PLT Meeting No. 9

CDOT Interregional Connectivity Study
Level 3 Evaluation Early Results

CH2MHILL

October 15, 2013

ICS Interregional Connectivity Study

CH2MHILL

Our objective is to communicate the following:

- What we heard from you at the last PLT meeting
- Overview of what we have learned so far
  - AGS Study
  - ICS Study
- Revised MOS (phasing) findings
- Likely next steps for ICS/AGS

What we heard from you last meeting

- Need to build something that is a success!
- How do we get the most people to vote for this and say “yes”?
- Phasing by segment? Or go with the bigger picture, the system, the scarier number?
- We need a bigger vision of the system – smaller initial segment will not get the votes.
- Mountain corridor provides a visionary segment that should be kept in mind.
- We need a collaborative effort to move anything forward.
- Key ingredients: DIA as a link; equitable distribution of service for vote; successful first phase

What have we learned – AGS

What have we learned - AGS

- Cost to build a high speed transit system into the mountains is high!
  - $10.8 billion to $32.4 billion
- Technologies exist that can do it
  - High speed maglev (Transrapid)
  - High speed rail
- There are viable alignments
  - All include tunnels to varying degrees
  - None stay 100% in I-70 right of way

What have we learned - AGS

- For high speed maglev, fare box can cover OPEX
- For high speed rail, fare box will cover OPEX except for MOS
- Benefit/cost is greater than 1.0 for all technologies and alignments at 20% federal funding or higher
- Still, finding funding is a problem

What have we learned – ICS

Key Assumptions for the final report

- Maglev Technology appears to be the most likely technology for the mountain segments
- HSR Technology will most likely be used for the Front Range segments – both technologies are carried into the final report
- Federal funding will be required to implement High Speed Transit (HST)
- A new state or regional sales tax will be required to implement HST
- A state or regional sales tax appears the most effective funding mechanism
- The first phase of the HST needs to have a positive operating ratio and a positive BCA

What have we learned – benefits...

Public Benefits

- All the scenarios investigated met the Purpose and Need
- Cost/Benefit Ratio is positive – the economic, environmental and community benefits are greater than the cost to implement the system
- Station development is expected to result in dramatic increases in local assessed valuation

Transportation Benefits

- Ridership of 18 million per year with the Full Build Scenario
- Alignments around Denver do as well or better than those through the City
- About 72 percent of the ridership is Front Range related but the AGS segments are important to revenue
- About 80 percent of the ridership is Intercity
- Diversion from aviation to transit is comparatively minor
- A "one seat ride" from Eagle County Regional Airport to DIA is possible only with Maglev technology
- Cross-platform transfers are expected to reduce ridership by about 5 % system wide

What have we learned – environmental...

- Environmental Considerations
  - All scenarios and MOS options considered will have positive effects on VMT and VHT
  - All scenarios will have a positive effect future land use
  - At this point the team identified no environmental “show-stoppers”
  - The ICS Full Build Scenario will have direct impacts on from 1,200 to 1,500 acres
  - Alignments around Denver will dramatically reduce community impacts
  - Construction on the I-76 Segment is expected to have more impact than construction on the C-470 and Northwest Quadrant segments
  - Truncating the alignment at Briargate will reduce impacts in Colorado Springs (COS)
  - Future construction through COS is challenging

What have we learned – engineering...

- Engineering
  - HSIPR is anticipated to cost about $55 to $65 million per mile (2013 $)
  - The ICS Full Build Scenario will require from 1,200 to 1,500 acres of ROW
  - There is opportunity to “single track” portions of the system resulting in significant cost savings of over $1 billion anticipated
  - The use of double track only at stations (hence single track for the remainder of the alignment) will save up to 30 percent of the CAPEX but reductions in ridership are great.
  - Alignments following the beltway segments are more constructible than the I-76 segment
  - The I-25 median to Fort Collins is no longer available to the project resulting in significant cost increases for that portion of the project.
  - Maglev technology provides a slightly faster travel time but is anticipated to cost about $20 million more per mile than HSR
  - Because of the potential advantages of Maglev technology in the future the study will carry both that technology and HSR in the final report.

What have we learned - financial...

Financial

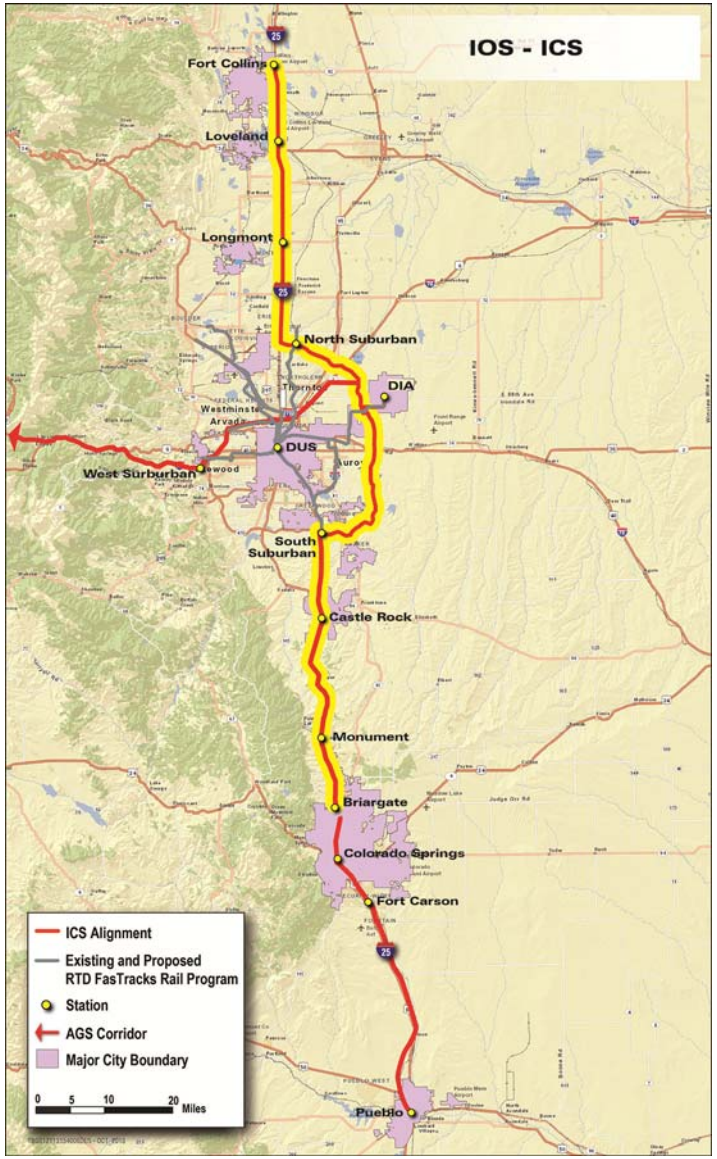
- Federal funding is a must to implement HSIPR in Colorado
- Low interest funding from RRIF and possibly TIFIA could be used to keep interest rates below 4%
- Private sector finance will cost 10 to 12 percent and limited to a relatively small portion (~25%) of the total cost.
- Any scenario or MOS will require a major new source of funding at the state level, generally a value of at least ½ of a penny of state sales tax is needed
- All 16 counties benefited by the HSIPR need to participate (as the leverage of the populated Front Range is needed)
- A "pay to play" strategy is impossible for a mountain system, increasing sales taxes to nearly 30 cents on the dollar
- An extension of the MPACT program or a new transportation sales tax appears the best mechanism for fulfilling the state match
- Local government contributions will optimistically be limited to covering station costs
- The economics of the system are not sufficient to attract a P3 Concessionaire without significant federal and state investment

What have we learned – phasing...

- Phasing – MOS Options must:
  - Connect to DIA
  - Be successful – have strong ridership and user satisfaction
  - Be attractive to a broad geographic spectrum of voters to support the new tax
- IOS – ICS: FC/DIA/Briargate presents the best cost-effectiveness
- IOS – AGS: DIA/Eagle County Regional Airport has weaker cost-effective measures but is strongly supported in the Mountain Communities
- Small MOSs (e.g. Denver to Fort Collins) will be easier to fund but represent benefits that are too focused to produce statewide support
- If a smaller MOS is desired, the S. Suburban to Briargate is the most representative of a HSIPR starter system as it connects the state's two largest population centers

Refreshed Phasing Results

IOS-ICS – best performer



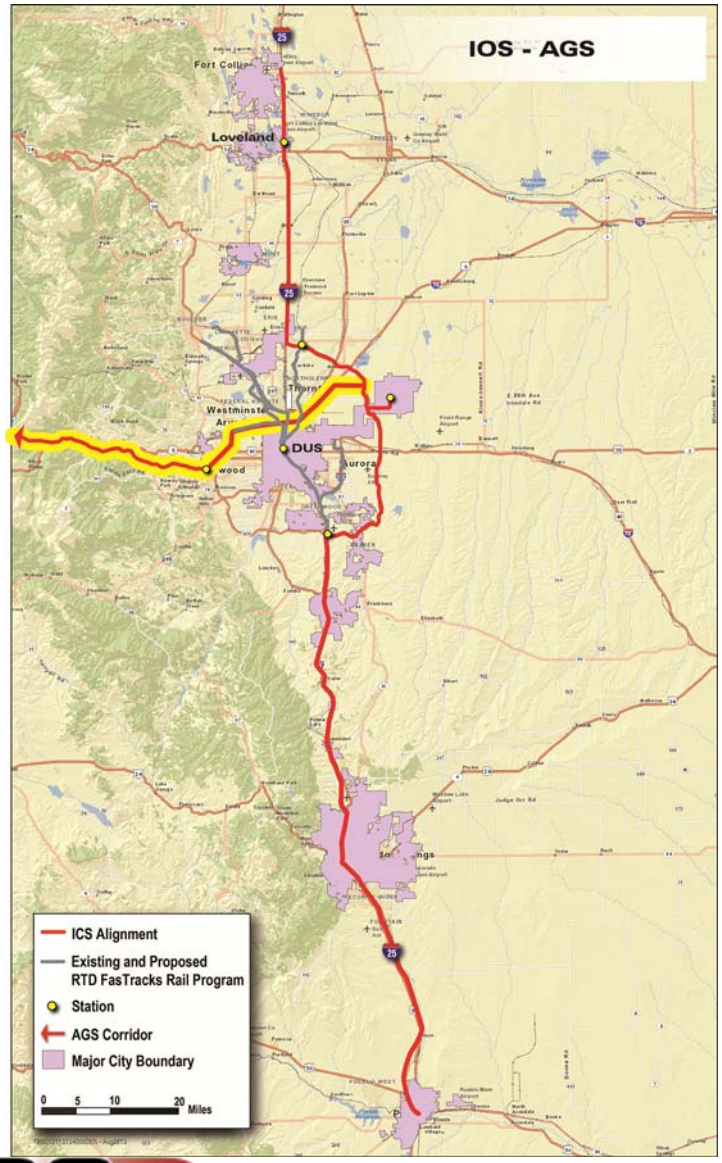
Scenario Description

- North:
  - North Suburban to Fort Collins
- Metro:
  - North to South Suburban via E-470
- South:
  - South Suburban to Briargate

Measure

- Total Mileage- 132
- Capital Cost – $7.2 B
- OPEX - $88.2 M
- Ridership - 13.6 M
- Revenue - $198 M
- OPEX Ratio - 2.3
- Cost/ride - $30.16
- Cost/rider mile - $0.23
- Sales Tax Impact (16 counties): 0.75%
- Sales Tax Impact (Statewide) - 0.63%

IOS-AGS – Strong local support



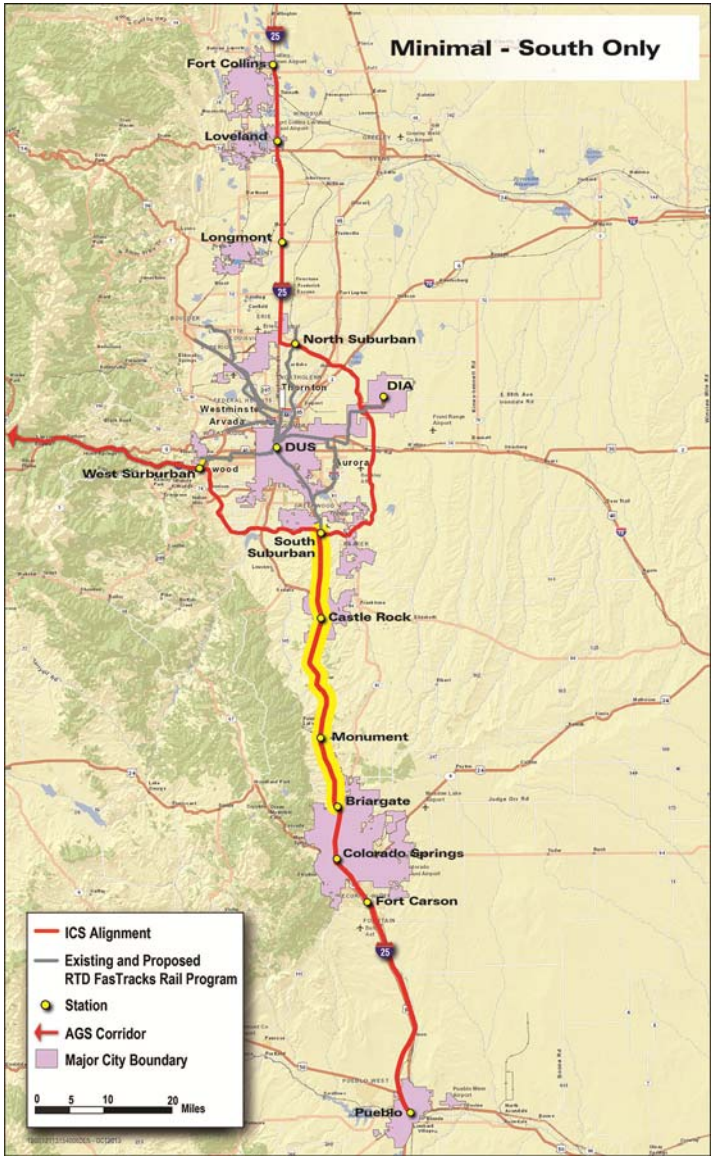
Scenario Description

- Metro:
  - DIA to West Suburban via I-70 & I76
- West:
  - West Suburban to ECRA

Measure

- Total Mileage- 151
- Capital Cost – $16.5 B
- OPEX - $78.5 M
- Ridership - 3.6 M
- Revenue - $79.3 M
- OPEX Ratio - 1.01
- Cost/ ride – $266
- Cost/rider mile - $1.75
- Sales Tax Impact (16 counties): 1.65%
- Sales Tax Impact (Statewide) - 1.4%

Minimal – South Only



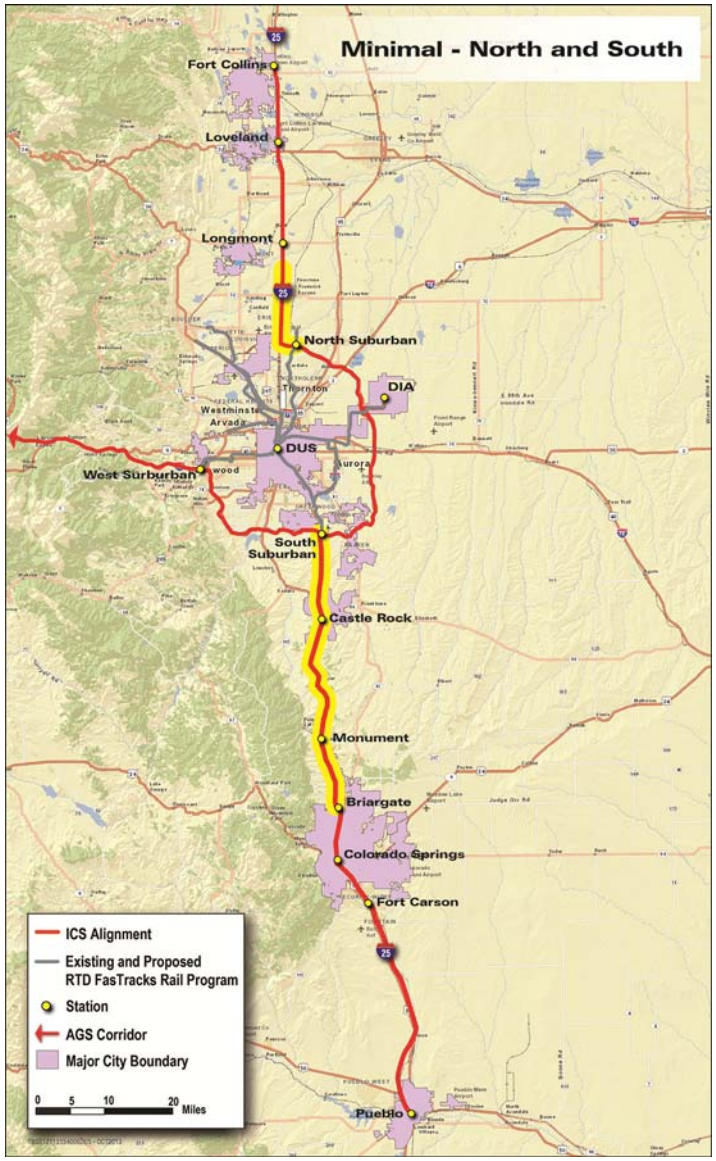
Scenario Description

- Metro:
  - Subsequent Phase
- South:
  - South Suburban Station to Briargate
- West:
  - Subsequent Phase

Measure

- Total Mileage – 39
- Capital Cost - $2.6
- OPEX - $33.0
- Ridership – 5.1 M
- Revenue - $39.8
- OPEX Ratio - 1.21
- Sales Tax Impact (16 counties): 0.27%
- Sales Tax Impact (Statewide): 0.23%

Minimal – North and South



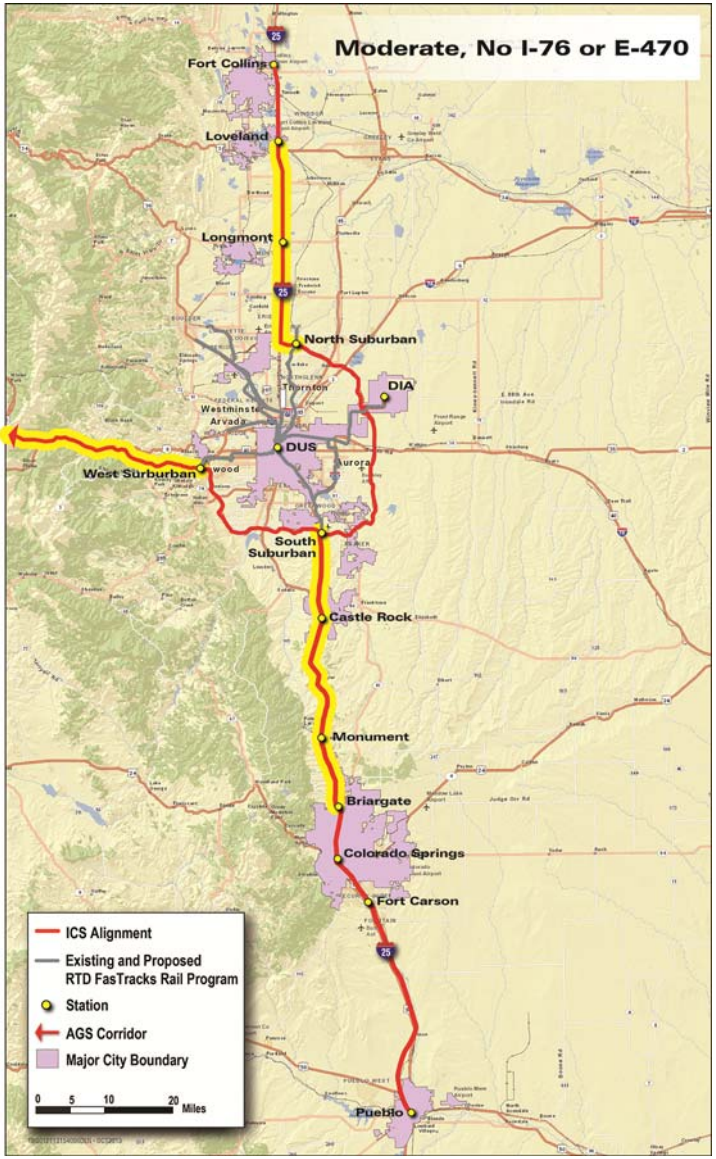
Scenario Description

- North:
  - North Suburban to Longmont with RTD
- Metro:
  - Subsequent Phase
- South:
  - South Suburban Station to Briargate
- West:
  - Subsequent Phase

Measure

- Total Mileage – 61
- Capital Cost - $3.7 B
- OPEX - $46.0
- Ridership - 5.4 M
- Revenue – $44.2 M
- OPEX Ratio - <1
- Sales Tax Impact (16 counties): 0.38%
- Sales Tax Impact (Statewide): 0.32%

Moderate, No I-76 or E-470



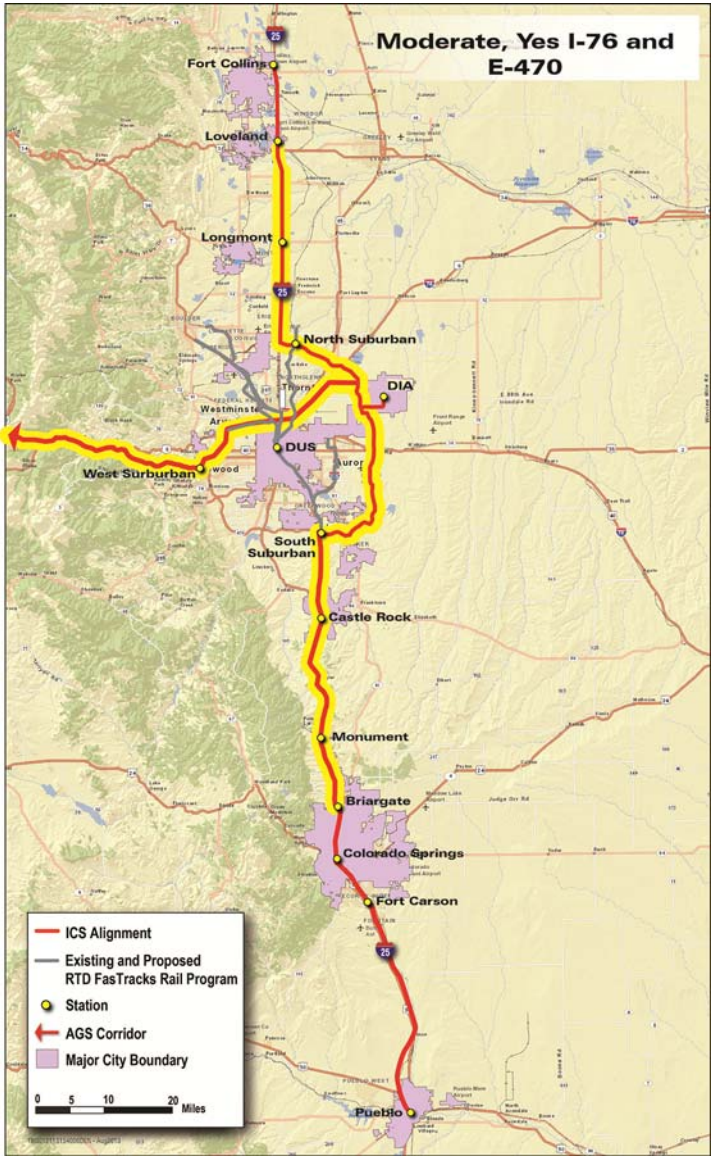
Scenario Description

- North:
  - North Suburban to Loveland
- Metro:
  - Subsequent Phase
- South:
  - South Suburban to Briargate (N of COS) Station
- West:
  - West Suburban to Keystone

Measure

- Total Mileage – 120
- Capital Cost - $9.3 B
- OPEX – $85.1 M
- Ridership - Not calculated (NC)
- Revenue - NC
- OPEX Ratio - NC
- Sales Tax Impact (16 counties): 0.96%
- Sales Tax Impact (Statewide): 0.80%

Moderate, Yes I-76 and E-470



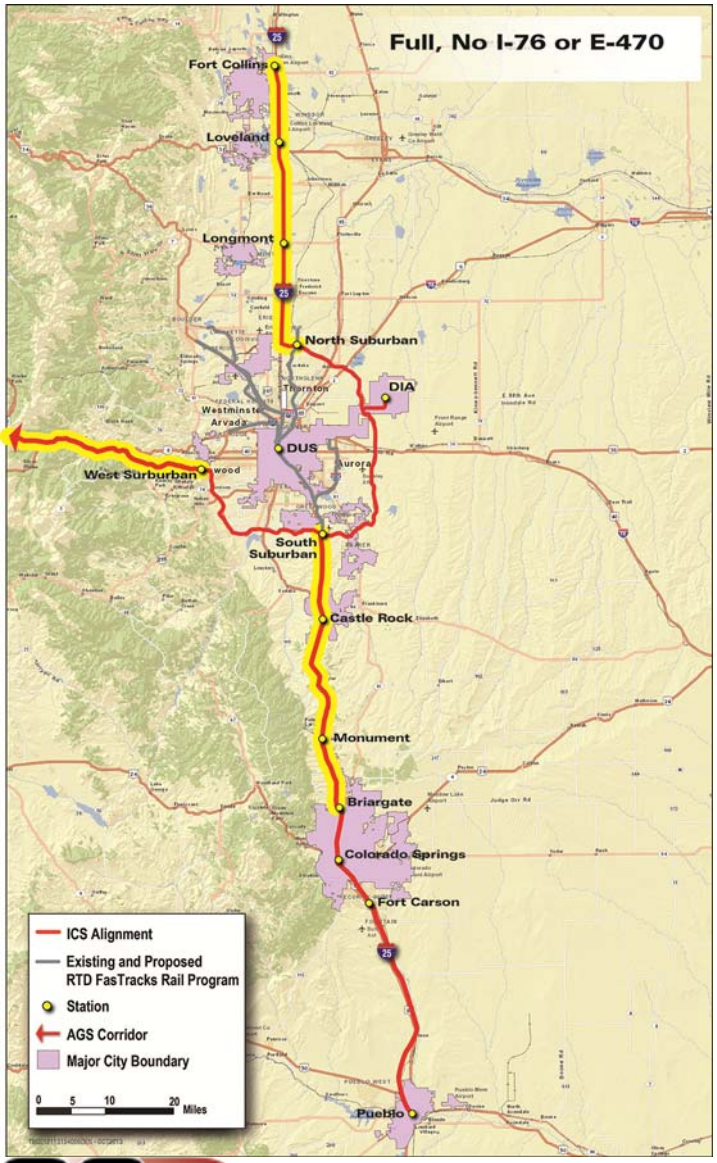
Scenario Description

- North:
  - North Suburban to Loveland
- Metro:
  - West Suburban to DIA via I-70 & I-76
  - North to South Suburban via E-470
- South:
  - South Suburban to Briargate (N of COS) Station
- West:
  - West Suburban to Keystone

Measure

- Total Mileage – 173
- Capital Cost - $15.45 B
- OPEX - $130.4 M
- Ridership - NC
- Revenue - NC
- OPEX Ratio - NC
- Sales Tax Impact (16 counties): 1.6%
- Sales Tax Impact (Statewide): 1.34%

Full, No I-76 or E-470



Scenario Description

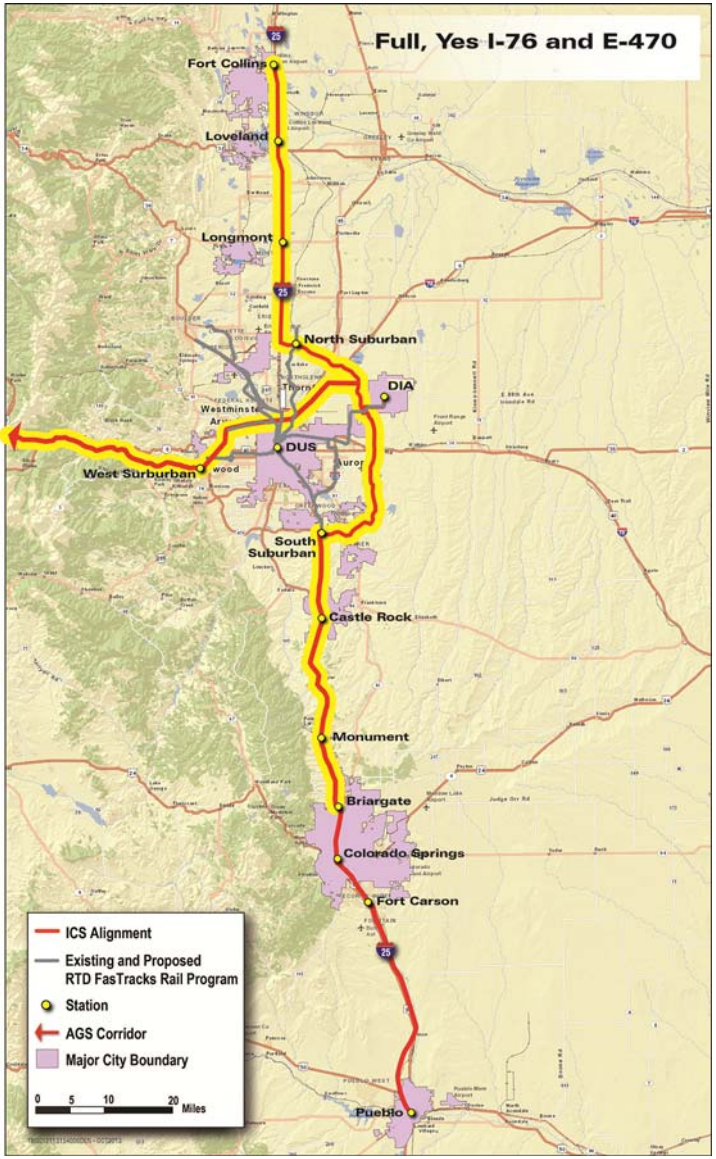
- North:
  - North Suburban to Fort Collins
- Metro:
  - Subsequent Phase
- South:
  - South Suburban to Briargate
- West:
  - West Suburban to Breckenridge

Measure

- Total Mileage – 138
- Capital Cost - $11.1 B
- OPEX - $93.4 M
- Ridership - NC
- Cost/Ride - NC
- Cost/Rider mile - NC
- Revenue - NC
- OPEX Ratio - NC
- Sales Tax Impact (16 counties): 1.15%
- Sales Tax Impact (Statewide): 0.96%

ICS Interregional Connectivity Study

Full, Yes I-76 and E-470



Scenario Description

- North:
  - North Suburban to Fort Collins
- Metro:
  - West Suburban to DIA via I-70 & I-76
  - North to South Suburban via E-470
- South:
  - South Suburban to Briargate
- West:
  - West Suburban to Breckenridge

Measure

- Total Mileage – 225
- Capital Cost - $17.24
- OPEX - $142.0 M
- Ridership - NC
- Cost/Ride - NC
- Cost/Rider mile -NC
- Revenue - NC
- OPEX Ratio - NC
- Sales Tax Impact (16 counties): 1.8%
- Sales Tax Impact (Statewide): 1.5%

Financial Considerations: IOS - ICS

IOS – ICS Simple Pay Back Analysis

	Total	1	2	3	4	5	6
Revenue	$5,940.0	$198.0	$198.0	$198.0	$198.0	$198.0	$198.0
Less: OPEX	$2,646.0	$88.2	$88.2	$88.2	$88.2	$88.2	$88.2
Net Cash	$3,294.0	$109.8	$109.8	$109.8	$109.8	$109.8	$109.8
Simple Pay Back							
CAPEX	$7,240.0						
With Fed $	33 years						
W/O Fed $	66 years						

IOS - ICS Conceptual Cash Flow

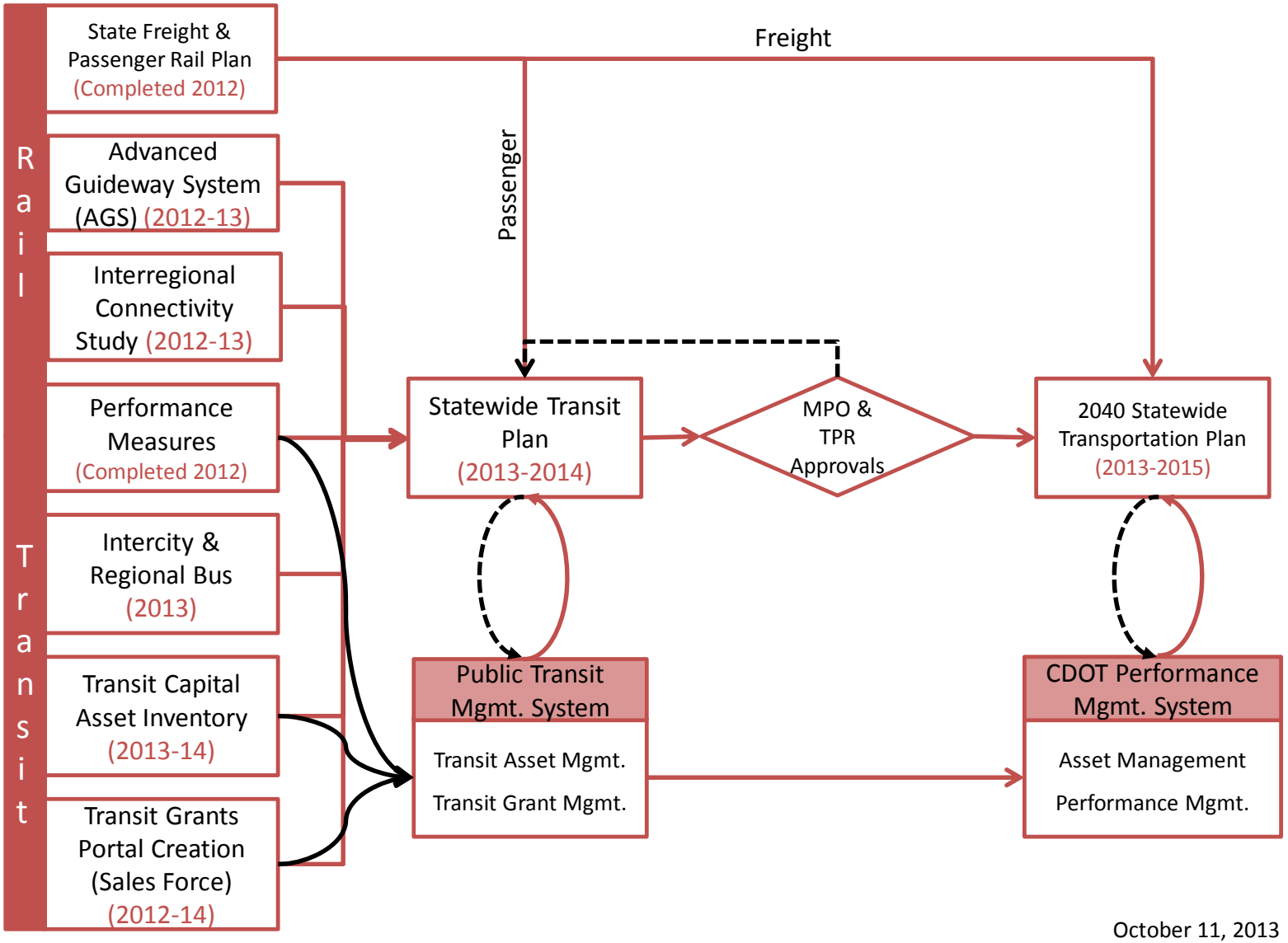
Inputs	Total	1	2	17	18
Requirements					
CAPEX	$7,240.0				
CAPEX Replacement - Vehicles (Yr 17 - 20)	$200.0			50	50
CAPEX Replacement - Systems @ 4% CAPEX	$1,005.0	33.5	33.5	33.5	33.5
CAPEX Replacement - Guideway @.005% CAPEX	$660.0	22	22	22	22
Total CAPEX	$9,105.0				
Funding Sources					
Federal Funding @ 50%	$3,620.0				
Local Contributions (stations)	$175.0				
Remaining CAPEX	$5,310.0				
Capital Recovery	$307.00	$307.00	$307.00	$307.00	$307.00
Income					
Fare Box	5940	198	198	$198.0	$198.0
Less: OPEX	$2,646.0	$88.2	$88.2	$88.2	$88.2
Net Cash	$3,294.0	$109.8	$109.8	$109.8	$109.8
Shortfall		**-$197.20**	**-$197.20**	**-$197.20**	**-$197.20**

Ridership and Revenue by Market

Origin	Destination	Station Pair	HSR Ridership			HSR Revenue		
			Ridership Diverted	Ridership Induced	Total Ridership	Revenue Diverted	Revenue Induced	Total Revenue
I70	I70	I70-I70	0	0	0	$ 0	$ 0	$ 0
I70	I25N	I70-I25N	0	0	0	$ 0	$ 0	$ 0
I70	I25S	I70-I25S	0	0	0	$ 0	$ 0	$ 0
I70	DEN	I70-DEN	0	0	0	$ 0	$ 0	$ 0
I25N	I70	I25N-I70	0	0	0	$ 0	$ 0	$ 0
I25N	I25N	I25N-I25N	1,235,569	170,866	1,406,435	$ 13,059,799	$ 1,811,582	$ 14,871,381
I25N	I25S	I25N-I25S	1,325,354	161,971	1,487,325	$ 34,669,948	$ 4,321,653	$ 38,991,601
I25N	DEN	I25N-DEN	1,097,296	79,808	1,177,104	$ 11,272,499	$ 1,175,753	$ 12,448,252
I25S	I70	I25S-I70	0	0	0	$ 0	$ 0	$ 0
I25S	I25N	I25S-I25N	1,325,354	161,971	1,487,324	$ 34,669,952	$ 4,321,652	$ 38,991,605
I25S	I25S	I25S-I25S	3,754,759	432,891	4,187,650	$ 32,394,830	$ 4,403,031	$ 36,797,861
I25S	DEN	I25S-DEN	1,265,047	82,816	1,347,863	$ 20,238,446	$ 1,555,441	$ 21,793,887
DEN	I70	DEN-I70	0	0	0	$ 0	$ 0	$ 0
DEN	I25N	DEN-I25N	1,097,296	79,808	1,177,104	$ 11,272,499	$ 1,175,753	$ 12,448,252
DEN	I25S	DEN-I25S	1,265,047	82,816	1,347,863	$ 20,238,444	$ 1,555,442	$ 21,793,886
DEN	DEN	DEN-DEN	0	0	0	$ 0	$ 0	$ 0
		TOTAL	**12,365,721**	**1,252,946**	**13,618,668**	**$ 177,816,418**	**$ 20,320,307**	**$ 198,136,725**

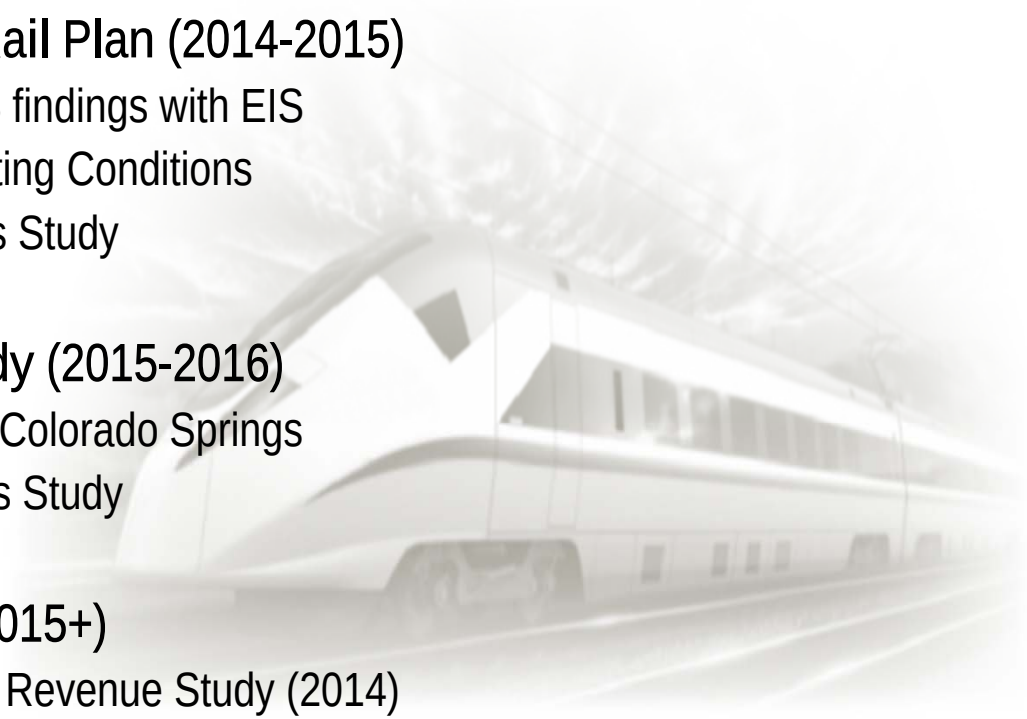
CDOT's Proposed Next Steps

Transit Studies Flowchart



High Speed Transit System Next Steps

- Update State Freight & Passenger Rail Plan
  - Integrated AGS & ICS High Speed System
- North Front Range Strategic Rail Plan (2014-2015)
  - Reconcile RTD-NAMS and ICS findings with EIS
  - Reflect Freight Railroad Operating Conditions
  - Funding is Programmed for this Study
- South I-25 Environmental Study (2015-2016)
  - Multimodal Between Denver & Colorado Springs
  - Funding is in Discussion for this Study
- I-70 Mountain Corridor TBD (2015+)
  - Based on Outcome of Traffic & Revenue Study (2014)



ICS Project Look Ahead Schedule

- Public Open Houses October 28 at Pueblo, October 29 at COS; November 4 at Fort Collins; and November 5 at Denver
- Draft AA Report – November 7
- Transit and Intermodal Committee approves study recommendations on November 21 and 22
- Project closeout –December 31
- Transportation Commission accepts study findings on December 18 and 19.