The Rocky Mountain Rail Authority’s Mission is to complete a high speed rail feasibility study for Colorado.

Additionally, RMRA is seeking the Federal Railroad Administration 11th High Speed Rail Corridor Designation for the Rocky Mountain Corridor.
Rocky Mountain Rail Authority

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
Rocky Mountain Rail Authority
Member Jurisdictions (46)

**Counties:**

**Towns and Cities:**

**Districts and Authorities**
RFTA
Pikes Peak Transportation Authority
RTD
Rail Feasibility Study Steering Committee

Diane Mitsch Bush  Routt County Commissioner
Wayne Williams  PPRTA & El Paso County Commissioner
Art Bobian  Huerfano County Commissioner
Harry Dale  Clear Creek County Commissioner
Doug Lehnen  Castle Rock Town Council
Mac Callison  Transportation Planner Aurora
Pete Morlan  Trinidad City Council
Thad Noll  I-70 Coalition & Summit County Assistant Manager
Gregg Hall  I-70 Coalition & Vail Public Works Director
Kirk Strand  RTD Team Leader/Sr. Civil Engineer, Trackwork
Janice Finch  Denver Public Works
Terence Quinn  Douglas County Public Works
Tom Mauser  CDOT Modal Programs Manager
Sandi C. Kohrs  CDOT Multimodal Planning Branch Manager
Bill Moore  PACOG MPO Administrator
George Scheuernstuhl  Consultant to DRCOG
David Averill  NFRMPO Multi-Modal Planner
Greg Schroeder  Eagle County Senior Project Engineer
Gene Putnam  City of Thornton Transportation Planning Manager
Charles Choi  RTD Citizens Advisory Committee
Richard Morton  Castle Rock Planner
Dave Mentor  Colorado Springs Transportation Planning Supervisor
Bernie Zimmer  President Colorado Rail Association
Flo Raitano  Executive Director I-70 Coalition
Will Kearns  Transportation Planner Jefferson County
Dave Evans  Bike Jeffco
Tracey McCoy  Town of Timnath Assistant Manager
$1.246 Million Funding for the study provided through CDOT SB97-01 Transit Program

$311,500 Local Match provided by RMRA Member Jurisdictions for Study Consultant and Study Project Management

$206,000 provided by RMRA Member Jurisdictions for RFP Preparation and Organizational and Administrative Expenses over 3 Year Period (2007 -2009)
After the high speed rail feasibility study is completed, the RMRA Board will evaluate the study findings and based on those findings, consider the appropriate course of action for the RMRA organization.

Those actions could include participation in “Next Step” Studies, the pursuit of a passenger rail operating entity and/or the funding source to advance passenger rail service throughout Colorado.
WHY RAIL?

- Potentially, The Most Energy Efficient & Environmentally Friendly (Green) Transportation Alternative

- Provides Diversity in Colorado’s Transportation Investment

- Provides Colorado’s Residents and Visitors with an additional Travel Choice and Alternative to Driving

- Provides a Travel Option to Better Prepare Colorado for Future Uncertainties such as Peak Oil, GCC and Changing Demographics
Relative Energy Efficiencies

Number of Miles One Ton can be Transported per One Gallon of Fuel

- 59 Miles by Truck
- 202 Miles by Rail
- 514 Miles by Inland Barge
Governor Ritter’s Climate Action Plan

- Greenhouse Gas Emission Reduction of 20 Percent by 2020

- Greenhouse Gas Emission Reduction of 80 Percent by 2050
RMRA

Potential Passenger Rail Corridors to be studied
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.
<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> (e.g. noise, traffic, parks/open space)</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>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>
Study Objectives that will be met

FRA Public/Private Partnership Potential –

- POSITIVE OPERATING RATIO
- POSITIVE COST BENEFIT RATIO

This requires an assessment of six criteria –

- Identification of proposed corridors that have existing rail lines where railroad speeds of 90 miles or more per hour currently occur or can be expected to occur in the future.
- Projected ridership associated with the proposed corridors.
- Percentage of the corridors over which trains will be able to operate at maximum cruise speed, taking into account factors such as topography and other traffic on the line.
- Projected benefits to non-riders, such as congestion relief on other modes of transportation servicing the corridors.
- Amount of federal, State and local financial support that can reasonably be anticipated for the improvement of the line and related facilities.
- Cooperation from right-of-way (ROW) owners that can be expected in the operation of the high-speed rail passenger service in the proposed corridors.
• 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
- **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
Scoping / Outreach

- 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
Scoping / Outreach

Business Plan Step 1: Database Development

- **Scoping Goal:**
  Obtain input/support for study goals, Purpose & Need and evaluation criteria

- **Three Scoping Workshops**
  - I-70 Coalition County Based Input Team *(Held September 11)*
  - I-25 County Based Input Team *(Held September 16)*
  - Denver Metro Area Sub-Team *(Held September 10)*

- **Media Relations**

- **Community Partnership Program Outreach**
Scoping / Outreach Deliverables

• Stakeholder Outreach Approach Technical Memorandum

• Scoping Technical Report
October 2008: Deliverables

• **Methodology Technical Report**
  including outreach, ridership and revenue forecasting, cost estimating, alternatives development, and alternatives analysis

• **Existing Conditions Technical Report**
  including opportunity to upgrade existing track to accommodate high speed passenger rail service
February 2009: Deliverables

Alternatives Development Workshop (October 30, 2008)

- The TEMS Team will lead alternatives development workshops for each primary corridor with the RMRA board, to reach consensus on the range of alternatives to be carried into alternatives evaluation.

Peer Review Panel Evaluation of Selected Alternatives

- Following the Alternatives Development Workshop, the Peer Review Panel will be convened to review and evaluate the alternatives.

Alternatives Development Technical Report
June 2009: Deliverables

- Ridership and Revenue Forecasts technical report
- Alternatives Analysis technical report (to include technology, operating, and cost assumptions)
Final Evaluation and Recommendation

Will identify an optimum high speed rail system alternative(s), with a clear rationale for the elimination of screened alternatives, and prepare a final evaluation of the feasibility of those system(s).
July 2009:

Documentation/Deliverables

Business Plan Step 6: Implementation and Business Plan

For the selected alternative(s):

• Implementation plan
• Business plan
Vehicle Technology Categories
<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.*
Conventional Rail
Max Speeds: <79 mph
Example: Conventional Amtrak

High-Speed Rail
Max Speeds: 110-130 mph
Example: Talgo T21
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
General Description Data

1. Vehicle Weight and Size
2. Parcel/Baggage Compartment Size
3. Seating Capacity and Configuration
5. Ability to Move Between Cars
6. Ability to Provide Food Service
7. Emergency Evacuation Safety Procedures
8. Propulsion Power Characteristics
9. Station Design and Configuration
Physical Characteristics Data

1. Maximum Gradient capability
2. Maximum Speed capability
3. Acceleration and Braking Curves as a function of gradient
4. Maximum Curve Superelevation
5. Power/Fuel consumption as a function of speed, gradient and load
6. Guideway Strength, Load Bearing and Geometric Alignment Requirements
   - Are these consistent with the design specifications and cost projections for the guide way?
7. Operational Reliability – In Service History
Economic Characteristics Data

1. Staffing
   - Train Crew Size and Duties
   - Dispatch/Supervisory
   - Station Staffing and Roles

2. Operating, Maintenance and Capital Cost History for:
   - Vehicles
   - Switches and Guideways
   - Stations
   - Power Supply Systems

3. Regulatory Approvals
Key Alignment Considerations
- **I-70 Corridor**
  - Grades and curves (speed vs. cost)
  - Do not assume I-70 reconstruction
  - 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