

# Denver T-REX / RTD

## North Metro Expansion

Cliff Cessna

Khyle Clute

Mina Samaan

Tao Fei



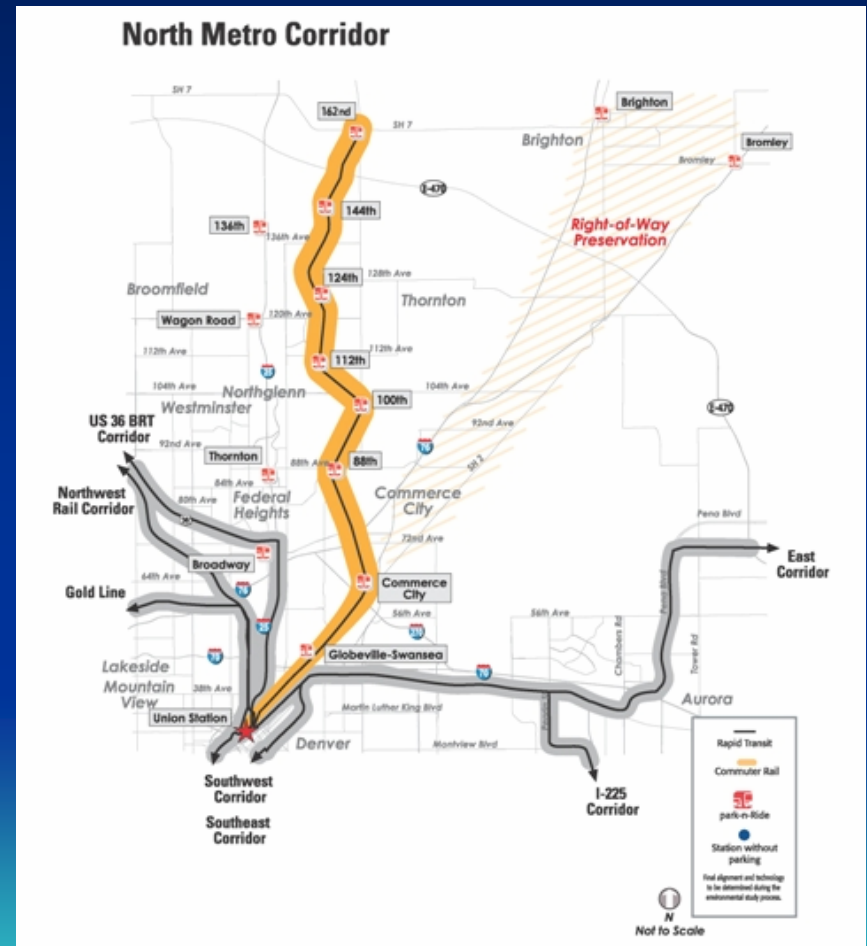
# Denver Light Rail History



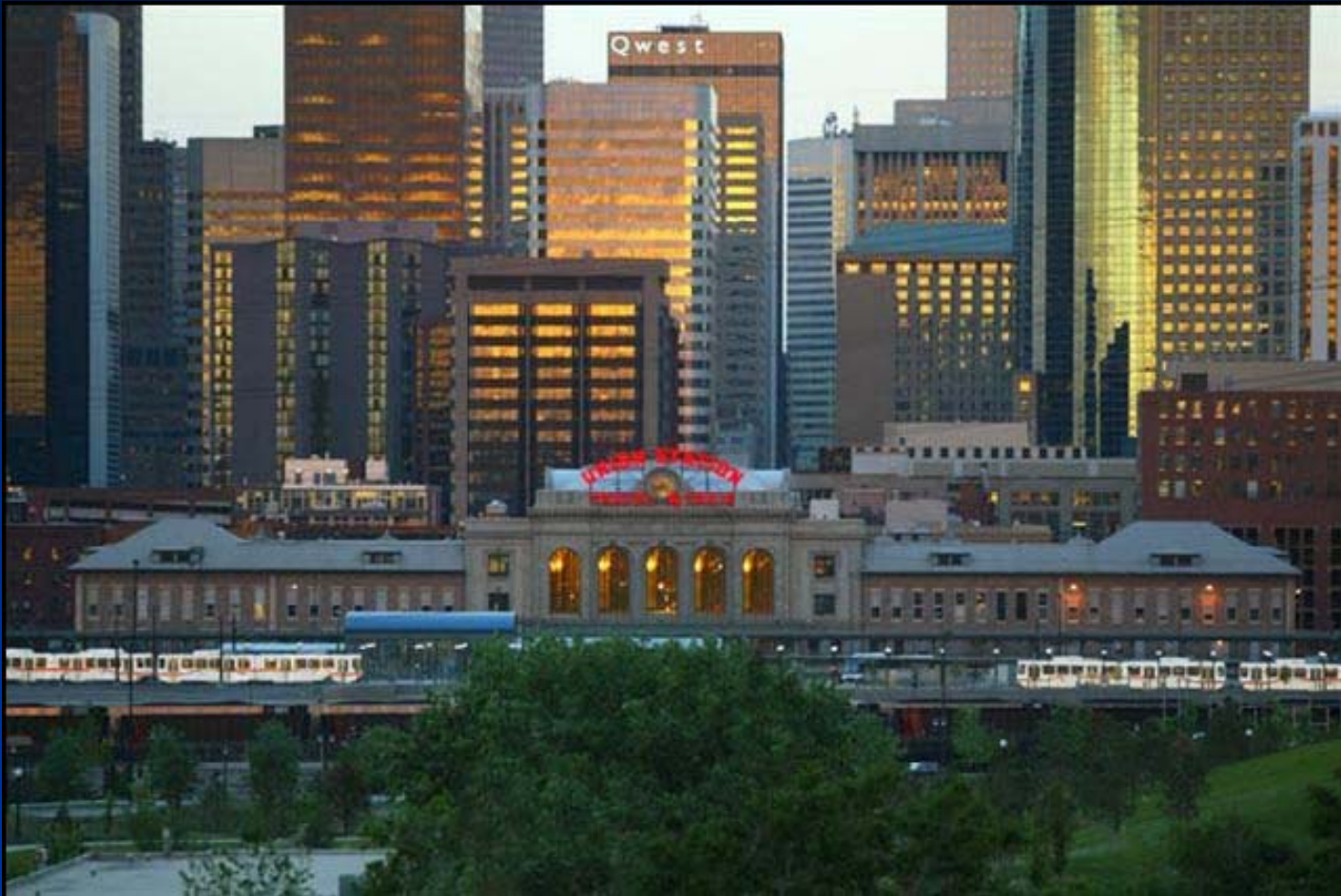
- Segment between Broadway and Osage opened in 1994
- Extensions to Denver Union Station and Littleton (Southwest Line) opened in 2002
- T-REX extension along I-25 opened in November 2006

# Project Description

- The North Metro corridor would extend all the way to 162<sup>nd</sup> Street
- Gray lines are other proposed light rail lines

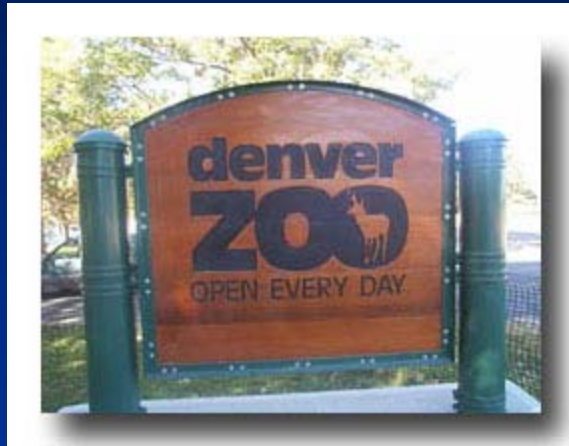


From: <http://www.denvergov.org>



Union Station is the main hub for the light rail system (two trains are visible) and is conveniently located right in downtown Denver. Passengers can also connect here with two daily Amtrak trains for long-distance trips or the Ski Train to Winter Park during the winter months. From <http://www.metrodenver.com>

# What's Along the Corridor?



- University of Denver
- Cherry Creek Shopping Center
- Denver Zoo

- University of Colorado Hospital
- Adam's Mark Hotel
- Queen Anne Bed & Breakfast Inn



# Alternatives?



I-25 at University Boulevard in Denver.

From <http://www.rtd-denver.com>

# Instead...



Here is an artist's rendering of what the Commerce City station might look like once it is completed along the North Metro Corridor.

From  
<http://www.metrodenver.com>

# Advantages / Disadvantages

- Add 19 miles of double-track light rail connecting to the existing system at Broadway in Denver and extending along the west side of I-25 to Lincoln Avenue in Douglas County and in the median of I-225 from I-25 to Parker Road in Aurora.
- Build 13 stations with park-n-Rides at 12 of the stations
- Add 34 light rail vehicles to RTD's fleet
- Reconstruct eight interchanges, including I-25/I-225
- Reconstruct and widen numerous bridges
- Improve drainage
- Enhance safety
- Add and improve shoulders
- Improve ramps and acceleration/deceleration lanes
- Minimize inconvenience to the public
- Large amount of jobs and opportunities created
- Some jobs will be taken away (such as bus drivers, cab drivers etc...)
- Fewer checks and balances between designer and builder
- Less owner control over design
- Potential quality issues
- Initial Contract Price may be higher due to large unforeseen costs
- Higher taxes for the next few years





# Costs

- Total cost will be \$428.1 million
  - \$23.8M per rail mile (18 miles)
  - Includes track, stations, Park 'n Ride facilities, trains, and all electric infrastructure



# Revenue

- On average, assume:
  - 11,050 passengers x \$1.50 per passenger x 6 days (Sat/Sun combine) x 52 weeks per year = **\$5,171,400 per year revenue**
- With Marginal Annual Return Rate of 6%, paying off the project from ticket revenue will take 31 years



# Additional Funding

- Federal and state governments will provide an undetermined amount of funding for the project
- Private businesses will also provide funding
  - The San Francisco Municipal Railway entered into a long-term ground lease for a former bus layover lot in downtown San Francisco. In exchange for the rights to build a boutique hotel on the parcel, the developer will pay the railway more than \$300 million over the term of the lease.



# Just Give it Eight Years

- The North Metro Corridor is slated to open in 2015
- Within ten years, it will carry as many as 11,900 passengers weekly
- Pollution reduction as a result of the corridor is immeasurable



From <http://www.denvergov.org>

# Works Cited

- <http://www.masstransitmag.com>
- <http://www.nossaman.com>
- <http://www.trexproject.com>
- <http://www.denverzoo.org>
- <http://www.metrodenver.com>
- <http://www.rtd-denver.com>
- <http://www.denvergov.org>
- <http://www.metrodenver.com>
- <http://www.rtd-denver.com>

