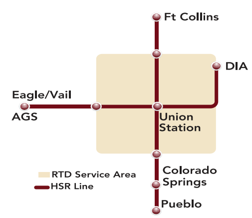
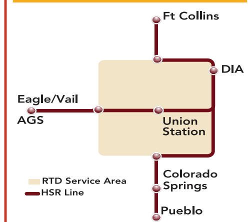
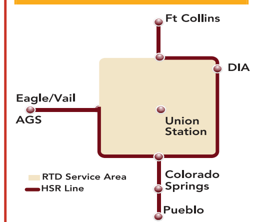
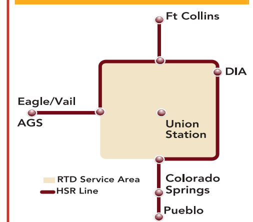
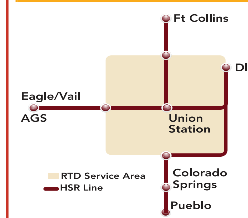
CAPEX Summary











CATEGORY	Scenario A1[1] - (US 6)	Scenario A5[2] - (I-76)	Scenario B2A	Scenrio B5	Scenario C1
TOTAL MILES	209	215	208	216	173
10-TRACK	5,326,576.40	5,036,768.66	4,918,755.00	55,028,948.79	4,099,736.96
20-STATIONS	400,000.00	375,000.00	350,000.00	375,000.00	325,000.00
30-FACILITIES:	433,576.00	243,048.00	243,048.00	243,048.00	243,048.00
40-SITEWORK, RIGHT OF WAY	1,018,332.48	965,121.92	740,776.78	876,376.16	736,301.58
50-COMM/SIGNALS	429,038.36	461,519.00	448,038.50	463,260.50	371,154.50
60-ELECTRIFICATION	1,037,674.18	1,116,232.00	1,083,628.00	1,120,444.00	897,676.00
70-PROFESSIONAL SER	2,204,525.34	2,090,410.84	1,083,628.00	2,067,304.75	1,701,593.85
80-UTILITY RELO	407,141.87	373,106.88	1,984,982.80	349,571.98	304,002.43
90-ENV. MITIGATION	216,129.94	204,942.24	341,563.05	202,676.94	166,822.93
CONTINGENCY	3,441,898.37	3,259,844.86	3,091,619.49	3,217,989.33	2,653,600.87
TOTAL	$ 14,914,892.95	$ 14,125,994.41	$ 13,397,017.78	$ 13,944,620.44	$ 11,498,937.11
COST PER MILE	$ 71,363.12	$ 65,702.30	$ 64,408.74	$ 64,558.43	$ 66,467.84

Footnotes:
1 – Note with Option a (I-76) the cost of this scenario increases to $15,667,000,000
2 – Note with Option b (US 6) the cost of this scenario increases to $14,308,000,000

ICS Interregional Connectivity Study

Environmental Impacts - Alignments Around Denver

- **Alignments around Denver (A-5, B-2A, and B-5) generally have fewer community impacts**
  - Less dense residential development
  - Right-of-way within transportation corridors, particularly for the east perimeter options (northeast and southeast quadrants)
  - Ecological/park/open space impacts, especially along west perimeter alignments (southwest and northwest quadrants)
  - Concerns regarding northwest quadrant in Golden area

Beltway East Around Denver

Community Disruption (miles Adjacent to residential/mixed use)
5.05 linear miles

Parks
None

Historic
Low
- ✓ 1 National Register listed site is potentially affected (Dinosaur Ridge)
- ✓ Potential for historic properties low in transportation corridor with recent development

Environmental Justice
Low
- ✓ No minority or low-income populations located along alignment

Stream Crossings
- ✓ 11 stream crossings
- ✓ 0.49 linear miles adjacent to streams

Beltway West Around Denver

Community Disruption (miles Adjacent to residential/mixed use)
9.98 linear miles

Parks
12 parks (Siena Reservoir, Carolyn Holmberg Preserve at Rock Creek Farm, Glacier Park, Colorado Hills Open Space, Rocky Flats National Wildlife Refuge, North Table Mountain Park, White Ash Mine Park, Mt Galbraith Park, Tin Cup Hogback Park, William F Hayden Green Mountain Park, Mount Glennon, Chatfield State Park)
11.28 linear miles adjacent to parks

Historic
Low
- ✓ No known sites affected
- ✓ Potential for historic properties low in transportation corridor with recent development

Environmental Justice
High
No minority or low-income populations located along alignment

Stream Crossings
- ✓ 20 stream crossings
- ✓ 0.76 linear miles adjacent to streams

Beltway North around Denver

Community Disruption (miles Adjacent to residential/mixed use)
7.02 linear miles

Parks
9 parks/open space ((Siena Reservoir, Carolyn Holmberg Preserve at Rock Creek Farm, Glacier Park, Colorado Hills Open Space, Rocky Flats National Wildlife Refuge, North Table Mountain Park, White Ash Mine Park, Mt Galbraith Park, Tin Cup Hogback Park)
6.73 linear miles

Historic
Low
- ✓ 2 National Register listed properties potentially affected (Riverside Cemetery, Flour Mill Lofts)
- ✓ Potential for historic properties high along established neighborhoods in central Denver

Environmental Justice
Low
Corridor generally traverses less developed, newer, and more affluent areas

Stream Crossings
- ✓ 13 stream crossings
- ✓ 0.71 linear miles adjacent to streams

Environmental Impacts - Alignments Through Denver

- **Alignments through Denver (A-1 and A-5) all have potential for adverse community impacts**
  - High speeds present concerns for noise, vibration, and safety at crossings (although crossings are grade-separated for all but Scenario C-1)
  - High Right-of-Way needs along developed corridors, particularly:
    - US 6 alignment for Scenarios A-1 and A-5
    - Around Denver Union Station for Scenario A-1
    - Along the freight railroad/Santa Fe corridors through central Denver (40th Ave to Evans Ave) for Scenario A-1
  - Established residential neighborhoods, especially west of I-25 and east of Sheridan/Wadsworth
    - Low Income and Minority Communities
    - Historic Properties and Neighborhoods
    - Cumulative Impacts of Multiple Transportation Facilities through Communities
  - Planned development and neighborhoods in Commerce City along 96th Ave

East-West I-76 through Denver (A-1 and A-5)

Community Disruption (miles Adjacent to residential/mixed use)
8.3 linear miles

Parks
6 parks (Johnson Park, Applewood Park, Golden Heights Park, Thunder Valley Park, North Dinosaur Park, Rocky Mountain Arsenal National Wildlife Refuge)
4.84 linear miles

Historic
Medium
- ✓ No known sites affected
- ✓ Much of corridor is adjacent to industrial and warehousing operations; some older residential homes are present between Pecos and Sheridan

Environmental Justice
Medium
- ✓ Low income/minority populations concentrated in central Denver, although residential development along I-76 further from corridor compared to other alignments

Stream Crossings
- ✓ 13 stream crossings
- ✓ 1.5 linear miles adjacent to streams

East-West US 6 Through Denver (A-1 and A-5)

Community Disruption (miles Adjacent to residential/mixed use)
11.32 linear miles

Parks
8 parks (Union Ridge, Frog Hollow Park, Barnum Park, Jefferson County Fairgrounds, Golden Heights Park, Thunder Valley Park, North Dinosaur Park, Rocky Mountain Arsenal National Wildlife Refuge)
5.35 linear miles adjacent to parks

Historic
High
- ✓ 3 National Register listed sites are potentially affected (Riverside Cemetery, Denver Union Station, Flour Mill Lofts)
- ✓ Neighborhoods and residential homes along US 6 maintain high degree of integrity and are generally post-War or older

Environmental Justice
High
Low income/minority populations concentrated along US 6 corridor between Wadsworth and I-25

Stream Crossings
- ✓ 12 stream crossings
- ✓ 0.55 linear miles adjacent to streams

North-South Railroad/Santa Fe Corridor through Denver (A-1 Only)

Community Disruption (miles Adjacent to residential/mixed use)
18.31 linear miles

Parks
1 (Fairfax Park)
0.15 linear miles

Historic
Medium/High
- ✓ 2 National Register listed properties potentially affected (Riverside Cemetery, Flour Mill Lofts)
- ✓ Potential for historic properties high along established neighborhoods in central Denver

Environmental Justice
High
Low income/minority populations concentrated in central Denver, particularly west of I-25 and east of Sheridan

Stream Crossings
- ✓ 23 stream crossings
- ✓ ?.? linear miles adjacent to streams

Environmental Impacts North and South of the Metro Area

N-1 Alignment traverses developed communities of Longmont, Loveland, Fort Collins

- Numerous residential neighborhoods are bisected by the N-1 alignment
- Insufficient right-of-way exists on the freight corridor to allow HSIPR/HST to be wholly within the right-of-way, and right-of-way requirements are thus high
- Corridor is better suited for commuter rail and not likely appropriate for HSIPR/HST
  - Communities are highly supportive of commuter rail, and a commuter rail along the N-1 alignment was approved in the I-25 North Environmental I mpact Statement (EIS)
  - I-25 North EIS determined the corridor was not suitable to HSIPR/HST, and communities do not support HSIPR/HST on this alignment
- Travel times are slower, costs are nearly six times higher, and ridership is lower than the N-2 alignment and new impacts are minimal

I-25 North EIS Commuter Rail Alignment to Fort Collins

Community Disruption (miles Adjacent to residential/mixed use)
0.56 linear miles

Parks
8 potentially affected parks
4.62 linear miles adjacent to parks

Historic
Medium
✓ Two National Register listed potentially affected
✓ Historic property potential in developed areas than 50 years old.

Environmental Justice
High
✓ Low income/minority populations concentrated adjacent to the US 287 corridor within communities of Longmont, Berthoud, Loveland, and Fort Collins)

Stream Crossings
✓ 12 stream crossings
✓ 2.77 linear miles of streams adjacent to alignment

N-2 Alignment along I-25 is generally contained within the I-25 right-of-way and has few environmental impacts

- CDOT is open to considering use of the I-25 right-of-way for HSIPR/HST
- Very few residences are located within 1,000 feet of the highway corridor
- The relatively straight alignment allows trains to achieve high speeds, providing good travel times for northern communities making intercity trips
- Stream crossings and impacts to farmlands and natural areas occur generally in the same locations that are already impacted by the highway corridor, and new impacts are minimal

I-25 North Alignment to Fort Collins

Community Disruption (miles Adjacent to residential/mixed use)
None

Parks
3 potentially affected parks
0.88 linear miles adjacent to parks

Historic
Low
✓ No known historic properties affected
✓ Potential for historic properties within CDOT right-of-way very low.

Environmental Justice
Low
✓ North of Timnath, some populations exist but far from alignment)

Stream Crossings
✓ 12 stream crossings
✓ 0.15 linear miles of streams adjacent to alignment

S-3 (new) Alignment South to Colorado Springs and Pueblo

- Only one alignment evaluated in Level 2
- Alignment generally follows highway and rail corridors where possible
- Alignment was modified and refined in Level 2 engineering to reduce environmental and community impacts, especially in the Black Forest area of Colorado Springs
- Environmental and community impacts greater in developed areas where new right-of-way is needed
- More open space, habitat, streams, wetlands, and other natural resources along this segment compared with other segments of the ICS
- Impacts are the same for all Scenarios because all share the same alignment from Denver to Colorado Springs and Pueblo

I-25 South Alignment to Colorado Springs and Pueblo

Community Disruption (miles Adjacent to residential/mixed use)
2.01 linear miles

Parks
2 potentially affected properties
1.17 linear miles

Historic
Medium
✓ 3 potentially affected National Register listed properties
✓ Traverses older, established neighborhood in Pueblo

Environmental Justice
Medium
✓ Low income/minority populations concentrated adjacent to much of the corridor through Colorado Springs and along a small (approximately 1.5 linear miles) portion of the alignment through Pueblo

Stream Crossings
✓ 52 stream crossings
✓ 4.96 linear miles of streams adjacent to alignment

Level 2 Goals and Criteria

2 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
- Identify general location of primary stations

2 Level 2 Evaluation Criteria

- Public Benefits
- Transportation Benefits
- Engineering and Institutional Feasibility
- Planning Feasibility
- Benefit Cost

Revenues and Financing

Capital Costs

- Range from $11 Billion to $14.5 B (2013$)
- Front Range only; costs for mountain AGS additional

$65 million/ year in revenue needed for first phase project

- Assuming 50% federal grants
- First phase project of $2 Billion

Goals of Revenue and Financing Analyses

- Identify new sources of funding
- Determine general level of revenue potential
- Determine the level of political will for new revenue sources

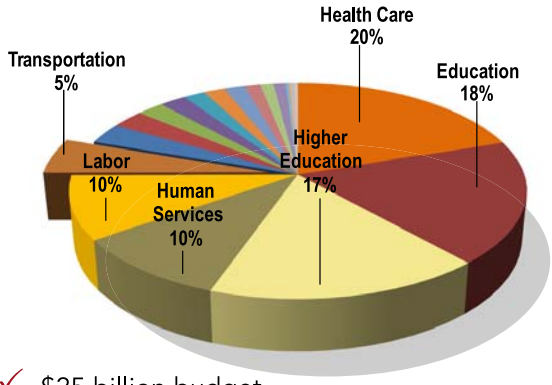
Approach

- Research other funding approaches
- Colorado State Budget
- CDOT Budget
- Identify transportation funding sources and general government sources and current funding levels

Identify Potential Funding Sources

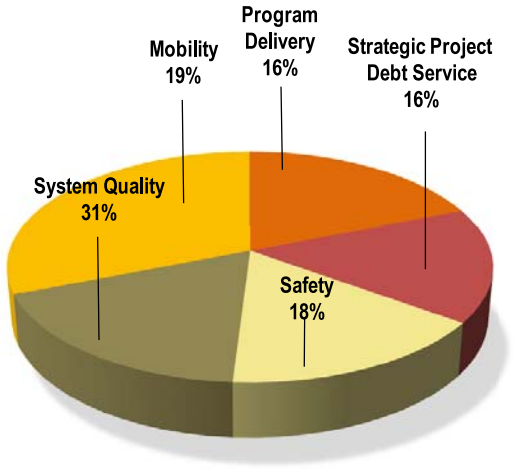
- Currently used for transportation
  - Motor Fuel Taxes
  - Vehicle Registration Fees
- Other General Government
  - Sales Taxes
  - Income Taxes
  - Property Taxes
  - Profits from Lottery Sales
- Others
  - Farebox Revenues
  - Value Capture Mechanisms (Fees)
  - Vehicle Miles Travelled (VMT) Fees
  - Utility Fees
  - Lodging (or other Visitor Fees)

Colorado State Government Revenues and Expenditures (Fiscal Year 2010-2011)



- ✓ $25 billion budget
- ✓ 22 departments
- ✓ Largest departments: Health Care & Education
- ✓ Transportation is about 5% of overall state budget at $1.3 billion

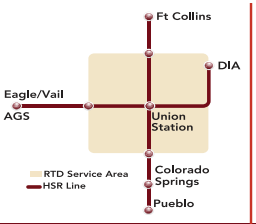
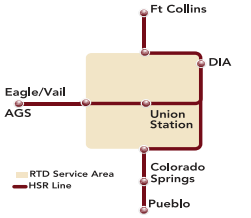
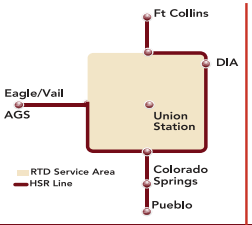
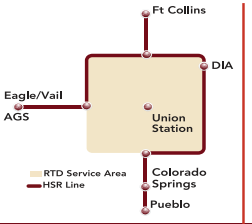
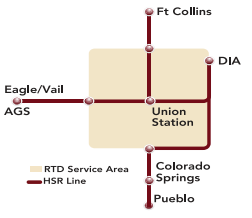
CDOT Expenditures (Fiscal Year 2010-2011))



Revenue Sources

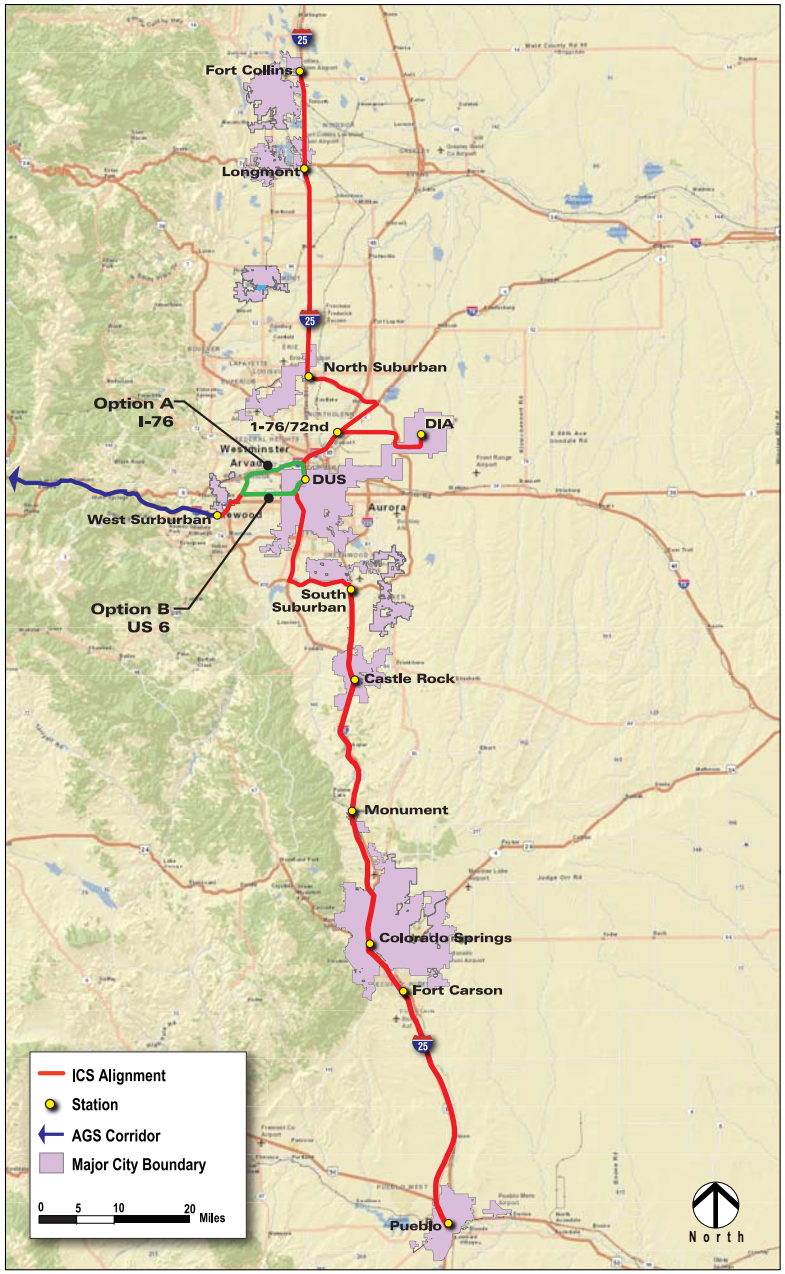
- ✓ Highway Users Tax Fund
  - Fuels Tax & Registration fees
- ✓ Federal Funds – MAP 21
  - Federal fuels tax
- ✓ ARRA / Tiger – ARRA mostly complete
- ✓ FASTER - $292 M per year to 2035
  - $15 M for transit
  - Bridge reconstruction, highway safety, transit
  - Vehicle registration fees

Ridership Summary

SCENARIO	A1a	A1b	A5a	A5b	B2a	B5	C1
							
RIDERSHIP							
Mountains	2,168,094	2,516,754	2,430,662	2,136,961	2,995,866	2,792,520	1,696,330
Percent of Total	17.85%	19.12%	18.75%	16.27%	21.63%	20.36%	15.64%
Mountain Daily	7,227	8,389	8,102	7,123	9,986	9,308	5,654
North of Denver	2,069,642	2,472,297	2,326,763	2,620,094	2,498,178	3,107,216	1,909,081
Percent of Total	17.04%	18.78%	17.95%	19.94%	18.04%	22.66%	17.60%
North Daily	6,899	8,241	7,756	8,734	8,327	10,357	6,364
South of Denver	5,451,251	5,674,676	5,584,849	5,514,986	6,220,862	5,596,993	4,994,421
Percent of Total	44.87%	43.11%	43.07%	41.98%	44.92%	40.81%	46.06%
South Daily	18,171	18,916	18,616	18,383	20,736	18,657	16,648
Denver Metro	2,460,154	2,499,106	2,623,452	2,865,417	2,133,840	2,218,226	2,244,474
Percent of Total	20.25%	18.99%	20.23%	21.81%	15.41%	16.17%	20.70%
Denver Daily	8,201	8,330	8,745	9,551	7,113	7,394	7,482
TOTAL	12,149,141	13,162,833	12,965,726	13,137,458	13,848,747	13,714,955	10,844,306

Scenario A-1

Direct Through Denver

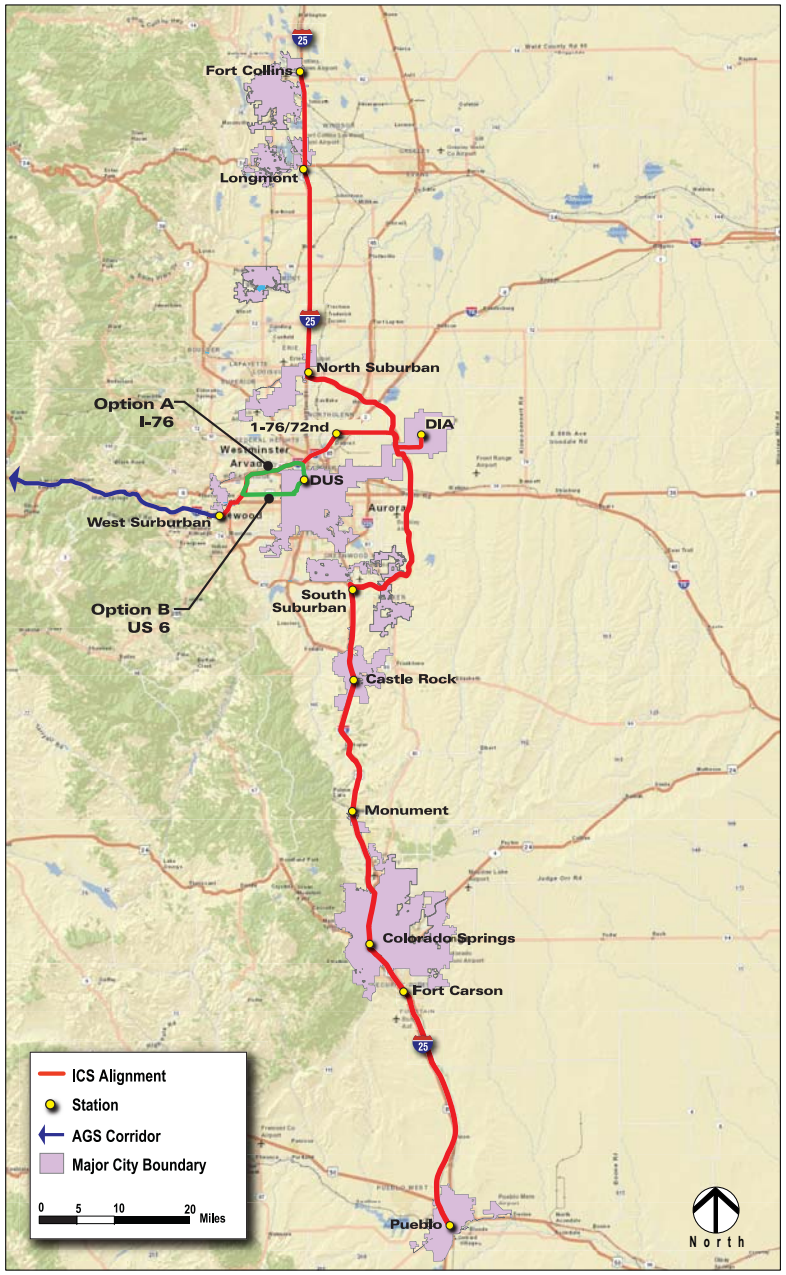


Characteristics	With Option A (I-76)	With Option B (US 6)
Total Miles	219.4	208.6
Miles Elevated	51.9	51.0
Right-of-Way Required (Acres)	1,587	1,445
Assumed Number of Stations	5	5
System Ridership	12,149,142	13,162,833
Capital Costs (CAPEX)	$15,667,430,000	$14,914,893,000
Annual Operating Costs (OPEX)	$183,047,000	$183,596,200
Annual Ticket Revenue	$241,102,808	$265,529,561
Benefit Cost Ratio	**1.97**	**2.03**
Operating Cost Ratio	**1.32**	**1.45**

ICS Interregional Connectivity Study

Scenario A-5

Eastern Beltway

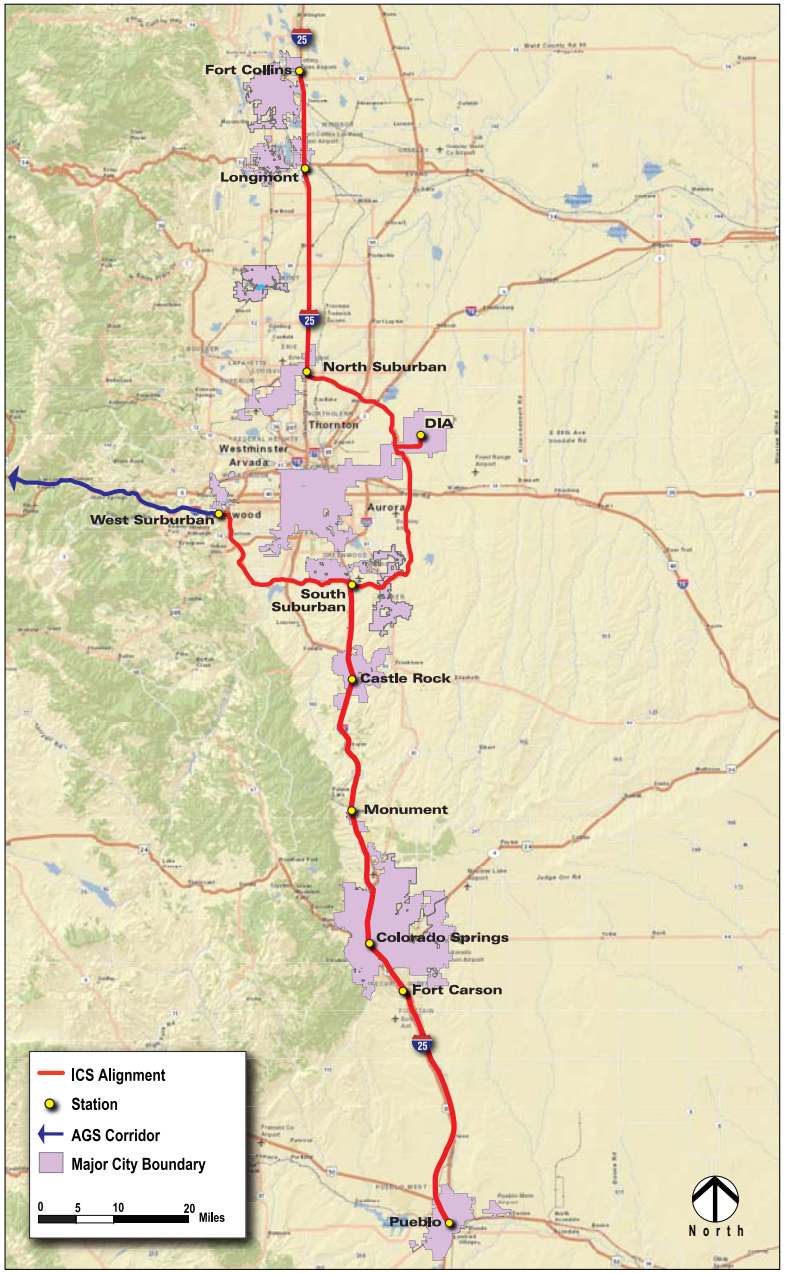


Characteristics	With Option A (I-76)	With Option B (US 6)
Total Miles	214.7	215.4
Miles Elevated	42.6	44.3
Right-of-Way Required (Acres)	1,405	1,399
Assumed Number of Stations	4	5
System Ridership	12,965,726	13,137,458
Capital Costs (CAPEX)	$14,125,994,000	$14,308,935,000
Annual Operating Costs (OPEX)	$186,108,600	$186,657,800
Annual Ticket Revenue	$246,469,103	$251,271,850
Benefit Cost Ratio	**2.0**	**2.0**
Operating Cost Ratio	**1.32**	**1.35**

ICS Interregional Connectivity Study

Scenario B2-A

Denver Periphery Excluding NW Quadrant

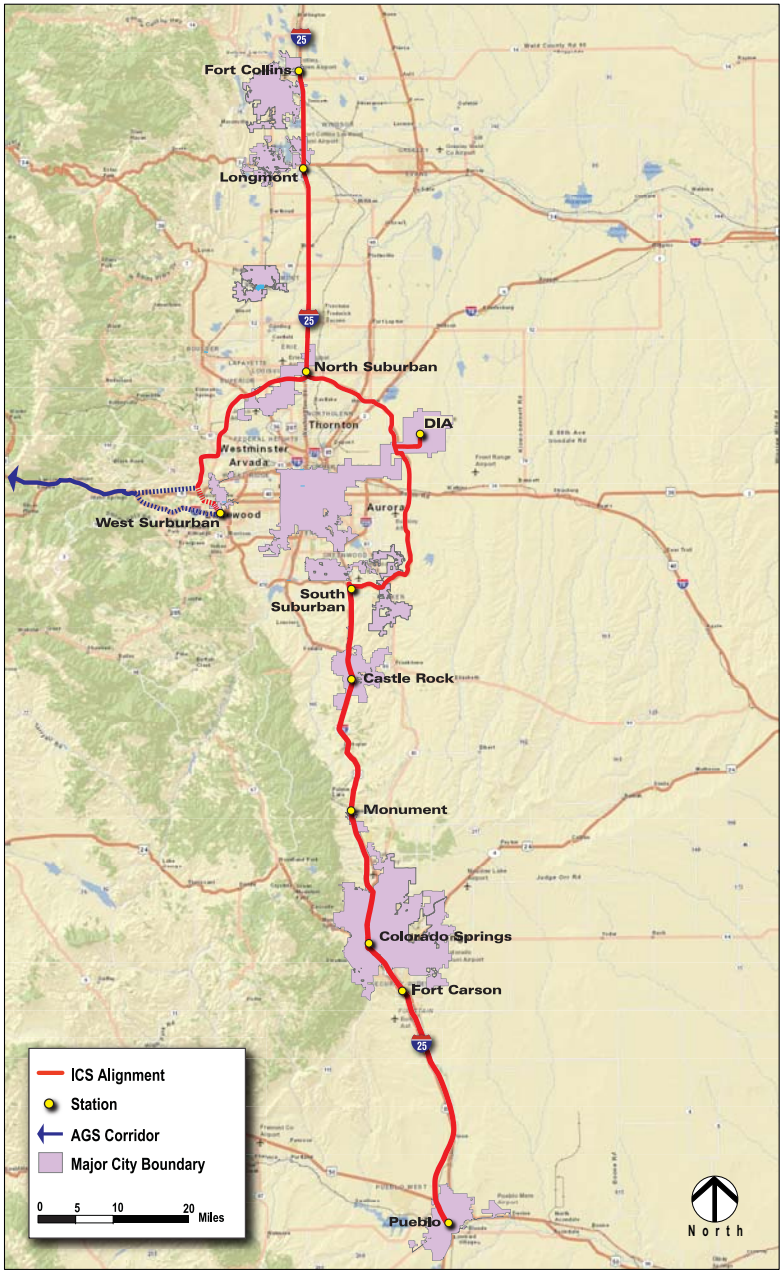


Characteristics	
Total Miles	208.4
Miles Elevated	41.2
Right-of-Way Required (Acres)	1,241
Assumed Number of Stations	4
System Ridership	13,848,747
Capital Costs (CAPEX)	$13,397,000,000
Annual Operating Costs (OPEX)	$205,988,000
Annual Ticket Revenue	$249,983,676
Benefit Cost Ratio	**2.01**
Operating Cost Ratio	**1.21**

ICS Interregional Connectivity Study

Scenario B-5 (New)

Denver Periphery Excluding SW Quadrant

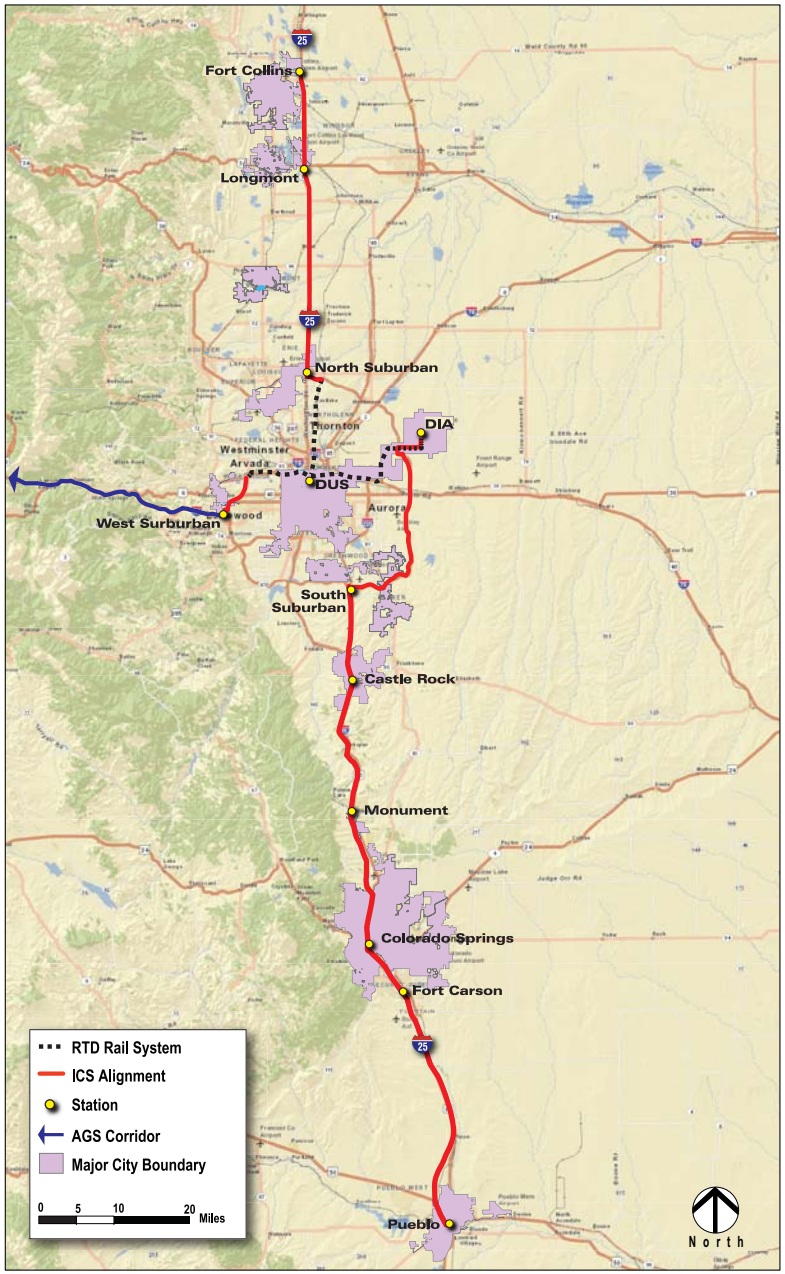


Characteristics	
Total Miles	215.5
Miles Elevated	39.5
Right-of-Way Required (Acres)	1,496
Assumed Number of Stations	4
System Ridership	13,714,955
Capital Costs (CAPEX)	$13,945,000,000
Annual Operating Costs (OPEX)	$206,867,600
Annual Ticket Revenue	$247,117,358
Benefit Cost Ratio	**1.99**
Operating Cost Ratio	**1.19**

ICS Interregional Connectivity Study

Scenario C-1

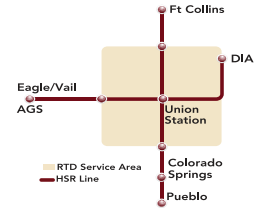
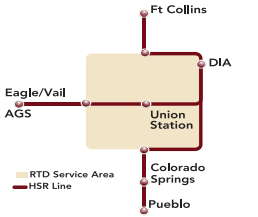
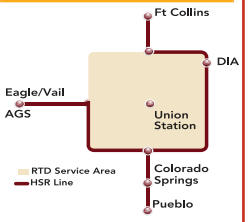
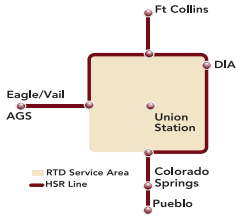
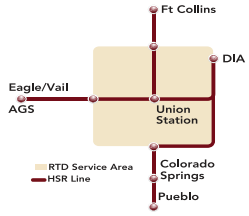
RTD Shared Track



Characteristics	
Total Miles	172.6
Miles Elevated	35.3
Miles of Track Shared with RTD	34
Right-of-Way Required (Acres)	1,154
Assumed Number of Stations	4
System Ridership	10,844,306
Capital Costs (CAPEX)	$11,499,000,000
Annual Operating Costs (OPEX)	$189,200,000
Annual Ticket Revenue	$197,850,186
Benefit Cost Ratio	**1.97**
Operating Cost Ratio	**1.05**

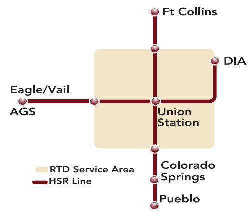
ICS Interregional Connectivity Study

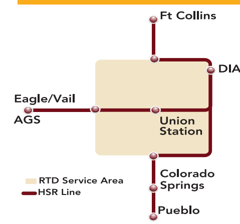
Annual Boardings by Station

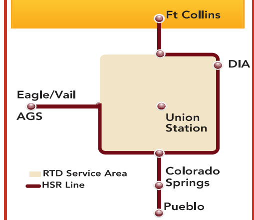
SCENARIO	A1a	A1b	A5a	A5b	B2a	B5	C1
							
STATION							
Berthoud	386,992	422,349	357,393	366,126	312,573	452,567	282,497
Breckenridge	169,282	185,456	172,060	164,956	189,263	165,547	130,262
Castle Rock	945,886	985,272	1,072,147	1,062,746	1,034,161	1,083,894	1,014,947
Colorado Springs	1,298,310	1,357,422	1,265,060	1,259,533	1,478,361	1,245,389	1,128,475
Denver - I-76/72nd	338,206	N/A	589,928	N/A	N/A	N/A	N/A
Denver - Union Station	1,463,284	1,621,610	N/A	732,198	N/A	N/A	956,729
DIA	658,622	877,496	2,033,524	2,133,219	2,133,840	2,218,226	1,287,745
Eagle Airport	591,377	654,587	589,253	560,359	549,180	540,183	405,094
Fort Carson	475,121	496,857	473,112	474,407	545,265	470,728	425,272
Fort Collins	1,221,262	1,370,281	1,144,980	1,259,077	1,132,901	1,458,643	1,142,896
Georgetown	203,247	224,483	192,378	200,514	192,623	193,767	175,426
Silverthorne	260,455	303,484	275,999	268,138	301,124	281,059	204,453
South Suburban	1,295,597	1,348,359	1,415,994	1,346,603	1,566,632	1,448,317	1,200,321
Monument	677,197	709,043	617,278	620,451	794,024	599,633	512,214
North Suburban	469,738	679,667	832,686	994,891	1,052,705	1,196,005	483,687
Pueblo	767,052	777,723	749,154	751,246	802,418	749,034	713,192
West Suburban	579,968	726,573	811,194	560,457	1,364,369	1,238,402	502,542
Vail Station	369,594	422,171	395,604	382,537	399,307	373,561	278,553
TOTAL	12,171,190	13,162,834	12,987,744	13,137,458	13,848,747	13,714,955	10,844,306

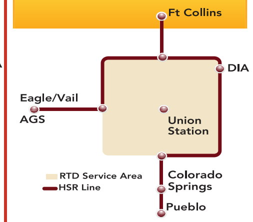
Summary of Costs and Benefits by Scenario

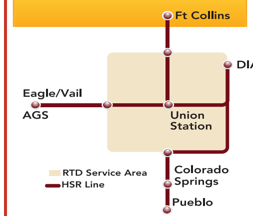
SCENARIO	A1a	A1b	A5a	A5b	B2a	B5	C1











B/C ELEMENT	A1a	A1b	A5a	A5b	B2a	B5	C1
COSTS							
CAPEX	15,667,430,000	$14,914,893,000	14,125,994,000	14,308,935,000	13,397,000,000	13,945,000,000	11,499,000,000
Annual OPEX	$183,047,000	$183,596,200	$186,108,600	$186,657,800	$205,988,000	$206,867,600	$189,200,000
OPEX Cost (30 Year)	$3,164,882,630	$3,174,378,298	$3,217,817,694	$3,227,313,362	$3,561,532,520	$3,576,740,804	$3,271,268,000
Interest Payments	$5,630,012,633	$5,359,592,225	$5,076,105,314	$5,141,844,248	$4,814,144,965	$5,011,066,025	$4,132,108,155
TOTAL COST	*$24,462,325,263*	*$23,448,863,523*	*$22,419,917,008*	*$22,678,092,610*	*$21,772,677,485*	*$22,532,806,829*	*$18,902,376,155*
BENEFITS							
Ridership	9,981,048	10,817,411	10,486,660	10,760,464	10,853,263	10,922,590	8,811,343
Ticket Revenue	$241,102,808	$265,529,561	$246,469,103	$251,271,850	$249,983,676	$247,117,358	$197,850,186
Reduction in Vehicle Miles[1]	296,118,104	325,409,895	284,075,042	287,788,682	292,981,842	284,668,554	220,233,121
Reduction in Vehicle hours[1]	713,675	1,013,611	767,627	812,549	979,328	929,069	357,502
VMT Benefit	$165,826,138	$182,229,541	$159,082,023	$161,161,662	$164,069,831	$159,414,390	$123,330,548
VHT Benefit	$16,414,519	$23,313,060	$17,655,427	$18,688,636	$22,524,544	$21,368,581	$8,222,543
Fatality Avoided	$20,195,255	$22,192,955	$19,373,918	$19,627,188	$19,981,362	$19,414,395	$15,019,899
CALCULATED BENEFITS							
Increase in Real Estate Value -							
Onetime Deal, No PW Calculations	$3,100,000,000	$3,100,000,000	$3,100,000,000	$3,100,000,000	$3,100,000,000	$3,100,000,001	$3,100,000,000
Fare Box Revenue (30 years)	$4,168,667,548	$4,591,006,112	$4,261,450,797	$4,344,490,279	$4,322,217,762	$4,272,659,117	$3,420,829,717
PW of VMT	$2,867,133,930	$3,150,748,764	$2,750,528,185	$2,786,485,134	$2,836,767,384	$2,756,274,811	$2,132,385,176
PW or VHT	$283,807,033	$403,082,807	$305,262,332	$323,126,524	$389,449,369	$369,462,769	$142,167,775
PW of Fatality Avoided	$349,175,954	$383,716,189	$334,975,040	$339,354,082	$345,477,742	$335,674,897	$259,694,052
Pollution Benefits	$1,018,856,522	$1,119,641,078	$977,419,837	$990,197,396	$1,008,065,553	$979,461,942	$757,758,303
PW of Operations Jobs	$1,582,441,315	$1,587,189,149	$1,608,908,847	$1,613,656,681	$1,780,766,260	$1,788,370,402	$1,635,634,000
PW of Non-basic jobs (1.5 multiplier)	$791,220,658	$793,594,575	$804,454,424	$806,828,341	$890,383,130	$894,185,201	$817,817,000
50% Federal Funding	$7,833,715,000	$7,457,446,500	$7,062,997,000	$7,154,467,500	$6,698,500,000	$6,972,500,000	$5,749,500,000
Multiplier Effect of Federal Funding	$15,667,430,000	$14,914,893,000	$14,125,994,000	$14,308,935,000	$13,397,000,000	$13,945,000,000	$11,499,000,000
(3.0 multiplier)	$6,353,142,865	$6,047,989,112	$5,728,090,567	$5,802,273,143	$5,432,483,500	$5,654,697,500	$4,662,844,500
Construction Employment	$4,193,074,291	$3,991,672,814	$3,780,539,774	$3,829,500,274	$3,585,439,110	$3,732,100,350	$3,077,477,370
Non-Basic Jos (2.0 multiplier)	48,208,665,115	$47,540,980,099	$44,840,620,801	$45,399,314,353	$43,786,549,811	$44,800,386,990	$37,255,107,893
TOTAL BENEFITS	*$48,208,665,115*	*$47,540,980,099*	*$44,840,620,801*	*$45,399,314,353*	*$43,786,549,811*	*$44,800,386,990*	*$37,255,107,893*
Sum of Benefits (PW Cost Basis)	$24,462,325,263	$23,448,863,523	$22,419,917,008	$22,678,092,610	$21,772,677,485	$22,532,806,829	$18,902,376,155
Sum of Costs (PW Cost Basis)							
B/C Ratio	1.97	2.03	2.00	2.00	2.01	1.99	1.97
Operating Ratio	1.32	1.45	1.32	1.35	1.21	1.19	1.05

ICS Interregional Connectivity Study

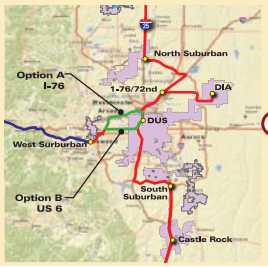
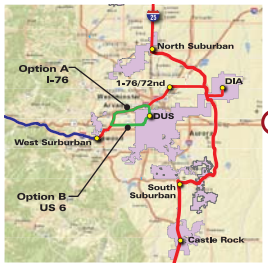
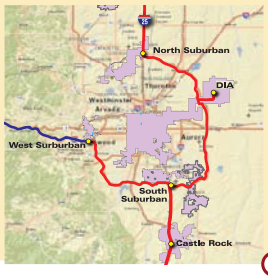
Technology

	Speed	Capacity	Energy[a]	Max. Grade
Talgo 350	205 mph (max.)	500 passengers (10 passenger cars with two traction units, one at each end)	88.8 kWh/mi or 177.6 Wh/seat-mi (500 seats) on straight and level route (demonstrated)	3% (and only for short distances)
Talgo 250	155 mph	450 passengers (10 passenger coaches with 3 traction units, one intermediate and one at each end)	36.0 kWh/mi at 155 mph or 80 Wh/seat-mi (demonstrated)	3% (and only for short distances)
TRI	150-300 mph	82 pass. per vehicle (probably run as 5-car consists)	22.5 kWh per consist/mi (5-car consist) at 170 mph constant speed or about 50 Wh per seat-mi (demonstrated)	10% (est.)
Japanese HS Maglev	200-300 mph	16-carriage train will be able to carry 1,000 passengers or 63 pass. per car	30% less energy than a Transrapid maglev when traveling at similar speeds (claim)	10% (est.)
AMT	120-150 mph	186 pass. per vehicle	2.9 kWh/mi for levitation and propulsion per vehicle at 120 mph or 15.6 Wh per seat-mi	10% (est.)

a – Lower speed will result in lower energy use per km

Projected Trip Type by Scenario

SCENARIO

		INTERCITY	INTRA-URBAN	CONNECT AIR
A1b		84%	12%	4%
A1a		84%	12%	4%
A5b		76%	19%	5%
A5a		75%	20%	5%
B2-A		77%	19%	4%
B5-New		75%	21%	4%
C-1		78%	16%	6%

Where Are We in the Study Process?

Next Steps

- Refine alternatives to improve performance
- Assess impacts in challenging areas
- Fine tune the service plan to reduce Operating Expenses
- Update cost estimates
- Develop a Phasing Plan
- Develop a Financial Plan

ICS Interregional Connectivity Study