PLT Meeting No. 3: Level 2 Evaluation

CDOT Interregional Connectivity Study

CH2MHILL

December 2012

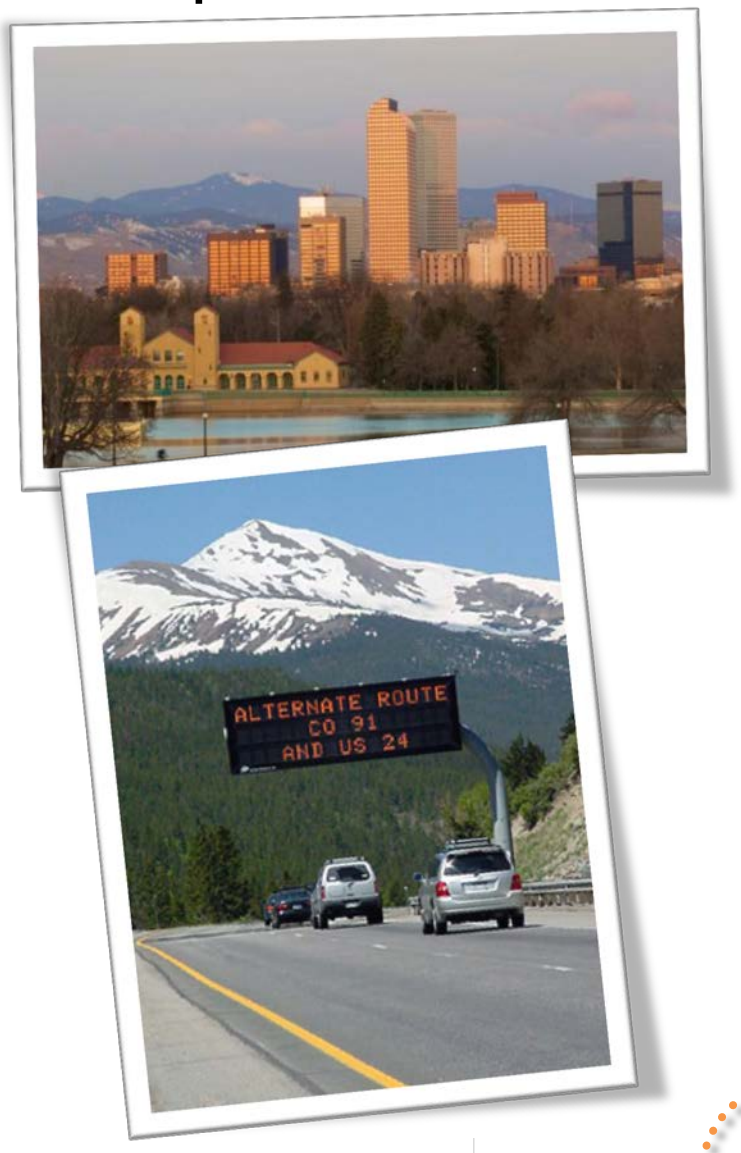
Agenda

- Welcome and Introductions
- Agenda Review
- Project Update
  - Results from Level 1 Evaluation
  - Level 2 Evaluation
- Level 2 Evaluation Criteria
- Ridership Modeling
- Benefit/Cost Studies
- Update on the AGS Study
- Break
- Break-out sessions

Project Update

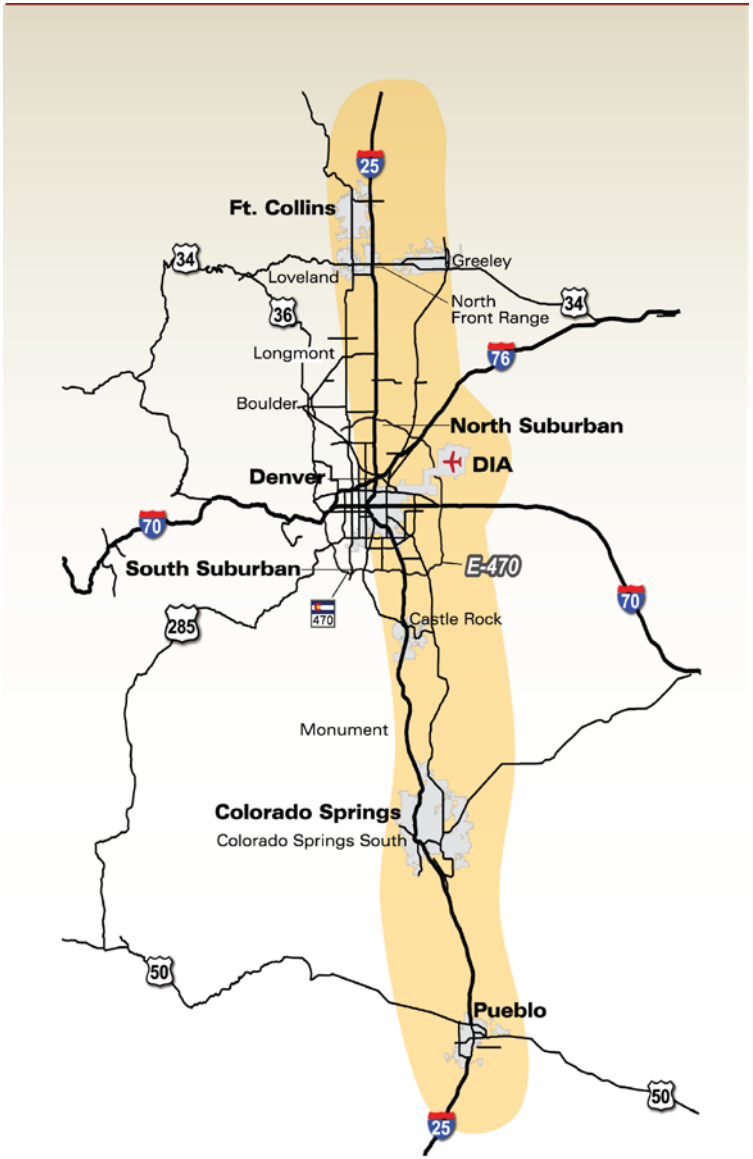
ICS Study Sponsors and Purposes

- Sponsors:
  - CDOT with funding from the Federal Railroad Administration
- Purposes:
  - Provide cost-effective recommendations for alignments, technologies and station locations in the Denver Metro Area that maximize ridership between HSIPR and RTD.
  - Suggest method for integrating HSIPR into the statewide multi-modal network.
  - Develop the basis for Next Steps.



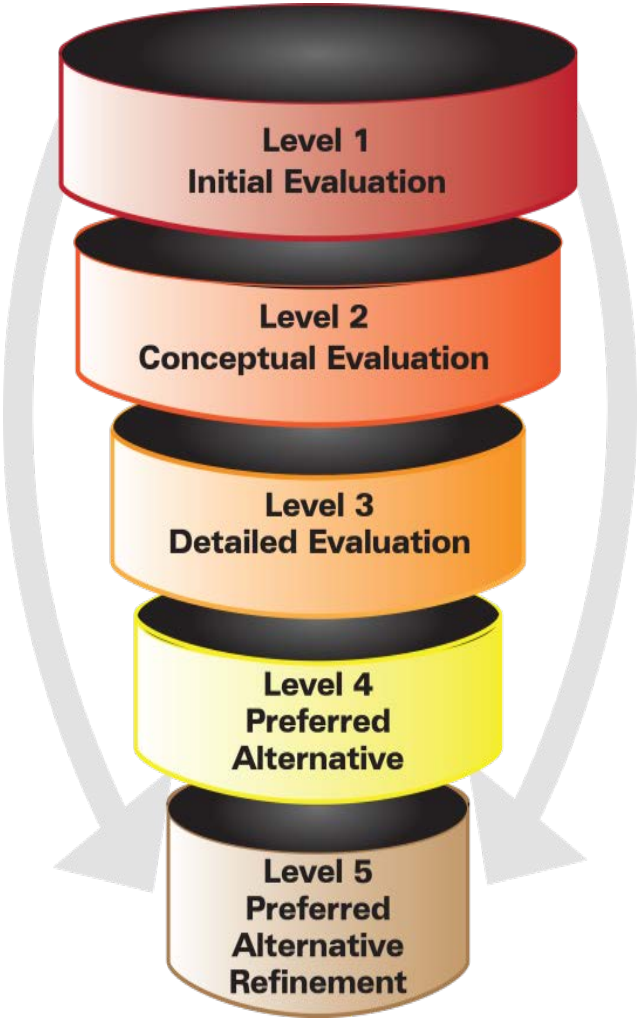
ICS Study Area

- Fort Collins
- Denver
- Colorado Springs
- Pueblo
- Ridership statewide



Where Are We in the Process?

- Level 1 Evaluation (completed)
- Level 2 Evaluation (initiated)
- Level 3 Evaluation
- Level 4 Preferred Alternative
- Level 5 Preferred Alternative Refinement

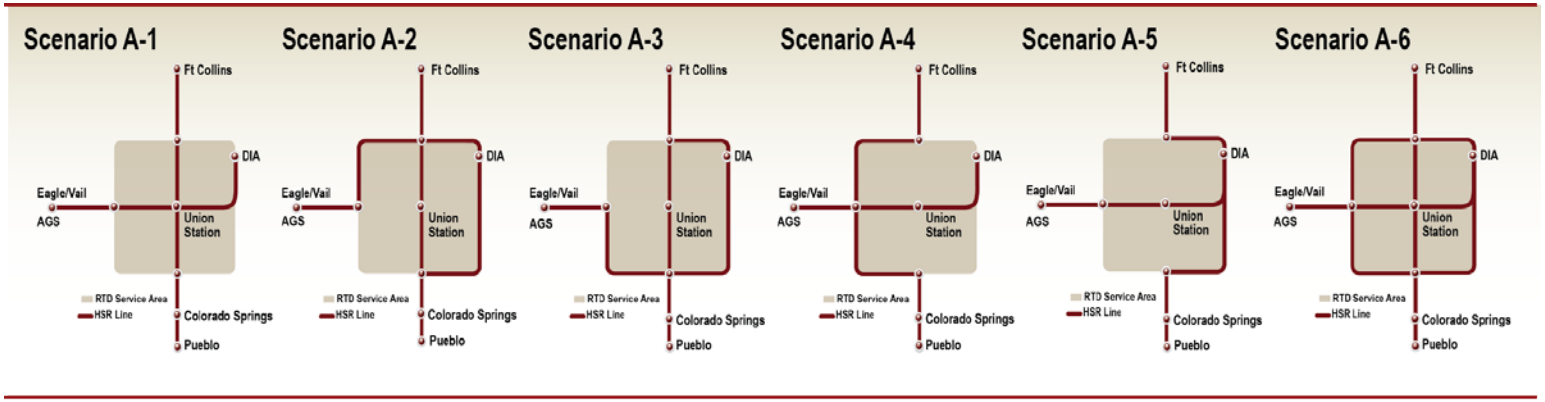


Level 1 Evaluation Results

What Was Evaluated?

- Segments (defined as a route between two points)
  - Those through the Denver metro area
    - 8 of 10 carried forward
  - Those around the Denver metro area
    - 4 of 4 carried forward
  - North to Fort Collins
    - 2 of 2 carried forward
  - South to Pueblo
    - 1 of 2 carried forward
- Scenarios (defined as a package of Segments)
  - 5 of 12 scenarios were carried forward to Level 2 Evaluation

Group A: Through the Denver metro area



109_FRMC_1_DEN

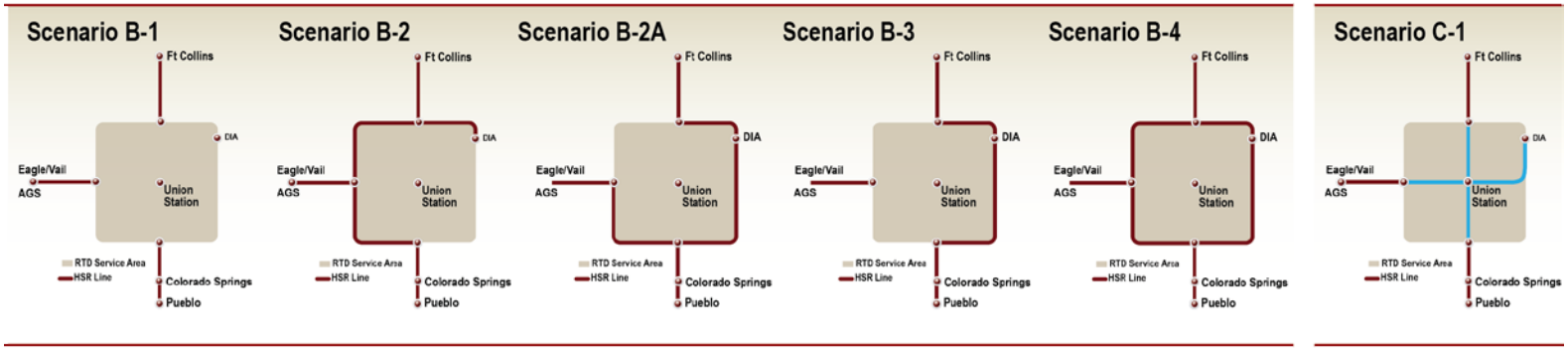
Advantages

- Generally shorter
- Probably faster
- One seat ride to DUS & DIA

Disadvantages

- High cost per mile
- Requires aerial structure
- Higher community impacts
- May compete with RTD

Group B: Those Traveling Around the Denver Metro Area



110 ICS 1 DEN

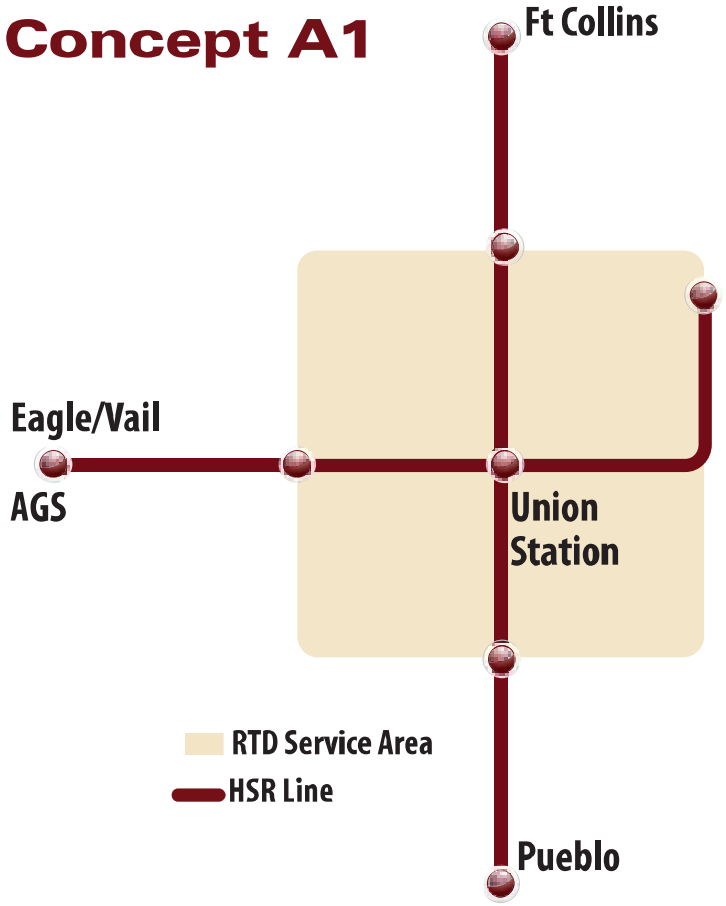
Advantages

- Generally lower cost
- Less construction impacts
- Potentially easier to implement
- Uses RTD infrastructure

Disadvantages

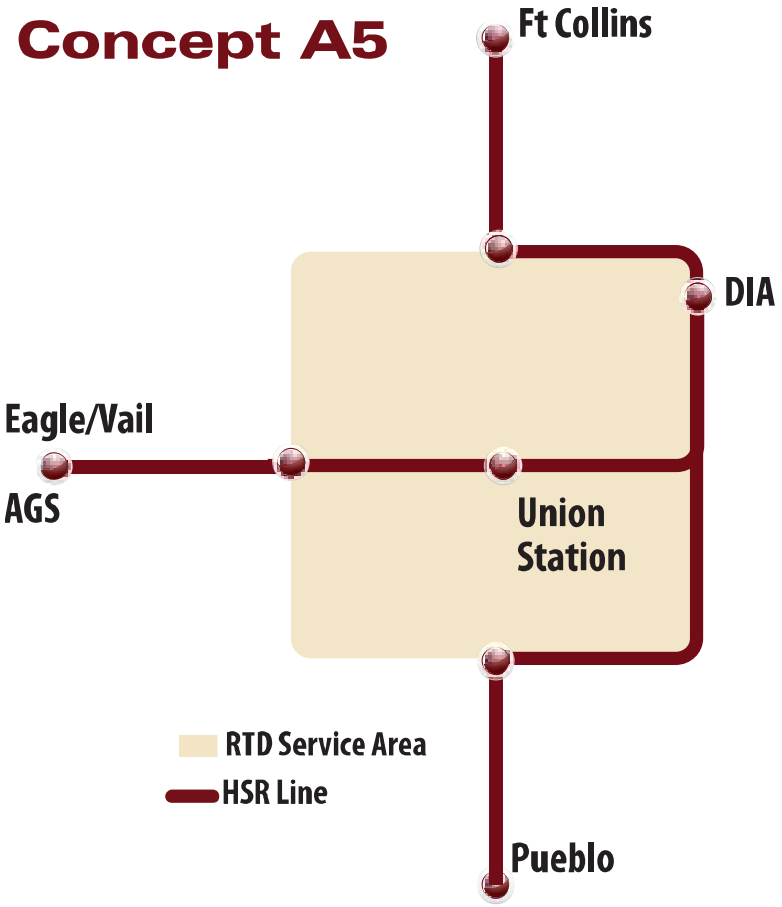
- Not as fast inside Denver
- Probably lower ridership
- No one seat ride to DUS
- Fewer economic benefits

A-1: Direct Routing through Denver



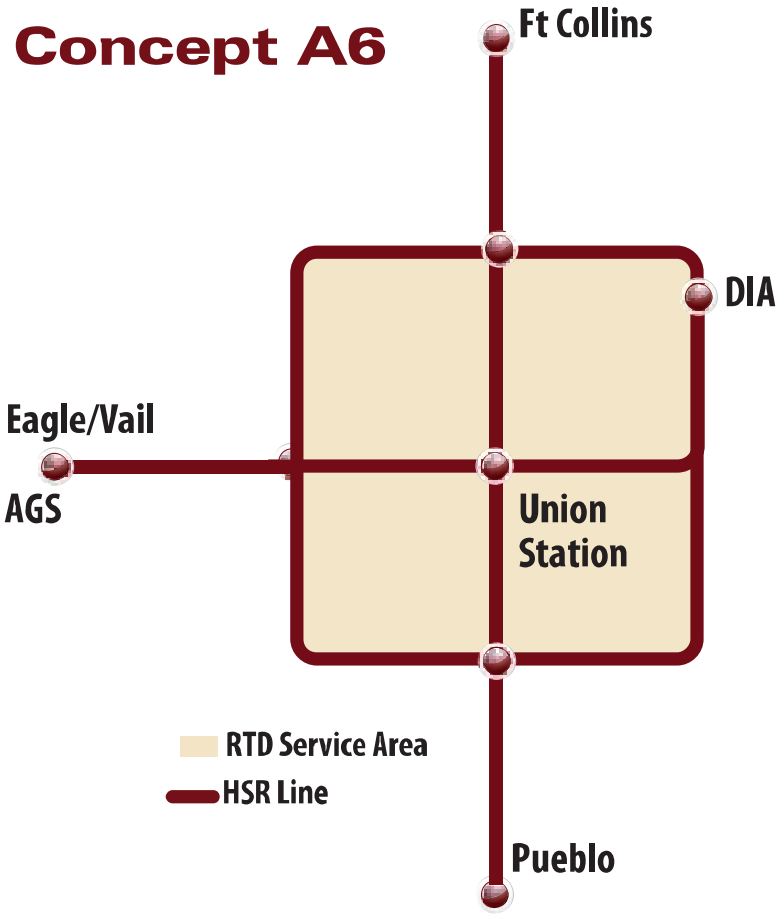
- Advantages
  - Shortest and possibly fastest
  - Supported by the Mountain Corridor
  - Close to the RMRA FRA Alternative
- Disadvantages
  - High community impact
  - High per mile cost
  - At least 3 options to consider E/W
  - N/S segment is problematic
- Recommendation
  - Carry Forward

A-5: Eastern Beltway



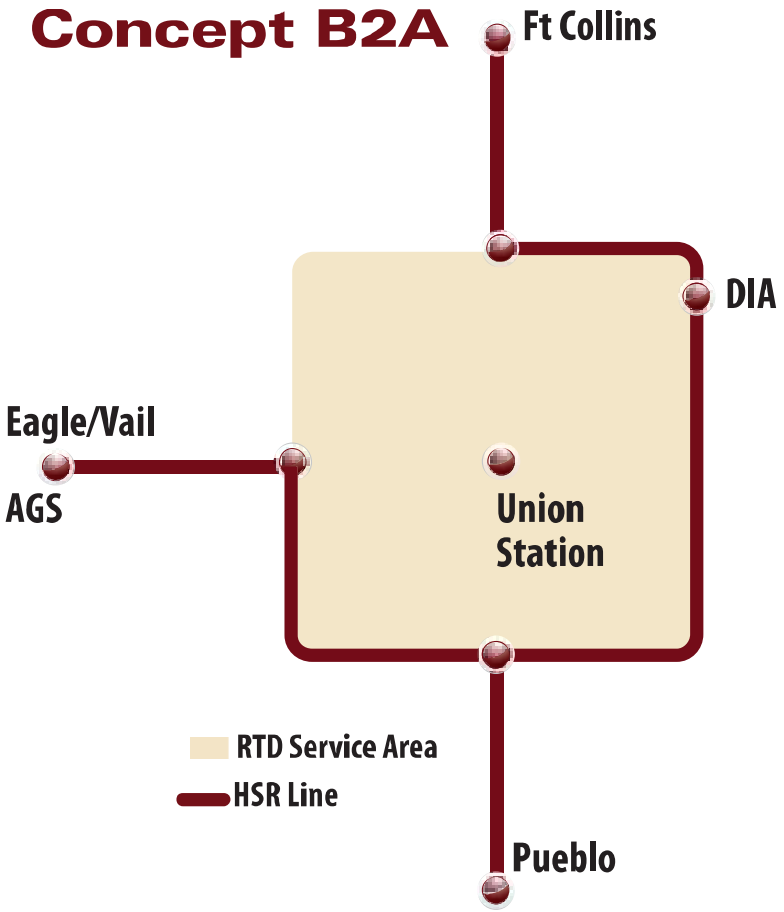
- Advantages
  - Lowest cost A series alternative
  - Good access to DIA
- Disadvantages
  - Poor access to the mountains from the north and south
  - High impact E-W alignment
- Recommendation
  - Carry Forward

A-6: Complete Beltway



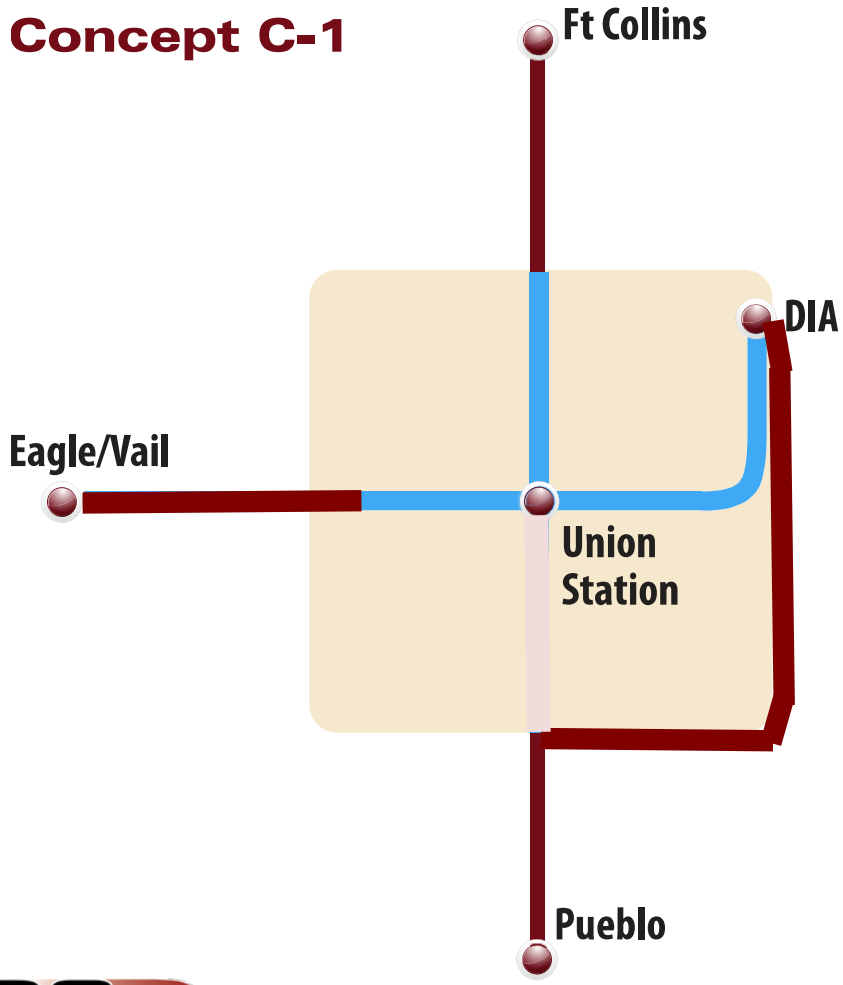
- Advantages
  - Provides highest mobility options
  - Possible highest ridership
  - Assesses all Denver segments
- Disadvantages
  - Not realistic….
  - Highest cost
  - Highest environmental impact
  - NW Quadrant controversy
- Recommendation
  - Carry Forward

B2A: RTD Collector/Distributor: Excluding the NW Quadrant



- Advantages
  - Good connection to DIA from the north and south
  - Avoids the NW Quadrant controversy
  - Provides a good test of E/W mobility vs. A-1
- Disadvantages
  - No direct access to DUS
  - Access to DIA from the mountains may be slower
- Recommendation
  - Carry Forward

C-1: Shared Track with RTD



- Advantages
  - Shares track with RTD – lower costs/impacts
  - One seat ride to DIA
- Disadvantages
  - Complicates operations
  - Limits technology
  - Public resistance, e.g. Arvada
- Recommendation
  - Carry Forward

What Segments Need to be Engineered in Level 2?

- 3 Segments E/W through Denver
- 1 Segment N/S through Denver
- 4 Beltway Segments around Denver
- 2 Segments north to Fort Collins
- 1 Segment south to COS and Pueblo
- 1 Partial Segment to extend the Gold Line to I-70

TOTAL = 12 Segments to be Engineered/Evaluated ~445 miles

Level 2 Evaluation

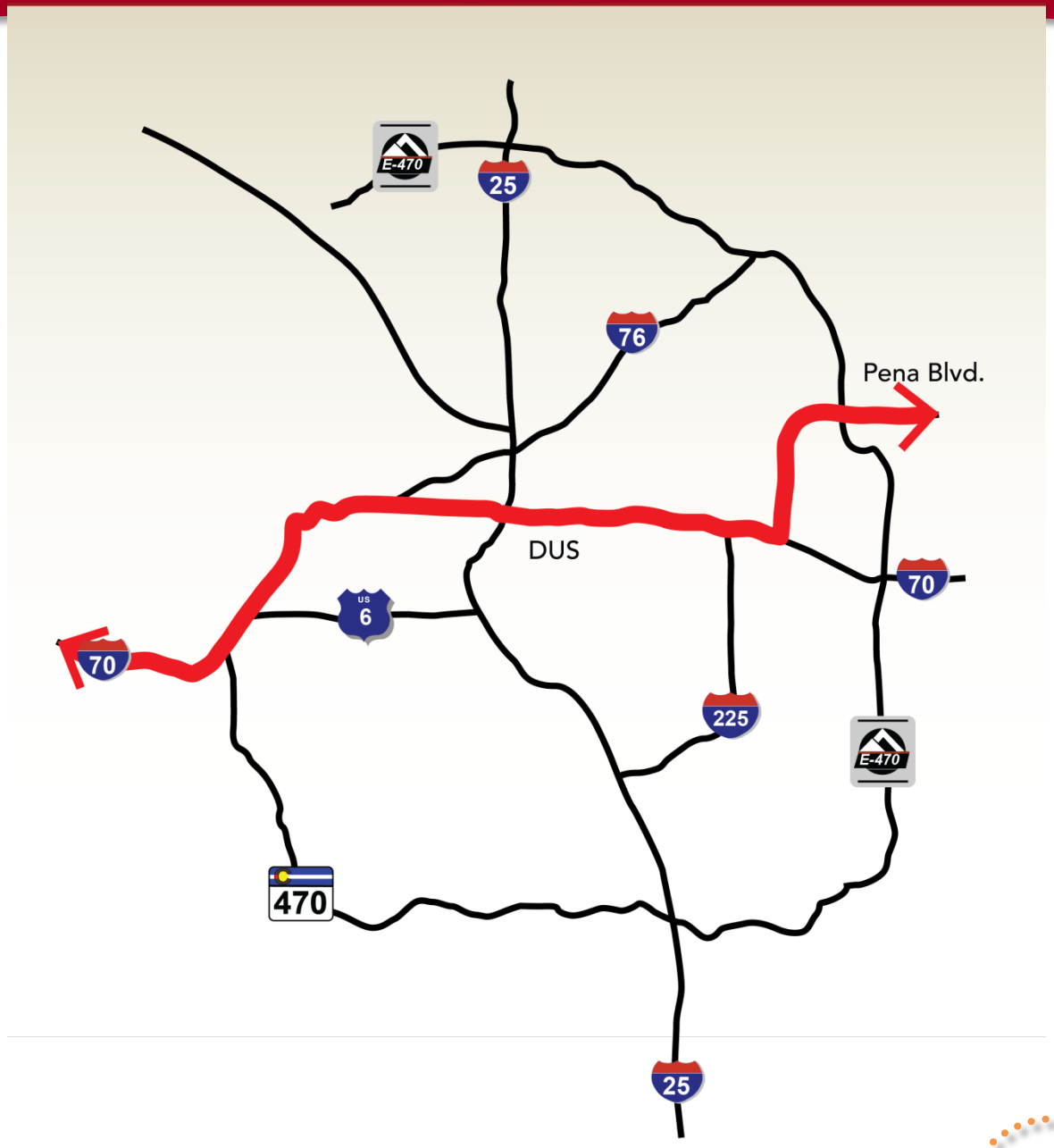
Level 2 Goals

- Maintain public support for HSIPR
- Select alignments north and south of the Denver metro area
- Define the two best alignments through the Denver metro area to DIA
- Define the best alignment around the Denver metro area using E-470 and C-470
- Generally identify primary and secondary station locations

E/W Through Denver: US 6

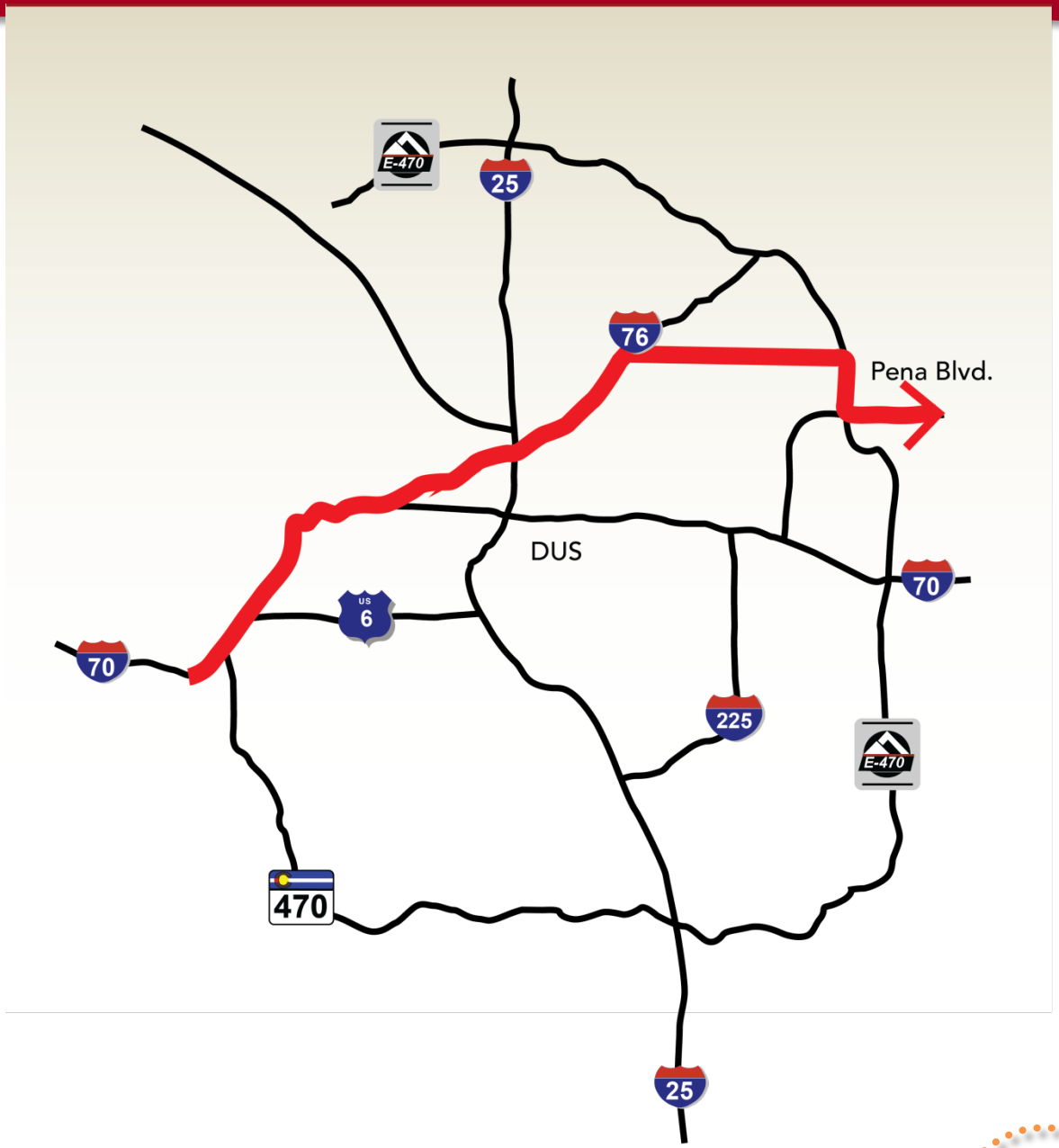
East/West: I-70 ▶ US 6 ▶ CML/BrushLine ▶ 96th Ave ▶ DIA

E/W Through Denver: I-70



East/West: I-70 ▶ New Stockyards Station ▶ I-70 ▶ DIA

E/W Through Denver: I-76 (new for L-2)

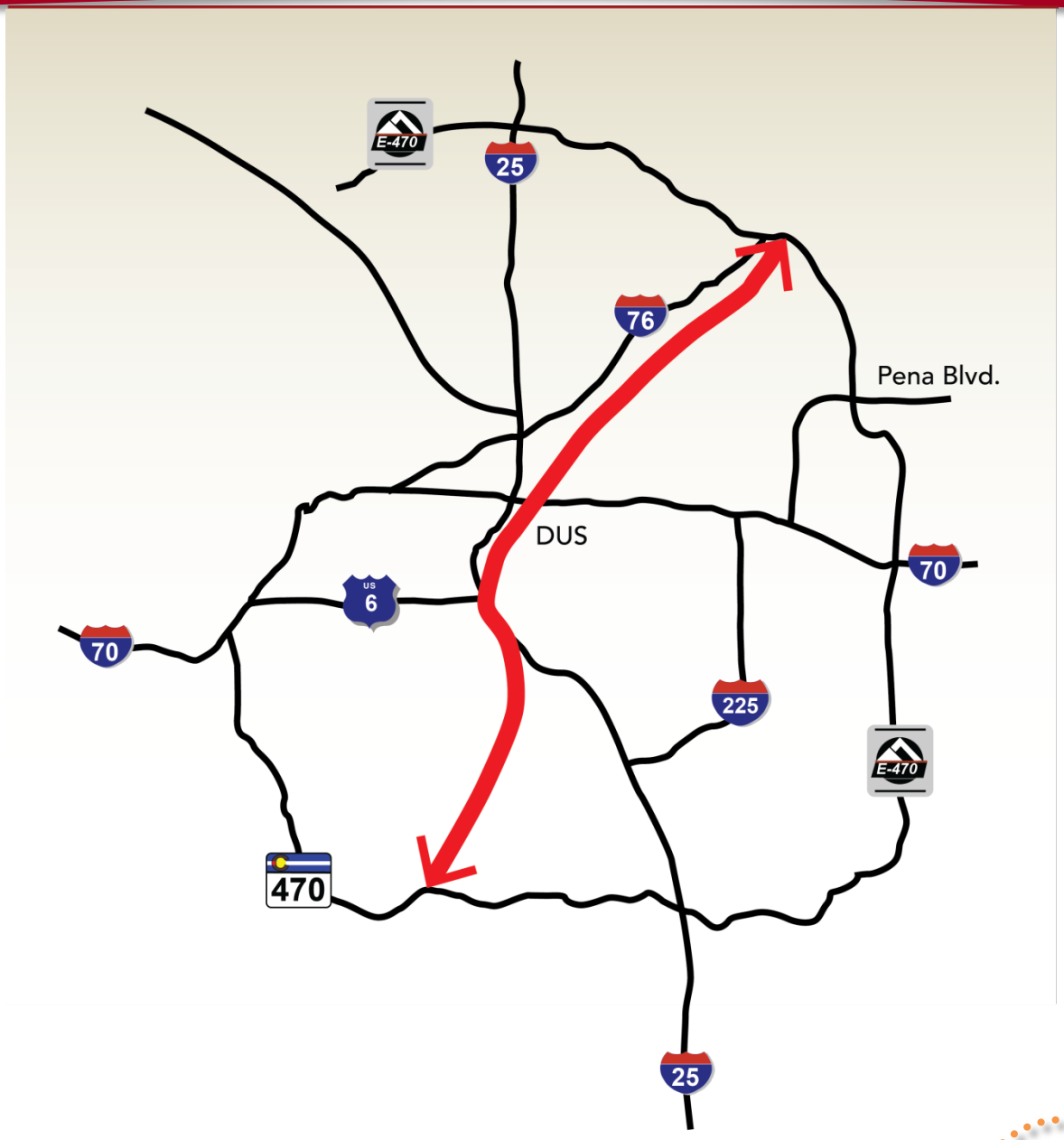


East/West: I-70 ▶ I-76 ▶ New North Metro Station ▶ 96th Ave ▶ DIA

E/W Around Denver: Beltways

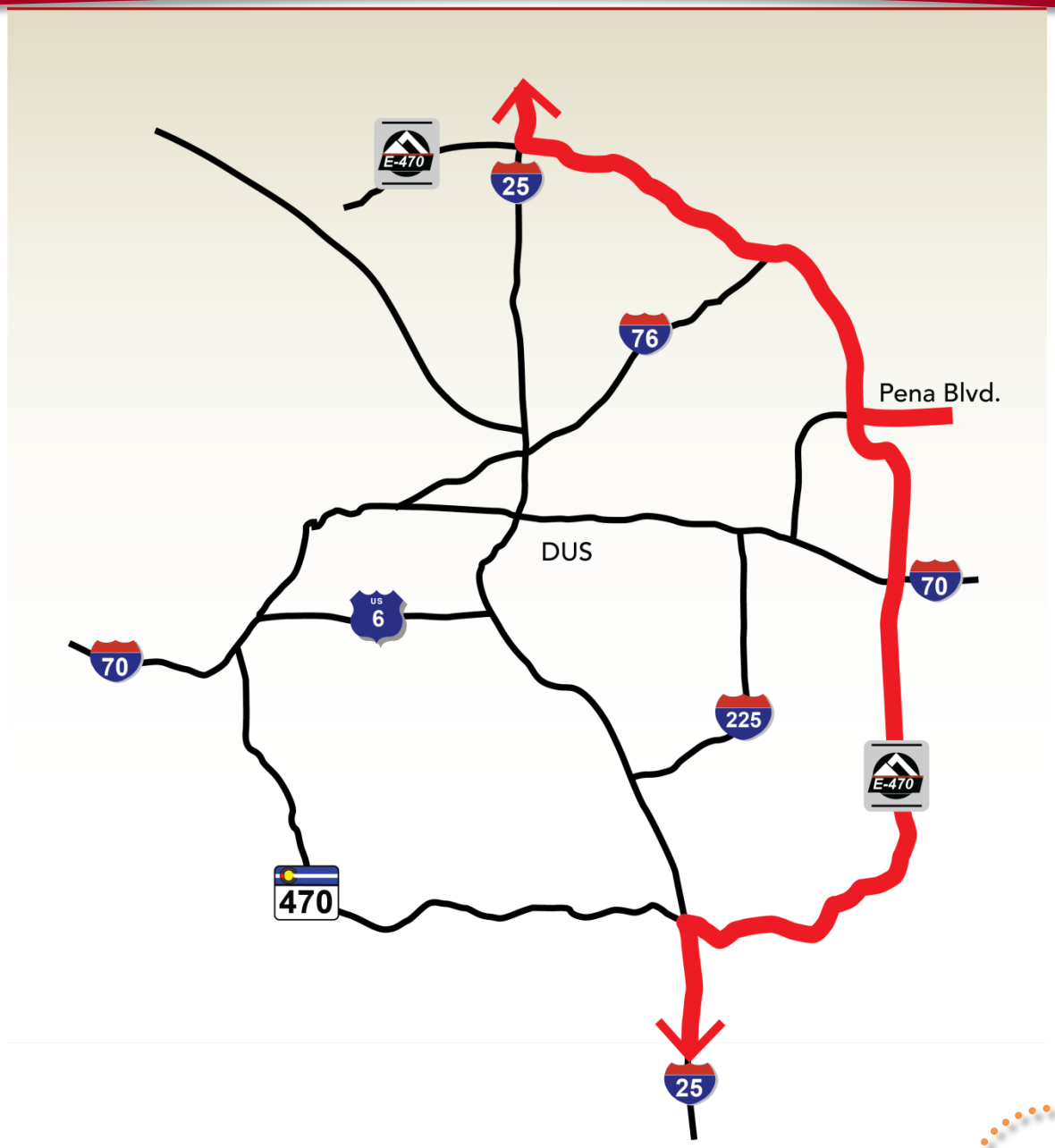
East/West Around Denver: I-70 ▶ C-470 ▶ E-470 ▶ DIA

N/S Through Denver: Railroads



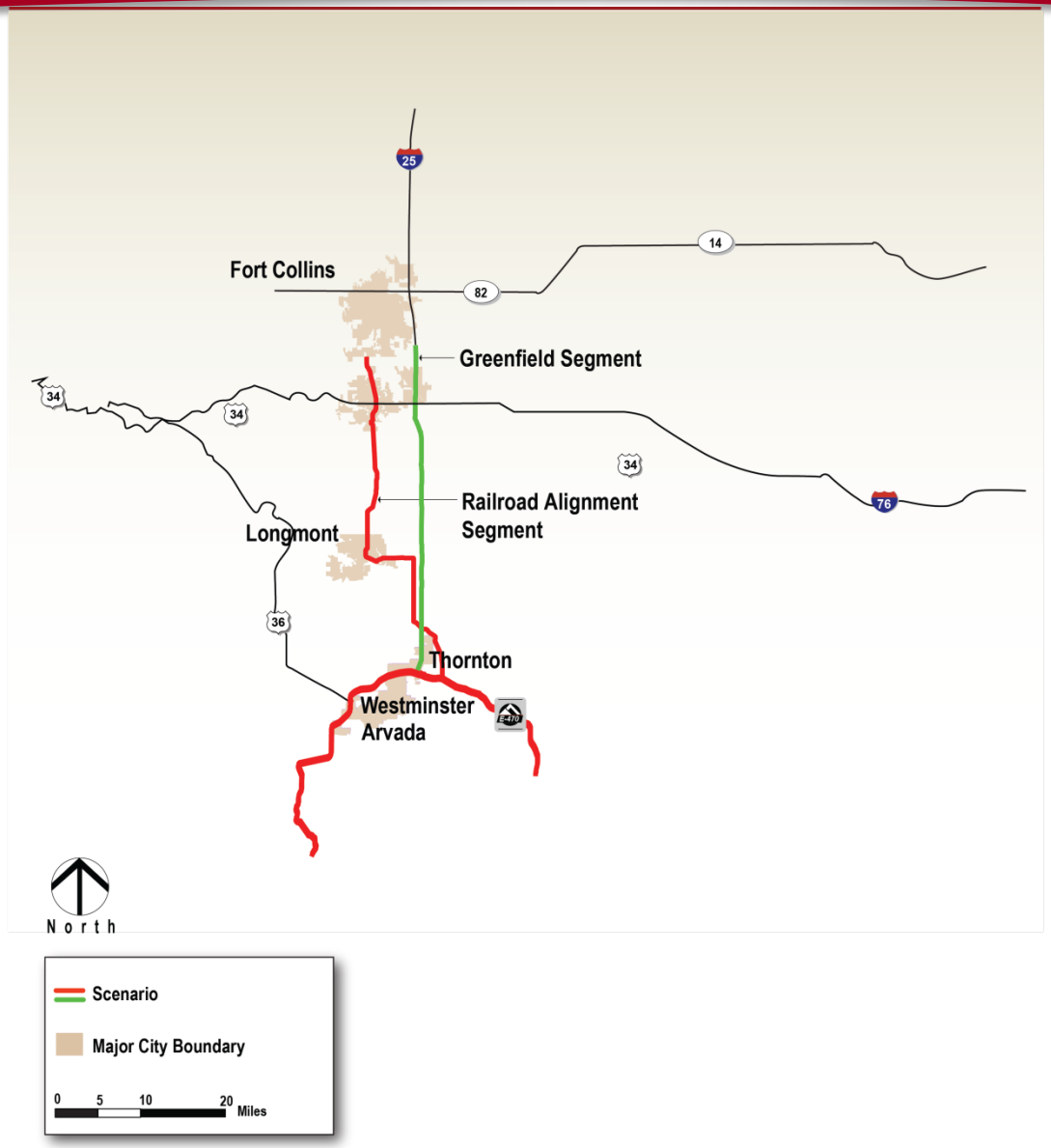
North/South Through Denver: Brush Line ▶ CML ▶ Joint Line ▶ C-470

N/S Around Denver: Beltways



North/South Around Denver: North I-25 ▶ E-470 ▶ DIA ▶ E-470 ▶ I-25 ▶ Castle Rock

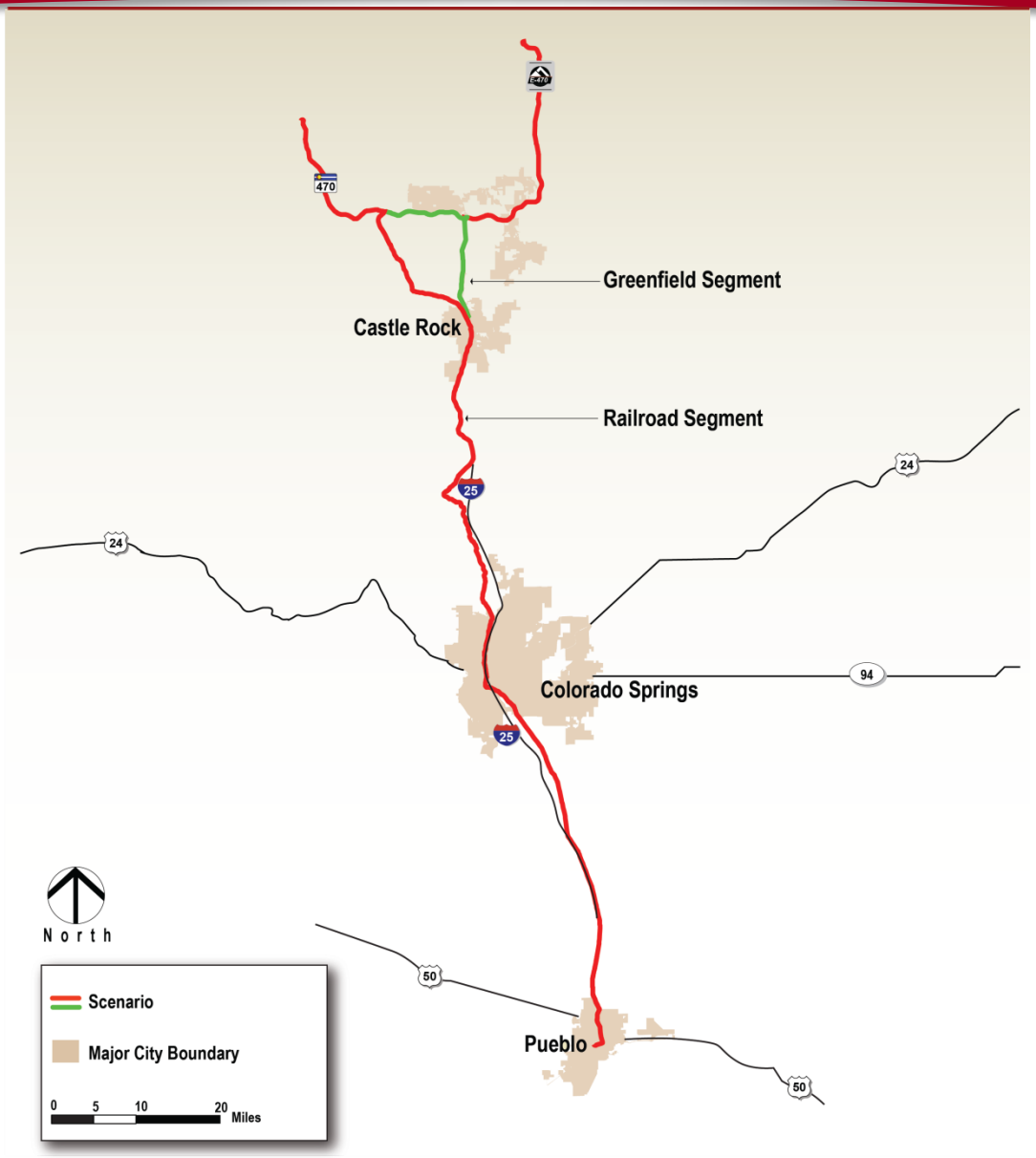
North to Fort Collins: Railroad and Greenfield Segments



I: North to Ft Collins: Railroad: NMEOL ▶ UPRR ▶ CR 7 ▶ SH 119 ▶ BNSF ▶ Longmont ▶ Loveland

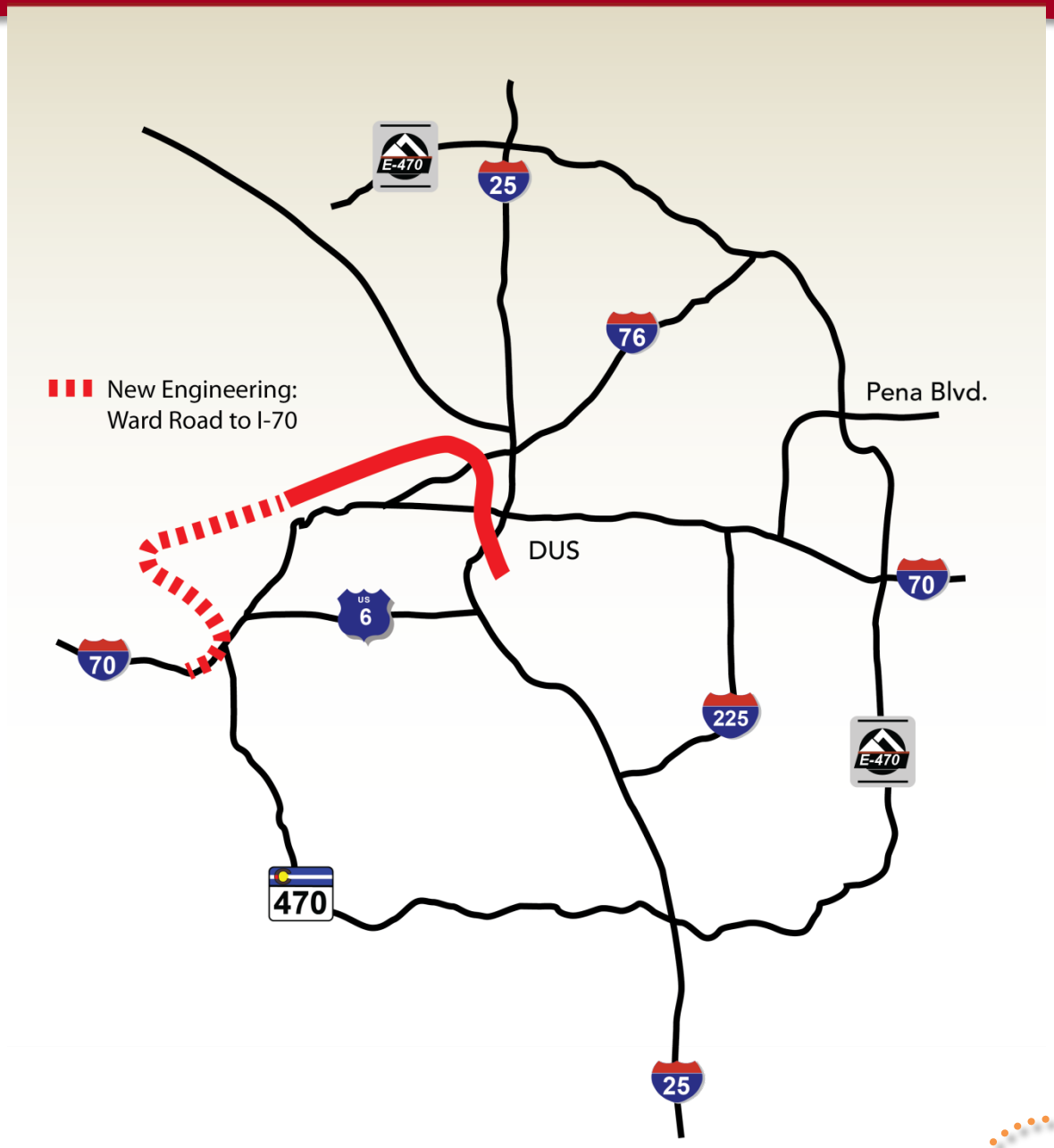
II: NMEOL ▶ NW Parkway ▶ I-25 ▶ Fort Collins

South to Pueblo: (New for L-2)



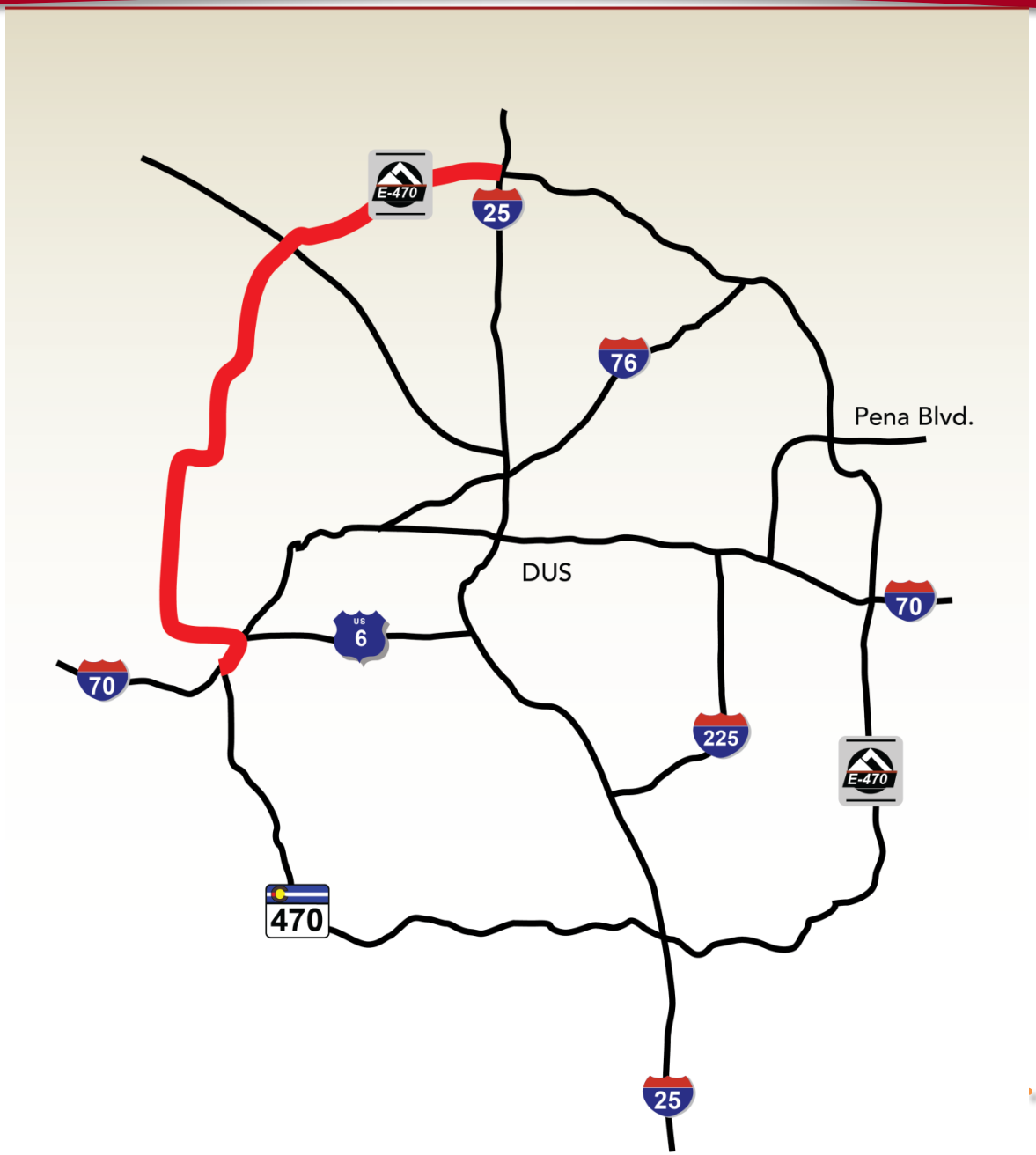
South to Colorado Springs and Pueblo: Best of Breed Routing to follow Existing Transportation Corridor (I-25 UPRR, BNSF)

Shared Track: Extend Gold Line to I-70



Exisiting Gold Line Segment: Needed for Alternative Scenario C-1

NW Quadrant: Need for A-6



NW Quadrant: Needed to Model A-6

ICS Interregional Connectivity Study

Evaluation Criteria

Level 2 Evaluation Criteria (handout)

Public Benefits

Transportation Benefits

Other Public Benefits

Engineering and Institutional Feasibility

Planning Feasibility

Benefit Cost

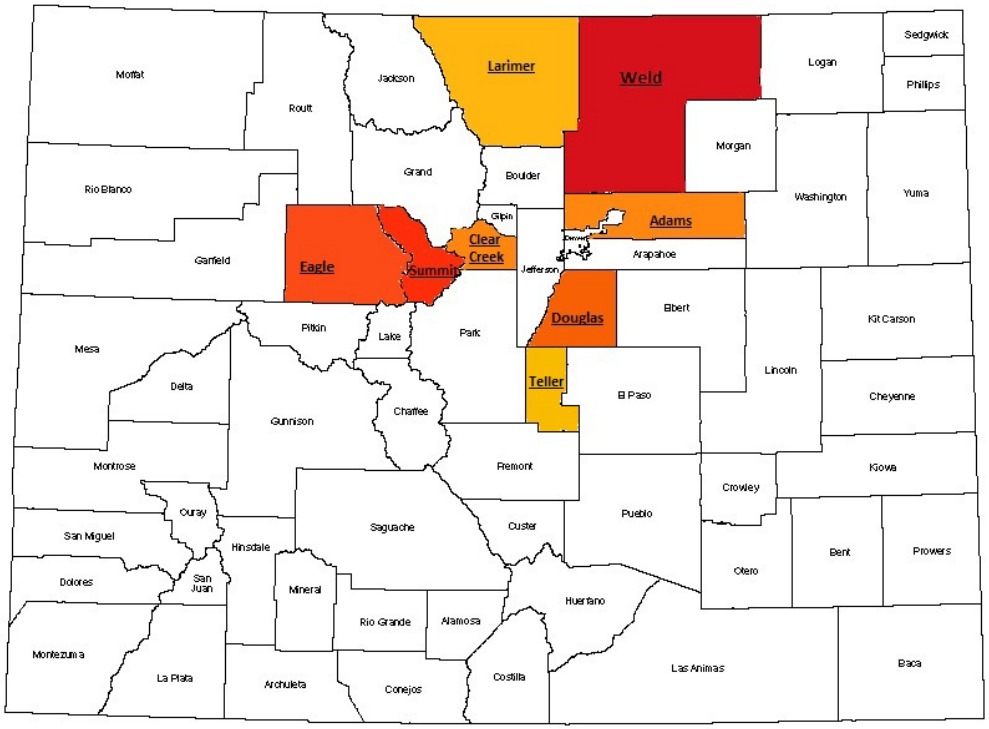
Ridership

On-Going Demand Modeling Activities

- Co-ordinated with local MPOs and RTD on their models and data
- Finalizing data preparation for
  - Transportation network
  - Modal service characteristics (travel times, costs, frequencies, etc.)
  - Socio-economic characteristics
  - Air trip table
- New data collection (auto trip table and traveler survey) is underway
- Demand model development for key travel markets is also underway
  - Long distance intercity travel (auto, air, bus and rail)
  - Short distance intra-urban travel within Denver Metro Area (auto, all urban transit modes and rail)
  - Connect air travel

Population from 2010 to 2035

- Study area increase in population from 4.3 to 6.2 million (45% growth)
- 18% of the State's growth will occur in the 16 county study area
- Study area counties with greatest projected growth (% growth):
  - Weld County: +100%
  - Summit County: +92%
  - Eagle County: +83%
  - Douglas County: +68%
  - Adams County: +56%
  - Clear Creek County: +55%
  - Larimer County: +52%
  - Teller County: +50%



Source: Colorado Department of Local Affairs

Long-Distance Auto Trip-Table Data Collection

- Data on anonymous cell phone movements within the study area have been obtained by the vendor AirSage

- Three months of data from 2011 (identified from traffic counts on I-70 & I-25)
  - Peak winter month (Feb/March)
  - Peak summer month (July)
  - Typical month (October)

- Currently identifying long distance trips in the data, and associating these trips to 200 geographic zones that cover the study area

- Following review and processing, the tables of long-distance auto trips to be used in the ICS will be developed from these data

Source: Colorado Department of Local Affairs

Traveler Survey (aka Stated Preference)

- Specialty firm RSG has designed an internet survey to investigate study area travelers' mode choice for intercity trips
- A survey draft has been shared with AGS & ICS stakeholders, and revisions were made based on comments received
- The survey instrument is currently being programmed and tested
- The survey should go live during the week of December 10
- When a specified number of surveys have been completed, RSG will clean the data and send it to the study team, before end of December
- Survey results will be used to inform the forecasting model

Source: Colorado Department of Local Affairs

Forecasting Timeline

- Input data preparation (including new data) completed by middle of January
- Model development for the various markets completed by middle to end of January
- Initial ridership forecasts available early February

Source: Colorado Department of Local Affairs

Level 2 Evaluation B/C Studies

- The project Purpose and Need states that any selected HSIPR alternative scenario will need to "*offer statewide social, environmental and economic benefits that are greater than the capital and operating costs of its implementation.*"
- Two B/C studies will be prepared:
  - Calculation of the Operating Ratio
  - Calculation of Project Benefit/Cost Ratio (B/C Studies)

B/C Studies – Benefit Calculation

- Benefits are expected to include the following:
  - Passenger revenue
  - Reductions in VMT
  - Reductions in highway delay
  - Reductions in accidents
  - Reductions in atmospheric pollution
  - Reductions in aviation delay (if any)
  - Reductions in highway investment requirements
  - Reductions in aviation investment requirements
  - Increases in property tax revenue around HSIPR stations (tax increment basis)
  - Increases in personal income from the construction and operation of the HSIPR system

Next Steps

- Completion of Ridership Modeling - Late February 2013
- Completion of remaining Level 2 Engineering/Planning analyses – Early March 2013
- Next PLT Meeting – Late February/Early March 2013
- Next Series of Public Workshops (Level 2 results) March 2013
- Initiation of Level 3 Evaluation – March 2013
- Completion of Level 3 Evaluation – July 2013

AGS Update

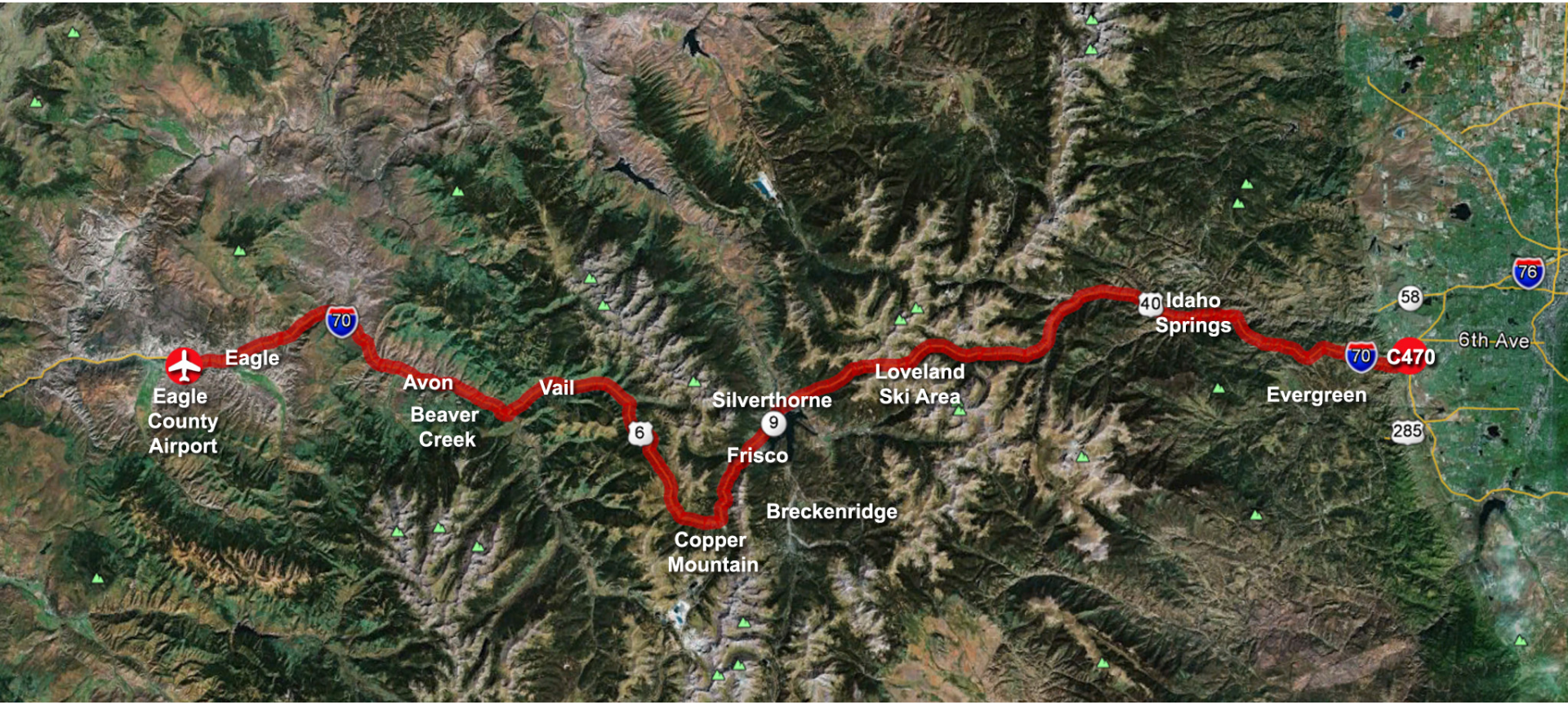
AGS Project Goal

- To find a feasible and implementable high speed transit system to ultimately link Denver International Airport and Eagle County Regional Airport, following the I-70 alignment

- This system will serve the recreational, business and commuter needs of the corridor

- This system will also reduce the amount of truck traffic on the corridor

Location of AGS



AGS Project Overview

- Colorado DOT Division of Transit & Rail (DTR) is project sponsor
- AZTEC/TYPSA is lead consultant
  - TYPSA Group is a Madrid, Spain based engineering firm with significant HSR and tunneling experience
  - AZTEC is TYPSA Group's US firm
  - Total Project Budget is $1.8 million
- 18 month schedule (Apr. 2012 – Sept. 2013)

AGS Project Process

April 2012 to September 2012

- Develop Draft System Performance & Operational Criteria
- Outreach to Industry
- Develop RFSOTI -Advertise September 12, 2012

October 2012 to April 2013

- Review Statements of Technical Information
- Technology Forum
- Alignment Design
- Cost Estimates
- Financial Task Force
- Request for Financial Information (to PPP concessionaires & financiers
- Ridership estimates

AGS Project Process

- May 2013 to September 2013
  - Finalize funding/financing plan
  - Prepare report and implementation plan
  - Decision point – AGS included with PPP for highway improvements?

Public Personal Rapid Transit Consortium

General Atomics

SOTI

- Statements of Technical Information (SOTI) were received October 10
- 18 Technology Providers submitted SOTIs

American Maglev Transit	Owen Transit Group
ET3	Personal Rapid Transit Consulting
FlightRail	Public Personal Rapid Transit Consortium
General Atomics	Roane Inventions (TriTrack)
Kestrel	SkyTran
MagneMotion	Swift Tram
Mediatrik/Techtronics	Talgo
MegaRail	Transrapid
Monobeam	Tubular Rail

Review of SOTIs

- Initial screening focused on 6 qualifying criteria
  - Qualification Criteria 1: Travel Time
  - Qualification Criteria 2: Grade
  - Qualification Criteria 3: Safety
  - Qualification Criteria 4: Weather/Wind
  - Qualification Criteria 5: Light Freight
  - Qualification Criteria 6: Technology Readiness (TRL)
- All six criteria had to be met to be qualified
- 11 Technology Providers were found to be qualified

Technology Forum Invitees

Technology Providers
American Maglev Transit
Talgo
Transrapid
Owen Transit Group
MegaRail
Public Personal Rapid Transit Consortium
General Atomics
SkyTran
Swift Tram
Flight Rail
MagneMotion

Technology Forum

Thu. Dec. 13 (8-5) & Fri. Dec. 14 (8:30-3:30)

Jefferson County Fairgrounds

15200 West 6th Avenue Service Road

Golden, CO 80401

Public Invited: Thursday December 13th 10 am – 5 pm

AGS Next Steps

Technology Forum (December 13 &14)

AGS Team begins alignment design & cost estimates (November thru April)

Round 2 Land Use/Station Discussions (January-February)

ICS team ridership estimates for AGS/ICS systems (February)

AGS PLT Meetings and Technical Team review of progress

Break-out Sessions

Convene to Break-out Sessions

- Group 1 – North to Fort Collins
- Group 2 – Denver Area: North to South
- Group 3 – Denver Area: East – West
- Group 4 – South to Colorado Springs and Pueblo

Thank you for Attending