

5.0 FINANCIAL ANALYSIS AND EVALUATION OF ALTERNATIVES

The East Corridor will be funded through a combination of local, federal, and private sources. The local funds include RTD sales tax revenues, RTD bond proceeds, and contributions from local governments and private sources. Federal funding is anticipated from FTA through their Section 5309 New Starts program based on the East Corridor's "medium" rating under New Starts criteria.

Each year RTD conducts a comprehensive evaluation of the entire FasTracks program. The RTD 2007 Annual Program Evaluation identified significant financial challenges since the *FasTracks Plan* (RTD, 2004) was developed, specifically capital cost increases and revenue forecast decreases. The evaluation involved examining each FasTracks project individually, as well as the program as a whole. Strategies that resulted from the evaluation included applying on the federal level to participate in the U.S. Department of Transportation (USDOT) Public-Private Partnership Pilot Program (Penta-P). On July 30, 2007, USDOT announced that the East Corridor and Gold Line were selected to take part in this pilot program to evaluate the benefits of forming public-private partnerships (PPP) for federally funded transit construction projects. The Penta-P will be unlike conventional procurement methods for federally funded new construction in that it will transfer responsibility for construction, operations, maintenance, and potential financial responsibilities to a single private entity or a consortium of private companies. This will allow for greater innovation and project integration. The East Corridor will be combined with the Gold Line and the commuter rail maintenance facility (CRMF) in a single procurement for a PPP.

The RTD 2008 Annual Program Evaluation identified impacts to the FasTracks program due to continued unprecedented increases in the cost of construction materials, the cost of fuel, and sales tax revenues not keeping pace with projections. The RTD 2009 Annual Program Evaluation identified impacts to the FasTracks program due to the economic downturn in 2008 and declining sales tax revenues. As a result, RTD has adjusted its long-term revenue assumptions and cost escalation factors to adapt to the changing economic conditions.

5.1 FINANCIAL ANALYSIS

RTD has demonstrated the financial capability to build the overall *FasTracks Plan*, including the East Corridor, as defined in the *FasTracks Financial Plan Update* (RTD, 2009b). Table 5-1 shows the amount of funding expected from different funding sources for the Preferred Alternative and the percentage that each funding source would contribute to the total capital cost of the plan for opening day (2015).

**Table 5-1
Estimated Sources of Capital Funds for the Preferred Alternative
for Opening Day (2015)**

East Corridor Capital Sources	Year 2015 (millions)	Total Project Cost (%)
Bond proceeds	\$63	4.7
Pay-as-you-go cash	\$0	0.0
FTA Section 5309 New Starts Program	\$789	58.7
Other federal funding	\$21	1.6
Local funding	\$34	2.5
Public – private	\$437	32.5
Total	\$1,344	100

Source: *FasTracks Financial Plan Update* (RTD, 2009b).

Additional parking, vehicles, and other improvements to the East Corridor between opening day and 2030 are projected to cost \$298 million. These capital expenditures will be funded by a combination of public and private sources. Total capital cost (year of expenditure) for the East Corridor 2030 Preferred Alternative is \$1,642 million.

The capital cost estimate for the CRMF is separate from the East Corridor, as it will be shared among all proposed commuter rail corridors. The estimated total CRMF capital cost is \$189,125,308 in year of expenditure dollars.

5.2 NATIONAL ENVIRONMENTAL POLICY ACT EVALUATION

NEPA of 1969, as amended, requires that agencies making transportation decisions involving federal funds do the following:

- Consult with other agencies
- Involve the public
- Disclose information
- Investigate the social, environmental, and economic effects of a reasonable range of alternatives
- Prepare a detailed statement of the effects of the alternatives

5.2.1 Performance in Satisfying Purpose and Need

Using the comments received during the public and agency scoping process and the purpose and need analysis, goals and objectives were defined to guide the development and evaluation of alternatives. These goals include access, capacity, community, environment, implementation, mobility, safety, and security. This subsection summarizes how each alternative satisfies the established purpose and need.

No-Action Alternative

Implementation of the No-Action Alternative does not satisfy the project purpose and need because it does not improve local and regional access, add capacity to the transportation system, or provide the necessary connection between downtown Denver and DIA that is a critical component of the *FasTracks Plan*.

Preferred Alternative

The Preferred Alternative meets the project purpose and need and established goals and objectives, which are:

- **Access:** Access to activity centers and residents as well as existing transportation facilities along the corridor would be improved by providing six stations (in addition to DUS) as identified in the *FasTracks Plan* and *East Corridor Major Investment Study* (DRCOG, 1997).
- **Capacity:** Rail operations and stations would allow for eight-car trains in the future; however, four-car trains would operate on opening day. As ridership grows beyond the 2030 projections, the number of cars per train could be increased to accommodate the increased ridership.
- **Community:** The Preferred Alternative would be consistent with adopted local, regional, and state planning efforts, including the fiscally constrained section of the *2030 Metro Vision Regional Transportation Plan* (DRCOG, 2005b), *Blueprint Denver* (CCD, 2002a), the *River North Plan* (CCD Community Planning and Development Office, 2003b), and local neighborhood plans. It would minimize adverse impacts to residential, business, and institutional properties by using portions of an existing rail corridor and the Peña

Transportation Corridor and would minimize adverse economic effects on local businesses by creating economic development opportunities including transit-oriented development (TOD) at several stations.

- **Environment:** The Preferred Alternative would minimize adverse impacts on environmental resources by using portions of an existing rail corridor and the Peña Transportation Corridor. In addition, electric multiple unit (EMU) commuter rail vehicle technology would minimize potential local air quality effects.
- **Implementation:** The Preferred Alternative would provide a cost-effective, long-term transportation solution that could be implemented and would be expandable to provide capacity beyond its forecasted needs. The EMU commuter rail technology is a proven technology that allows for cost-effective operation and maintenance, minimal subregional air quality emissions, and the capacity to provide adequate access to the system.
- **Mobility:** Connections between residential and business activity centers would be improved and facilitated through six stations along the corridor in addition to DUS. Transfers between different modes, including local, regional, and express bus routes as well as other rail lines, would be accommodated for a variety of users. Key connection points would be DUS for the 16th Street Mall shuttle and other bus and rail lines; 38th/Blake (formerly called 40th/40th) station for the proposed Central Corridor Extension; and the Peoria station for the proposed I-225 light rail transit (LRT) line.
- **Safety and Security:** The Preferred Alternative would conform to engineering design and safety standards and to standard practices for construction, maintenance, and operations. It would address safety needs by developing and implementing a safety and security plan that would minimize accidents, minimize cross-modal conflicts and conflict points through the evaluation of traffic and rail operations, and maintain maximum security measures regarding access to DIA.

5.2.2 Screening Results Summary

A four-level screening process was used to reduce the reasonable range of alternatives and select the Preferred Alternative. Alternatives were evaluated at the various screening levels and each screening step was conducted based on the evaluation criteria determined from the project purpose, need, goals, and objectives and with an increasing level of detailed analysis. More detail on the alternatives evaluated is included in Chapter 2, Alternatives Considered.

Alternatives considered for the East Corridor included 32 different transit alignments, 42 station locations, 18 transit technologies, and various transportation demand management (TDM) and transportation system management (TSM) alternatives. Alternatives were evaluated in categories as part of the first two levels of screening (initial and comparative screening) and then combined for the remaining levels of the process (detailed screening and alternative refinement). The combined alternatives evaluated in detailed screening were:

- Bus rapid transit (BRT) on the I-70 corridor
- Commuter rail on the Union Pacific railroad (UPRR) corridor
- LRT on the UPRR corridor
- BRT on the UPRR corridor
- LRT on Bruce Randolph Avenue
- BRT on Bruce Randolph Avenue
- LRT on Martin Luther King Boulevard
- BRT on Martin Luther King Boulevard

As a result of the detailed screening analysis, alternatives on Bruce Randolph Avenue and Martin Luther King Boulevard were eliminated based on their slower travel times, similar ridership, substantial property impacts, and significant community opposition. BRT on the I-70 corridor was also eliminated during detailed screening because it had the lowest ridership and highest cost of any alternative. BRT on the UPRR corridor was eliminated because it would result in significant traffic impacts on city streets and would have lower ridership and slower travel times than other alternatives on or along the UPRR corridor. As a result of detailed screening, both LRT and commuter rail on the UPRR corridor were further evaluated as part of alternative refinement, the fourth step of the alternative screening process.

During alternative refinement and additional screening, issues were identified that would not effectively allow LRT for the East Corridor to enter DUS. UPRR also sent RTD a letter stating that they would not allow non-Federal Rail Administration (FRA) compliant vehicles such as LRT in their right of way (ROW). In addition, the refined cost per user for the LRT alternative was 35 percent higher than commuter rail. For those reasons, LRT on the UPRR corridor was screened out, identifying commuter rail along the UPRR corridor as the most reasonable and feasible alternative for the East Corridor.

A comparison of commuter rail vehicle technologies was completed that included locomotive hauled coaches, diesel multiple unit (DMU), and EMU. Based on long-term forecasting, EMU was the most cost-effective commuter rail vehicle technology, and it resulted in the fewest potential impacts on resources in the corridor. Once the four-level screening process was completed, EMU commuter rail on the UPRR corridor was recommended as the Preferred Alternative for the East Corridor.

5.2.3 Comparative Benefits and Environmental Impacts

The Preferred Alternative would result in increased mobility and access to employment. It would reduce future travel times and provide enhanced access to employment opportunities and other amenities for the high percentage of low-income, minority, elderly, disabled, and transit-dependent populations throughout the corridor. Key performance discriminators of the Preferred Alternative as compared to the No-Action Alternative and TSM Alternative are identified in Table 5-2.

Table 5-2
Key Performance Discriminators

Criterion	No-Action Alternative	TSM Alternative	Preferred Alternative
Travel time (2030)	79 minutes	48 minutes	29 minutes
Rail ridership	N/A	N/A	37,900
Regional vehicle miles traveled (VMT)	116,124,000	116,005,000	115,920,000
Change in regional VMT over No-Action Alternative	N/A	-119,000	-204,000
Regional daily transit boardings	369,000	382,900	390,500
Change in regional daily transit boardings over No-Action Alternative	N/A	+13,900	+21,500
Regional vehicle hours traveled (VHT)	3,628,000	3,622,000	3,617,000
Change in regional VHT over No-Action Alternative	N/A	-6,000	-11,000

N/A – not applicable

No-Action Alternative

No environmental impacts would result from the implementation of the No-Action Alternative. Implementation of the No-Action Alternative would also result in no benefits.

Preferred Alternative

Environmental benefits and impacts that would result from implementation of the Preferred Alternative are summarized by resource:

- **Environmental justice**
 - Benefit of faster travel and the availability of more travel options.
 - Benefit of easier access to jobs and services through expanded public transit options including faster access to local destinations as well as regional destinations due to planned connecting rail and bus lines.
 - Benefit of increase in jobs related to construction and due to indirect or induced impacts (detailed in the following economic benefits).
- **Economic**
 - Benefit of 1,460 new jobs related to construction and operation of the project.
 - Benefit of 3,360 new jobs due to indirect and induced impacts.
 - Benefit of additional jobs as a result of TOD near stations.
 - Potential for loss of up to 813 relocated jobs.
- **ROW acquisition and relocations**
 - Acquisition of six residential properties.
 - Relocation of seven residences.
 - Full acquisition of 59 commercial/industrial properties.
 - Relocation of approximately 49 businesses.
- **Cultural resources**
 - Adverse effect to four historic resources.
- **Air quality**
 - Benefit of reduction in regional VMT.
- **Noise**
 - 229 severe noise impacts and 457 moderate noise impacts (222 within the top 50 percent of moderate range and 44 with existing noise exposure above 65 dBA).
 - All severe noise impacts will be mitigated through the implementation of quiet zones.
- **Wetlands**
 - 1.0942 acres of permanent impacts to jurisdictional wetlands and 0.0035 acre of impact to jurisdictional open waters of the U.S.

All of the adverse environmental impacts will be mitigated. The Preferred Alternative also provides faster travel times and improved travel options as compared to the No-Action Alternative.

TSM Alternative

The TSM Alternative would provide mobility benefits and lower VMT resulting in improved air quality.

5.2.4 Irreversible and Irretrievable Commitments of Resources

Implementation of any transportation system results in irreversible and irretrievable commitments of resources. The commitments are offset by the long-term benefits of increased mobility and access that would result from a transportation improvement project.

The Preferred Alternative would require the acquisition of property with the associated displacement of residences and businesses. The majority of the land required for the project is owned by UPRR, CCD, Aurora, Adams County, and the State of Colorado (approximately 61 percent combined). The land required for stations and roadway improvements includes a mixture of residential, commercial, and industrial properties. Property acquisition represents an irreversible commitment of real property. Owners and tenants of the purchased property would be afforded opportunities to relocate, but their existing properties would be converted to transit uses that support the project.

Fossil fuels, labor, and construction materials would be expended during construction. These materials are generally considered irretrievable, and their use would not have an adverse impact on their continued availability.

5.3 NEW STARTS EVALUATION AND RATING

RTD is pursuing New Starts funding for the Preferred Alternative. The Section 5309 New Starts program is the federal government's primary program for providing financial support to locally-planned, implemented, and operated fixed guideway transit capital investments. The New Starts evaluation process is separate from the evaluation required by NEPA that is discussed in Chapter 2, Alternatives Considered. This section describes the New Starts process and the associated methods that FTA uses to evaluate and rate fixed guideway transit projects seeking federal funding and describes the current criteria ratings for the East Corridor. The current FTA New Starts evaluation rating for the East Corridor is "medium".

5.3.1 Background

Each year FTA submits its Annual Report on New Starts to Congress as a companion document to the annual budget submitted by the President. The report provides recommendations for the allocation of New Starts funds under Section 5309 of Title 49 of the United States Code (USC). As required by the Safe, Accountable, Flexible, Efficient, Transportation Equity Act: A Legacy for Users (SAFETEA-LU), FTA uses the following project justification criteria to evaluate New Starts projects in addition to consideration of the local financial commitment for the proposed project:

- Mobility improvements
- Environmental benefits
- Cost effectiveness including operating efficiencies
- Transit-supportive existing land use, policies, and future patterns
- Other factors including economic development

FTA reviews the project justification and local financial commitment criteria for each candidate project and assigns a rating for each criterion. For some of the project justification criteria, the proposed project is compared against a New Starts Baseline/TSM Alternative. The New Starts Baseline/TSM Alternative consists of improvements to the transit system that are relatively low

in cost and the best that can be done to improve transit without major capital investment for new infrastructure. A candidate project is given an overall rating of high, high-medium, medium, medium-low, or low based on ratings assigned by FTA to each of the project justification and local financial commitment criteria previously described.

Project evaluation is an ongoing process. FTA evaluation and rating occurs annually in support of budget recommendations presented in the Annual Report on New Starts and when projects request FTA approval to enter into preliminary engineering or final design. Consequently, as proposed New Starts projects proceed through the project development process, information concerning costs, benefits, and impacts is refined and the ratings updated to reflect new information.

As discussed in Section 5.1, Financial Analysis, the East Corridor and the Gold Line will be in the Penta-P. In particular, the pilot program is intended to study whether, in comparison to conventional procurements, PPPs better reduce and allocate risks associated with new construction, accelerate project delivery, improve the reliability of projections of project costs and benefits, and enhance project performance.

FTA may confer certain benefits on a PPP project through this pilot program, which include but are not limited to, federal financial assistance and procedural and regulatory benefits.

Federal Financial Assistance

To the extent the East Corridor or Gold Line or a combined PPP project is a candidate for funding under FTA's New Starts program in an amount of \$250 million or more, a New Starts submission is evaluated and rated in accordance with the rating scheme of the New Starts program as adjusted to account for its demonstration value as a member of the Penta-P.

In the event the East Corridor and/or Gold Line qualify for funding under the New Starts program and a letter of intent is issued, FTA may allocate funds from amounts appropriated for the New Starts program for Fiscal Year 2009 or subsequent fiscal years; each case is subject to approval by the Office of Management and Budget.

Procedural and Regulatory Benefits

FTA may afford RTD, through the Penta-P, certain procedural and regulatory benefits, including but not limited to:

- Streamlining environmental review and approval.
- Expediting and consolidating final design and construction approvals.
- Expediting ROW acquisition approvals.
- Issuing letter(s) of intent to allocate New Starts funds prior to signing a full funding grant agreement.
- Relying on contractual terms and conditions, cost and schedule controls, and cost and performance guarantees in the PPP agreement instead of FTA's standard risk assessment and financial reviews.
- Accepting, without further review, projections of transportation user benefits on the basis of which cost-effectiveness and mobility measures for a New Starts project's rating will be developed, subject to RTD's PPP agreement.

FTA budget recommendations and other final approvals with respect to the East and/or Gold lines (together with any procedural or rating benefits received by the PPP project under the

Penta-P prior to a funding recommendation) will be conditioned on RTD and its private partner entering into a PPP agreement with respect to the project that safeguards the federal interest.

5.3.2 Current Rating

On April 20, 2009, FTA informed RTD that the East Corridor project has been approved to enter into preliminary engineering (PE). This approval of the initiation of PE is a requirement of federal transit laws governing the New Starts program (49 USC §5309[e][6]).

FTA is required by law to evaluate a proposed project against a number of New Starts criteria to ensure prospective grant recipients demonstrate the technical, legal, and financial capability to implement the project. As a result of FTA's evaluation of the project, the East Corridor project has received an overall rating of "medium" under New Starts criteria.