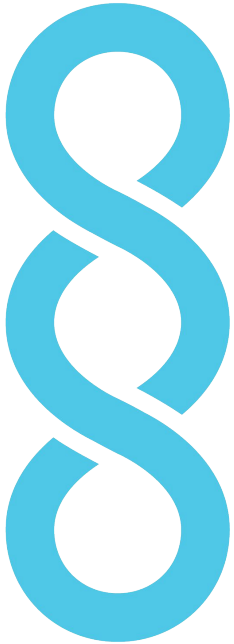


FRPR

FRONT RANGE
PASSENGER
RAIL

Rail Commission: Initial Modeling Results

August 28th, 2020

Welcome

FRPR FRONT RANGE PASSENGER RAIL

BNSF Route

FRPR FRONT RANGE PASSENGER RAIL

Big Takeaway: Model Projects a Notable Demand for Rail

After months of data-intensive work and many simulated runs, we found:

- There would be demand for rail service along the Front Range.
- Demand is highest for commuters, but there's also substantial demand for recreation and special events.
- Front Range Passenger Rail ridership projections fare well when compared to other successful intercity rail lines across the country.
- There would be real reductions in emissions and vehicle miles traveled.

Project Development: Schedule

STEP 1

PROJECT INITIATION & SCOPING

What do we want Front Range Passenger Rail to be?

STEP 2

LEVEL 1 EVALUATION

What are the possibilities for corridors and operations?

STEP 3

LEVEL 2 EVALUATION

How do alternatives compare?

STEP 4

ADVANCE TO NEPA

Federally required process to advance major infrastructure projects

STAKEHOLDER ENGAGEMENT AND GOVERNANCE

Where are we in the modeling process?

Roughly halfway done. Future model runs will consider:

- We are looking at additional development around stations (TOD)
- Fewer trains (More limited service scenarios)
- Different sets of stations
- BNSF + N Line (FASTRACKS) Alignment with 125 mph technology
- I-25 + E-470 Alignment with 125 mph technology

CDOT Model Uses the Highest Scientific Standards

- "Behavioral"
  - Survey data on people and their travel
  - "Revealed preference": not "what would you do?" but "what did you do?"
- Detailed
  - Each person modeled individually
  - Each house and business located at its address
  - High level of realism in the model
- Checked and double-checked
  - U.S. Census data, vehicle and transit ridership counts, compare to "big data" sources

CDOT's Model Is Better Than Most States'

- One of the most advanced state-level models in the US
  - "Activity-based" models are now common in large metro areas
  - Now starting to be used at state level
- Part of a long practice of travel modeling in the U.S and around the world
  - Earliest such models date to the 1960s
  - CDOT's model is a "next-generation" model
  - Represents best practice in the field
- Adapted DRCOG's model for state use
  - DRCOG has used their model for 10 years

Model Uses Specific Speeds and Geographic Details

- Stay with existing transportation corridors and past studies
- Engineering
  - Horizontal & Vertical Alignments
    - Avoid sharp curves & steep grades to meet railroad design standards
    - Minimize right-of-way and environmental impacts, excessive cut and fill
  - Speeds
    - Assume higher speed capability (90-125 mph maximum)
    - Use appropriate operations in urban vs. rural areas
    - Factor in climbing and reducing speeds for stations
- Potential Markets and Station Locations
  - Identified in the planning process
  - Modeling tests different scenarios
- Other - $2 parking cost, 32 cents/mile fare

Results Show BNSF Alternative (through Boulder/Longmont) Produces High Ridership

System	Length	Population	Trains/day	Stations	Annual ridership	Weekday ridership
BNSF	191	7.0M	25 (In each direction)	14	2.9M	9,200

BNSF Alternative Compares Favorably to Peers

System	Length	Population	Trains/day	Stations	Annual ridership	Weekday ridership
Frontrunner (SLC)	81	1.2M	28	17	4.9M	16,180
Sounder (Seattle)	82	3.7M	6	9	4.6M	15,488
Caltrain (San Fran)	77	4.6M	47	32	4.6M	15,437
South Florida (Miami)	72	6.0M	25	18	4.3M	14,291
South Shore (Chicago)	90	2.7M	17	19	3.4M	11,435
BNSF	191	7.0M	25 (In each direction)	14	2.9M	9,200
Capital (Sacramento)	168	6.9M	7	17	1.6M	5,447
Altamont (Stockton)	86	2.7M	4	10	1.32M	4,407
Orlando	62	2.5M	20	16	852k	2,840
Hiawatha (Milwaukee)	80	11.1M	7	5	836k	2,788

Usage Projected Highest in the Northern Segment

Alternative	South of DUS	At DUS	North of DUS
BNSF	1,433	3,282	4,485

Other Modeling Outputs: Demand for Special Events and Emission Reductions

“Special” trips (weekends, stadium events, etc.)

- About 20% of yearly boardings

Greenhouse Gas reduction

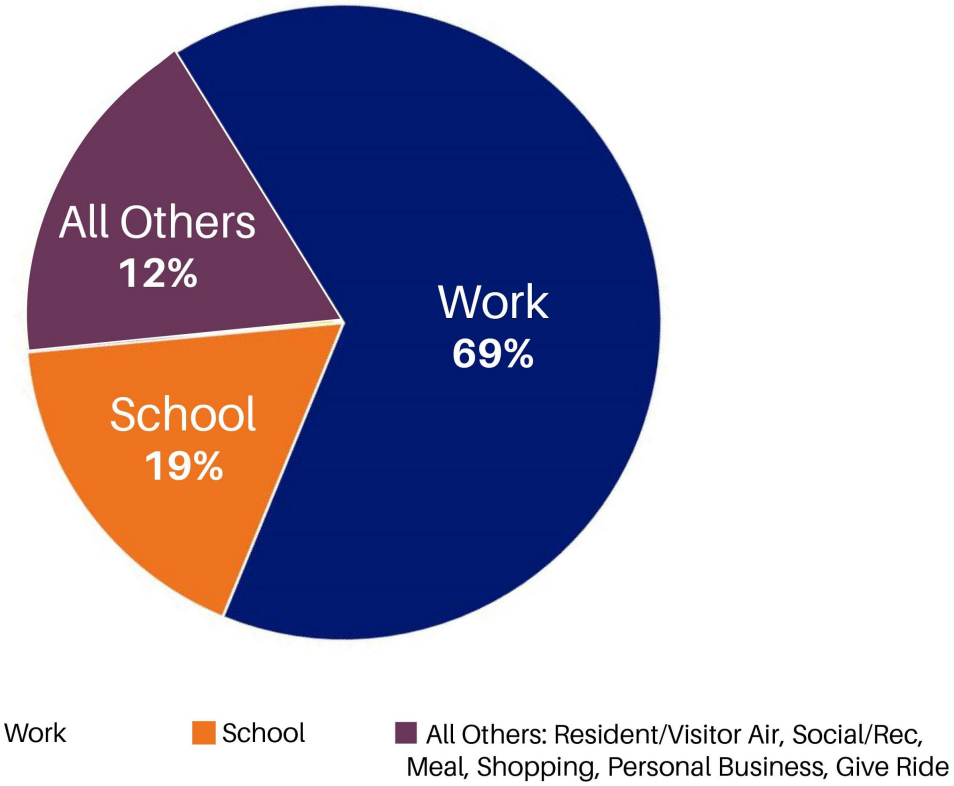
- About 210,000 vehicle miles traveled (VMT) saved per typical weekday
- 411 grams per mile for a typical car (EPA figure)
- Means 94 tons saved per typical weekday

Where will the trips begin and end?

Most trips would be within MPO areas. For context, this table shows actual total person trips (all modes) along the Front Range, both inter and intra-regional.

From / To	NFRMPO	DRCOG	PPACOG	PACOG	Total
NFRMPO	3,300,000	135,000	1,400	300	3,400,000
DRCOG	135,000	15,600,000	52,000	2,100	15,800,000
PPACOG	1,200	53,000	3,400,000	19,000	3,500,000
PACOG	300	2,400	19,000	682,000	703,000
Total	3,400,000	15,800,000	3,500,000	703,000	23,400,000
				inter-MPO	420,000

Strongest Demand Would Be for Commuting



Points in Closing

- Speed matters, but urban operation and some rural grades limit how fast we can go
- Connectivity and schedule can have an impact
  - because out-of-vehicle time is disliked more than in-vehicle time
- FRPR ridership much higher for a Denver Union Station stop versus Burnham Yard
- Few end-to-end trips by any mode
  - 2010 FRTC survey, Streetlight Data and Census Journey-to-Work all agree closely on this
  - Model results match all three data sets

Thank you!

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