessment Document (see website).  
** High-level estimates based on other cities and previous studies.
GA 400 – 1 (A, B, C, D)

• **Alignment:**
  – 11.9 to 12.7 miles long
  – North Springs Station - GA 400 - Windward

• **Mode:**
  – BRT
  – LRT/SC
  – HRT

• **Key Assumptions:**
  – Use of GDOT Transit ROW*
  – Most direct route
  – High construction costs
  – Fewer community impacts

*GDOT ROW availability on GA 400 to be determined based on Managed Lanes
GA 400 – 3

**Alignment:**
- 15.1 miles long
- North Springs Station - GA 400 - SR 140 - SR 9 - Mansell - North Point - Windward

**Mode:**
- BRT

**Key Assumptions:**
- Use of GDOT Transit ROW*
- Dedicated lanes where feasible on arterials
- Congestion on SR 140
- Grade issues on Mansell crossing GA 400

*GDOT ROW availability on GA 400 to be determined based on Managed Lanes
• **Alignment:**
  - 14.7 miles long
  - North Springs Station - GA 400 - SR 140 - SR 9 - Windward

• **Mode:**
  - BRT

• **Key Assumptions:**
  - Use of GDOT Transit ROW*
  - Dedicated lanes where feasible on arterials
  - Grade/Topography/ Roadway alignment & ROW issues on SR 9

*GDOT ROW availability on GA 400 to be determined based on Managed Lanes*
SR 9 – 2

• **Alignment:**
  – 19.6 miles long
  – Dunwoody Station - Hammond - SR 9 - Mansell - North Point Pkwy – Windward

• **Mode:**
  – BRT

• **Key Assumptions:**
  – Dedicated lanes where feasible on arterials
  – Grade/Topography/ Roadway alignment & ROW issues on SR 9
  – Consistent with proposed BRT on Hammond
Preliminary Screen 1 Findings
<table>
<thead>
<tr>
<th>Criteria</th>
<th>Measures</th>
<th>GA 400-1 (A-B-C-D)</th>
<th>GA 400-3 BRT</th>
<th>GA 400-6 BRT</th>
<th>SR 9-2 BRT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>HRT</td>
<td>LRT</td>
<td>BRT</td>
<td></td>
</tr>
<tr>
<td>Mobility</td>
<td>Impacts to roadway capacity</td>
<td>&gt; 1 mile</td>
<td>&gt; 1 mile</td>
<td>&gt; 1 mile</td>
<td>2 – 3 miles</td>
</tr>
<tr>
<td>Access &amp; Connectivity</td>
<td>Projected population, households, employment *</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Major activity centers *</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Low-income, minority, elderly and zero-car populations*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Interface with existing &amp; future transit service</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Land Use &amp; Development</td>
<td>Consistency with local and regional plans</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potential for TOD</td>
<td>Projected population and employment densities*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Transit-supportive future land uses and zoning*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Costs</td>
<td>Annual O&amp;M ($ million)</td>
<td>$15 – 20 M</td>
<td>$8 – 10 M</td>
<td>$4 – 6 M</td>
<td>$4 – 6 M</td>
</tr>
<tr>
<td></td>
<td>Construction Capital</td>
<td>~$1.9 B</td>
<td>~$2.0 B</td>
<td>~$35 M</td>
<td>~$36 M</td>
</tr>
<tr>
<td>Community Impacts</td>
<td>Potential community impacts</td>
<td>600-750 parcels</td>
<td>600-750 parcels</td>
<td>600-750 parcels</td>
<td>~ 700 parcels</td>
</tr>
<tr>
<td></td>
<td>300-400 acres</td>
<td>300-400 acres</td>
<td>300-400 acres</td>
<td>300-400 acres</td>
<td>~ 400 acres</td>
</tr>
</tbody>
</table>
What We Have Learned So Far…

- ROW along SR-9 will present cost and travel time challenges

- Alignments outside of GA 400 ROW may potentially impact more of the community

- Moderate potential impact to environmental features for all alignments

- HRT and LRT will have highest capital costs
Small Group Exercise

• Confirm Proposed Alignment Alternatives-add/delete/refine

• Identify Station Locations for Each Alternative

• List up to 3 opportunities/constraints associated with each station location
Moving Forward
Next Steps

• Incorporate PSC Input into Station Area Development

• Finalize Screen 1 Analysis

• Public Outreach - December
  – Present findings from Screen 1
  – Gain consensus on alternatives for Screen 2
  – Facebook updates and quiz
Connect 400

Question 1 / 7
What is the purpose for this project?

A. Improve Mobility and Access
B. Support Land Use and Economic Development Planning
C. Provide Cost-Effective Transit Service
D. Minimize Environmental Impacts
E. All of the above

Next
Connect 400 Contact

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