Metro Green Line to LAX / “Airport Metro Connector” Alternatives Analysis

April 2012
Airport Metro Connector
Overview

• Crenshaw/LAX Project:
  ➢ Extends Metro Rail to Aviation and Century Boulevards
  ➢ Provides foundation for connection to LAX

• Metro Green Line to LAX Project:
  ➢ Goal – connect regional transit network to LAX
  ➢ Long Range Transportation Plan
    • Metro funding: $200 M (2008$)
    • Opening Year: 2028, dependent upon airport contribution
  ➢ America Fast Forward: 2018 opening
Types of Connections

Direct Light Rail Transit (LRT) Branch
- Metro goes to the airport
- Metro Green Line direct connection

Circulator
- Airport (Circulator) goes to Metro
- New transit system tailored to address the airport’s unique travel demands/operating environment

Intermediate LRT and Circulator
- Metro (LRT) and Airport (Circulator) meet in the middle

Modified LRT Trunk
- Metro goes through the airport
- Direct connection for Metro Green & Crenshaw/LAX lines
- Crenshaw/LAX line will be built as currently planned and environmentally cleared
Modes

Light Rail Transit (LRT)

Automated People Mover (APM)

Bus Rapid Transit (BRT) (Elevated Busway)
Alignments

On-Airport (in terminal area)
Two-Stage Screening Process

Initial Connection Concepts

- Direct LRT Branch
  - Mode + Alignments

- Circulator
  - Mode + Alignments

- Intermediate LRT & Circulator
  - Mode + Alignments

- Modified LRT Trunk
  - Mode + Alignments

Stage I Screening
Emphasis on Feasibility

Screened Alternatives (27)

- Alternative
- Alternative
- Alternative

Stage II Screening
Emphasis on Performance

Alternatives Carried into EIS/EIR
Additional Funding Needs to be Identified

- Build Alternative
- Build Alternative
## Trade-offs

### Passenger Convenience

<table>
<thead>
<tr>
<th>Alternative Connection Types</th>
<th>Number of Transfers</th>
<th>Vertical Level Changes</th>
<th>Average Travel Time Saved (min)</th>
<th>Airport Transit Riders per Day</th>
<th>Capital Cost (M) ($200M is available)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct LRT Branch</td>
<td>0-1</td>
<td>2-4</td>
<td>11</td>
<td>4,900-5,400</td>
<td>$540 - $1,160</td>
</tr>
<tr>
<td>Circulator (APM/BRT)</td>
<td>1</td>
<td>1-4</td>
<td>9</td>
<td>4,600-5,100</td>
<td>$624-$1,250 (APM)</td>
</tr>
<tr>
<td>Intermediate LRT &amp; Circulator</td>
<td>1-2</td>
<td>4-6</td>
<td>7</td>
<td>3,600-4,300</td>
<td>$680-$1,370 (APM)</td>
</tr>
<tr>
<td>Modified LRT Trunk</td>
<td>0-1</td>
<td>2-4</td>
<td>16</td>
<td>4,700-6,100</td>
<td>$940-$1,460</td>
</tr>
</tbody>
</table>

- Intermediate LRT & Circulator: Average travel time saved/added dependent on station location.
## Trade-offs

**Direct LRT Branch vs. Through LAX**

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Average Travel Time* (minutes)</th>
<th>Ridership (Transit Riders per Day)</th>
<th>Capital Cost ($M) ($200M is available)</th>
<th>Constructability Issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct LRT Branch</td>
<td>29-30</td>
<td>5,300-5,400</td>
<td>$540-$1,160</td>
<td></td>
</tr>
<tr>
<td>Through LAX</td>
<td>25</td>
<td>6,100</td>
<td>$940-$1,130</td>
<td></td>
</tr>
</tbody>
</table>

*Average from Norwalk, Expo, and South Bay
## Trade-offs
### Alignments in the Airport Terminal Area

<table>
<thead>
<tr>
<th>On-Airport Options</th>
<th>Capital Cost ($M) ($200M is available)</th>
<th>Average Total Travel Time to Terminal (min)</th>
<th>Average Walk Dist. to Terminal (feet)</th>
<th>Potential Visual Impacts to Theme Building</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aerial (Rail)</td>
<td>$620-$740</td>
<td>32.2</td>
<td>820</td>
<td><img src="image" alt="Camera" /></td>
</tr>
<tr>
<td>Tunnel (Rail)</td>
<td>$1,040-$1,250</td>
<td>31.5</td>
<td>820</td>
<td><img src="image" alt="Camera" /></td>
</tr>
<tr>
<td>Aerial (Rail)</td>
<td>$1,060-$1,270</td>
<td>31.2</td>
<td>600</td>
<td><img src="image" alt="Camera" /></td>
</tr>
<tr>
<td>At-Grade (BRT)</td>
<td>$110-$130</td>
<td>34.3</td>
<td>200</td>
<td><img src="image" alt="Camera" /></td>
</tr>
</tbody>
</table>

Add 5-10 minutes under severe traffic congestion
## Trade-offs

### Century Boulevard vs. 98th Street

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Average Number of Vertical Level Changes</th>
<th>Average Travel Time (minutes)</th>
<th>Capital Cost (millions)</th>
<th>Potential Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>98th St</td>
<td>2</td>
<td>29-30</td>
<td>540-1,160</td>
<td>Visual, Traffic/Access</td>
</tr>
<tr>
<td>Century Blvd</td>
<td>3.3</td>
<td>31-32</td>
<td>470-1,080</td>
<td></td>
</tr>
<tr>
<td>Direct LRT Branch</td>
<td>4</td>
<td>31-32</td>
<td>620-1,270</td>
<td></td>
</tr>
<tr>
<td>Circulator</td>
<td>4</td>
<td>29-30</td>
<td>600-1,240</td>
<td></td>
</tr>
</tbody>
</table>

Average from Norwalk, Expo, and South Bay.
Community Outreach – Summary

• In general, stakeholders preferred:
  ➢ Fewer transfers to the terminals
  ➢ More reliable travel times
  ➢ Connection for both the Metro Green and Crenshaw/LAX lines

• Alternatives eliminated from further analysis included:
  ➢ Most number of transfers
  ➢ Least amount of travel time savings
  ➢ Lowest ridership
  ➢ Potential environmental impacts
Four Alternatives to be Evaluated in Draft EIS/EIR

Direct LRT Branch
- Extends Metro Green Line to LAX Terminals
- Two or Three stations in Terminal area
- Capital Cost Estimate: $540-$1,160 million
- Average Travel Time: 29 min
- Ridership: up to 15,400 daily riders

Modified LRT Trunk (Through LAX)
- Both Metro Green and Crenshaw/LAX Lines serve the LAX Terminals
- One station in Terminal area
- Capital Cost Estimate: $940-$1,130 million
- Average Travel Time: 25 min
- Ridership: up to 16,100 daily riders
Four Alternatives to be Evaluated inDraft
EIS/EIR (Continued)

Circulator (APM)

- Metro Rail passengers transfer to APM system at Aviation/Century station
- 2 or 3 stations in the Terminal area
- Capital Cost Estimate: $620-$1,270 million
- Average Travel Time: 32 min
- Ridership: up to 14,700 daily riders

Circulator (BRT)

- Metro Rail passengers transfer to BRT system at Aviation/Century station
- BRT would use existing airport loop roadway with 8 stops in the Terminal area
- Capital Cost Estimate: $110-$130 million
- Average Travel Time: 34 min (+ 5-10 min with severe congestion)
- Ridership: up to 15,000 daily riders
## Preliminary Ridership & Capital Cost Estimates - Summary

<table>
<thead>
<tr>
<th>Alternative Connection Types</th>
<th>Airport Transit Riders per Day*</th>
<th>Capital Cost ($M) ($200M is available)</th>
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<tbody>
<tr>
<td>Direct LRT Branch</td>
<td>15,400</td>
<td>$540 - $1,160**</td>
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<tr>
<td>Circulator (APM)</td>
<td>14,700</td>
<td>$620-$1,270**</td>
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<tr>
<td>Circulator (BRT)</td>
<td>15,000</td>
<td>$110-$130</td>
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<tr>
<td>Modified LRT Trunk (Through LAX)</td>
<td>16,100</td>
<td>$940-$1,130</td>
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* Includes up to 10,000 airport park and ride passengers

**2-station aerial configuration in terminals is lowest cost option; 3-station aerial loop and 2-station tunnel are higher cost options (2010 dollars)
Parallel Planning Efforts: SPAS (updates Airport Master Plan) and Metro Green Line to LAX

**Specific Plan Amendment Study (SPAS)**
- Sponsor: LAWA
- Environmental review focused on airport-wide improvements
- Focus: support modernization of LAX and accommodate nearly 79 million annual airline passengers
- Provide solutions to concerns about certain LAX Master Plan projects
- Projects under study:
  - Construct Bus Rapid Transit (BRT) or Automated People Mover (APM) system
  - Terminal, runway, and taxiway improvements
- Completion of Draft EIR expected 2012; Final EIR expected 2013

**Metro Green Line to LAX**
- Sponsor: Metro
- Measure R funded project: $200 M ($2008)
- Focus: connect regional transit network to LAX
- Modes considered:
  - Bus Rapid Transit (BRT)
  - Light Rail Transit (LRT)
  - Automated People Mover (APM)
- Completion of Draft EIS/EIR expected 2013; Final EIS/EIR expected 2014

**Common Goal:** Connect regional travelers to LAX

**Collaboration**
LAX Master Plan
Ground Transportation Projects

LAX Master Plan (Alternative D)

“Yellow Light” Ground Transportation Projects

GTC-CTA Peoplemover (APM2) requires further analysis in SPAS
LAX Master Plan
Ground Transportation Projects

“Green Light” Projects Related to Ground Transportation

ITC-RAC-CTA Peoplemover (APM1)
does not require further analysis in SPAS
Next Steps

- Coordinate with:
  - LAWA
    - Roles and responsibilities
    - Potential funding contribution for environmental
  - FTA and FAA
    - Initiate environmental process
- Public Scoping Meetings (Late Spring 2012)