AGS Feasibility Study

Statewide Transportation Advisory Committee

January 11, 2013

Results of Technology Evaluation

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

Technology Forum

- Held on December 13 and 14
- Included:
  - Media Preview
  - Technology Exhibition
  - Presentations
    - 45 minute presentation
    - 60 minute Q&A
    - Review Panel

Technology Forum Questions

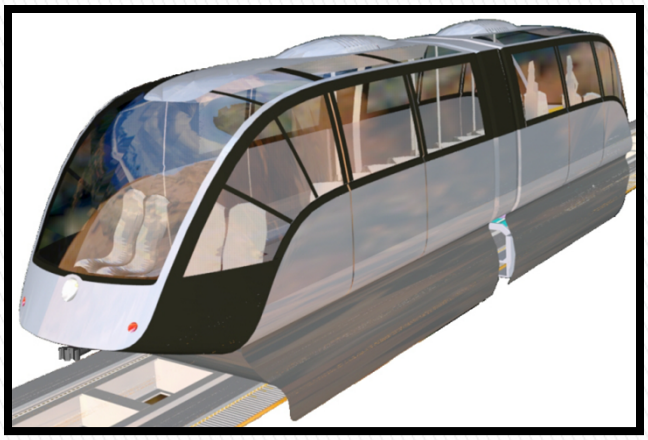
- Plan for Stations and Maintenance Facilities
- Safety Certifications & Corridor Safety Design
- Operational Capacity, Headways, Expansion
- Infrastructure & Rolling Stock Costs
- Interface with other Travel Modes and Freight Accommodation

Presenters

- Urban Maglev
- 93 passenger vehicle
- 120 mph to 150 mph

American Maglev Technology

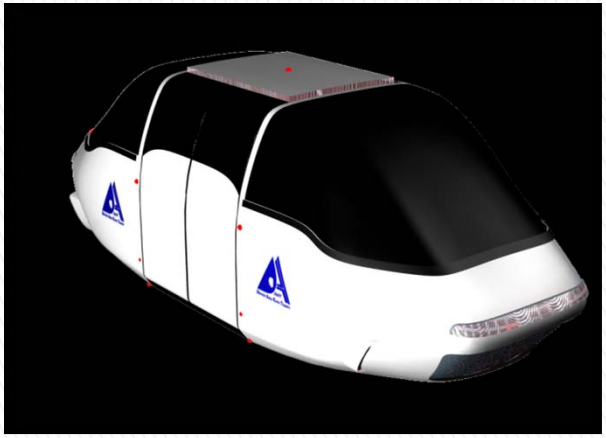
- Maglev
- 40 passenger vehicle
- 150 mph to 300 mph



General Atomics

Presenters

- Electric Guideway
- 4 passenger vehicle
- 120 – 150 mph



PPRTC

- Electric wheelway
- 8 passenger vehicle
- 85 to 120 mph

MegaRail

Presenters

- Rail/HSR
- 21-36 passenger vehicle
- 186 mph

Talgo

Next Steps

- ✓ Technology Feasible? Yes
- ☐ Alignment & Land Use Feasible?
- ☐ Funding & Governance Feasible?
- ☐ Is AGS Feasible?

Next Steps

- Evaluation of Alignment Feasibility
  - Based on 3 general alignments
  - Assess ROW needs
  - Assess community and environmental issues
  - Assess cost/engineering challenges

- Evaluation of Funding/Financing Feasibility
  - Forming a financial task force
  - Issue a Financial Request for Information
  - Assess Governance Models

Questions?

http://www.coloradodot.info/projects/AGSstudy

CDOT Interregional Connectivity Study

December 17, 2012

Successful Alternatives Fulfill The Purpose & Need

- Purpose:
  - The purpose of the ICS project is provide Colorado with a well supported modal option for the State's transportation network that connects communities and destinations for interregional business and tourism travel; builds on and strengthens Colorado's existing transportation infrastructure; supports the State's Vision, as articulated in the 'State Rail Plan'; and offers statewide social, environmental, and economic benefits that are greater than the capital and operating costs of its implementation.
- Needs:
  - Address the mobility demands of future population growth.
  - Improve mobility through provision of a travel option.
  - Enhance economic development through improved connectivity.
  - Improve the State's environmental quality and energy efficiency.
  - Provide economic benefits sufficient to receive new funding sources.

Possible Technologies

- Conventional – diesel and electric (79 mph)
- High Speed Diesel (130 mph)
- High Speed Maglev (125 mph)
- High Speed Electric (150 mph)
- Very High Speed Electric (220 mph)
- Ultra High Speed Maglev (300 mph)

ICS Interregional Connectivity Study

Developing Alternatives

1

- Based off of the Purpose & Need

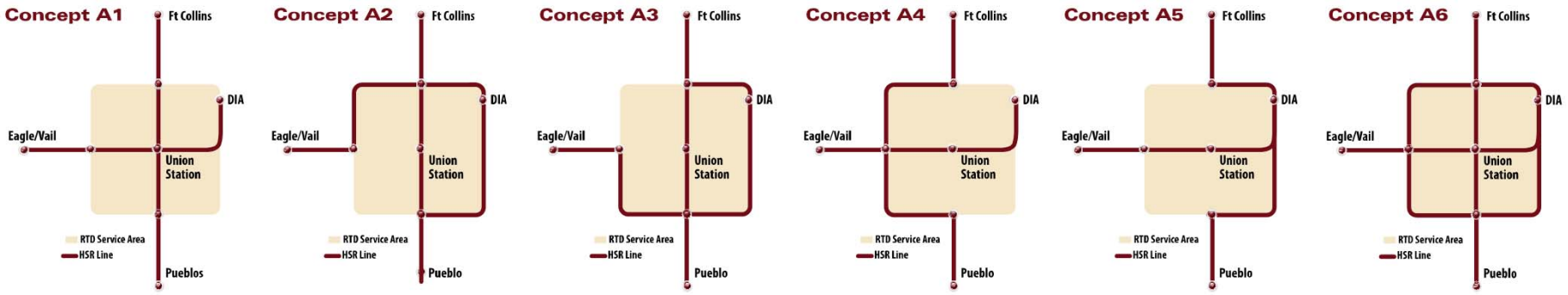
2

- Built from past studies
  - Rocky Mountain Rail Authority Study (RMRA)
  - State Rail Plan
  - RTD System
  - I-70 Mountain EIS
  - North I-25 EIS
  - I-70 East EIS

3

- Federal Railroad Administration guidance
  - Speed requirements: 90+ mph
  - Operational requirements
  - Safety requirements
  - Stations & station spacing
  - Alternatives analysis evaluation criteria

Group A: Through Denver Alignments



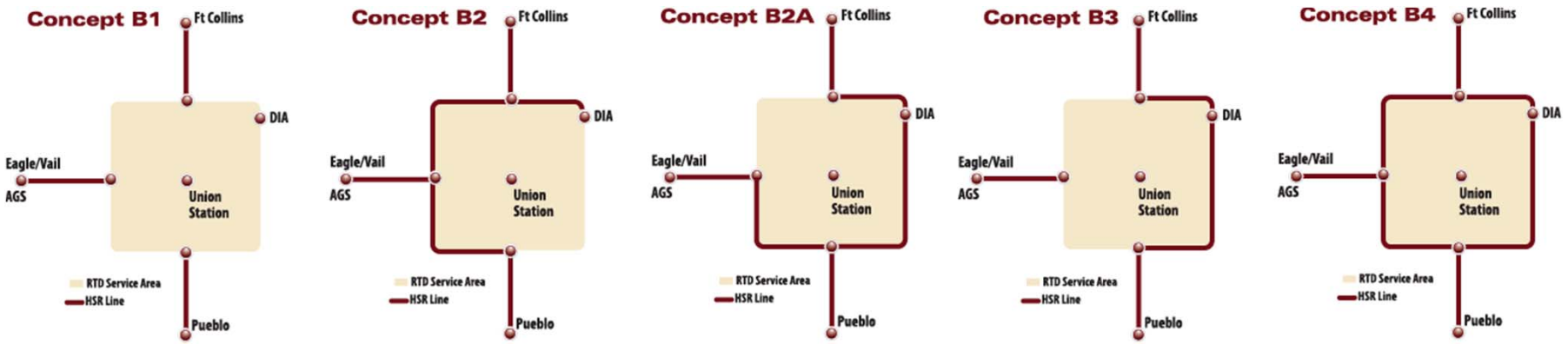
Advantages

- 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: Denver Periphery Alignments



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

Group C: Utilizes RTD Track For High Speed Rail Through The Denver Metro Area

Advantages

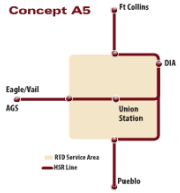
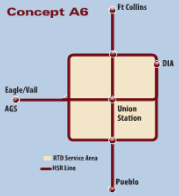
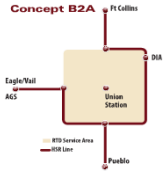
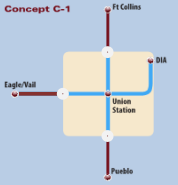
- One seat ride to DUS & DIA
- Less construction impacts
- Potentially easier to implement
- Uses RTD track

Disadvantages

- Not as fast inside Denver
- Operational challenges working on RTD track
- Fewer economic benefits

ICS Interregional Connectivity Study

Best Performing Options Summary

A-1: Direct through Denver		• **Shortest, possibly fastest alternative** • **One seat ride** • **Provides contrast to the beltway options**
A-5: Eastern Beltway		• **Least cost of the A-series alternatives** • **Still provides one seat ride**
A-6: Complete Beltway		• **Probable highest ridership alternative** • **Test as a comparison to all others**
B-2A: South/East Beltway		• **Thought to be the best performing of the B-series scenarios** • **Avoids the controversial NW Quadrant**
C-1: Direct via RTD		• **Tests the impact of sharing RTD track** • **Second lowest cost alternative** • **Theoretical one-seat ride**

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

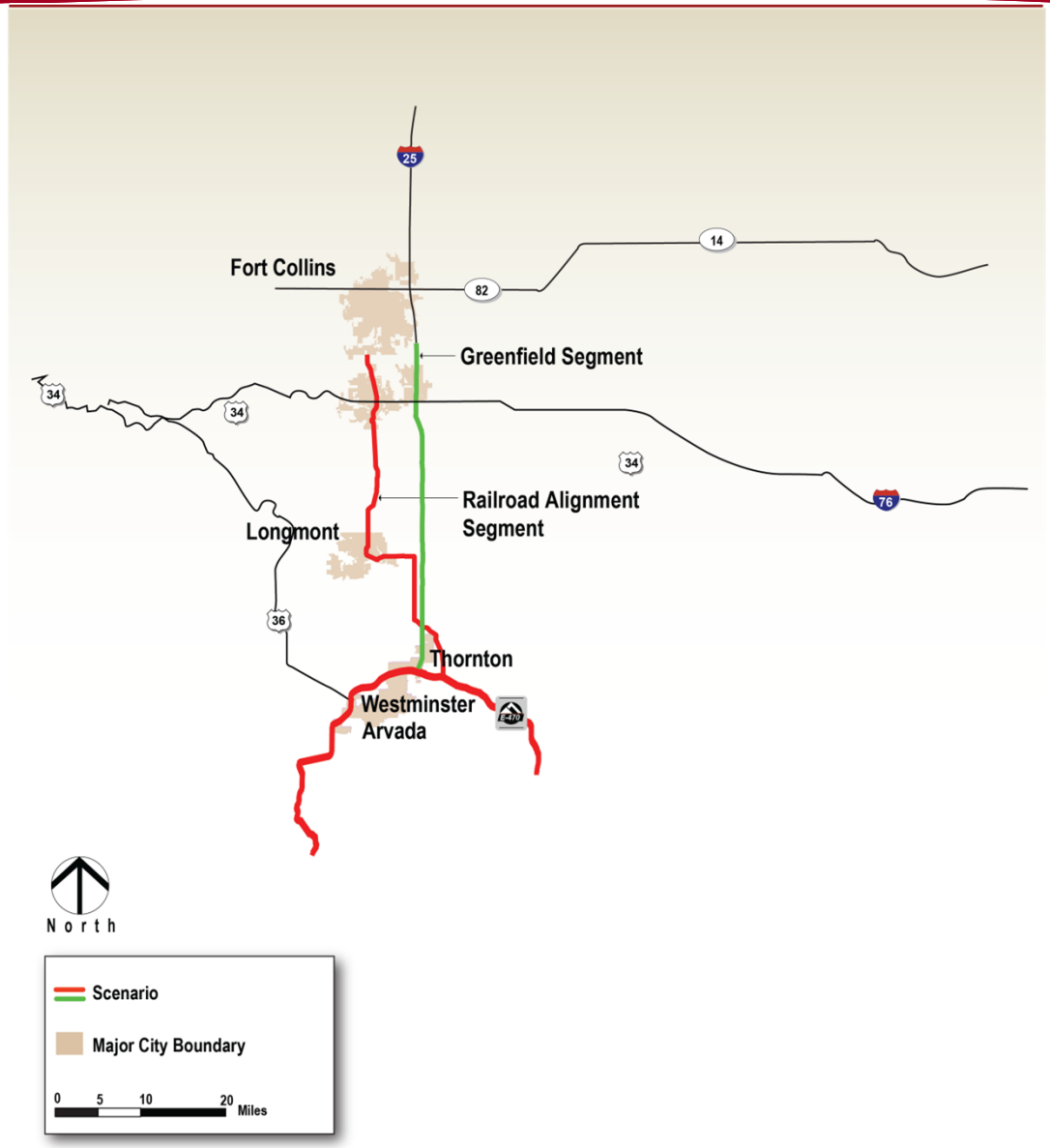
What Segments Need to be Engineered to Build Our Alternative Scenarios?

- 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

North to Fort Collins: Railroad and Greenfield Segments

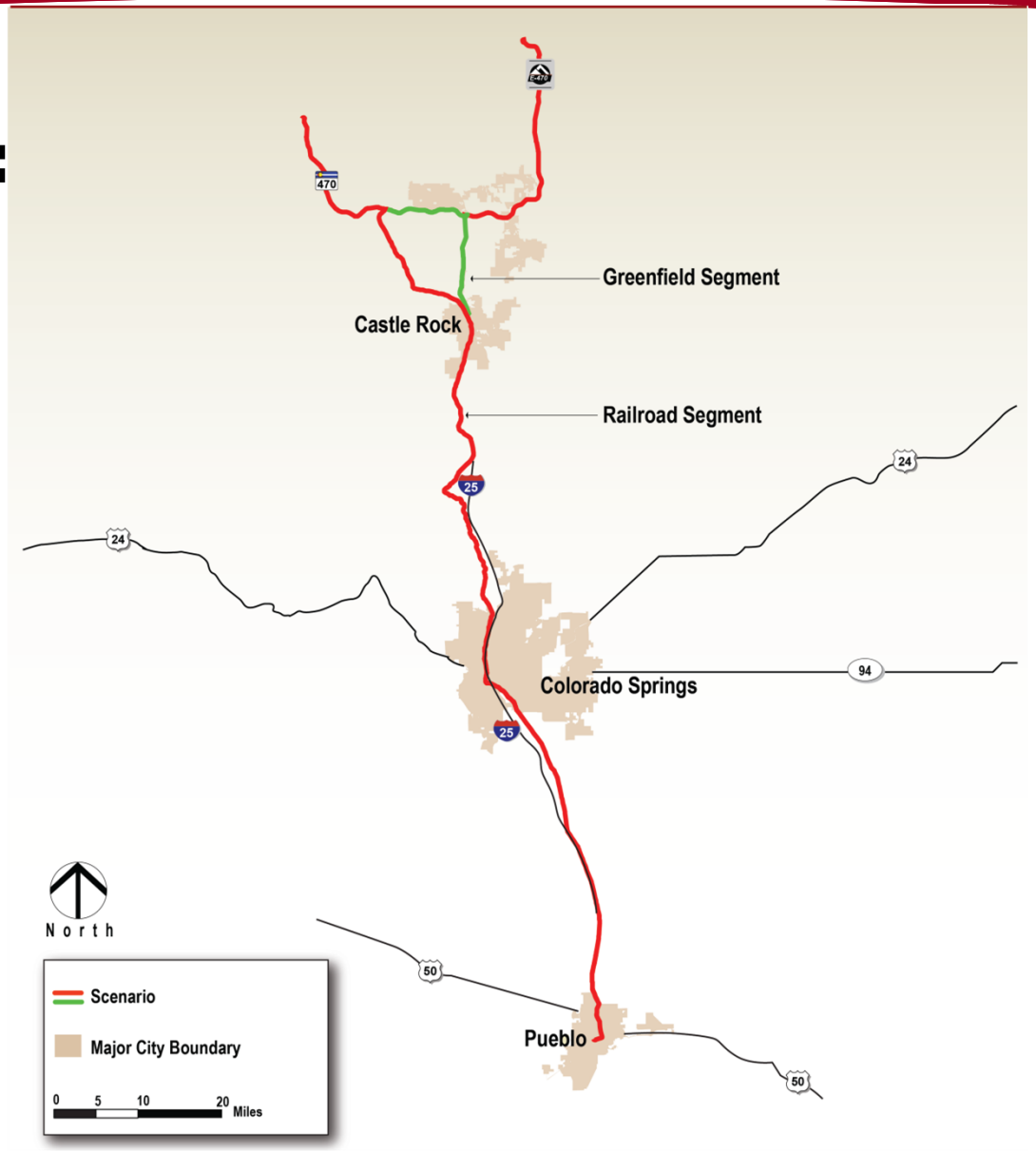


I: North to Ft Collins: Railroad: NMEOL ▶ UPRR ▶ CR 7 ▶ SH 119 ▶ BNSF ▶ Longmont ▶ Loveland

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

ICS Interregional Connectivity Study

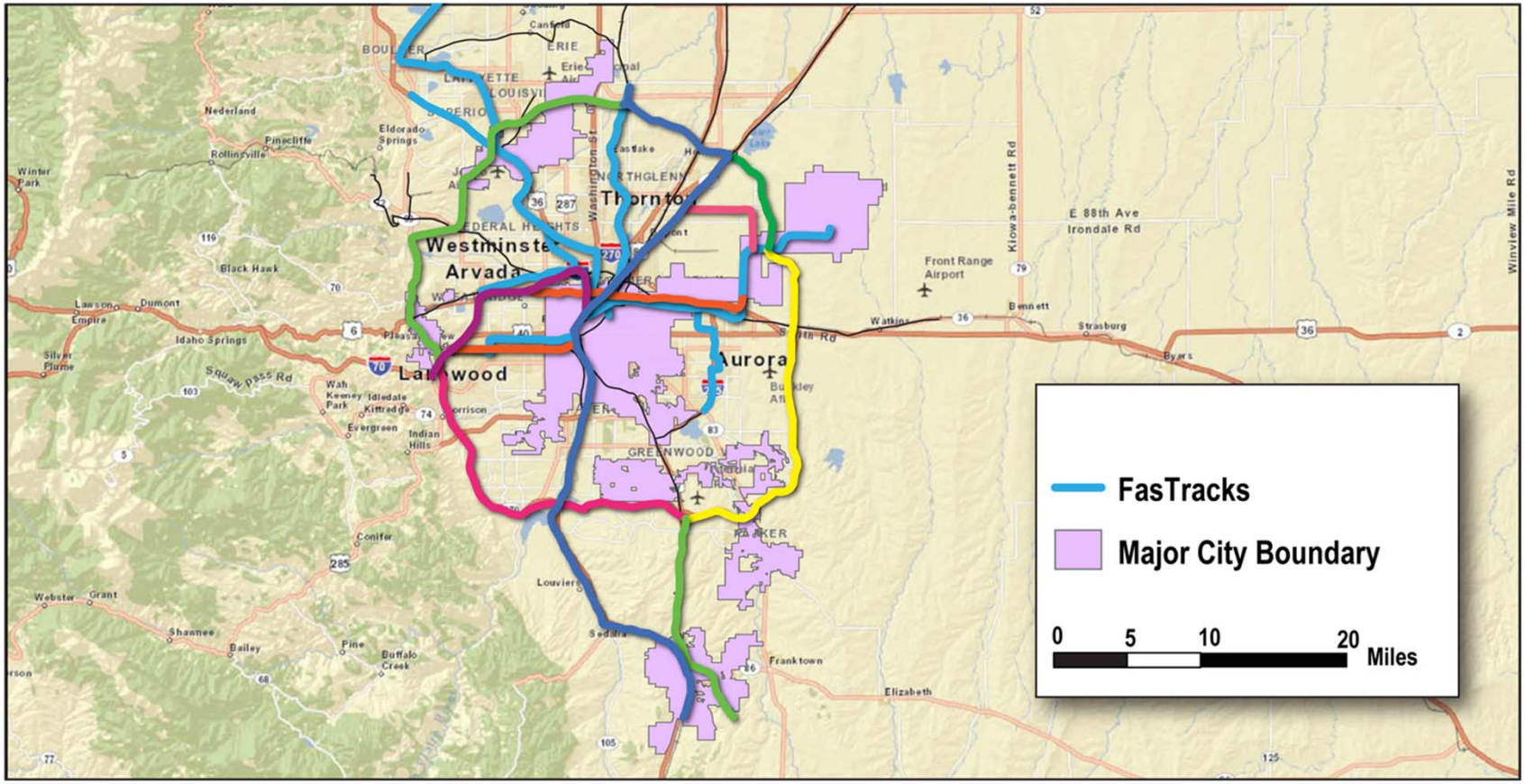
South to Pueblo: Best of Breed (new for L-2)



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

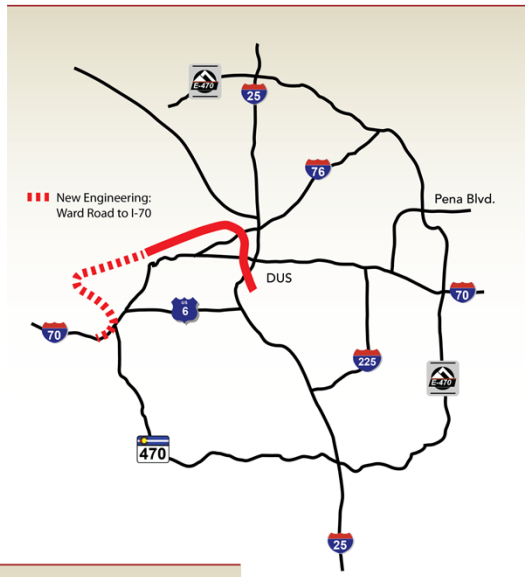
ICS Interregional Connectivity Study

Alignments Being Studied In The Denver Metro Area



E/W Through Denver

East/West: I-70 ▸ US 6 ▸ CML/BrushLine



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

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

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

ICS Interregional Connectivity Study

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

B/C Studies – Cost Calculation

- Costs are expected to include the following:
  - All operating and maintenance costs (OPEX)
  - All capital costs, including right of way and soft costs (CAPEX)

- It is anticipated that the operating life assumed for the B/C studies will be 50 years; that long term interest for bonding will be assumed at 5 percent; and that inflation will average 3.5 percent per year, resulting in an “effective interest rate” of 1.5 percent. A sensitivity analysis will be provided to identify the risks associated with changes in the baseline conditions.

Level 2 Evaluation Next Steps: Public Involvement

- Technical Analysis November through January
- Project Leadership Team Meeting in February
- Public Workshops in February / March

Questions?

http://www.coloradodot.info/projects/ICS