Project Update with STAC

CDOT Interregional Connectivity Study

CH2MHILL

May 2013

ICS Interregional Connectivity Study

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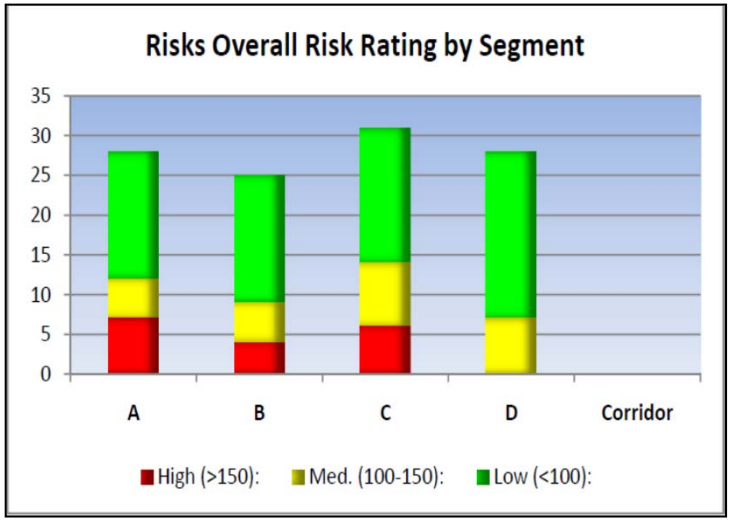
Where are We in the Process?

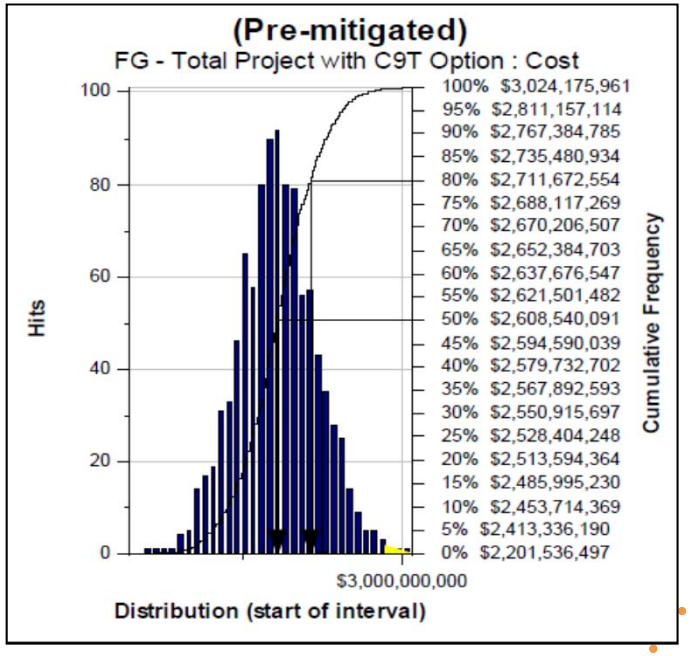
ICS Accomplishments Since Dec. 2012

- Conceptual Engineering of Alignments
- Cost Estimates for all Scenarios
- Service Planning for each Scenario
- Operating Estimates for each Scenario
- Ridership Estimates for each Scenario
- High Level Review of Physical Impacts of Alignments
- Evaluation of Funding Sources
- B/C Preliminary Results

CAPEX Methodology

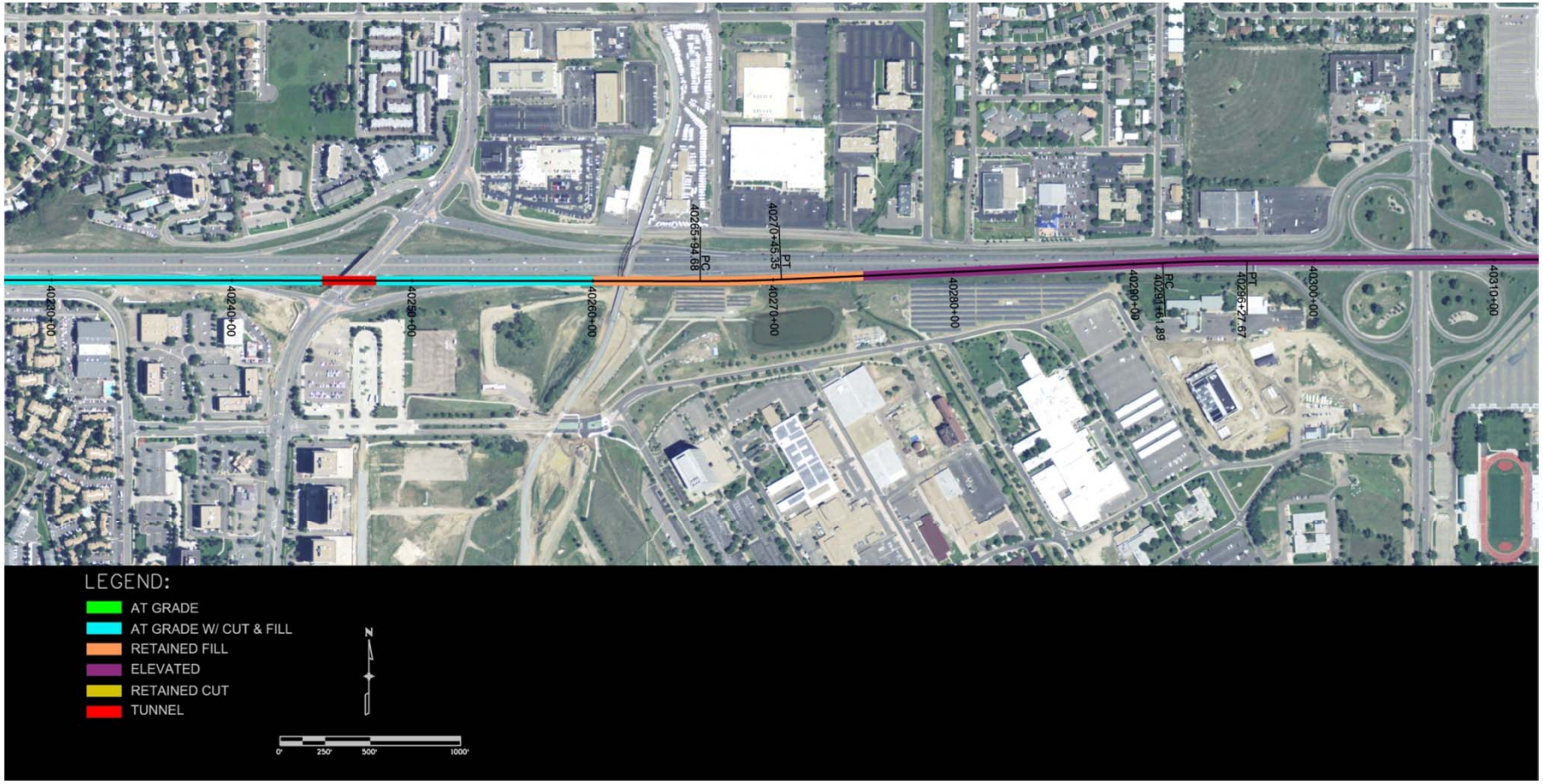
- Capital Expenditure / Capital Cost (CAPEX) Methodology Manual was developed at Level 1
- Standard Cross Sections were developed for
  - Track at grade
  - Track on retained fill
  - Track on structure
  - Track in Tunnel
- Unit Prices were developed for each standard cross section
- Unit price is multiplied by the length of a standard cross section within a given segment





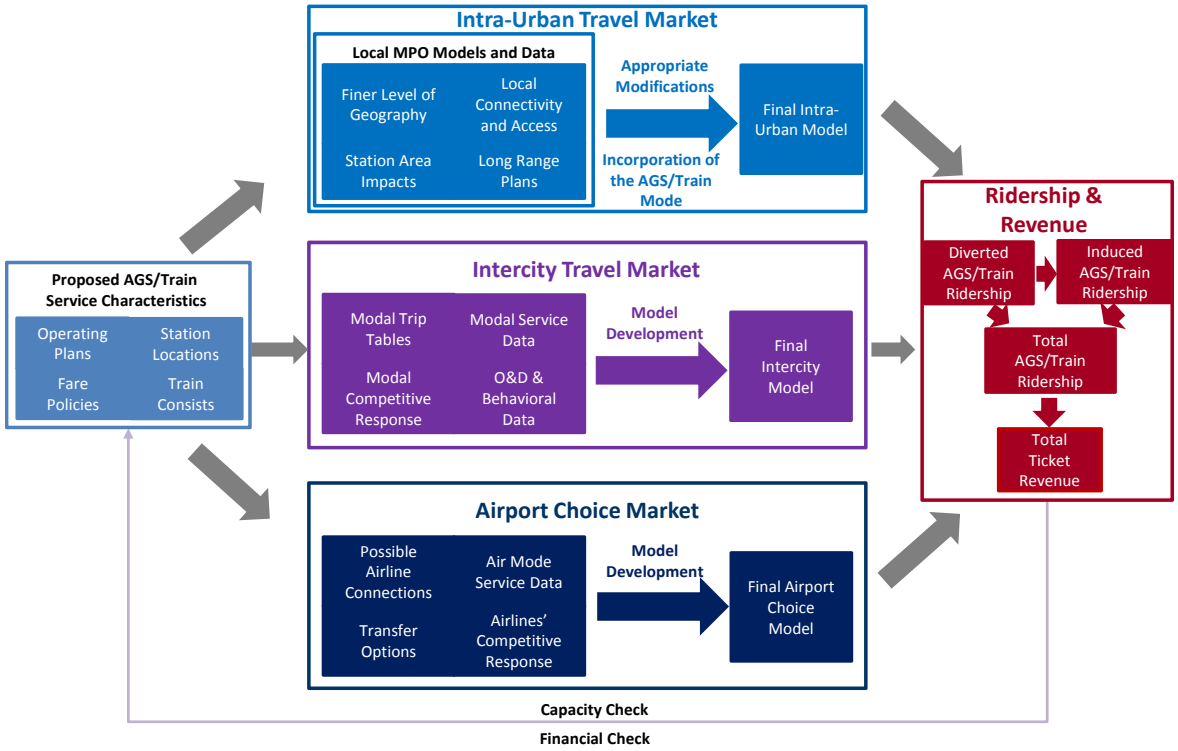
ICS Interregional Connectivity Study

Example of Quantity Measurement



Ridership Estimation Process

- Open, non-proprietary methods
- Use of DRCOG & other MPO inputs & review by MPO's
- New data to update inputs and to inform model



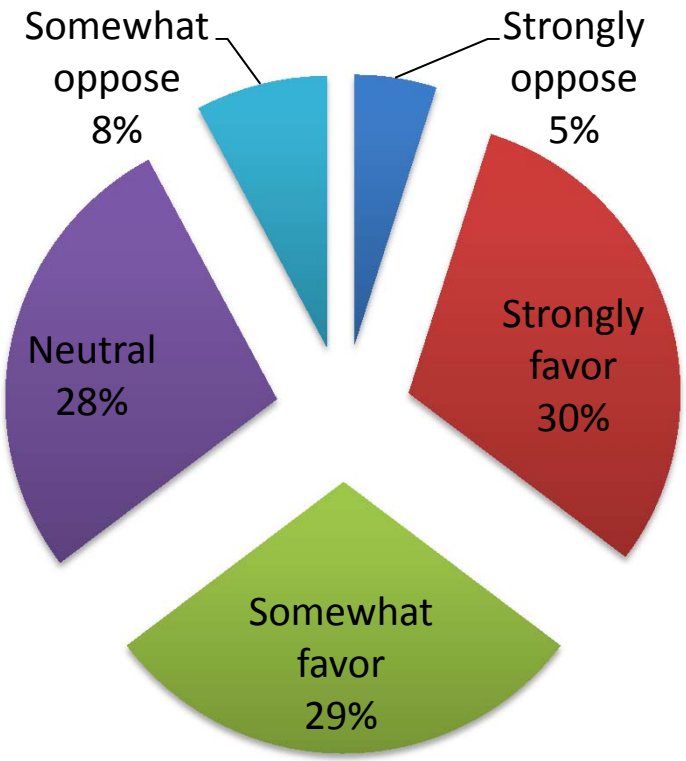
Stated Preference (SP) Survey Design

- 8 SP situations tested for each respondent
- 3 different options for making the trip described
- The situations forced respondents to make trade-offs
- Travel time and cost values used in the 8 SP situations were generated from the actual (reference) trip the respondent made

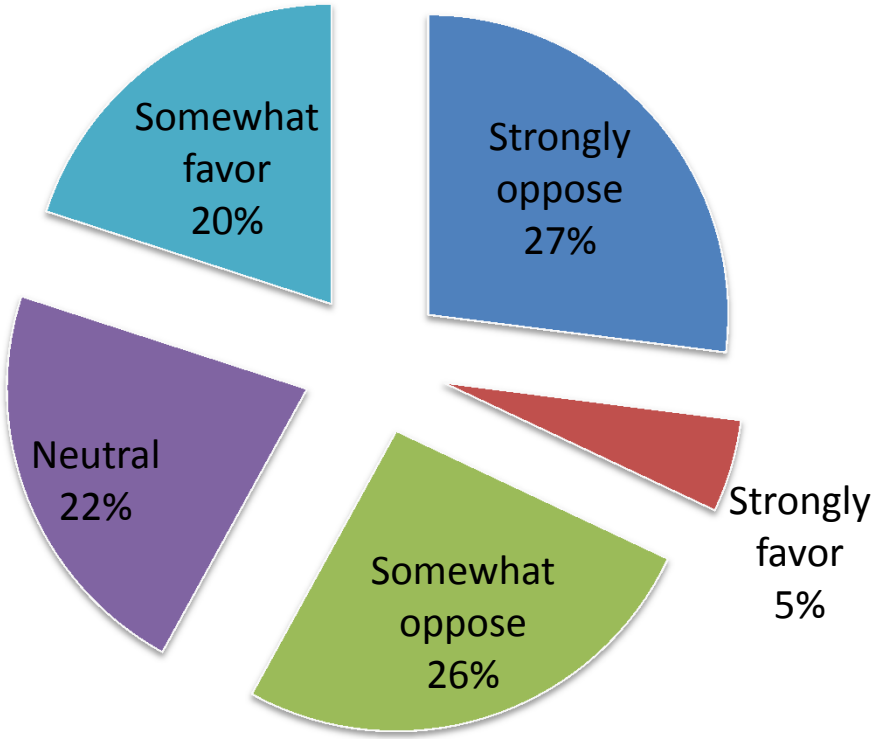
Current Route	New Tolled Route	Travel by AGS/Train
Total travel time: 3h 0m	**Total travel time:** 2h 20m	Time to get to train: 0h 15m On-board train travel time: 1h 42m Time from train to destination: 0h 15m **Total travel time:** 2h 12m Number of transfers: 1
Price of gasoline at time of trip: $4.50 per gallon Toll costs: $3.00 per trip Parking costs: $6.00 per trip	Price of gasoline at time of trip: $4.50 per gallon Toll costs: $11.00 per trip Parking costs: $6.00 per trip	Cost to get to train station and parking: $6.00 Total one-way train fare for your party of 2: $50.00 Cost from train station to destination: $4.00 **Total one-way travel cost:** $60.00
I prefer this option: ()	I prefer this option: ()	I prefer this option: ()

Stated Preference Survey

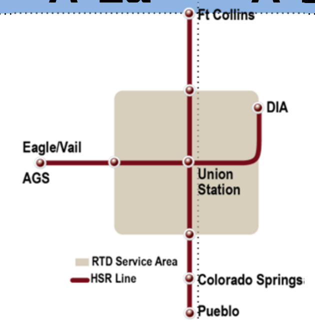
Opinion: new AGS/Train

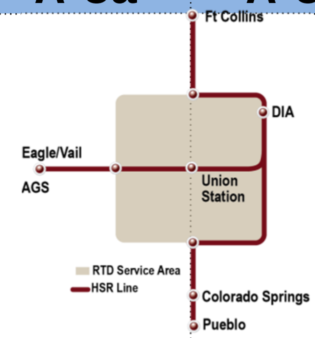


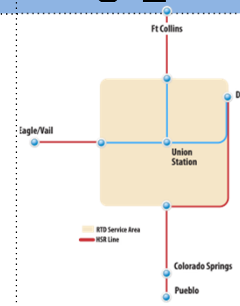
Opinion: tolls on I-25 and I-70

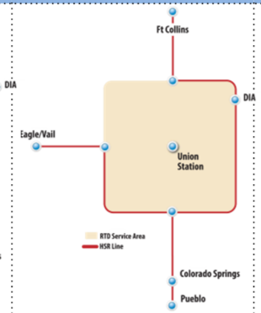


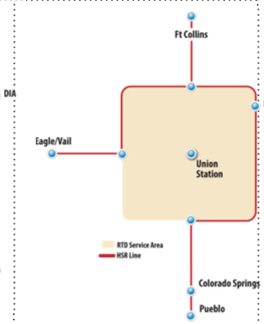
Market Share by Scenario







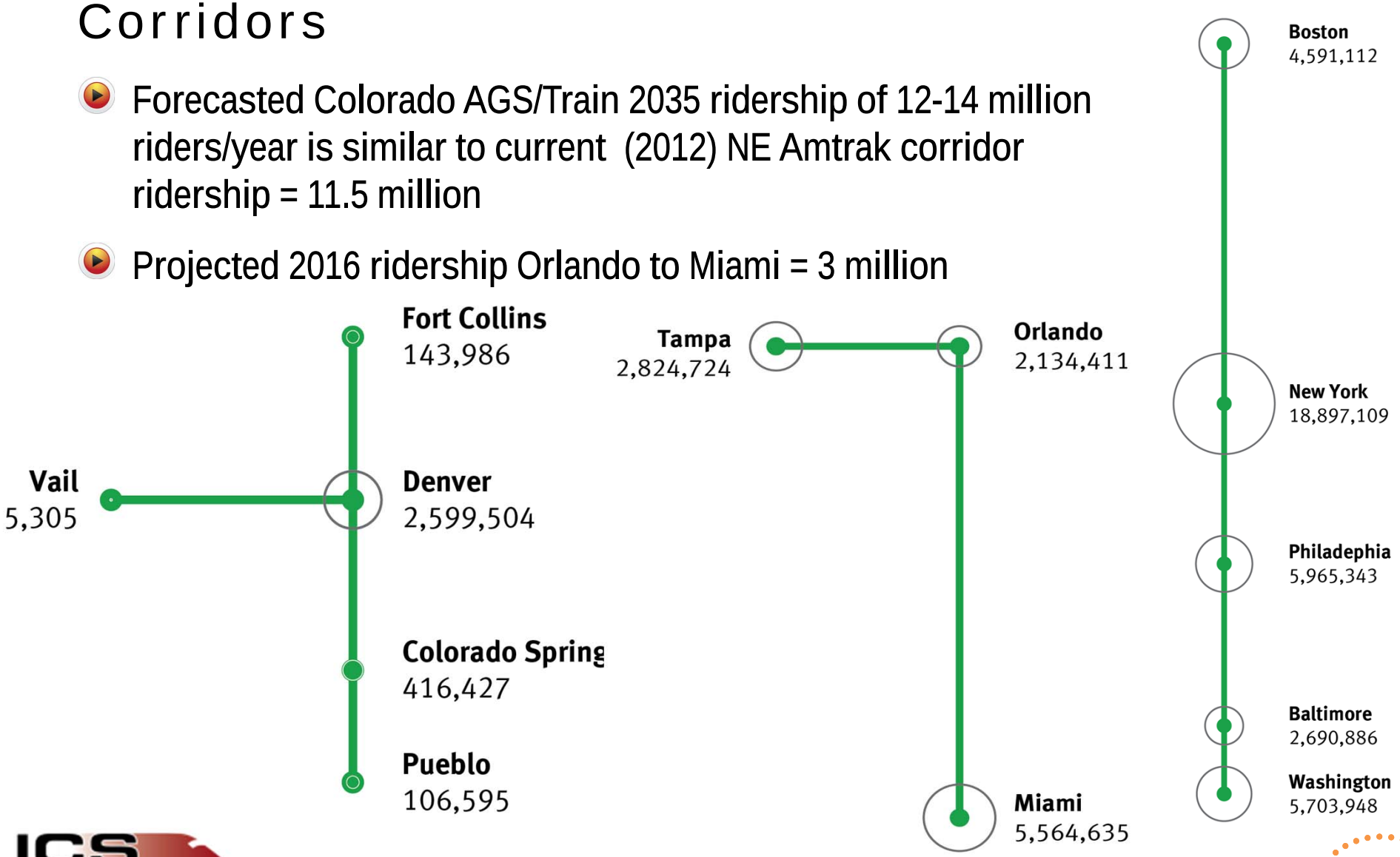




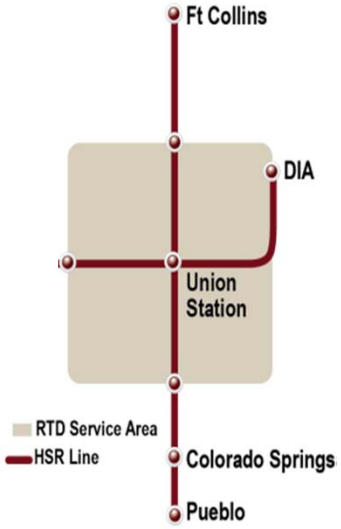
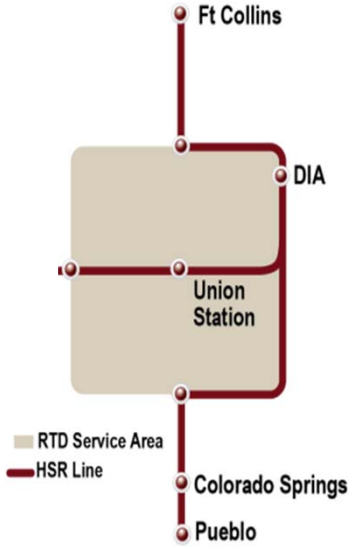
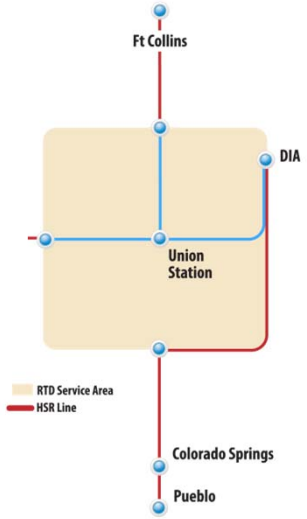
Market	A-1a	A-1b	A-5a	A-5b	C-1	B-2	B-3
Mountain to Eagle	2,168,094	2,516,754	2,430,662	2,136,961	1,696,330	2,995,866	2,792520
Percent of Total	17.85%	19.12%	18.75%	16.27%	15.64%	21.63%	20.36%
Mountain Daily	7,227	8,389	8,102	7,123	5,654	9,986	9,308
North to FC	2,069,642	2,472,297	2,326,763	2,620,094	1,909,081	2,498,178	3,107,216
Percent of Total	17.04%	18.78%	17.95%	19.94%	17.60%	18.04%	22.66%
North Daily	6,899	8,241	7,756	8,734	6,364	8,327	10,357
South to Pueblo	5,451,251	5,674,676	5,584,849	5,514,986	4,994,421	6,220,862	5,596,993
Percent of Total	44.87%	43.11%	43.07%	41.98%	46.06%	44.92%	40.81%
South Daily	18,171	18,916	18,616	18,383	16,648	20,736	18,657
Denver Interurban	2,460,154	2,499,106	2,623,452	2,865,417	2,244,474	2,133,840	2,218,226
Percent of Total	20.25%	18.99%	20.23%	21.81%	20.70%	15.41%	16.17%
Denver Daily	8,201	8,330	8,745	9,551	7,483	7,113	7,394
ANNUAL TOTAL	**12,149,141**	**13,162,833**	**12,965,726**	**13,137,458**	**10,844,306**	**13,848,747**	**13,714,955**

Ridership Benchmark Against Other HSR Corridors

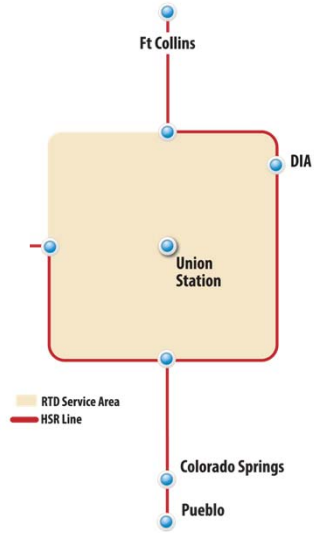
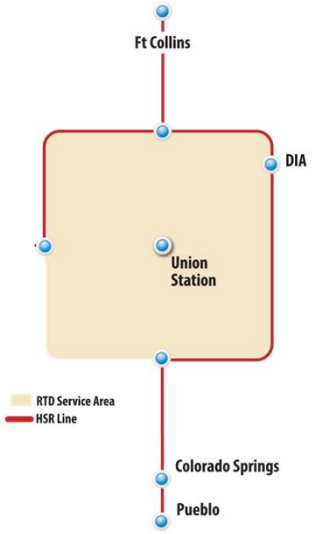
- Forecasted Colorado AGS/Train 2035 ridership of 12-14 million riders/year is similar to current (2012) NE Amtrak corridor ridership = 11.5 million
- Projected 2016 ridership Orlando to Miami = 3 million



Summary of Scenarios Presented at April PLT

	A-1	A-5	C-1
			
Capital Cost	$14.9 Billion	$14.3 Billion	$11.5 Billion
O&M Cost	$158 Million/yr	$161 Million/yr	$165 Million/yr
Ridership	12.1 to 13.1 million/yr	12.9 to 13.1 million/yr	10.8 million/yr
Revenue	$250 Million/yr	$257 Million/yr	$205 Million/yr
O&M Ratio	1.58	1.60	1.24
B/C Ratio	2.0	2.0	2.0

Summary of Scenarios Presented at May PLT

	B-2	B-3
		
Capital Cost	$13.4 Billion	$13.9 Billion
O&M Cost	$137 Million/yr	$TBD Million/yr
Ridership	13.8 million/yr	13.7 million/yr
Revenue	$249 Million/yr	$248 Million/yr
O&M Ratio	1.82	TBD
B/C Ratio	TBD	TBD

Summary of Feedback at Meetings

- Choice of alignments in Denver area affects ridership in the mountain and North I-25 corridors more than South I-25
- Will be a challenge to get community approval on alignments through the middle of the Denver metro area
- Central Denver / Union Station and DIA are important
- Important that service / operating plans work well with RTD to provide options
- Operating ratio >1.0 means fares will pay for O&M costs
- B/C of 2.0 means high speed transit return on investment is a “good deal” for Colorado if/when funding can be found

Next Steps

- ICS Public Meetings (Tentative)
  - Wednesday, May 22 – Windsor
  - Wednesday, May 29 – Colorado Springs
  - Thursday, May 30 – Pueblo
  - Denver (TBD)
  - Mountain Corridor (TBD)
- Level 2 Evaluation Report - May/June
- Initiate Level 3 Evaluation - June
- Next ICS PLT Meeting – July 2013

Questions?

Preliminary B/C Calculations

B/C Element	Scenario A-1	Scenario A-5	Scenario B2	Scenario B3	Scenario C-1
Costs ($)					
Capital Cost	$14.9 B	$14.3 B	$13.4 B	$13.9 B	$11.5 B
PW of O&M	$2.7 B	$3.2 B	$2.4 B	TBD	$2.8 B
Interest payments	$5.4 B	$5.3 B	$4.9 B	$5.1 B	$4.1 B
Total Cost	**$23.0 B**	**$22.8 B**	**$20.7 B**	**TBD**	**$18.4 B**
Benefits ($)					
Increase in Real Estate Value	$3.1 B	$3.1 B	$3.1 B	$3.1 B	$3.1 B
VMT, VHT, Fares, Clean Air, Etc.	$20.7 B	$21.4 B	TBD	TBD	$16.4 B
50% Federal funding	$7.4 B	$7.4 B	$6.7 B	$7.0 B	$5.7 B
Multiplier effect	$14.9 B	$14.8 B	$13.4 B	$13.9 B	$11.5 B
Total Benefits	**$46.1 B**	**$46.7 B**	**TBD**	**TBD**	**$36.7 B**
B/C Ratio	**2.00**	**2.05**	**TBD**	**TBD**	**2.00**
Operating Ratio	**1.53**	**1.68**	**TBD**	**TBD**	**1.26**

Comparison of Community/Environmental Impacts East – West Options through Denver

	I-76 through Denver 	US 6 through Denver 	Beltway north around Denver 
Community Disruption	8.3 linear miles	11.32 linear miles	7.02 linear miles
Parks	5 parks + RMA 0.56 linear miles	7 parks + RMA 1.07 linear miles	9 parks/open space 6.73 linear miles
Historic	Medium	High	Low
Environmental Justice	High	High	Low
Stream Crossings	13	12	13

Comparison of Community/Environmental Impacts North-South Options through Denver

	Railroad/ Santa Fe Corridor 	Beltway east around Denver 	Beltway west around Denver 
Community Disruption	18.31	5.05	9.98
Parks	1 0.15 linear miles	None	12 parks 11.28 linear miles
Historic	High	Low	Low
Environmental Justice	High	Low	Low
Stream Crossings	23	11	20