California High Speed Rail Modeling
Experiences and Lessons Learned

presented to
Florida Model Task Force – Transit and Rail Committee

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Presentation Overview

- Project Background
- CA HSR Ridership & Revenue Model
- Lessons Learned
Timeline – Overall Project

Pre-2000 Efforts
- CRA develops first CA HSR R&R model (1994)
- CRA develops revised HSR R&R model (1999)

2000-2004
- Business Plan (2000)
- Ridership & revenue forecasts using 1999 R&R model

2005-2008
- Bay Area to Central Valley Programmatic EIR (2006-2008)
Timeline – Overall Project

2008 and beyond

- Ridership, growth & transportation in support of regional teams (2008-present)
- Business Plan and updates (2008 and 2009)
- Model enhancements & risk analysis
## Timeline – Model Development (2005-2007)

<table>
<thead>
<tr>
<th>Task Description</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
</tr>
<tr>
<td>1 Work Program</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Model System Design</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Data Collection</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 Model System Development</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 Network Alternatives</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 Network Coding</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 Ridership &amp; Revenue Forecasting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 Final Report</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 Users' Guide &amp; Training Materials</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Peer Review Meetings</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>
Key Deliverables

- **Peer Reviews**
  - First meeting
    - 2a – July 2005
  - Second Meeting
    - 2b – July 2006
  - Third Meeting
    - 2c – September 2007

- **Model Development**
  - 5a – August 2006
Key Deliverables (continued)

- Ridership & Revenue Forecasts
  - 8a – August 2007

- Final Report
  - 9a – July 2007

- Users’ Guide
  - 10a – September 2007
Overview

- **Forecast:**
  - Inter-regional trips within California
  - Intra-regional trips in largest urban areas
  - Background intra-regional trips in other urban areas
  - Induced travel for inter-regional trips
Integrated Modeling Process

- Merge urban and interregional trips
- Peak and off-peak time periods
- Feedback

Urban Models

1. Trip Generation
2. Trip Distribution
3. Mode Choice
4. Trip Assignment
5. Travel Times

Interregional Models

1. Trip Frequency
2. Destination Choice
3. Mode Choice
4. Travel Times
Travel Surveys
PERFORMED FOR STUDY

- Passenger surveys
  - Revealed & stated preference
  - Components
    - Air intercept (1,234)
    - Rail intercept (431)
    - Auto household (1,508)
  - Completed
    - 3,173 complete surveys
    - 2,678 geocoded
  - Four SP exercises per survey

EXISTING DATA

- Urban Area Household Travel Surveys from MPOs (revealed preference)
  - SCAG (343)
  - MTC (723)
  - SACOG (318)
  - 1,384 revealed preference

- Caltrans Household Travel Survey
  - 2,820 revealed preference

TOTAL AVAILABLE SURVEYS: 6,882 with geocoding
Networks

Highway

Rail

Local Transit

Air
Interregional Model Structure

No Trips | One Trip | Two-Plus Trips

Trio Frequency/Day
- Origin Zone
- Household Type
- Purpose/Distance Class
- Party Size (For Long Distance)
- Origin Type (For Short Distance)

Destination Choice
- Origin Zone
- Household Type
- Purpose/Distance Class
- Party Size (For Long Distance)

Main Mode Choice
- Origin Zone
- Household Type
- Purpose/Distance Class
- Party Size (For Long Distance)
- Destination Zone

Access Mode Choice
- Origin Zone
- Household Type
- Purpose/Distance Class
- Party Size (For Long Distance)
- Destination Zone
- Main Mode (Rail/HSR/Air)

Egress Mode Choice
- Origin Zone
- Household Type
- Purpose/Distance Class
- Party Size (For Long Distance)
- Destination Zone
- Main Mode (Rail/HSR/Air)
Door to Door Travel Times – Example
South San Francisco to Central LA

Travel Time Components – Door to Door

- **Auto**
  - Access Origin to Station: 0 min
  - Terminal Curb to Waiting Area: 270 min
  - Wait Board Vehicle: 10 min
  - Line-Haul In-Vehicle: 20 min
  - Terminal Seat to Curb: 8 min
  - Egress Station to Destination: 20 min
  - Total: 410 min
  - Cost: $84.00

- **HSR**
  - Access Origin to Station: 0 min
  - Terminal Curb to Waiting Area: 10 min
  - Wait Board Vehicle: 20 min
  - Line-Haul In-Vehicle: 10 min
  - Terminal Seat to Curb: 40 min
  - Egress Station to Destination: 50 min
  - Total: 270 min
  - Cost: $54.00

- **Air**
  - Access Origin to Station: 0 min
  - Terminal Curb to Waiting Area: 20 min
  - Wait Board Vehicle: 10 min
  - Line-Haul In-Vehicle: 20 min
  - Terminal Seat to Curb: 40 min
  - Egress Station to Destination: 20 min
  - Total: 236 min
  - Cost: $139.00
2030 Mode Shares
Selected Regions

- LA - San Diego
- SF - Sacramento
- SF - San Joaquin
- LA - San Joaquin
- LA - SF

Air  Conv. Rail  HSR  Auto
Lessons Learned

- Good Models & Forecasts Take Time

- Don’t Scrimp…
  - …on data collection
  - …on model development
  - …on applications
  - …on documentation

- Quality Peer Review
  - Establish early
  - Provide a clear charge
  - Document recommendations and responses