Why Is This Project Being Considered?

- Connect major activity centers
- Economic development
- Serve population and employment growth
- Improve transit service throughout the region
- Support UA growth and development
- Alternative to parking constraints
- Preserve neighborhoods
FTA Project Development Process

- **Phase 1 – Alternatives Analysis / Draft Environmental Impact Statement (AA/DEIS)**
- **Phase 2 – Final Environmental Impact Statement / Preliminary Engineering (FEIS/PE)**
- Final Design
- Construction
- Operation
Alternatives Evaluation

- **Tier 1 - Conceptual Screening**
  - Completed in April 2005
  - Analyzed a “long list” of transit alternatives
  - Eliminated alternatives that had fatal flaws

- **Tier 2 - Detailed Evaluation**
  - Analyzes “short list” of transit alternatives
  - Includes a schematic design evaluation that identifies plans/cross-sections, ROW, major utilities, transit stops, maintenance facility, bus service, and operating/capital costs
  - Identifies a recommended alternative
Evaluation Schedule

- **Evaluation Methodology**
  - November 2004

- **Tier 1 - Conceptual Screening**
  - January – April 2005

- **Tier 2 - Detailed Evaluation**
  - April – October 2005

- **Recommendation to Mayor and Council**
  - Fall 2005

- **LPA**
  - Winter 2005
Tier 1 - Technology Recommendations

- **Advance:**
  - Rapid Bus Circulator
  - Modern Streetcar

- **Do not advance:**
  - Historic Trolley*

- TAC and CLG approved this recommendation in March 2005

*Historic trolley will be considered for operation in conjunction with modern streetcar but will no longer be considered as a primary technology.*
Tier 1 - Alignment Recommendations

- **Advance:**
  - Segment A: Congress (two-way)
  - Segment B: University/2nd and 6th/Campbell

- **Do not advance:**
  - Segment A: Congress/Pennington
  - Segment B: Helen

- TAC and CLG approved this recommendation in March 2005
Tier 2 – Detailed Evaluation

- **Transit Alternatives**
  - Modern Streetcar A1/B1
  - Modern Streetcar A1/B2
  - Rapid Bus Circulator A1/B1
  - Rapid Bus Circulator A1/B2
Tier 2 Recommendation

Evaluation Results

<table>
<thead>
<tr>
<th>Rank</th>
<th>Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Modern Streetcar A1/B1</td>
</tr>
<tr>
<td>2</td>
<td>Rapid Bus Circulator A1/B1</td>
</tr>
<tr>
<td>3</td>
<td>Modern Streetcar A1/B2</td>
</tr>
<tr>
<td>4</td>
<td>Rapid Bus Circulator A1/B2</td>
</tr>
</tbody>
</table>
Tier 2 Evaluation Criteria

- Rider benefits
- Land use
- Traffic issues
- Economic development
- Populations served
- Environmental issues
- Design issues
- Costs (Capital and Operating)
Rider Benefits

- **Modeling of Alternatives**
  - Model and validate existing transit trips
  - **2004 On-Board Bus Survey:**
    - Transit operators (Sun Tran, Cat Tran, TICET)
    - Travel market (origins and destination)
    - Route level ridership volumes
    - Mode of access and time of day
  - Validation elements:
    - Bus route times
    - Bus boardings by route
    - Boardings / trip
Modeling Procedure

- New model being developed
- Incremental logit – alternative approach developed with FTA
- Uses trips from survey as the basis
- Forecasts future transit use based on service changes
- Project transit technology
Rider Benefits (cont.)

- Alternatives Evaluated with Model
  - No-Build
  - Transportation System Management (TSM)
  - A1/B1*
  - A1/B2*

*Model does not differentiate between technologies*
Rider Benefits (cont.)

- Future Growth
  - Households, employment, and daily person trips

<table>
<thead>
<tr>
<th></th>
<th>2005</th>
<th>2030</th>
<th>Difference</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Households</td>
<td>363,601</td>
<td>610,630</td>
<td>247,029</td>
<td>68%</td>
</tr>
<tr>
<td>Employment</td>
<td>389,678</td>
<td>688,699</td>
<td>299,021</td>
<td>77%</td>
</tr>
<tr>
<td>Daily Trips</td>
<td>370,3212</td>
<td>6,322,253</td>
<td>2,619,041</td>
<td>71%</td>
</tr>
<tr>
<td>Daily Trips with Transit Access</td>
<td>2,187,086</td>
<td>2,554,357</td>
<td>367,271</td>
<td>17%</td>
</tr>
<tr>
<td>% Trips with Transit Access</td>
<td>59%</td>
<td>40%</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
Rider Benefits (cont.)

**Ridership Results**
- A1/B1 has more boardings per mile than Route 8 (5.4 vs. 3.3)
- A1/B1 ridership is almost 40 percent higher than A1/B2
- Does not include special event, visitor, direct demand markets
- These ridership estimates do not have capacity constraints

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Daily Boardings</th>
<th>Daily Service Miles</th>
<th>Boardings/Mile</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1/B1</td>
<td>4,217</td>
<td>778</td>
<td>5.4</td>
</tr>
<tr>
<td>A1/B2</td>
<td>3,423</td>
<td>799</td>
<td>4.3</td>
</tr>
<tr>
<td>Route 8</td>
<td>9,289</td>
<td>2816</td>
<td>3.3</td>
</tr>
<tr>
<td>Route 4</td>
<td>5,247</td>
<td>1656</td>
<td>3.2</td>
</tr>
</tbody>
</table>
Rider Benefits (cont.)

Next Steps

• Phase II use of the newly calibrated PAG Model
• Full travel forecasting model will provide information on all modes of travel and travelers characteristics
• What if scenarios? (fare increases, decreased highway capacity, and land use intensification)
• FTA user benefits information
• Special events modeling
Traffic Issues

- **A1 (Downtown/Río Nuevo)**
  - Substantial peak hour delay on two-way Congress Street

- **B1 (University/2nd)**
  - Low volume streets; no major roadway capacity issues

- **B2 (6th/Campbell)**
  - Substantial peak hour delay on 6th Street and Campbell
  - 25% increase in delay per vehicle in westbound direction
  - Left turn restrictions on 6th Street and Campbell
Economic Development

Opportunities

- Technology travel times are similar, so recommendation related to economic development
- Modern streetcar takes advantage of increased foot traffic, reduced parking, and mixed use development
- Buses can suffer from negative stereotypes (16th Street Mall in Denver is an exception)
- Development related to Portland Streetcar:
  - $1.4 billion in private construction costs
  - 5,000 residential units; 3.7 million sq. ft. of non-residential

Modern streetcar documented to have more economic development potential
Environmental Issues

- No environmental “fatal flaws”
  - Minor property acquisitions for modern streetcar, including maintenance base
  - Almost entire study area is located within current or eligible National Register Historic Districts
  - Much of the study area is located within the 100 year floodplain
  - Noise and vibration analysis will be completed during the EIS
  - Maintenance facility sites likely contaminated given existing uses
Intangibles

- Modern Streetcar vs. Rapid Bus Circulator
  - User friendly
  - Creates new trips (Tacoma / San Francisco)
  - Heavily used for midday, entertainment, and special events
  - Fosters economic development
  - More sustainable operation
Costs

- Capital Costs
  - Modern streetcar is higher because it requires track and power infrastructure and utility relocation
  - Modern streetcar uses OPT infrastructure for cost savings

<table>
<thead>
<tr>
<th>Transit Alternative</th>
<th>Total Capital Cost (2005 dollars in millions)</th>
<th>Total Length (Miles)</th>
<th>Cost Per Mile (in millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modern Streetcar A1/B1</td>
<td>$89.2</td>
<td>3.61</td>
<td>$24.7</td>
</tr>
<tr>
<td>Modern Streetcar A1/B2</td>
<td>$92.7</td>
<td>3.40</td>
<td>$27.3</td>
</tr>
<tr>
<td>Rapid Bus Circulator A1/B1</td>
<td>$28.4</td>
<td>3.61</td>
<td>$7.9</td>
</tr>
<tr>
<td>Rapid Bus Circulator A1/B2</td>
<td>$28.9</td>
<td>3.40</td>
<td>$8.5</td>
</tr>
</tbody>
</table>
Costs (cont.)

- Operation and Maintenance (O&M) Costs
  - Frequency: 10 minutes peak / 20 minutes off-peak
  - Hours of operation: 5 a.m. to 1 a.m. (Peak 6 a.m. to 6 p.m.)
  - O&M cost estimates do not include potential farebox recovery

<table>
<thead>
<tr>
<th>Transit Alternative</th>
<th>First-Year O&amp;M Costs (in millions)</th>
<th>20-Year O&amp;M Costs (in millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modern Streetcar A1/B1</td>
<td>$3.3</td>
<td>$66.0</td>
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<tr>
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<td>$3.3</td>
<td>$66.0</td>
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<td>$1.3</td>
<td>$2.5</td>
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<td>$1.2</td>
<td>$2.4</td>
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Tier 2 Evaluation Results

- **Modern Streetcar A1/B1 (2nd/University)**
  - **Pro**
    - Highest ridership potential
    - Most people carrying capacity
    - Better access to UA and 4th Avenue
    - Least impact on traffic of modern streetcar alternatives
    - Lower operating cost over the long term
    - Greatest economic development potential
    - Integrates well with Sun Tran
    - Enhances Old Pueblo Trolley
  - **Con**
    - Higher operating cost in the short term
    - Second highest capital cost
Tier 2 Evaluation Results (cont.)

  - **Pro**
    - Most people carrying capacity
    - Lower operating cost over the long term
    - Enhances Old Pueblo Trolley
  - **Con**
    - Lowest ridership
    - Impacts on 6th Street and Campbell Avenue
    - Highest capital cost
    - Misses major activity centers (Main Gate, central UA campus)
    - No central UA transfer point
Tier 2 Evaluation Results (cont.)

  - **Pro**
    - Highest ridership
    - Lowest capital cost
    - Better access to UA and 4th Avenue
    - Least impact on traffic
    - Integrates well with Sun Tran
  - **Con**
    - Less people carrying capacity
    - Higher operating cost in the long term
    - Less economic development potential
    - No enhancement to Old Pueblo Trolley
**Tier 2 Evaluation Results (cont.)**

- **Rapid Bus Circulator A1/B2 (6\textsuperscript{th}/Campbell)**
  - **Pro**
    - Second lowest capital cost
  - **Con**
    - Lowest ridership
    - Impacts on 6\textsuperscript{th} Street and Campbell Avenue
    - Misses Main Gate and UA
    - No central UA transfer point
    - Less people carrying capacity
    - Higher operating cost in the long term
    - Lowest economic development potential
    - No enhancement to Old Pueblo Trolley
## Tier 2 Recommendation

### Evaluation Results

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Next Steps

- Feedback from TAC and CLG
- Incorporate comments into Tier 2 Report
- Present the recommended alternative to Mayor and Council