Rocky Mountain Rail Authority (RMRA)

High-Speed Rail Feasibility Study

Denver Metro Input Team Scoping Meeting

DRCOG Offices in Denver

September 10, 2008
Rocky Mountain Rail Authority (RMRA)

High-Speed Rail Feasibility Study

I-25 Corridor Input Team Scoping Meeting

Mountain Metropolitan Transit in Colorado Springs & North Front Range MPO in Fort Collins

September 16, 2008
Agenda

- Introductions
- Roles Responsibilities
- RMRA Overview
- Feasibility Study Overview
  - Study Overview
  - Technologies
  - Alignments
- Discuss Opportunities & Constraints
- Next Steps
RMRA representatives
Study team representatives
Corridor Input Team representatives
Multi-jurisdictional government body formed in 2007

Created to determine viability of high-speed passenger rail in Colorado

46 member counties, municipalities and other organizations
- Board and Executive Committee
- Rail Feasibility Study Steering Committee

Funded by CDOT SB-1 Transit Grant and memberships
Role of the Corridor Input Teams

- Cities, Counties, MPOs, TPRs, Transit/Transportation Agencies
- Elected Officials / Senior Staff
- Provide Policy/Technical Input at Key Milestones
  - September `08: Study Kick-Off / Scoping
  - November `08: Alternatives Selection
  - February `09: Alternatives Analysis
- Represent Local Constituencies
- Share Study Information w/ Local Constituencies
- Individual Collaboration as Appropriate
Input & Decision Making Process

RMRA
BOARD OF DIRECTORS

RMRA FEASIBILITY STUDY
STEERING COMMITTEE

PMC
PBS&J

STUDY TEAM
TEMS/Quandel Team

CORRIDOR
INPUT TEAMS
I-25 Corridor
I-70 Corridor
Denver Metro Area

GENERAL PUBLIC
Community Partnership Program
Web Site / Email
Community Meetings
The purpose of the study is to determine the technical, financial and economic feasibility of implementing high-speed intercity passenger rail service in the I-25 Corridor, I-70 Corridor and secondary corridors along I-70.

FRA and public-private partnership potential will depend on positive cost-benefit and operating ratios.
# Feasibility Study vs. NEPA Study

<table>
<thead>
<tr>
<th></th>
<th>Feasibility Study</th>
<th>NEPA Study (e.g. EIS)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Alignments</strong></td>
<td>Identify representative and feasible alignment(s)</td>
<td>Preliminary engineering of alignments, structures, etc.</td>
</tr>
<tr>
<td><strong>Stations</strong></td>
<td>Potential station locations generally identified (e.g. within a community)</td>
<td>Station locations and footprints selected</td>
</tr>
<tr>
<td><strong>Alternatives</strong></td>
<td>Reasonable alternatives considered for each technology to determine if “a feasible alternative exists”</td>
<td>Full range of alternatives considered to select and gain environmental approval for one “Preferred Alternative”</td>
</tr>
<tr>
<td><strong>Environmental Impacts</strong></td>
<td>Obvious “fatal flaw issues” are considered</td>
<td>Analysis of environmental resources to identify likely impacts and proposed mitigations (where appropriate) for a project.</td>
</tr>
<tr>
<td><strong>Noise, Traffic, Parks/ Open Space</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cost</strong></td>
<td>Typical unit costs and quantities for major elements used to estimate order of magnitude project costs</td>
<td>Cost estimate based on quantities developed during the preliminary engineering</td>
</tr>
<tr>
<td><strong>Financing &amp; Economics</strong></td>
<td>Preliminary financing option developed for preferred technology/technologies</td>
<td>Final financing plan developed for “Preferred Alternative”</td>
</tr>
</tbody>
</table>
The Study will Include

- Full market assessment including stated-preference survey and investment-grade ridership and revenue forecasts
- Evaluation of full range of high-speed rail technologies
- Assessment of potential alignments to identify those capable of supporting high-speed rail operation
  - Potential station location options
- Development of a business and implementation plan
  - Cost-benefit and operating ratios
  - Detailed financial and economic analysis
- Pro-Forma Financials
  - Expected levels of federal, state, local and private financial support
- Potential economic benefits to local communities, regions and the state
- Recommended next steps
Study Schedule

**Scoping (July-Sep `08)**
- Introduce the study and its purpose
- Gather input on local needs, concerns and desires
- Gather existing data (from MPOs, railroads, CDOT, local plans, etc.)

**Alternatives Selection (Oct-Nov `08)**
- Determine technology and route alternatives to be evaluated
- Gather data on the proposed technology and route alternatives
- Develop market database (o/d data, travel flows, socioeconomic data, stated preference surveys)
- Introduce and gather input on proposed alternatives

**Alternatives Analysis (Dec `08-June `09)**
- Identify most feasible alternative(s) (alignments, stations, cost-benefit ratios, operating ratios, potential economic/community benefits, etc.)
- Select most feasible alternative(s) and identify next steps
- Develop business and implementation plan
If a Feasible Alternative is Found

- Submit to Federal Railroad Administration for designation as nation’s 11th high-speed rail corridor
- Conduct necessary environmental studies (e.g. Environmental Impact Statement)
Study Questions & Comments
<table>
<thead>
<tr>
<th>Type</th>
<th>Power Source</th>
<th>Maximum Operating Speeds*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conventional Rail</td>
<td>Electric or Diesel</td>
<td>&lt;79 mph</td>
</tr>
<tr>
<td>High-Speed Rail</td>
<td>Electric or Diesel</td>
<td>110 – 130 mph</td>
</tr>
<tr>
<td>Very High-Speed Rail</td>
<td>Electric</td>
<td>150 – 185 mph</td>
</tr>
<tr>
<td>Ultra High-Speed</td>
<td>Electric</td>
<td>&gt;250 mph</td>
</tr>
</tbody>
</table>

* Actual operating speeds would vary depending on community sensitivities, topography and other factors. Particularly in densely populated and other sensitive areas, actual operating speeds would be much lower than these speeds.
Vehicle Technology Examples

Conventional Rail
Max Speeds: <79 mph
Example: Conventional Amtrak

High-Speed Rail
Max Speeds: 110-130 mph
Example: Talgo T21
Vehicle Technology Categories

**Very High-Speed Rail**
Max Speeds: 150-185 mph
Example: Siemens ICE

**Ultra High-Speed Rail**
Max Speeds: >250 mph
Example: Transrapid Maglev
Key Technology Considerations

- **Physical/Performance**
  - Maximum grade, speed and tilt capabilities
  - Acceleration and braking
  - Operational reliability and in-service history

- **General**
  - Weight, size, seating capacity
  - Light freight and baggage capabilities
  - Emergency evacuation safety procedures

- **Economic**
  - Staffing (train crew size & duties, station staff size & roles)
  - Operating, maintenance and capital costs
  - Regulatory approvals
Technology
Questions & Comments
Key Alignment Considerations

- **I-70 Corridor**
  - Grades and curves (speed vs. cost)
  - Do not assume I-70 widening
  - Environmental sensitivities
  - Local plans/needs/desires

- **I-25 Corridor**
  - Constraints on existing rail alignment (pending Rail Relocation Study)
  - New “greenway” alignment not dependent on freight rail relocation but very costly
  - Local plans/needs/desires

- **Denver Metro Area**
  - Connection and coordination with DIA and FasTracks
  - Local plans/needs/desires
  - Distinction between local and intercity service
Alignment

Questions & Comments
NOTE TO REVIEWERS…

- The following slides will be pre-written on butcher sheets of paper and used at the appropriate meeting.
- We will review these “what we know” information with meeting participants and engage them in a discussion to help clarify and expand upon these issues.
- My hope is that you can review these and add to them with add’l opportunities and constraints
Denver Metro Area
Opportunities & Constraints

- Integration with Denver International Airport
- Coordination/integration with FasTracks (RTD supportive of intermodal/intercity opportunities)
- Supportive or conflicting local land-use plans
- Alignment options in a mostly built-out metropolitan area
- Station options (DIA, Central Business District, “parkway” stations)
- Likely confusion between desires for local transit options and goals/objectives of intercity rail.
I-70 Corridor
Opportunities & Constraints

- I-70 Coalition Land-Use Planning Study
  - Advanced consideration of rail in the corridor
  - Initial identification of potential station locations

- Steep mountain grades will be greatest challenge
  - Technology
  - Alignment
  - Stations
  - Cost

- Environmental and recreational sensitivities

- Avoid, but not preclude, improvements to I-70

- Likely confusion between desires for local transit improvements and goals/objectives of intercity rail.
Existing freight rail operations in this corridor are viable

- Use of existing freight railroad alignments will be dependent on successful relocation of freight lines and would require significant coordination with freight railroads
- A “greenfield alignment(s)” would have much higher cost than upgrading existing lines and require significant coordination with freight railroads, CDOT local municipalities and private property owners

Limited local planning for potential intercity rail stations. No regional planning

Likely confusion between desires for local transit improvements and goals/objectives of intercity rail.

Potential integration with intercity rail in Wyoming and/or New Mexico