Presentation To
Rocky Mountain
Rail Authority (RMRA)

Data Collection Update
July 18, 2008
Study Work Schedule: Tasks 1 thru 4.3.3
Study Work Schedule: Tasks 4.4 thru 8.4
Study Team Coordination

- I-70 Coalition
- CDOT
- Freight Railroads
- MPOs
- RTD FasTracks
- Corridor Workshops
Study Area
TRACKMAN™
Database Development

Key inputs: Speeds, curves, grades, rail and highway crossings, and other potential speed restrictions such as moveable bridges

All the data is being captured in a consistent computerized format, to facilitate train performance and cost evaluation

Sample Denver Data
Track Chart Verification

- TEMS initial update TRACKMAN™ based on Railroad Track Charts, FRA grade crossing database, and satellite imagery.
Engineering Cost Development

- Field Survey to Verify Existing Conditions and Update TRACKMAN™ Track Chart Data Base
- Unit Cost Adjustment to Local Conditions
- Cost Estimates will be Developed for New Alignments, Speed Improvements and Line Capacity Upgrades
- Cost Development Supported by TRACKMAN™ Upgrade Module
Incremental Rail: Equipment Options-
(maximum operating speeds)

79-mph

Conventional Amtrak

110-130 mph

Talgo T21
New Alignment: Equipment Options-
(maximum operating speeds)

150-185 mph
Siemens ICE

250-mph
Transrapid Maglev
Incremental Rail: Incremental Rail: Train Performance Curves*

*On Straight-and-Level Track. Achievable speed is also limited by infrastructure restrictions, which forms a key part of the Interactive Analysis.
Incremental Rail: Train Performance Curves*

* On Straight-and-Level Track versus 4% Uphill Grade
Case Study: UP vs. BNSF Northern Options

[Map showing the northern options for UP and BNSF rail lines, with cities such as Cheyenne, Greeley, and Boulder highlighted.]
Train Performance Evaluation
(“First Cut” and Preliminary)

Speed Profile – BNSF Line
115 miles – 1:48 Running Time
Train Performance Evaluation
(“First Cut” and Preliminary)

Speed Profile – UP Line
98 miles - 1:05 Running Time
COMPASS™ Model Structure

- Stated Preference Survey
- Origin-Destination Data
- Four-Mode Transport Network
- Trip Matrices
- Economic Scenarios
- Rail Strategies
- Travel Demand Model Run
- User Benefit Analysis
- Forecast Year Trip Matrices
- Economic Rent Analysis
- Revenue Analysis
- Alternatives Analysis Assessment
- Base Year Socio-Economics
- Demand Model Calibration
- Base Year Matrix
- Base Year Matrix
Denver Area TAZ Zones
Socioeconomic Projections
Population/Employment/Income

<table>
<thead>
<tr>
<th>Year</th>
<th>Optimistic</th>
<th>Trend</th>
<th>Pessimistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>10,000</td>
<td>10,500</td>
<td>11,000</td>
</tr>
<tr>
<td>2020</td>
<td>11,500</td>
<td>12,000</td>
<td>12,500</td>
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<tr>
<td>2030</td>
<td>13,000</td>
<td>13,500</td>
<td>14,000</td>
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<tr>
<td>2040</td>
<td>14,500</td>
<td>15,000</td>
<td>15,500</td>
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</tbody>
</table>

Population (Thousands)
## Trade-Off Analysis

<table>
<thead>
<tr>
<th>Cost ($)</th>
<th>15</th>
<th>20</th>
<th>25</th>
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</thead>
<tbody>
<tr>
<td>55</td>
<td>1</td>
<td></td>
<td></td>
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<tr>
<td>65</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>85</td>
<td></td>
<td></td>
<td>9</td>
</tr>
</tbody>
</table>
# Networks: Generalized Cost Components

<table>
<thead>
<tr>
<th>Public Modes</th>
<th>Auto</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Time</strong></td>
<td></td>
</tr>
<tr>
<td>In-vehicle Time</td>
<td>Travel Time</td>
</tr>
<tr>
<td>Access/Egress Time</td>
<td></td>
</tr>
<tr>
<td>Number of Interchanges</td>
<td></td>
</tr>
<tr>
<td>Connection Wait Times</td>
<td></td>
</tr>
<tr>
<td>Terminal Wait Times</td>
<td></td>
</tr>
<tr>
<td><strong>Costs</strong></td>
<td></td>
</tr>
<tr>
<td>Fare</td>
<td>Operating Costs</td>
</tr>
<tr>
<td>Access/Egress Costs</td>
<td>Tolls</td>
</tr>
<tr>
<td></td>
<td>Parking</td>
</tr>
<tr>
<td></td>
<td>(all divided by occupancy)</td>
</tr>
<tr>
<td><strong>Reliability</strong></td>
<td></td>
</tr>
<tr>
<td>On Time Performance</td>
<td></td>
</tr>
<tr>
<td><strong>Schedule</strong></td>
<td></td>
</tr>
<tr>
<td>Frequency of Service</td>
<td></td>
</tr>
<tr>
<td>Convenience of Times</td>
<td></td>
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</tbody>
</table>
Raising the Standard: Customer Services
Association of Mode and Rider Bias
Stated Preference Survey (example #1)

Province of Alberta – Travel Survey

Dear Respondent:
This survey is part of a transportation study conducted by Alberta Infrastructure and Transportation in order to better understand and meet travel needs for the Province of Alberta. Please take a few minutes to answer the questions on this form and return it to our representatives. The information you provide will be kept strictly confidential. Thank you for your cooperation.

1. Please describe a recent workday trip you have made using Highway 2:
   - Origin (City): ________________________ Postal Code: __________
   - Destination (City): ____________________ Postal Code: __________
   - What is the city and state/province of your primary residence?

2. Please specify the number of people in the vehicle for this trip, including you.

3. How frequently do you travel on Highway 2? (Check one box)
   - 1 time or more per week
   - Twice a month
   - Less than once a month
   - Once a week
   - Once a month

4. How did you complete this trip? (Check one box)
   - Drive directly from home or work to the destination and park
   - Joined a carpool; dropped at a park and ride facility
   - Drove to a bus/metro station or parking lot and completed the trip on transit
   - Other (specify)

5. What was the primary purpose of your trip? (Check one box)
   - Business
   - Commute to/from work
   - Personal Business
   - Attend school/volunteer
   - Recreational/Vacation
   - Attend special event
   - Visit friends or relatives
   - Other

6. What is your employment status? (Check one box)
   - Employed full-time
   - Employed part-time
   - Other

7. The combined annual income of everyone in your household is:
   - Less than $30,000
   - $30,000 to $55,000
   - $50,000 to $75,000
   - $75,000 to $100,000

How much do you value your time when traveling?

The following questions about a hypothetical trip (between, for example, Calgary and Edmonton) will help us understand your travel choices. Option A on the left-hand side presents one method to reach the destination for a given cost and time, while Option B presents trade-offs in cost and time. As shown in the example, please indicate for each pair of choices the degree to which you prefer Alternative A or Alternative B.

Cost is the cost of a one-way trip, including gasoline, parking and any other for you may incur.

Time is the total travel time to get to your trip destination, including getting to your vehicle, etc.

Option A (Cost/Time): 
- $45 3 hrs
- $35 5 hrs
- $37 4 hrs
- $51 2½ hrs
- $65 2 hrs

Option B (Cost/Time): 
- Prefer a lot
- Prefer a little
- No Preference
- Prefer a little
- Prefer a lot

Thank you! Your participation in this survey is greatly appreciated.
Transportation Survey
Questionnaire - Visitors/Tourists

Dear Respondent:
This survey is part of a transportation study, being conducted for the Maryland Transportation Authority. This effort is designed to assist in improving travel conditions in Maryland. Please take a few minutes to answer the questions on this form. The information you provide will be kept strictly confidential. Thank you for your cooperation.

General Information

1. Are you here on a vacation?  
   Yes ☐  No ☐  
   If yes, how long are you here for a vacation?  
   a. For a day ☐  b. For a weekend ☐  c. Longer than a weekend ☐

2. What is the Zip code of your origin?  

3. Could you describe your trip route?  
   a. Drove along route 50 ☐  
   b. Drove along route 1 ☐  
   c. Drove along route 113 ☐  
   d. Drove along some other route ☐

4. Did you experience any congestion?  
   a. Yes ☐  b. No ☐  If yes, for how long? ☐

5. Could you give us the location where you experienced congestion?  ____________________

6. Did you depart for this trip at a different time than your “ideal” time?  
   Yes ☐  If yes, by how much time? ☐

7. Did you begin this trip…  
   a. early morning (before 8am) ☐  
   b. mid-morning (8-11am) ☐  
   c. noon (11am-1pm) ☐  
   d. early afternoon (1pm-3pm) ☐  
   e. mid-afternoon (3pm-6pm) ☐  
   f. evening (after 6pm) ☐

8. If you had the option of changing your departure time beforehand, then how would you have changed it?  
   a. Earlier than your scheduled departure ☐  If yes, how early? ☐
   b. Later than your scheduled departure ☐  If yes, how late? ☐
   c. Cannot change your departure time ☐

9. How many times do you make this trip in one year ☐

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Rating your travel time and cost preferences?

Alternative A

Cost: $40  
Time: 4 hrs

Alternative B

Cost: $42  
Time: 3½ hrs

Difference:

- $2 more  
- ½ hour less

Rating your travel time and cost preferences?

Alternative A

Cost: $40  
Time: 4 hrs

Alternative B

Cost: $46  
Time: 3 hrs

Difference:

- $6 more  
- 1 hour less

Rating your travel time and cost preferences?

Alternative A

Cost: $40  
Time: 4 hrs

Alternative B

Cost: $52  
Time: 2½ hrs

Difference:

- $12 more  
- 1½ hour less

Rating your travel time and cost preferences?

Alternative A

Cost: $40  
Time: 4 hrs

Alternative B

Cost: $60  
Time: 2 hrs

Difference:

- $20 more  
- 2 hours less
Public Involvement Highlights

Activity Since June 27

- Project Overview Fact Sheet
  - Core Messages

- Stakeholder Outreach Approach Report

Upcoming Efforts

- Statewide media launch

- Organize County Based Input Teams

- Launch Community Partnership Program
Three Phases of Outreach

- **Scoping** (July-Sep)
  - Introduce the study and its purpose
  - Gather input on local needs and desires

- **Alternatives Selection** (Oct-Nov)
  - Introduce and gather input on proposed alternatives
  - Stated Preference Survey

- **Alternatives Analysis** (Dec-June)
  - Summarize results of analysis and identify all feasible alternatives
  - Community Benefits
Input and Decision Process

- RMRA BOARD OF DIRECTORS
- RMRA RFS STEERING COMMITTEE
- PMC
  - PBS&J
- STUDY TEAM
  - TEMS/Quandel Team
- COUNTY BASED INPUT TEAMS
- GENERAL PUBLIC
Thank You