RTD 2007 Annual Report to DRCOG on FasTracks
2007 Annual Report to DRCOG on FasTracks
December 2007
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EXECUTIVE SUMMARY

The 2007 annual report of the FasTracks program is submitted to DRCOG in accordance with the original SB 208 FasTracks resolutions of approval that require RTD to provide an annual report on the status and progress in implementing the program and to document any substantial changes to FasTracks plan elements. The original DRCOG review (“Review of the RTD FasTracks Plan Final Report”) was completed in 2004. DRCOG conducted its third annual review in 2006. DRCOG has taken responsibility for reviewing the following:

- Project Definition and Scope
- Plan and Corridor Costs
- Revenue Projections
- Implementation Schedule
- Level of Bus Service
- Operating Characteristics

This report documents the current status of each FasTracks corridor as well as corresponding facilities required for operations and maintenance. Additionally, it identifies elements of the FasTracks program that require re-approval through the DRCOG process.

Project Definition and Scope

Unlike typical transit development strategies, which pursue one corridor at a time and can take decades to accomplish, the FasTracks plan offers a comprehensive, region-wide approach to transit development. Under the revised Plan, 28 miles of light rail, 94 miles of commuter rail (includes 3 miles of shared track between the Gold Line and Northwest Rail Corridor and 1.5 miles of shared track between the East and North Metro Corridors), and 18 miles of bus rapid transit improvements will be developed between 2005 and 2017. The FasTracks Plan adopted by the voters and approved by the DRCOG Board in 2004 consists of:

- Nine rail corridors (new or extensions).
- One bus rapid transit (BRT) corridor.
- The redevelopment of the Denver Union Station (DUS) with associated yard and station improvements.
- Three maintenance facility projects:
  - A new light rail maintenance facility (As a result of the change from light rail to commuter rail for the Gold Line, it has been determined that an expansion of the Elati light rail facility, along with additional improvements at the Mariposa facility, is sufficient to service the light rail fleet)
  - A new commuter rail maintenance facility
  - A bus maintenance facility

In 2007, the RTD responded to significant challenges to the FasTracks Plan that developed in 2005 and 2006. These challenges were chiefly financial and were a reflection of economic trends in the Denver metropolitan region, nationally and internationally. In the Denver region, there was a slowing of economic growth that resulted in reduction of sales tax revenues to the
RTD. On a national and world-wide basis, costs for key construction materials (concrete, steel, copper, etc.) rose sharply, reflecting an international boom in construction. The RTD’s responses to these challenges are described in the report’s sections on Plan and Corridor Costs, Financial Plan, and the Annual Program Evaluation (APE).

Pressures on RTD’s capacity to fund the FasTracks Plan were exacerbated by an unanticipated decrease in revenues at the same time as materials and labor costs shot upward. Labor and material cost indices compiled by the *Engineering News Record* (ENR) are compared to the Colorado Consumer Price Index (CPI) as shown below. The Colorado CPI was the index used for estimating cost increases for the FasTracks Plan.

![Graph showing cost indices comparison](image)

The first Annual Program Evaluation (APE) effort was conducted in 2007 to evaluate the original FasTracks Plan costs developed in 2003 by utilizing the most current project definitions and scopes along with updated cost information. Each corridor or project was evaluated independently and common elements among corridors were reconciled. The APE resulted in a complete “bottoms up” estimate of the FasTracks Plan benchmarked at January 2007. The evaluation revealed several consistent factors:

- Unit costs increased significantly. New unit costs were developed to reflect current information.
- Some corridor scopes and definitions had changed from the original FasTracks Plan due to more advanced planning and engineering, changes in vehicle technologies, new regulatory requirements and other factors.
- The APE resulted in a revised FasTracks cost estimate $6.17B in Year of Expenditure dollars as presented to the RTD Board in May 2007. This represented an increase of $1.45B over the original FasTracks Plan cost of $4.72B. Over 70% of the increase was attributable to material, labor and right-of-way escalation costs.
• As a further cost containment effort, the FasTracks schedule was reviewed and updated in June 2007 to reflect alternative delivery methods. The schedule update resulted in a cost savings to the FasTracks Program by advancing some corridor completion dates through use of techniques such as design–build.

• The revised FasTracks capital cost estimate (Year of Expenditure dollars) based on the updated schedule is $6.1B. This budget was adopted by the RTD Board of Directors in September 2007 as part of the Financial Plan update.

Rail vehicle technology studies conducted as part of the EISs undertaken on the individual corridors. Commuter rail technologies were identified as alternatives were developed and evaluated in each corridor. Criteria for technology evaluation included noise, vibration, air quality (local and regional), visual impacts, cost-effectiveness, complexity of implementation and community input.

• The Gold Line was included in the evaluation since the technology changed from Light Rail to Commuter Rail due to railroad requirements for transit vehicles operating within general railroad system (freight) rights-of-way.

• The life cycle costs (in addition to the up front capital costs) were analyzed to evaluate the most cost effective technologies over time for each corridor.

• Present value and costs of financing were added to the life cycle cost analysis to ensure the results of the life cycle cost analysis fully identified the affordability of the technologies under consideration.

• As a result of these analyses, the technologies identified in the adopted Preferred Alternatives for the four potential commuter rail corridors was as follows:
  1. Gold—EMU (Electrical Multiple Units)
  2. East—EMU
  3. North Metro—DMU (Diesel Multiple Unit)
  4. Northwest Rail—DMU

A brief description of each corridor’s definition and scope is provided below.

**East Corridor**
The East Corridor consists of 23.6 miles of double-track from Denver Union Station (DUS) to Denver International Airport (DIA). A significant change this year was the selection of Electric Multiple Unit (EMU) as the commuter rail technology July 2007, and the selection of the East Corridor for the Federal Transit Administration’s (FTA) Public-Private Partnership Pilot Program (Penta-P). Public-private partnerships are a procurement delivery mechanism that allocates risks and rewards of project development among public agencies and private companies. The Penta-P project offers the opportunity for a streamlined and expedited project development process under the federal New Starts capital funding program. The East Corridor is scheduled for completion in 2014.

**Gold Line Corridor**
The Gold Line is 11.2-miles of mostly double-track from DUS to Ward Road. Significant this year is the change to commuter rail technology, rather than light rail, which was originally
planned. During the EIS process the railroads expressed concerns regarding safety and the incompatibility of light rail with freight operations. As with the East Corridor, Electric Multiple Unit (EMU) was selected as the commuter rail technology on July 24, 2007. The Gold Line was also selected into the Penta-P Program by FTA. Completion of the Gold Line is scheduled for 2015.

**Southeast Corridor Extension**
The Southeast Corridor Extension is 2.3 miles in length and extends from the existing Lincoln Station south to RidgeGate Parkway (under construction). Completion is scheduled for 2015.

**Southwest Corridor Extension**
The Southwest Corridor Extension is 2.5 miles in length, utilizes light rail technology and extends from the existing Mineral Station south and east to Lucent Boulevard. It is scheduled for completion in 2015.

**I-225 Corridor**
The I-225 Corridor, 10.5 miles in length, utilizes light rail technology and extends from Nine Mile Station north to the Peoria/Smith Station. Completion is scheduled for 2015.

**North Metro**
The North Metro Corridor begins at DUS and extends north 18 miles to 162nd Avenue. Of significance this year is the RTD Board of Directors approval, on October 16, 2007, of Diesel Multiple Unit (DMU) as the preferred technology for this commuter rail corridor. Scheduled completion is in 2015.

**Denver Union Station**
Development of Denver Union Station (DUS) is proceeding as a public-private partnership (P3), following selection of a master developer, Union Station Neighborhood Company (USNC), in late 2006. Contract negotiations with the Master Developer are ongoing. They will be responsible for private development of the DUS site and for final design and construction of the public transportation elements of the DUS Master Plan. Completion is scheduled for 2012.

**Central Corridor Extension**
The Central Corridor Extension begins at the 30th and Downing Station and extends north 0.8 miles to the 40th/40th Station. This station will serve as the terminus for the Central Corridor, as well as a transfer hub to the East and North Metro Corridors. The Central Corridor is scheduled for completion in 2015.

**West Corridor**
The West Corridor originates at DUS and extends west for 12.1-miles ending at the Jefferson County Government Center. This corridor is furthest along in the development and construction process, with completion of construction scheduled for 2012 and opening day in 2013.

**US 36 BRT—Phase 1**
This project includes construction of the US 36/McCaslin park-n-Ride and pedestrian bridge (completed in 2006); the US 36/Church Ranch park-n-Ride and north and southbound bus slip ramps (completed in 2007); a shared parking structure at the Arista Development in Broomfield (completed); and construction of a relocated Broomfield park-n-Ride (scheduled for completion in 2009/2010).
US 36 BRT—Phase 2
This project consists of 18 miles of dedicated BRT lanes in US 36 that extend from DUS to the Table Mesa park-n-Ride. It also includes construction of a pedestrian bridge at the Table Mesa park-n-Ride and a new eastbound bus slip ramp on the south side of US 36. Senate Bill 1 funds that will be used to construct the pedestrian bridge at Table Mesa have been received by RTD on behalf of the US 36 Mayors and Commissioners Coalition (MCC). RTD, the US 36 MCC, and CDOT are exploring funding options for the BRT lanes and median stations. The Draft EIS was released in August 2007. Completion of Phase 2 will be determined based on CDOT, RTD, and the US 36 MCC agreement on the final US 36 alternative.

Northwest Rail Corridor
The Northwest Rail Corridor consists of 41 miles of commuter rail (DMU) that originates at DUS and extends northwest to downtown Longmont. Significant changes that have occurred in 2007 regarding this corridor include extending the corridor to downtown Longmont (additional 2.9 miles), and the selection of DMU on October 16, 2007, as the preferred alternative for commuter rail technology. The Northwest Rail Corridor is scheduled for completion in 2014.

Maintenance Facilities
The FasTracks Plan includes facilities for light rail, bus, and commuter rail maintenance. Light rail maintenance will be accommodated by an expansion of the existing Elati and Mariposa Facilities; and the commuter rail facility will accommodate both EMU and DMU. Two sites are currently being considered for the commuter rail maintenance facility (as part of the East Corridor EIS). An evaluation of the need for expansion of bus maintenance capacity indicated that it was not needed until 2020. Therefore, the planning process for this facility will be initiated in 2013, with completion scheduled for 2020.

Plan and Corridor Costs
The table below summarizes the projected capital costs of the Plan by corridor:

Revenue Projections
The current $6.1 billion projected cost is an upward revision from the originally estimated $4.7 billion (2004) following an extensive update on construction cost estimates this year due to increases in worldwide commodity prices.

At the same time, RTD has revisited forecasted revenue assumptions using Colorado Legislative Council and the Office of State Budget and Planning (OSBP) projections. This resulted in less revenue over time than originally predicted in 2004. The ability to implement the FasTracks Plan depends on a variety of financial assumptions and projections which have been developed using the best available current estimates of costs, reasonably anticipated federal funding based on current federal law and regulations, and revenues from other sources including RTD sales tax and fare collections. Over the anticipated remaining build-out of ten years, specific cost items, federal and other contributions, and RTD revenues may vary. Based on the extensive analysis behind the financial assumptions used, RTD expects to deliver the major transit corridors and related improvements within the time frames originally promised. RTD expects that over a ten year time-frame, certain adjustments and modifications will be required to deal with changing conditions in revenues and material and labor price escalations.
The section on Revenue Projections details the assumptions used and provides further explanation as to how RTD expects to finance the FasTracks Plan.

### FasTracks Projected Capital Costs by Corridor
(In Millions of Year of Expenditure Dollars)

<table>
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<tr>
<th>Corridor</th>
<th>April 2004</th>
<th>December 2007¹</th>
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<tr>
<td><strong>FasTracks Program Costs</strong></td>
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<tr>
<td>West Corridor</td>
<td>$511.8</td>
<td>$634.7</td>
</tr>
<tr>
<td>Northwest Rail Corridor</td>
<td>565.1</td>
<td>684.4</td>
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<tr>
<td>Gold Line</td>
<td>463.5</td>
<td>552.5</td>
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<tr>
<td>I-225 Corridor</td>
<td>442.3</td>
<td>620.0</td>
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<td>East Corridor</td>
<td>702.1</td>
<td>1,141.6</td>
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<td>North Metro Corridor</td>
<td>420.0</td>
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<td>Central Corridor Extension²</td>
<td>68.7</td>
<td>65.9</td>
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<td>Southeast Corridor Extension²</td>
<td>136.8</td>
<td>164.9</td>
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<td>Southwest Corridor Extension²</td>
<td>134.9</td>
<td>178.6</td>
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<tr>
<td>U.S. 36 BRT—Phase 1</td>
<td>22.2</td>
<td>21.6</td>
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<td>U.S. 36 BRT—Phase 2</td>
<td>204.1</td>
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<td>Denver Union Station³</td>
<td>268.4</td>
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<tr>
<td>Light Rail Maintenance Facility</td>
<td>100.4</td>
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<tr>
<td>Commuter Rail Maintenance Facility</td>
<td>80.4</td>
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<tr>
<td>Bus Maintenance Facility</td>
<td>71.7</td>
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<td>Other FasTracks Project Costs</td>
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<td><strong>Total FasTracks Program Costs</strong></td>
<td>$4,717.1</td>
<td>$6,083.1</td>
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<td><strong>Third Party Funded Projects—West Corridor⁴</strong></td>
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<tr>
<td><strong>Total Financial Plan Program Costs</strong></td>
<td>$4,717.1</td>
<td>$6,112.8</td>
</tr>
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¹Current capital cost estimates are inflated at Consumer Price Index (average of 3.4% per year); actual increases could be different.

²Costs for the Southeast, Southwest, and Central Corridor Extensions include costs for the extension only. Upgrades, which are also part of the FasTracks Plan, are included in “Other FasTracks Program Costs”.

³Denver Union Station costs in the December 2007 plan include only RTD locally-funded contributions to the joint project and Federal funds to be received by RTD. CDO, other federal sources, TIF, metro district revenues, development rights revenues, and other sources are expected to contribute an additional $264.6 million to the project, for a total project cost of $480 million.

⁴This represents the cost of the following third-party-funded projects that are not a part of the base FasTracks plan, but are tracked as part of the FasTracks financial plan:
- Passing track—$11.9 million
- Additional parking at Jeffco Station—$7.4 million
- Bike bridges at Wadsworth and Kipling—$1.8 million
- Federal Bridge—$8.6 million

The FasTracks Program schedule adopted in 2004 (as part of the SB 208 process) was the basis for RTD’s original $4.7 billion FasTracks program estimate. The revised FasTracks capital cost estimate (in Year of Expenditure dollars) with the updated schedule is $6.1B. The
FasTracks Plan is financed in part through a 0.4% increase in the regional sales and use tax approved by voters in November of 2004. The revised FasTracks Financial Plan is summarized by the sources of funds expected to pay for the Plan’s $6.1 billion of project expenditures in the table below.

### FasTracks Estimated Capital Sources of Funds
(Millions of Year of Expenditure Dollars)

<table>
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<tr>
<td>Bond Proceeds</td>
<td>2,365.9</td>
<td>1,976.1</td>
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<td>COPs Proceeds</td>
<td>203.1</td>
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<td>TIFIA Loan Proceeds</td>
<td>142.7</td>
<td>212.4</td>
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<tr>
<td>Pay-as-you-go Cash</td>
<td>985.0</td>
<td>1,414.5</td>
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<td>Federal New Start Grants</td>
<td>815.4</td>
<td>1,262.3</td>
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<tr>
<td>Other Federal Grants</td>
<td>110.0</td>
<td>163.8</td>
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<tr>
<td>Local Funding</td>
<td>95.0</td>
<td>126.2</td>
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<tr>
<td>Public-Private Partnerships</td>
<td>—</td>
<td>547.8</td>
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<tr>
<td><strong>Total FasTracks Program Funding</strong></td>
<td><strong>4,717.1</strong></td>
<td><strong>6,083.1</strong></td>
</tr>
<tr>
<td>Third Party Funded Projects¹</td>
<td>—</td>
<td>29.7</td>
</tr>
<tr>
<td><strong>Total FasTracks Financial Plan</strong></td>
<td><strong>4,717.1</strong></td>
<td><strong>6,112.8</strong></td>
</tr>
</tbody>
</table>

¹This represents third-party-funding for four projects in the West Corridor that are not a part of the base FasTracks plan:
- Passing track—$11.9 million
- Additional parking at Jeffco Station—$7.4 million
- Bike bridges at Wadsworth and Kipling—$1.8 million
- Federal Bridge—$8.6 million

Additional Funding (Third-Party)
RTD will request supplementary funds through the SB 97-01 and DRCOG Transportation Improvement Program (TIP) processes for West Corridor. If successful, RTD has agreed to restore passing tracks east of Red Rocks Community College and west of I-70 to allow for 10-minute headways ($11.9 million, CDOT SB 97-01 funds), along with a third level to the proposed parking structure at the Jefferson County Government Center ($7.4 million, DRCOG TIP funds). RTD has agreed that when the funding is secured, they will issue the direction necessary to implement these improvements to the West Corridor contractor.

### Implementation Schedule
RTD has revised the FasTracks Plan Schedule submitted to DRCOG in the 2006 Annual Report. In the 2006 Annual Report, the revised schedule accelerated three projects to maximize the financial savings available from lower interest rates on bonds. These corridors included the West Corridor, Denver Union Station (DUS), and the Light Rail Maintenance Facility. This year, an accelerated schedule for the Southeast and Southwest Corridors has been added. In both cases, the scheduled completion has shifted from 2016 to mid-2015. Additionally, DUS has a further accelerated schedule, as does the expansion of the Elati Light Rail Maintenance Facility.
Since the inception of the FasTracks Plan, the delivery methods for some corridors have changed. The original FasTracks Plan envisioned construction of each corridor progressing through design, bid/procurement, and construction phases. In 2006, RTD approved I-225 and the Southeast/Lone Tree Extension for design-build projects. In 2007, the Southwest Corridor was also considered for design/build. This represents a change from the original FasTracks design-bid-build schedule. Additionally, during the 2007 reporting period other corridors have been identified for different implementation strategies. They include: Design-Build (DB) for DUS; and Design-Build-Finance-Operate-Maintain (DBFOM) for the East and Gold Line Corridors, and the Commuter Rail Maintenance Facility, which are slated for development and operation as Public-Private Partnerships (P3) projects.

P3 is a concept that RTD has selected to use as an alternative procurement and delivery mechanism for some corridors. It is one strategy that RTD is using to deliver the FasTracks Plan on schedule and as cost effectively as possible. The P3 approach has been in use internationally for years and is being used more frequently in the United States. A P3 strategy allows a public agency to partner with the private sector on some or all of the components of an infrastructure project: design, build, finance, operate and/or maintain. The RTD was approved in August 2007 to participate in the FTA's Public Private Partnership Pilot Plan (Penta-P). As a participant in this plan, RTD will not only potentially benefit from the P3 approach, but also from entering into a partnership with FTA to streamline the project development process.

Updated delivery methods recommended for each project were used to refine the schedules for each project. RTD will continue to review the recommended delivery methods as each project progresses as part of the Annual Program Evaluation (APE), which is a program update process.

Level of Bus Service
Background bus service levels in the Plan were re-examined in light of the substantial increase in demand for services for persons with disabilities. The Americans with Disabilities Act (ADA) of 1990 requires transit agencies to provide complementary paratransit services for persons who can not use fixed route services, and must serve all eligible trips with no service denials. Demand for ADA service has increased substantially since the FasTracks Plan was presented to the voters in 2004, a trend seen nationally, as well as within the RTD service area. The 2007 updated FasTracks Financial Plan reflects adjustments in both fixed-route and ADA service levels. Rubber-tire service levels (bus and ADA services) will increase by a minimum of 1.0% per year from 2008-2020, and a minimum of 1.5% per year from 2021-2035. Overall, 2035 rubber-tire service hours will increase by 50% over 2007 service levels.

Operating Characteristics
Since the DRCOG approval of the FasTracks Plan in 2004, the planning horizon for both the Regional Transportation Plan and the FasTracks corridor EISs has been extended to 2035. There have been minor changes to the transit operating characteristics, including travel times and speeds, for some of the FasTracks corridors, based on changes in technology and alignment refinements.
Conclusion

In 2006, RTD and the FasTracks Plan were presented with several challenges. In 2007, the FasTracks team responded to those challenges. In summary, the key challenge was identifying and developing the means to deliver the FasTracks Plan within schedule and budget. Project scopes, definitions and schedules were assessed and reviewed, rail technology options were re-assessed in several corridors, alternative procurement and project delivery mechanisms were identified, and federal funding is being aggressively pursued. RTD made progress on all of these approaches in 2007 to response to these challenges. While continuous review of project progress, schedules and budgets will be critical to overall FasTracks success, 2007 can be viewed as the year in which RTD took significant steps to respond to regional, national, and international economic trends that could have severely impacted the plan’s progress.

Based on the changes in the FasTracks Plan as described in the full SB 208 report, potential SB 208 findings would include:

- Change in technology for the Gold Line from light rail to EMU (electric multiple unit).
- Public Private Partnership (P3) approach to project delivery and funding for the East Corridor, Gold Line and commuter rail maintenance facility.
- West Corridor funding approach, which includes an additional $11.9 million for passing track from the Denver Federal Center to the Jefferson County Government Center and $7.4 million to construct the third level of a proposed parking structure at the Jefferson County Government Center.
- Revised FasTracks Financial Plan.

Potential RTP amendments could be required to address:

- Change in technology for the Gold Line from light rail to EMU (electric multiple unit).
- The revised FasTracks Financial Plan.
- The extension of the Northwest Rail Corridor to 1st and Terry (downtown Longmont).
- Station revisions.
1.0 PROJECT DEFINITION SCOPE AND COSTS

1.1 Project Definition and Scope
In 2007, the RTD responded to significant challenges to the FasTracks Plan that developed in 2005 and 2006. These challenges were chiefly financial and were a reflection of economic trends in both the Denver metropolitan region and internationally. In the Denver region, there was a slowing of economic growth that resulted in reduction of sales tax revenues to the RTD. On a world-wide basis, costs for key construction materials (concrete, steel, copper, etc.) rose sharply, reflecting an international boom in construction. The RTD’s responses to these challenges are described in the following sections on Plan and Corridor Costs, Financial Plan, and the Annual Program Evaluation (APE). The APE was a comprehensive evaluation of the costs, revenues, financing options and construction delivery methods for the overall FasTracks program. Preliminary results of the APE, including corridor costs, revenues, financing gaps, and financing opportunities were presented to the RTD Board in May 2007. In September 2007, the RTD Board adopted an updated financial plan (summarized in Section 2, page 9, and attached as Appendix B) that incorporated updated cost and revenue estimates, project delivery methods and alternative financing methods. The updated financial plan allows corridor projects to be constructed and opened for revenue service within the twelve-year horizon promised to the voters in 2004.

The West Corridor is in Final Design. The other projects are either in, or scheduled to be in, the National Environmental Policy Act (NEPA) process, which includes preparation of an Environmental Impact Statement (EIS), Environmental Assessment (EA) or related document. Corridor alignments and stations are undergoing refinements as part of the NEPA process. The East Corridor EIS previously included an evaluation of the Central Corridor Extension. Since the Central Corridor Extension will be locally funded, it is not included in the East Corridor EIS.

1.2 Plan and Corridor Costs
The FasTracks Plan capital costs and characteristics for all FasTracks corridors and major components, such as maintenance facilities, are summarized in Table 1. This table was presented in the 2004 and 2006 SB 208 reports and is included to depict all pertinent changes. Table 1 has been updated for the 2007 Annual Report. Information from the RTD 2006 Annual Report to DRCOG on FasTracks is shown in yellow and the capital cost characteristics for 2007 are shown in blue. Changes from 2006 are identified by red, bolded type. Table 1 includes the original project costs (2002$) and current project costs expressed in year-of-expenditure dollars (YOE$). Cost increases have resulted from increases in materials, labor, and right-of-way; third party requests; and increased delineation and clarification of scopes that have occurred as the projects’ planning and design has progressed.
Page left intentionally blank
<table>
<thead>
<tr>
<th>Carrier</th>
<th>2006 Capital Cost Characteristics</th>
<th>2007 Capital Cost Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northwest Rail</td>
<td>* Commuter Rail Partially reconstruct existing BNSF track from DUS to Longmont (Hover Road), build second track from DUS to Boulder (Pearl); construct new grade separations at stations/pnRs at South Westminster (71st Ave), Chatwin Park, Flatirons Mall, Downtown Longmont, Boulder Transit Village (80th Ave), Guanella, and Downtown Longmont (Hart Tlg). * Commuter rail grade separation at station Journeys at 71st, Lowell, Bradburn, 69th, S. Boulder Rd and 2 between Boulder and Longmont will be at-grade.</td>
<td></td>
</tr>
<tr>
<td>East Corridor Commuter Rail</td>
<td>* Build new double tracks; construct grade separations at Broadway, 38th, Denver Market lead RR, 2 freight flyovers for freight customer access track, Quebec, Peoria, 17th/Latino Blvd/URRR, 48th, 56th, Tower, 470. Press/Pena and DA approach. DA funding station at DA (in count), class of project. * DMU stations/pnRs at South Westminster (71st Ave), Chatwin Park, Flatirons Mall, Downtown Longmont, Boulder Transit Village (30th/Pearl), 80th, 88th, 104th, 120th, 162nd Avenue in Thornton.</td>
<td></td>
</tr>
<tr>
<td>Central Corridor Extension (LRT)</td>
<td>* Build new double tracks from CU Boulder/URRR ROW to Airport Boulevard. New Airport Boulevard corridor/transfer structure near the URRR, Airport Boulevard West, and I-70. North of I-70, cross 58th Ave, continue along west side of Pena Boulevard, extend along east side of Pena Transportation Corridor as Pena, north of I-70 at Pena Boulevard, east along 78th Ave and north into DIA terminal. Total of 2 grade separations.</td>
<td>* Build new double tracks from CU Boulder/URRR ROW to Airport Boulevard. New Airport Boulevard corridor/transfer structure near the URRR, Airport Boulevard West, and I-70. North of I-70, cross 58th Ave, continue along west side of Pena Boulevard, extend along east side of Pena Transportation Corridor as Pena, north of I-70 at Pena Boulevard, east along 78th Ave and north into DIA terminal. Total of 2 grade separations.</td>
</tr>
<tr>
<td>I-225 Corridor LRT</td>
<td>* Build new double tracks from Smith/Peoria, go south to Montview, east through Fitzsimons and cross Fitzsimons Parkway; transition to aerial crossing at Yale Street, Montview Boulevard and Peoria Street) ROW; use RTD ROW (already acquired). For stations/PnRs, acquire approx.16.6 acres private property.</td>
<td></td>
</tr>
</tbody>
</table>

Notes: 1. The number of at-grade crossings are new for the rapid transit system and include construction/construction costs to meet passenger safety requirements. Most of the Northwest Rail, East & Gold line corridor crossings currently exist, for height right of way. 2. The Central Corridor Extension is north of North Dakota and will join with the I-225 Corridor and will use the Central Corridor Extension where commuter right and light rail right exist. 3. The Northwest Rail, East & Gold line will extend a commuter right and light rail right exist. 6. The Central Corridor Extension is north of North Dakota and will join with the I-225 Corridor and will use the Central Corridor Extension where commuter right and light rail right exist. 7. Two "design option" stations to be privately funded include 48th/Pena Boulevard and 64th/Himalaya. These are not shown in this section. 8. The Central Corridor Extension will utilize a single LRT vehicle in a transit section. 9. I-225 parking stations at the Pena Station (East Corridor) are shared with the I-225 Corridor. 10. RTD Funding Requirement* ** New Funding Requirement 3. North Dakota also includes New Mexico. The number of stations is listed. 4. The East Corridor and North Dakota Corridor (CRT) share the 48th/Pena ROW. The Central Corridor Extension (CRT) terminates at 64th/84th Street and creates a transfer point between CRT (East and North Dakota Corridors) and LRT (Central Corridor East). 5. 2007 Capital Cost Characteristics presented in the ATD 2006 Annual Report to DRCOG on FastTracks
Table 1 (cont’d). FastTracks Capital Cost Characteristics

<table>
<thead>
<tr>
<th>Item</th>
<th>Rapid Transit</th>
<th>Non-Rapid Transit</th>
<th>SB 200 Finding</th>
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</thead>
<tbody>
<tr>
<td><strong>Length (miles)</strong></td>
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<tr>
<td>A Tie-Grade Finding Upgrades</td>
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<tr>
<td>B LRT Extension: Build new double track, grade separations at Mineral, County Line, BNSF/UP, C-470 and Wadsworth, Kipling and Ward, and purchase additional private land.</td>
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<td>1</td>
<td>1</td>
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<tr>
<td>C LRT: East Corridor, North Metro Corridor, Northline, North Central, and Northwest Rail share track and grade separations at Union Station, east of I-25, and north of 40th.</td>
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<td>1</td>
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<tr>
<td>D LRT: Northwest Rail shares track and grade separations at Federal Center, west of I-25, and north of 40th.</td>
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<tr>
<td><strong>Stations</strong></td>
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<tr>
<td>E LRT: East Corridor, North Metro Corridor, and Northwest Rail share 10 stations with the East Corridor and 10 stations with the Northwest Rail at grade.</td>
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<td>1</td>
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<tr>
<td>F Regional Rail/EMU, commuter rail, and bus will be located at grade and underground, respectively, at all stations.</td>
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<tr>
<td><strong>PNRs (Spaces)</strong></td>
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<tr>
<td>G LRT: East Corridor, North Metro Corridor, and Northwest Rail share 10 stations with the East Corridor and 10 stations with the Northwest Rail.</td>
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</tr>
<tr>
<td>H Regional Rail/EMU, commuter rail, and bus will be located at grade and underground, respectively, at all stations.</td>
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<tr>
<td><strong>Notes</strong></td>
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</tr>
<tr>
<td>1. The number of at-grade crossings are fewer for the rapid transit system and include certain/enclosure/construction to meet passenger safety requirements. Most of the Northwest Rid, North Metro, and East and Gold Line corridors are existing freight.</td>
<td></td>
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<tr>
<td>2. The Northwest Rid, North Metro, and East and Gold Line corridors are extensive for freight and intermodal requirements.</td>
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<tr>
<td>3. The Northwest Rid, North Metro, and East and Gold Line corridors includes additional track and grade separations at grade for passenger safety.</td>
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<tr>
<td>4. The Northwest Rid, North Metro, and East and Gold Line corridors include additional track and grade separations at grade for passenger safety.</td>
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<tr>
<td>5. LRT corridor also includes 10 stations, which is included in the number of stations included.</td>
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<tr>
<td>6. The East Corridor and North Metro Corridor (CRT) share the LRT Corridor; the Central Corridor Extension (CRT) terminates at the East DTC station and creates a transfer point between CRT (East and North Metro Corridors) and LRT (Central Corridor CRT).</td>
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<tr>
<td>7. Capital Cost Characteristics presented in the RTD 2006 Annual Report to DRCOG on FasTracks.</td>
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<tr>
<td>8. 550 parking spaces at the Peoria Station (East Corridor) are shared with the I-225 Corridor.</td>
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<tr>
<td>9. East Corridor and North Metro Corridor (CRT) share the LRT Corridor; the Central Corridor Extension (CRT) terminates at the East DTC station and creates a transfer point between CRT (East and North Metro Corridors) and LRT (Central Corridor CRT).</td>
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<td>10. The Northwest Rid, North Metro, and East and Gold Line corridors are extensive for freight and intermodal requirements.</td>
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<tr>
<td>11. The original FasTracks Plan included 12 stations and 10 stations are planned for this corridor. An additional 1351 parking spaces will be constructed as an on-site, underground structure.</td>
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<td>12. These notes reflect the RTD’s findings related to the Central Corridor following the addition of the East DTC station.</td>
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<td>13. These notes reflect the RTD’s findings related to the West Corridor following the addition of the East DTC station.</td>
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<td>14. Gold Line and Northwest Rail share 3 miles of track from DUS to Pecos.</td>
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<td>15. East and Gold Line corridors are extensive for freight and intermodal requirements.</td>
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<tr>
<td>16. East and Gold Line corridors are extensive for freight and intermodal requirements.</td>
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<tr>
<td><strong>2007 Annual Report to DRCOG on FasTracks</strong></td>
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<tr>
<td>1. Capital Cost Characteristics presented in the RTD 2006 Annual Report to DRCOG on FasTracks.</td>
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<td>2. Capital Cost Characteristics presented in the RTD 2006 Annual Report to DRCOG on FasTracks.</td>
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<td>3. Capital Cost Characteristics presented in the RTD 2006 Annual Report to DRCOG on FasTracks.</td>
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<td>6. Capital Cost Characteristics presented in the RTD 2006 Annual Report to DRCOG on FasTracks.</td>
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<td>7. Capital Cost Characteristics presented in the RTD 2006 Annual Report to DRCOG on FasTracks.</td>
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<td>18. Capital Cost Characteristics presented in the RTD 2006 Annual Report to DRCOG on FasTracks.</td>
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<td>19. Capital Cost Characteristics presented in the RTD 2006 Annual Report to DRCOG on FasTracks.</td>
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<td>20. Capital Cost Characteristics presented in the RTD 2006 Annual Report to DRCOG on FasTracks.</td>
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<td>21. Capital Cost Characteristics presented in the RTD 2006 Annual Report to DRCOG on FasTracks.</td>
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<td>23. Capital Cost Characteristics presented in the RTD 2006 Annual Report to DRCOG on FasTracks.</td>
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<td>27. Capital Cost Characteristics presented in the RTD 2006 Annual Report to DRCOG on FasTracks.</td>
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<td>28. Capital Cost Characteristics presented in the RTD 2006 Annual Report to DRCOG on FasTracks.</td>
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<td>29. Capital Cost Characteristics presented in the RTD 2006 Annual Report to DRCOG on FasTracks.</td>
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## Table 1 (cont’d). FasTracks Capital Cost Characteristics

### Comparison of 2004 and 2007

<table>
<thead>
<tr>
<th>Year</th>
<th>Corridor</th>
<th>Mode</th>
<th>Capital Costs</th>
<th>2002$</th>
<th>YOE$²</th>
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<td>Bus</td>
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<td>US 36 BRT */Phase II</td>
<td>HOV/BRT</td>
<td>$214.0</td>
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<td>2004</td>
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<td>Commuter Rail</td>
<td>$415.6</td>
<td>$565.1</td>
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<td>Northwest Rail *</td>
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<td>Commuter Rail/DMU</td>
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<td>Commuter Rail</td>
<td>$554.2</td>
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<td>2007</td>
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<td>$1,141.6</td>
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<td>SE Extension &amp; Upgrades³</td>
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<td>$217.1</td>
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</table>

### Notes:

1. Capital costs include the right-of-way (ROW) costs.
2. YOE$ are the costs per corridor in year of expenditure dollars.
3. Costs for the Southeast, Southwest, and Central Corridor Extensions include costs for the extension and for upgrades, which are also part of the FasTracks Plan.
4. The total costs for DUS are $480 million (includes SB1, FHWA, FTA funds = $65.2 million; TIF funds = $186 million; and other potential sources = $20 million) Note: Change in RTD project costs from 2006 to 2007 reflects the change from RTD to USNC as the project lead (resulted in grant funds previously obtained by and through RTD, now provided through USNC, as reflected in the lowered total for RTD costs)."*

*Rail and bus elements of the US 36 project were separated in 2006 into two separate projects: US 36 BRT for bus and HOV improvements and Northwest Rail for commuter rail.

Changes from 2004 FasTracks Plan are shown in **bold**.
### Table 1 (cont’d). FasTracks Capital Cost Characteristics

**Comparison of 2004 and 2007**

<table>
<thead>
<tr>
<th>Year</th>
<th>Corridor</th>
<th>Mode</th>
<th>Millions of Dollars</th>
<th>Capital Costs¹</th>
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<td>2002$</td>
<td>YOE$²</td>
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<td>Gold Line</td>
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<td>$81.8</td>
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<td>Central Corridor Extension and Upgrades⁴</td>
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<td>$113.1</td>
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<td>2004</td>
<td>Denver Union Station (DUS)</td>
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<td>$200.0</td>
<td>$268.5</td>
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<td>Denver Union Station (DUS)⁴</td>
<td>LRT, commuter rail &amp; bus</td>
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<td>2007</td>
<td>Totals</td>
<td></td>
<td>$6,112.8</td>
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**Notes:**

1. Capital costs include the right-of-way (ROW) costs.
2. YOE$ are the costs per corridor in year of expenditure dollars.
3. Costs for the Southeast, Southwest, and Central Corridor Extensions include costs for the extension and for upgrades, which are also part of the FasTracks Plan.
4. The total costs for DUS are $480 million (includes SB1, FHWA, FTA funds = $65.2 million; TIF funds = $186 million; and other potential sources = $20 million) Note: Change in RTD project costs from 2006 to 2007 reflects the change from RTD to USNC as the project lead (resulted in grant funds previously obtained by and through RTD, now provided through USNC, as reflected in the lowered total for RTD costs).”

*Rail and bus elements of the US 36 project were separated in 2006 into two separate projects: US 36 BRT for bus and HOV improvements and Northwest Rail for commuter rail.

Changes from 2004 FasTracks Plan are shown in bold.
The recent trends for labor and material costs are illustrated in Figure 2. Pressures on RTD’s capacity to fund the FasTracks Plan were exacerbated by an unanticipated decrease in revenues at the same time as materials and labor costs shot upward. Labor and material cost indices compiled by the Engineering News Record (ENR) are compared to the Colorado Consumer Price Index (CPI) in Figure 1. The Colorado CPI was the index used for estimating cost increases for the FasTracks Plan.

Figure 1. Labor and Material Cost Trends Compared to Consumer Price Index (CPI)

Figure 2 illustrates the decrease in forecast sales and use tax revenues for the period 2005-2035. Specifically the figure provides a comparison of RTD’s original 2004 forecast (extended to 2035) that was included in the first FasTracks SB 208 report; and for the same period, RTD’s revised, current 2007 forecast, accounting for experience to date and revised revenue forecasts.

The implications of these trends began to be recognized in 2006. Several strategies to address cost control were addressed in the 2006 Annual Report. In 2007, additional alternative financing strategies and cost containment measures were identified by RTD. These financing strategies and cost containment measures include:

- Revised public-financed debt opportunities
- Public-private partnership opportunities
- Sale of excess RTD properties
- Utilizing advertising and vending opportunities beyond bus advertising, which was included in the original FasTracks Plan
- Outside equity contributions to projects
- Additional state and/or local funding and partnerships
• Ongoing cost containment and value engineering of both the program and specific projects
• Accelerated construction schedule
• Early procurement of materials and vehicles

Figure 2. Total FasTracks Sales and Use Tax Revenue Forecasts—2005–2035

NOTE: 2026-2035 tax forecasts were not included in the original FasTracks plan, but were imputed based on the FasTracks plan long-term growth rates.

In addition, RTD has identified opportunities to manage or reduce costs by accelerating capital expenditures in order to lower interest cost by taking advantage of current, relatively low interest rates.

1.3 2007 Annual Program Evaluation (APE)
The purpose of the FasTracks Annual Program Evaluation (APE) was to evaluate the original 2002 FasTracks Program Costs based on the most current project definitions, scope and updated cost information. The APE was initiated in late December of 2006 and the majority of the evaluation was completed by May of 2007. The work was performed by the RTD FasTracks Team with assistance from corridor consultants who were working on design and Environmental Impact Statements (EIS) for their respective corridors.

The APE involved an independent evaluation of each corridor or project and a reconciliation of common elements among corridors. All costs were developed in 4th quarter 2006 dollars for consistency.

It is important to note that the APE did not address several program elements that contain some level of risk, such as inflation greater than the Consumer Price Index (CPI) and railroad
negotiations. These elements are being closely monitored as the Program progresses so that any significant changes can be incorporated into subsequent annual program updates.

The APE focused on capital costs for FasTracks projects. Additionally, FasTracks and RTD base system operating and maintenance costs, revenue forecasts, and financing strategies were updated and included as part of the overall analysis. These updates were incorporated into the 2007 FasTracks Financial Plan which was adopted by the RTD Board of Directors in September, 2007.

The following elements were evaluated for the APE:

- **Project Scope**—RTD Project Managers prepared updated assumptions for each project based on planning and design progress since the initial FasTracks Plan definition.
- **Unit Costs**—New unit costs (2006$) were developed based on current RTD bid documents and other relevant industry information.
- **Quantities**—RTD Project Managers (with assistance from consultants where appropriate), prepared current (2006) quantities for each project.
- **Contingencies**—Previous project-by-project and programwide contingencies were reviewed.
- **Design Criteria**—the original FasTracks Program cost estimates were based on the 2002 RTD Design Criteria; RTD updated the Design Criteria in 2005, and the new criteria were used as input to the revised cost estimates.

Once the initial evaluations were complete, Project Managers went through a process to refine the cost estimates for each of the projects. These efforts included:

- **Cost Containment**—RTD FasTracks staff developed value engineering elements that were evaluated for the Program overall, and for corridors on a case-by-case basis.
- **Revised Project Scopes**—Each project was evaluated to ensure that only those items originally part of the FasTracks Plan were included in the costs. The exception to this is Northwest Rail Corridor, which was extended 2.9 miles in a cost-neutral change as described in more detail under the corridor description. Items such as additional stations not part of the original Plan were eliminated, and the scopes were revised to reflect the cost containment efforts.
- **Peer Review**—Three senior members from the Program Management Consultant reviewed the scope and estimates in April 2007. Several of their recommendations were incorporated or are continuing to be assessed as design progresses on each project.
- **Current Working Estimate (CWE)**—The Project Managers developed updated project cost estimates which reflected the new unit costs, cost containment elements and the revised project scopes. RTD conducted a review of each corridor and ancillary facility cost estimates for the FasTracks Program. Updated quantities and unit prices were established based on additional information that was generated since the inception of the FasTracks program (Appendix C). In 2004, these costs were submitted to DRCOG and were evaluated by a peer review composed of transit agency officials from various
properties from the Midwest and western parts of the United States. The conclusion of
the peer review was that the estimated costs for the FasTracks Program were
reasonable.

• FasTracks Program Estimate Summary—The programwide estimate summary was then
prepared based on the 2006 schedule and a revised FasTracks cost estimate (in inflated
dollars) was developed.

1.4 APE Summary
The APE resulted in a complete “bottoms-up” estimate of the FasTracks Program benchmarked
to a January 2007 date. The evaluation revealed several consistent factors:

• Unit costs have increased significantly over the CPI commonly used to escalate project
costs. New unit costs were developed to reflect current information.

• Some corridor scopes and definitions had changed from the original FasTracks Plan due
to more advanced planning and engineering, changes in vehicle technologies, new
regulatory requirements and other factors.

• As a further cost containment effort, the FasTracks schedule was reviewed and updated
in June 2007 to reflect alternative delivery methods. The schedule update resulted in a
cost savings to the FasTracks Program by advancing some corridor completion dates
through use of techniques such as design–build.

• The APE resulted in a revised FasTracks cost estimate $6.06B in inflated dollars in
August 2007. This represents an increase of $1.45B over the original FasTracks Plan
cost of $4.72B. Of the $1.45B increase, over 70% was attributable to material, labor and
right-of-way escalation costs.

• The revised FasTracks capital cost estimate (inflated dollars) with the updated schedule
is $6.06B. This budget was adopted by the RTD Board of Directors in September 2007
as part of the Financial Plan update.

1.5 Vehicle Technology
Rail vehicle technology studies were conducted as part of the EISs undertaken on the individual
corridors. Commuter rail technologies identified as alternatives were developed and evaluated
in each corridor. Criteria for technology evaluation included noise, vibration, air quality (local
and regional), visual impacts, cost-effectiveness, complexity of implementation and community
input.

• The Gold Line was included in the evaluation since the technology changed from Light
Rail to Commuter Rail due to railroad requirements for transit vehicles operating within
general railroad system (freight) rights-of-way.

• The life cycle costs (in addition to up front capital costs) were analyzed to evaluate the
most cost effective technologies over time for each corridor.

• Present value and costs of financing were added to the life cycle cost analysis to ensure
the results of the life cycle cost analysis fully identified the affordability of the
technologies under consideration.
These studies looked at three different vehicle types:

- Single Level Diesel Multiple Units (DMU)
- Double Deck Diesel Multiple Units (DDMU)
- Electric Multiple Units (EMU)

RTD performed two sets of analyses which included: 1) a life cycle analysis, and 2) a life cycle with Present Value analysis.

1.5.1 Methodologies
The following describes the methodologies used for the Life Cycle and Life Cycle with Present Value Analyses.

1.5.1.1 Life Cycle Analysis
The Life Cycle Analysis was conducted both for each corridor and on a system-wide basis. Included were estimates of the differences in capital costs between what is needed for a specific vehicle technology operation (vehicles and support for those vehicles); and the average annual operating maintenance costs over 30 years. Using this information, an evaluation of the four potential commuter rail corridors (East Corridor, Gold Line, North Metro and Northwest Rail) as “stand alone” projects was performed; as was an evaluation of technologies from a commuter rail “systems” perspective to consider cost sharing and economies of scale.

1.5.1.2 Life Cycle with Present Value Analysis
The Life Cycle with Present Value Analysis included an analysis of the Gold Line, East Corridor, North Metro, and Northwest Rail as EMU or DMU technologies. In this analysis, the up front capital costs are funded by debt; and average annual operating maintenance costs over 30 years were used.

1.5.2 Results
The following describes the results of the Life Cycle and Life Cycle with Present Value Analyses.

1.5.2.1 Corridor Life Cycle Analysis Results
The results of the Life Cycle Analysis for each individual corridor as a “stand alone” project are as follows:

**East Corridor**
The differential capital cost for the East corridor is lowest with the DDMU double deck, intermediate with the DMU single level and most expensive with the EMU.

Taking into account the operating costs over the long-term, the average annual (over 30 years) operating costs show a different pattern. The EMU is the lowest at $23 M per year, the DMU double deck is intermediate at $27 M per year and the DMU single level is the most expensive at $32M per year.

The lower annual operating costs for EMU “pay back” the higher initial capital costs after 10 years of operations.
Gold Line
The differential capital cost for the Gold Line shows the same pattern as for the East Corridor: lowest with the DDMU double deck, intermediate with the DMU single level and most expensive with the EMU.

Taking into account the operating costs over the long term, the pattern is different. The average annual (over 30 years) operating cost for EMU is the lowest at $16 M per year, the DMU single level is next lowest at $18 M per year and the DDMU double deck is highest at $19 M per year.

The lower annual operating costs for EMU “pay back” the higher initial capital costs after 23 years of operations.

North Metro
The differential capital costs for North Metro are somewhat different than for the Gold Line and East Corridor. While the DMU double deck is the lowest differential capital cost for the Gold Line and East Corridors, the DMU single level is the lowest differential capital cost for the North Metro Corridor. The DMU double deck is intermediate in cost and the EMU is the most expensive.

Taking into account the average annual operating costs over the long term, EMU and DMU double deck are about the same cost at $17 M per year (over 30 years) while DMU single level is slightly higher at $19 M per year.

For North Metro, the lower annual operating costs of EMU “pays back” at approximately the 30 year time frame.

Northwest Rail
The Northwest Rail Corridor has a capital cost pattern similar to the North Metro Corridor. The DMU single level has the lowest differential capital cost, the DMU double deck is intermediate in cost and the EMU is the most expensive.

For Northwest Rail, the average annual operating costs over the long term, DMU single level and DMU double deck cost about the same (over 30 years) at $21 M per year. EMU has slightly lower average annual operating costs of $19 M per year.

However, for this corridor, the average annual operating cost savings for EMU do not “pay back” the higher initial capital costs of EMU over the 30 year time frame of operations.

Summary
The individual corridor analysis shows that EMU for the East Corridor and the Gold Line is least expensive over time. For the Northwest Rail Corridor, DMU remains least expensive initially and over time. For the North Metro corridor, this analysis was inconclusive.

1.5.2.2 System-Wide Life Cycle Analysis Results
The Life Cycle Analysis from a “system-wide” perspective looked at four alternatives:

1. EMU in all corridors
2. DMU single level in all corridors
3. DMU double deck in all corridors

4. “Mixed Fleet” (EMU in the East Corridor and Gold Line and DMU in North Metro and Northwest Rail)

EMU in all corridors was significantly over the capital budget for FasTracks. The return of capital investment due to operational savings did not occur until after 21 years in operations.

DMU single level in all corridors had a lower up front capital costs; however, operational cost increases over time outweigh the initial capital savings.

DMU double deck in all corridors also had lower up front capital costs. Double-deck DMUs would require significant improvements at DUS to accommodate their height and have a very limited history in revenue operations.

Mixed Fleet appeared to be the most reasonable approach from a systems perspective. EMU on the Gold Line and for the East corridor pays back after 15 years in operations and is cost effective over time. DMU on North Metro and Northwest Rail is least expensive initially and over time. Also, this approach is most consistent with community expectations.

1.5.2.3 Life Cycle with Present Value Analysis Results
This subsequent study was undertaken to evaluate the results of the straight Lifecycle Analysis and to add present value and costs of financing to the life cycle cost analysis.

**Gold Line and East Corridor**
The results of this analysis include:

- Savings from EMU on the Gold Line and East Corridors are realized immediately in the first year of operations because of the O&M savings and impact of debt financing spreading the increased capital costs over time.
- Operating savings from EMU more than offset the additional debt service required to cover the initially higher capital costs.
- Lower annual cost offers benefits including: freeing up capital for the program, providing a cushion should electricity prices increase at a faster rate than diesel and improved cost effectiveness for FTA funding purposes.
- Gross savings from EMU were $421.3 M.
- Present value savings from EMU were $182.8 M.

Based on this information, on July 24, 2007, at a regular meeting, the RTD Board unanimously approved the selection of EMU for the Gold and East Corridors.

**Northwest Rail Corridor**
RTD evaluated the Northwest Rail Corridor. For this analysis, the railroad requirements for bridge modifications to allow for EMU were taken into account. The result was a significant increase of at least $400 M to $500 M in the capital cost for EMU. To satisfy BNSF requirements, ten major bridge structures would have to be reconstructed to accommodate the 26-foot catenary wire, which would create substantial traffic delays during construction. This
work would also cause substantial schedule impacts that were not anticipated in the project scope.

Concerns regarding noise, vibration, and emissions were expressed by some during the technology evaluation for this corridor. RTD will address these specific concerns, as further study of this corridor continues.

The results of the evaluation are as follows:

- Lower costs are realized with DMU than EMU as a result of lower operating cost due to lower operating frequency.
- The BNSF RR has issues with EMU operating on shared track and long-term ROW availability for expansion.
- Lower annual cost offers benefits including: freeing up capital for the program, providing a cushion should electricity prices increase at a faster rate than diesel.
- Gross savings with DMU, rather than EMU, are $1,276.5 M ($678.3 present value).

Other factors for consideration regarding the technologies include:

- Consistency with the Original FasTracks Plan—diesel technology was in the Plan that went to the voters.
- Expandability—DMU is more cost effective and compatible with future service expansions serving North Front Range.
- Technology—DMU allows migration to future energy sources (hybrid, fuel cell, electric, biofuels, etc.).
- Maintenance of Way—DMU is simpler and less expensive than EMU—no special maintenance equipment would be required.
- Visual Concerns—Some jurisdictions indicated a preference not to have catenary structures that are required for EMU because of the visual appearance. A selection of DMU addresses this concern.

**North Metro Corridor**

RTD evaluated the North Metro Corridor and determined that the cost of electrification is not offset by lower operating costs and that a substantial savings would occur if DMU were used. RTD received comments, many of which favored the use of EMU. RTD will address specific concerns, such as noise, vibration, or emissions as further study of this corridor continues.

RTD evaluated the North Metro Corridor with the following results:

- Lower costs are realized with DMU than EMU as a result of lower operating cost due to lower operating frequency.
- Lower annual cost offers benefits including: freeing up capital for the program, providing a cushion should electricity prices increase at a faster rate than diesel.
• Gross savings with DMU, rather than EMU, are $79.9 M ($48.2 present value).

Other factors for consideration regarding the technologies include:

• Constructability—DMU is simpler to construct
• Consistency with the Original FasTracks Plan—diesel technology was in the Plan that went to the voters.
• Expandability—DMU is more cost effective and compatible with future service expansions serving North Front Range.
• Technology—DMU allows migration to future energy sources (hybrid, fuel cell, electric, biofuels, etc.).
• Maintenance of Way—DMU is simpler and less expensive than EMU—no special equipment would be required.

1.6 Responsible Rail Amendment
In October 2007, the RTD Board adopted the Responsible Rail Amendment (Appendix D). The Responsible Rail Amendment commits the RTD to procurement of fuel efficient, environmentally responsible commuter rail vehicles for the North Metro and Northwest Rail corridors. It also commits the RTD to assisting local jurisdictions in their Quiet Zone application processes.

1.7 Status of FasTracks Corridors
The corridor descriptions below highlight changes in cost and scope to the corridor projects. A summary of each corridor, with cost characteristics and budget, is presented in Tables 1 and 1a. Detailed descriptions of each corridor, with progress and status reports, are provided in Section 8, Corridor Updates.

East Corridor
The East Corridor consists of 23.6 miles of double-track from Denver Union Station (DUS) to Denver International Airport (DIA). Significant this year is the selection of Electric Multiple Unit (EMU) as the commuter rail technology on July 24, 2007, and the selection of the East Corridor for the Federal Transit Administration’s (FTA) Public-Private Partnership Pilot Program (Penta-P). Public-private partnerships are a procurement delivery mechanism that allocates risks and rewards of project development among public agencies and private companies. The Penta-P project offers the opportunity for a streamlined and expedited project development process under the federal New Starts capital funding program.

Summary
Length: 23.6 miles (1.5 miles from DUS to 40th/40th are shared with the North Metro Corridor)
Mode: Commuter Rail/EMU
Costs: $1,141.6 million—2007, YOES; ($702.5 million—2006, YOE$)
Method of Delivery: Design-Build-Finance-Operate-Maintain (DBFOM); P3
Status: Draft EIS in final review
Tasks Remaining: Final EIS; Record of Decision (ROD); P3 procurement; Design, Construction, Operation, and Maintenance
Scheduled Completion: 2014
Notable Changes:
- Increased costs due to a variety of factors in addition to escalation in labor, materials, and right-of-way costs. Other factors affecting the increase include a change in technology to EMU; additional drainage and right-of-way needs; and the cost to relocate utilities under the Union Pacific railroad right-of-way.
- Adoption of EMU as the preferred alternative by the RTD Board of Directors
- Method of Delivery—P3

**Gold Line Corridor**
The Gold Line is 11.2-miles of mostly double-track from DUS to Ward Road. Significant this year is the change to Commuter Rail Technology, rather than Light Rail, which was originally planned. During the EIS process the railroads expressed concerns regarding safety and the incompatibility of light rail with freight operations. As with the East Corridor, Electric Multiple Unit (EMU) was selected as the commuter rail technology on July 24, 2007. The Gold Line was also selected into the Penta-P Program by FTA.

**Summary**
Length: 11.2 miles (3 miles from DUS to Pecos are shared with the Northwest Rail Corridor)
Mode: Commuter Rail/EMU
Costs: $552.5 million—2007, YOE$; ($463.2 million—2006, YOE$)
Method of Delivery: Design-Build-Finance-Operate-Maintain (DBFOM); P3
Status: Draft EIS in final review
Tasks Remaining: Final EIS; Record of Decision (ROD); P3 procurement; Design, Construction, Operation, and Maintenance
Scheduled Completion: 2015
Notable Changes:
- There has been an increase in costs for right-of-way, pedestrian bridges, and trackwork.
- Method of Delivery—P3
- Technology change from LRT to CRT/EMU

**Southeast Corridor Extension**
The Southeast Corridor Extension is 2.3 miles in length and extends from the existing Lincoln Station south to RidgeGate Parkway (under construction).

**Summary**
Length: 2.3 miles
Mode: Light Rail
Costs: $208.4 million—2007, YOE$; ($182.6 million—2006, YOE$)
Method of Delivery: Design-Build (DB)
Status: Environmental Evaluation (EE) and Basic Engineering (BE) to begin March 2008
Tasks Remaining: EE; Design and Construction; Operation and Maintenance
Scheduled Completion: 2015
Notable Changes:
- There has been an increase in costs due to the general rise in material costs, labor costs, and the escalation of costs for right-of-way acquisition, and the need to purchase additional light rail vehicles to meet demand.
Southwest Corridor Extension
The Southwest Corridor Extension is 2.5 miles in length and extends from the existing Mineral Station south and east to Lucent Boulevard.

Summary
Length: 2.5 miles
Mode: Light Rail
Costs: $217.1 million—2007, YOE$; ($163.5 million—2006, YOE$)
Method of Delivery: Design-Build (DB)
Status: Environmental Evaluation (EE) and Basic Engineering (BE) to begin March 2008
Tasks Remaining: EE; Design and Construction; Operation and Maintenance
Scheduled Completion: 2015
Notable Changes:
• There has been an increase in costs due to the general rise in material and labor costs, in particular cost increases for major bridge structures over railroad rights-of-way, and at County Line Road and C-470.

I-225 Corridor
The I-225 Corridor, 10.2 miles in length, extends from Nine Mile Station north to the Peoria/Smith Station.

Summary
Length: 10.2 miles
Mode: Light Rail
Costs: $620 million—2007, YOE$; ($441.9 million—2006, YOE$)
Method of Delivery: Design-Build (DB)
Status: Environmental Evaluation (EE) and Preliminary Engineering (PE) began August 2007
Tasks Remaining: EE; Design and Construction; Operation and Maintenance
Scheduled Completion: 2015
Notable Changes:
• There has been an increase in costs due to a more complicated bridge structure and an elevated station at Colfax; a tunnel under northbound I-225 at Exposition; increased design development for electrification and signaling; and increased environmental mitigation.

North Metro
The North Metro Corridor begins at DUS and extends north 18 miles to 162nd Avenue. Of significance this year is the RTD Board of Directors approval, on October 16, 2007, of Diesel Multiple Unit (DMU) as the preferred technology for this commuter rail corridor. Also of note is the increase in budget from $437.7 million in 2006 (YOE$) to $637.2 million (YOE$) in 2007.

Summary
Length: 18 miles (1.5 miles from DUS to 40th/40th are shared with the North Metro Corridor)
Mode: Commuter Rail/DMU
Costs: $637.2 million—2007, YOE$; ($437.7 million—2006, YOE$)
Method of Delivery: Design-Bid-Build
Status: The Draft EIS, which was initiated in August 2006, has progressed through scoping, station planning, preferred technology screening, selection and adoption by the RTD Board of a preferred vehicle technology. The alternatives analysis is now underway and release of the Draft EIS for public comment is anticipated in spring 2008.

Tasks Remaining: Completion of Draft EIS; Final EIS; obtaining a ROD; Final Design; Construction; Operation and Maintenance

Scheduled Completion: 2015

Notable Changes:
- Adoption of DMU by the RTD Board of Directors as the preferred vehicle technology
- The budget increase was created by the need for additional retaining walls and structures; a change in the alignment to avoid the Sand Creek Junction (a junction of the Union Pacific and the Burlington Northern-Santa Fe railroads), and increased utility relocation and environmental mitigation costs

Denver Union Station

Development of Denver Union Station (DUS) is proceeding as a public-private partnership (P3), following selection of a Master Developer, Union Station Neighborhood Company (USNC), in late 2006. Contract negotiations with the Master Developer are ongoing. They will be responsible for private development of the DUS site and for final design and construction of the public transportation elements of the DUS Master Plan.

Summary

Length: NA
Mode: NA
Costs: Total costs: $480 million (transit elements)
- Includes: RTD-$215.4 million—2007, YOE$; ($268.4 million—2006, YOE$)
- SB-1, FHWA, FTA Funds—$61.7 million
- TIF; Metro District, Development Rights—$186 million
- Other Potential Sources—$16.9 million

Method of Delivery: Design-Build (DB); P3

Status: The Final EIS is scheduled for completion in fall 2008.

Tasks Remaining: Completion of Final EIS; obtaining a ROD; Final Design; Construction; Operation and Maintenance

Scheduled Completion: 2009 (for Final Design of LRT, CRT, and Bus Facilities, and LRT Systems Design): 2010 (for construction of LRT); 2012 (for construction of CRT)

Notable Changes:
- Selection of a Master Developer (USNC).
- Change in RTD project costs from 2006 to 2007 reflects the change from RTD to USNC as the project lead (resulted in grant funds previously obtained through RTD, now provided through USNC, as reflected in the lowered total for RTD costs).
- Design changes resulting in bus service below grade under 17th Avenue (22 bay facility); LRT at grade adjacent to the Consolidated Main Line (CML); CRT services at ground level (8-track at grade); and below-grade transit and pedestrian connections.

Central Corridor Extension

The Central Corridor Extension begins at the 30th and Downing Station and extends north 0.8 miles to the 40th/40th Station. This station will serve as the terminus for the Central Corridor, as well as a transfer hub to the East and North Metro Corridors.
Summary
Length: 0.8 miles
Mode: Light Rail
Costs: $113.1 million—2007, YOE$; ($118.2 million—2006, YOE$)
Method of Delivery: Design-Bid-Build
Status: Preliminary Engineering underway (to be completed late 2007)
Tasks Remaining: Final Design and Construction; Operation and Maintenance
Scheduled Completion: 2015
Notable Changes:
- Selection of a single light rail vehicle, operating in the same manner as a streetcar, and utilizing a single track (one in each direction on each side of the street) to address ROW needs and community concerns
- There has been a slight cost decrease as a result of the selection of a single light rail vehicle operating in the street, which significantly lowered ROW costs.

West Corridor
The West Corridor originates at DUS and extends west for 12.1-miles ending at the Jefferson County Government Center. This corridor is furthest along in the development and construction process, with completion of construction scheduled for 2012 and opening day in 2013.

Summary
Length: 12.1 miles
Mode: Light Rail
Costs: $634.7 million—2007, YOE$; ($511.8 million—2006, YOE$)
Method of Delivery: Design-Bid-Build
Status: Final Design underway (to be completed mid-2008)
Tasks Remaining: Final Design and Construction (to begin mid-2008); Operation and Maintenance
Scheduled Completion: 2012 (construction complete); 2013 (opening day)
Notable Changes:
- There has been a budget increase as a result of increased materials, labor, and ROW costs.
- Implementation of cost containment measures including early procurement of materials; construction of single-track for the Federal Center to Jefferson County Government Center segment.
- Requesting supplementary funds through the SB 97-01 and DRCOG Transportation Improvement Program processes, which will be used to restore passing tracks east of Red Rocks Community college and west of I-70 that will allow for 10-minute headways, along with a third level to the proposed parking structure at the Jefferson County Government Center.
- Supplementary funds requested are:
  - $19.3 million(total)¹
  - $11.9 million(SB 97-01 funds; passing tracks)
  - $7.4 million(DRCOG TIP funds; third level to parking structure)
  ¹These funds represent a portion of third-party funding for four projects (total $29.7 million) in the West Corridor that are not part of the base FasTracks plan. The other
projects are bike bridges at Wadsworth and Kipling ($1.8 million) and the Federal Bridge ($8.6 million).

- Working with Jefferson County to address concerns of cost containment measures by entering into an intergovernmental agreement to expand services if predetermined ridership thresholds or ridership “demand milestones” are met.

**US 36 BRT—Phase 1**
This project includes construction of the US 36/McCaslin park-n-Ride and pedestrian bridge (completed in 2006); the US 36/Church Ranch park-n-Ride and north and southbound bus slip ramps (completed in 2007); a shared parking structure at the Arista Development in Broomfield (completed); and construction of a relocated Broomfield park-n-Ride (scheduled for completion in 2009/2010).

**Summary**
Length: Not Applicable  
Mode: Bus  
Costs: $21.6 million—2007, YOE$; ($32.3 million—2006, YOE$)  
Method of Delivery: Design-Bid-Build  
Status: Construction underway (to be completed late 2009)  
Tasks Remaining: Completion of Construction; Operation and Maintenance  
Scheduled Completion: 2009/2010  
Notable Changes:  
- This phase will be completed with the conclusion of design and construction of the Broomfield pedestrian bridge and slip ramps in 2009.

**US 36 BRT—Phase 2**
This project consists of 18 miles of dedicated BRT lanes in US 36 that extend from DUS to the Table Mesa park-n-Ride. It also includes construction of a pedestrian bridge at the Table Mesa park-n-Ride and a new eastbound bus slip ramp on the south side of US 36. Senate Bill 1 funds that will be used to construct the pedestrian bridge have been received by RTD on behalf of the US 36 Mayors and Commissioners Coalition (MCC). RTD, the US 36 MCC, and CDOT are exploring funding options for the BRT lanes and median stations.

**Summary**
Length: 18 miles  
Mode: Bus Rapid Transit (BRT)  
Costs: $214.0 million—2007, YOE$; ($193.2 million—2006, YOE$)  
Method of Delivery: Design-Bid-Build  
Status: Draft EIS released for comment in August 2007 (to be completed in late-2008)  
Tasks Remaining: Completion of EIS/PE phase; Final Design and Construction; Operation and Maintenance  
Scheduled Completion: To be determined based on CDOT, RTD, and US 36 MCC agreement on final US 36 alternative  
Notable Changes:  
- The Final EIS will likely be completed in late 2008/early 2009.  
- The budget increase is due to an increase in materials, labor, and ROW costs.
Northwest Rail Corridor
The Northwest Rail Corridor consists of 41 miles of commuter rail (DMU) that originates at DUS and extends northwest to downtown Longmont. Significant changes that have occurred in 2007 regarding this corridor include extending the corridor to downtown Longmont (additional 2.9 miles), and the selection of DMU on October 16, 2007, as the preferred alternative for commuter rail technology. The corridor was extended from the original end-of-line station at Twin Peaks Mall. This location was found to be problematic due to upgrades that would be required to the surrounding roadway network to satisfy traffic concerns. The extension to 1st and Terry Streets was found to be cost-neutral when compared against the roadway upgrades that would have been required in the vicinity of Twin Peaks Mall.

Summary
Length: 41 miles (3 miles from DUS to Pecos are shared with the Northwest Rail Corridor)
Mode: Commuter Rail/DMU
Costs: $684.4 million—2007, YOE$; ($566.0 million—2006, YOE$)
Method of Delivery: Design-Bid-Build
Status: EE and PE underway (to be completed end of 2008)
Tasks Remaining: Final Design and Construction; Operation and Maintenance
Scheduled Completion: 2014
Notable Changes:
- New end-of-line station at 1st and Terry in Longmont, rather than Twin Peaks Mall resulting in increase in length from 38.1 to 41 miles, a cost-neutral change.
- Adoption of DMU by the RTD Board of Directors as the preferred alternative on October 16, 2007
- There has been a budget increase as a result of changes that have occurred since the original FasTracks budget. These include the decision to extend the line from the original Twin Peaks terminus to downtown Longmont; change from a trench to a flyover at Utah Junction; need to consider additional requirements for pedestrian bridges at stations; need for additional wetlands impact mitigation; and others.

Maintenance Facilities
This includes facilities for light rail, bus, and commuter rail. Light rail maintenance will be accommodated by an expansion of the existing Elati and Mariposa Facilities; and the commuter rail facility will accommodate both EMU and DMU. Two sites are currently being considered. An evaluation of the need for expansion of bus maintenance capacity indicated that it was not needed until 2020. Therefore, the planning process for this facility will be initiated in 2013, with completion scheduled for 2020.

Summary: Light Rail Facility
Length: NA
Mode: NA
Costs: $102.4 million—2007, YOE$; ($91.7 million—2006, YOE$)
Method of Delivery: Design-Bid-Build
Status: Preliminary Engineering underway (to be completed in 2007)
Tasks Remaining: Final Design and Construction; Operation and Maintenance
Scheduled Completion: 2012
Notable Changes:
• Decision to expand the existing Elati Facility (Feasible as a result of the Gold Line technology change from LRT to CRT).
• The Mariposa Facility where RTD conducts heavy maintenance on light rail vehicles is also being expanded.
• The scope of work for the expansion also includes additional parts storage capacity; additional power supply for the system elements for the added light rail vehicles to be stored at the site; modifications to the drainage system; added tracks; yard lighting; walks; and access drive improvements.

Summary: Commuter Rail Facility
Length: NA
Mode: NA
Costs: $203.4 million—2007, YOE$; ($170.4 million—2006, YOE$)
Method of Delivery: Design-Build-Finance-Operate-Maintain (DBFOM, part of Penta-P)
Status: EIS underway (part of East Corridor EIS; to be completed end of 2008)
Tasks Remaining: Design and Construction; Operation and Maintenance
Scheduled Completion: 2014
Notable Changes:
  • Environmental analysis is included in the East Corridor EIS.

Summary: Bus Facility
Length: NA
Mode: NA
Costs: $74.6 million—2007, YOE$; ($49.3 million—2006, YOE$)
Method of Delivery: Design-Bid-Build
Status: Will begin 2013
Tasks Remaining: Environmental and Preliminary Engineering process; Final Design and Construction; Operation and Maintenance
Scheduled Completion: 2020
Notable Changes:
  • Scheduled for completion 2020 based on need

2.0 SUMMARY OF FINANCIAL PLAN

The current $6.1 billion projected cost is an upward revision from the originally estimated $4.7 billion (2004) following an extensive update on construction cost estimates this year due to increases in worldwide commodity prices.

At the same time, RTD has revisited forecasted revenue assumptions using Colorado Legislative Council and the Office of State Budget and Planning (OSBP) projections. This resulted in less revenue over time than originally predicted in 2004. The ability to implement the FasTracks Plan depends on a variety of financial assumptions and projections which have been developed using the best available current estimates of costs, reasonably anticipated federal funding based on current federal law and regulations, and revenues from other sources including RTD sales tax and fare collections. Over the anticipated remaining build-out of ten years, specific cost items, federal and other contributions, and RTD revenues may vary. Based on the extensive analysis behind the financial assumptions used, RTD expects to deliver the
major transit corridors and related improvements within the time frames originally promised. RTD expects that over a ten year time-frame, certain adjustments and modifications will be required to deal with changing conditions in revenues and material and labor price escalations. This section details the assumptions used and provides further explanation as to how RTD expects to finance the FasTracks Plan.

The Plan also anticipates $1.3 billion in Federal New Start Grant funding in conjunction with $163.8 million in other Federal grant funding, and contributions from local jurisdictions benefiting from transit in an amount equal to 2.06% of total project costs or $126.2 million system-wide. In addition to Federal grants, the Plan assumes a loan from the U.S. DOT under the Transportation Infrastructure Finance and Innovation Act of 1998 ("TIFIA") program in the amount of $212.4 million.

2.1 Public Private Partnership Pilot Program

Another key strategy that RTD is using to deliver the FasTracks plan on schedule and as cost effectively as possible is to pursue alternative procurement and project delivery strategies. One of the strategies that RTD is analyzing is an approach called Public-Private Partnerships (PPP or P3). The P3 approach has been in use internationally for years and is being used more frequently in the United States. A P3 strategy allows a public agency to partner with the private sector on some or all of the components of an infrastructure project: design, build, finance, operate and/or maintain. In some P3 arrangements, the public agency makes annual “availability” payments to its private sector partner, based on delivery and performance. P3s are usually long-term contractual arrangements.

In the RTD’s case, a P3 will allow a private entity to borrow funds and retire the debt over time, enabling RTD to spread large upfront costs over a long period of time. This approach will allow RTD to preserve cash in the early years of FasTracks implementation. The potential benefits of the P3 strategy include lowering overall project cost by reducing construction and operating costs, and transferring certain risks to the private sector.

The RTD was approved in August 2007 to participate in the FTA’s Public Private Partnership Pilot Program (Penta-P). As participant in this program, RTD will not only potentially benefit from the P3, but also from entering into a partnership with FTA to streamline the project development process. Participation in the Penta-P demonstration program is expected to facilitate additional benefits through streamlined Federal approvals and funding for the project including reduced time and costs as a result of the FTA’s expectation that the due diligence performed by private equity and debt providers will reduce the need for Federal oversight. The estimated value of the P3 project is $1.9 billion. It is expected that RTD’s P3 concessionaire will provide upfront financing of $547.8 million for these projects, thereby facilitating the RTD’s cash flow requirements.

The RTD anticipates entering into a Public-Private Partnership (P3) agreement with a private concessionaire to design, build, finance, operate and maintain the Gold Line and East corridors as well as the Commuter Rail Maintenance Facility. RTD is also considering the inclusion of the operation of the North Metro and Northwest Rail corridors in the P3 agreement for East Corridor and Gold Line.
The RTD anticipates this arrangement will bring multiple benefits. It is well established from research performed on behalf of the FTA and other entities that the use of Design-Build can be expected to save up to 30% of the anticipated schedule. This time saving translates directly into cost savings arising from lower overhead costs and reduced escalation in costs. Inclusion of operation and maintenance responsibilities into a single Design-Build-Operate-Maintain contract facilitates significant risk transfer capability and the engagement of cutting-edge industry expertise and experiences. This translates to increased cost certainty for the RTD and optimal service to the traveling public. The combination of these services, and the long-term nature of the services, facilitates the ability of the private concessionaire to attract equity and debt providers to the project. This capability is attractive to the RTD for FasTracks as it allows funds to be applied over a longer term, assuring a robust financial plan.

Payments for the P3 project are anticipated to be three-fold. Significant funds from the FTA will be used during the initial phase of the P3 project to pay for part of the capital investment. The balance of the investment cost will be subject to concessionaire financing. During the operations and maintenance phase, the RTD will make availability payments to the concessionaire based on the actual availability of the capital infrastructure and equipment for passenger service. The third element of payment will likely be for actual passenger service delivered by the concessionaire, subject to meeting prescribed performance standards.

Table 2 summarizes the sources of funds expected to pay for the Plan’s $6.1 billion of project expenditures:

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Table 2. FasTracks Estimated Capital Sources of Funds
(Millions of Year of Expenditure Dollars)

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<td>Third Party Funded Projects¹</td>
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<td>Total FasTracks Financial Plan</td>
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¹This represents third-party-funding for four projects in the West Corridor that are not a part of the base FasTracks plan:
- Passing track—$11.9 million
- Additional parking at Jeffco Station—$7.4 million
- Bike bridges at Wadsworth and Kipling—$1.8 million
- Federal bridge—$8.6 million
2.2 Twenty-Year Needs Assessment
To plan for future facility and transit system needs, RTD conducted and maintains a 20-Year Needs Assessment and Transit System Plan. When it was originally undertaken in 2004, the plan was intended to appraise the current condition of RTD’s physical plant, equipment, and facilities, to develop a long term system plan for transit services, and to develop a long term investment strategy for capital improvements consistent with future service plans. The result was a long term vision and a long term investment strategy, which form the framework for RTD’s six year service and capital program, the Transit Development Plan (TDP). The results also formed the foundation upon where the No-Build and the Build FasTracks scenarios were constructed. The 20-Year Needs Assessment Report is included in Appendix E.

3.0 IMPLEMENTATION SCHEDULE

3.1 Acceleration of Corridors/Projects
RTD has revised the FasTracks Plan Schedule submitted to DRCOG in the 2006 Annual Report. The updated FasTracks schedule is shown in Figure 3a and Figure 3b. Figure 3a contrasts the current schedule with the original 2004 FasTracks schedule and Figure 3b contrasts the current schedule with the 2006 schedule. For each corridor, the scheduled completion date is either consistent with or earlier than the date scheduled in either 2004 or 2006.

In the 2006 Annual Report, the revised schedule accelerated three projects to maximize the financial savings available from lower interest rates on bonds. These corridors included the West Corridor, Denver Union Station (DUS), and the Light Rail Maintenance Facility. This year, an accelerated schedule for the Southeast and Southwest Corridors has been added. In both cases, the scheduled completion has shifted from 2016 to mid-2015. Additionally, DUS has a further accelerated schedule, as does the expansion of the Elati Light Rail Maintenance Facility.

An exception is the bus maintenance facility. It was determined that additional bus maintenance facility capacity would not be needed until 2020. Therefore, the schedule for the environmental assessment and design has been scheduled for 2013.

Since the inception of the FasTracks Plan, the delivery methods for some corridors have changed. The original FasTracks Plan envisioned construction of each corridor progressing through design, bid/procurement, and construction phases. In 2006, RTD identified two corridors, I-225 and the Southeast/Lone Tree Extension as possible candidates for design/build projects subject to the RTD Board of Director’s approval. In 2007, the Southwest Corridor was also named as a candidate being considered for design/build. This represents a change from the previous FasTracks design-bid-build schedule. Additionally, during the 2007 reporting period several other corridors have been identified with different implementation strategies. They include: Design-Build (DB) for DUS; and Design-Build-Finance-Operate-Maintain (DBFOM) for the East and Gold Line Corridors, which are slated for development and operation as P3 projects.
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## Figure 3a. FasTracks SB208 Original Schedule and 2007 APE Re-Baseline Schedule

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- Northwest Rail
- East
- North Metro
- Gold Line
- I-225
- 400th/400th Ext
- SEC/Light Rail Maintenance Facility
- US 36 BRT - Phase 1
- US 36 BRT - Phase 2
- Mainline Station
- Bus Maintenance Facility
- Commuter Rail Maintenance Facility
- Light Rail Maintenance Facility

**Timeline Phases**
- 1: Design
- 2: Construction
- 3: Testing & Startup
- 4: Contract Procurement
### Figure 3b. FasTracks SB208 2006 Schedule & 2007 APE Re-Baseline Schedule

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3.2 Status of Other Corridors/Projects
The Environmental Evaluation (EE) process for the Northwest Rail Corridor was initiated in late summer 2007, and contract procurement for the EE/Basic Engineering (BE) process for two corridors, the Southeast/Lone Tree Corridor Extension and the Southwest Corridor Extension, will be nearing completion by the beginning of 2008. Both are scheduled for completion in early 2010. The East Corridor, Gold Line, and North Metro EISs are ongoing and scheduled for completion in late 2008/early 2009, as is I-225, which is scheduled for completion in late 2009.

In the 2004 FasTracks plan, an additional light rail maintenance facility was planned. With decision to implement the Gold Line using commuter rail technology (CRT), rather than as light rail, it was determined that the expansion of the existing Elati light rail maintenance facility would accommodate the light rail fleet needed for implementation of FasTracks. Expansion of the Elati facility is more cost effective than construction of an additional light rail maintenance facility.

Additionally, the environmental assessment for the commuter rail facility remains ongoing, as does the Central Corridor Extension, which was begun as part of the East Corridor.

The Draft EIS for the US 36 Corridor, jointly sponsored by CDOT and RTD, was released for public review and comment in August 2007. The comment period ended in September 2007.

4.0 Bus Service Levels
Background bus service levels in the Plan were re-examined in light of the substantial increase in demand for services for persons with disabilities. The Americans with Disabilities Act (ADA) of 1990 requires transit agencies to provide complementary paratransit services for persons who can not use fixed route services, and must serve all eligible trips with no service denials. Demand for ADA service has increased substantially since the FasTracks Plan was presented to the voters in 2004, a trend seen nationally, as well as within the RTD service area. The 2007 updated FasTracks Financial Plan reflects adjustments in both fixed-route and ADA service levels, with a net increase in service provided as compared to the original FasTracks Plan.

In last year’s version of this document RTD reported 3.03 million bus hours (fixed routes only) as being programmed in the 2006 budget. This year’s report has 2006 actual hour data which included 3.12 million fixed route bus hours plus 0.65 million hours of call-n-Ride and ADA bus hours for a total of 3.78 million bus hours. In 2006 there was an overall increase of 3.7% in total bus service hours over 2005. In 2007, the total programmed service hours increases were 1.7% over 2006, with actual year-end data still unavailable. In 2008 RTD has programmed an additional 2.3% increase. Future year increases range between 1.0% and 1.5% through 2020 and between 1.5% and 1.6% annually from 2021 through 2035.
### Table 3. FasTracks Plan Bus Service Levels

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Service Hours (millions)</th>
<th>% Change from Prior Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2005</td>
<td>3.64</td>
<td>Base Year – Not Applicable</td>
</tr>
<tr>
<td>2006</td>
<td>3.78</td>
<td>3.7%</td>
</tr>
<tr>
<td>Programmed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2007</td>
<td>3.85</td>
<td>1.7%</td>
</tr>
<tr>
<td>2008</td>
<td>3.94</td>
<td>2.3%</td>
</tr>
<tr>
<td>Future Planned</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2017</td>
<td>4.42</td>
<td>1.0%</td>
</tr>
<tr>
<td>2035</td>
<td>5.75</td>
<td>1.6%</td>
</tr>
</tbody>
</table>

### 5.0 Operating Characteristics

Since the DRCOG approval of the FasTracks Plan in 2004, the planning horizon for both the Regional Transportation Plan and the FasTracks corridor EISs has been extended to 2035. There have been minor changes to the transit operating characteristics, including travel times and speeds, for some of the FasTracks corridors, based on changes in technology and alignment refinements. Table 4 lists the approximate peak hour capacity and maximum peak hour passenger line loads and Figure 4 displays the updated operating plan and peak hour capacities for FasTracks corridors in 2035.

### Table 4. FasTracks Corridor Capacity and Year 2035 Maximum Line Loads

<table>
<thead>
<tr>
<th>Corridor</th>
<th>Screenline</th>
<th>2004</th>
<th>Current (2007)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Peak Hour Capacity</td>
<td>Peak Hour Maximum Line Load</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Peak Hour Capacity</td>
</tr>
<tr>
<td>Southeast</td>
<td>Southmoor</td>
<td>4,375</td>
<td>3,225</td>
</tr>
<tr>
<td>Southwest</td>
<td>Evans</td>
<td>3,250</td>
<td>3,068</td>
</tr>
<tr>
<td>Central Platte Valley</td>
<td>Auraria West</td>
<td>6,500</td>
<td>6,424</td>
</tr>
<tr>
<td>Central</td>
<td>10th/Osage</td>
<td>7,625</td>
<td>7,479</td>
</tr>
<tr>
<td>West</td>
<td>Wadsworth</td>
<td>4,500</td>
<td>4,248</td>
</tr>
<tr>
<td>Gold</td>
<td>Olde Town</td>
<td>3,000</td>
<td>2,228</td>
</tr>
<tr>
<td></td>
<td>Arvada</td>
<td></td>
<td>2,160</td>
</tr>
</tbody>
</table>
Table 4. FasTracks Corridor Capacity and Year 2035 Maximum Line Loads (cont.)

<table>
<thead>
<tr>
<th>Corridor</th>
<th>Screenline</th>
<th>2004</th>
<th>Current (2007)</th>
</tr>
</thead>
<tbody>
<tr>
<td>East</td>
<td>64th/Pena</td>
<td>2,160</td>
<td>2,700</td>
</tr>
<tr>
<td>North Metro</td>
<td>124th</td>
<td>1,620</td>
<td>2,160</td>
</tr>
<tr>
<td>Northwest Rail</td>
<td>Flatiron</td>
<td>1,080</td>
<td>1,080</td>
</tr>
<tr>
<td>I-225</td>
<td>Iliff</td>
<td>2,500</td>
<td>2,500</td>
</tr>
</tbody>
</table>

**West Corridor**

As part of the cost containment strategies for the West Corridor, a modification of the operating plan was developed. Initially, the West Corridor project was planned for 5-minute headways during weekday peak period operation along the entire alignment. Based on updated ridership forecasts, RTD proposes to maintain the 5-minute peak hour headway from the Auraria West Station to the Denver Federal Center, but operate a 15-minute peak headway from the Denver Federal Center to the Jefferson County Government Center end-of-the-line station.

Under this revised operating plan peak period trains to downtown Denver would operate every 15 minutes from the Jefferson County Government Center station and every 5 minutes from the Federal Center station. Ridership forecasts for this operating scenario showed an approximate 1 percent decrease in overall ridership for the West Corridor.

RTD is currently assuming that light rail service west of the Denver Federal Center will consist of two light rail vehicles traveling through this corridor segment every 15 minutes. This 15-minute service provides a seated passenger capacity of 512 per hour—30% more capacity than demand generated at five minute headways (RTD FasTracks Rail Operations Plan Memo, February 2004, p. 34). This operating scenario provides a more balanced and cost effective plan for serving this segment of the corridor.

Additionally, the FTA cost-effectiveness index was maintained, meeting a key threshold required for federal funding. Core off-peak service remains as originally planned, which is every 15 minutes over the length of the corridor.

In order to assure Jefferson County that RTD can provide capacity for potential future passengers on this segment of the corridor, RTD and Jefferson County have entered into an Intergovernmental Agreement (IGA) that outlines an agreed upon approach. RTD is working with Jefferson County to request supplementary funds through the SB 97-01 and DRCOG Transportation Improvement Program (TIP) processes. If successful, RTD has agreed to restore passing tracks east of Red Rocks Community College and west of I-70 to allow for 10-minute headways ($11.9 million; CDOT, SB 97-01 funds), along with a third level to the proposed parking structure at the Government Center ($7.4 million; DRCOG, TIP funds).

**Gold Line**

Service frequencies remain as originally planned. The Gold Line and West Corridor were originally interlined light rail routes. The Gold Line was changed to commuter rail to conform to railroad requirements. The Gold Line peak headways have remained at 7.5-minutes; however,
service has changed from 3-car light rail trains to 2-car commuter rail trains. Modeled peak hour ridership demand was accommodated with 2-car commuter rail trains.

**East Corridor**
Service frequencies remain as originally planned East Corridor had been assigned 4-car commuter rail trains. Updated modeling indicated that peak hour demand required 5-car trains. Train capacity was increased with 5-car commuter rail trains.

**Northwest Rail**
No change identified at this time.

**40th/40th Extension**
No change identified at this time. This station was originally interlined with the train from I-225; however, a new independently operated line between downtown and 40th/40th will better match the modeled demand for this line, which is one light rail vehicle every 15-minutes during peak hour.

**North Metro**
North Metro had been assigned 3-car commuter rail trains. Updated modeling indicated that peak hour demand required 4-car trains. Corresponding train capacity was therefore increased. Also, the short turn at 124th Avenue was eliminated and all trains were defined to operate between DUS and 162nd Avenue.

**I-225**
No change identified at this time.
Figure 4. Updated Rail Operating Plan and Peak Hour Capacities for FasTracks Corridors in 2035

*US36 BRT peak frequency by route every 10 to 30 minutes: up to 44 buses per hour*
6.0 OTHER FASTRACKS PLAN ELEMENTS

6.1 Legislative Update
During the 2007 First Regular Session of the 66th Colorado General Assembly, important legislation was passed to enhance the operations of RTD and to assist in the implementation of FasTracks.

6.1.1 Senate Bill 07-088, concerning the management of parking at a Regional Transportation District Parking Facility
This bill was signed into law on May 22, 2007. It allows RTD to implement a pay-for-parking plan to manage parking at over-crowded parking facilities and encourage riders to utilize lots that have excess parking capacity. The guiding principle for this bill is that RTD parking facilities are provided free for daily bus and train riders who live in the District.

When the parking management plan is implemented, riders who reside within the RTD District park for free for the first 24 hours, and a fee will be charged for those vehicles parked over the 24-hour limit. Riders who live outside the District will be charged a fee at all times. In addition, the bill provides that up to 15 percent of the spaces in a parking facility that charges for parking may be reserved on a monthly basis. An essential part of this legislation was the section that allows RTD access to the Department of Revenue Motor Vehicle registration electronic database in order to carry out the parking management functions. The RTD Board of Directors will set the specific parking policies and fees.

6.1.2 Senate Bill 07-205, concerning the performance of utility relocation work in conjunction with the Regional Transportation District's transportation expansion plans
SB 07-205 was signed into law on May 3, 2007, and describes a process to facilitate utility relocations on the various corridors with the smallest possible citizen inconvenience, at the lowest possible cost, and as speedily as possible.

The bill requires RTD to negotiate with utility companies to determine which party shall be responsible for any utility relocation projects. It also establishes a dispute resolution process and specifies which courts will hear the cases if agreement cannot be reached.

6.1.3 Senate Bill 07-013, concerning passenger rail carriers, and, in connection therewith, encouraging the development of a nationwide shared risk pool.
The joint resolution encourages the development of public passenger rail service in the Denver metropolitan region and the state of Colorado; acknowledges the need for a comprehensive liability solution to increased risks arising out of the shared use of public passenger rail service of existing rail corridors; and encourages the United States Congress to work with transit agencies across the country to form a nationwide risk pool and to provide the initial funding of up to $200 million for this risk pool. This joint resolution was passed prior to Senate Bill 07-219 being introduced.
6.1.4 Senate Bill 07-219, concerning the limitations on the liability of railroads that make their property available for the provision of public passenger rail service, and, in connection therewith, clarifying the status of public light rail vehicles under the “Colorado Governmental Immunity Act.”

This bill was critical to the development of passenger rail in the freight rail corridors associated with the FasTracks plan and was signed into law on May 22, 2007. The bill contains the following provisions:

- Limits the imposition of damages in an action against a railroad company that allows a public entity to use the railroad’s property for public passenger service;
- Authorizes a public entity to insure against its liability or the liability of a railroad for claims by passengers;
- Requires that the liability insurance be maintained at levels sufficient to insure against the maximum liability permitted against a railroad by federal law;
- Allows the required liability insurance to be provided by a risk management pool for public passenger rail services authorized by federal law.
- This law does not become effective until an agreement between the affected railroads and RTD has been executed.

6.2 Quality Management Oversight

RTD’s quality philosophy is to place primary responsibility for quality assurance on the contractors who are performing the work; including environmental planning, design, construction, manufacturing, and installation services and products. RTD ensures contractor quality assurance programs are functioning satisfactorily through a robust quality oversight program that assesses both the work products and the quality processes of each contractor. The RTD Quality Management Oversight team focuses on providing program-wide procedures, tools, training, and support to the project teams so that consistent quality oversight processes can be applied from the planning stage through commissioning. The program has three main functions:

- Establish a quality oversight program for contracted work
  - Provide a comprehensive Quality Oversight Program Manual and procedures
  - Train staff involved in the quality oversight program
  - Provide database tools for assessing, trending, communicating, and tracking quality issues during design and construction
  - Audit contractor quality assurance and related management programs to ensure approved procedures are being effectively implemented
  - Implement corrective and preventive actions
  - Provide tools for tracking project acceptance and closure
- Implement an Internal Quality Audit program of RTD’s key management processes and procedures
- Develop annual internal quality audit schedule
- Audit internal program management processes, identify improvement opportunities, and follow-up on corrective actions as needed
- Support the “Quality of Life” measurement (see section 6.3)
- Provide data management tools

6.3 Quality of Life
Since 2006, data collection for QoL Study has been underway. The QoL Study is attached as Appendix F. The QoL study also has the responsibility of collecting needed data for Before and After (BA) studies for corridors receiving federal New Starts funding. The purpose of the QoL study is similar to, but considerably broader than, the FTA’s requirement to conduct BA studies. Those studies—which focus on project scope, transit service levels, capital costs, operating and maintenance costs, and ridership and fare revenue—are designed to provide the FTA, and the transit industry in general, with better information about stated versus actual project costs and impacts. In contrast, the QoL study will evaluate a broad array of project effects, which will be reported to the RTD Board, community leaders, businesses and agencies throughout the region.

Southeast Corridor Before and After Study. Part of the Quality of Life effort includes the Before and After Studies now required by FTA for federal New Starts projects. Requirements for Before and After Studies were instituted by FTA after the Southeast Corridor was funded. Although the FTA doesn’t require a Before and After Study for the Southeast corridor, collecting the “Before” data for the corridor will establish the needs and level of effort for future Before and After Studies.

To have a consistent database for comparison, RTD is working with DRCOG to conduct a study of travel patterns, behaviors and demographic characteristics of transit riders before and after the opening of the Southeast Light Rail. The study includes an on-board survey and traffic and ridership counts. DRCOG conducted traffic counts in fall 2005 and spring 2006 as part of its ongoing count program. Additional counts were taken in the southern metro area as requested by RTD to form part of the “Before” database. RTD conducted on-board surveys in fall 2006 of the southern metro area. These data also will form part of the “Before” database. The southern metro area as defined for the traffic counts and on-board surveys includes both the current Southwest Corridor LRT line, future Southeast Corridor LRT line, and all arterial and freeway roadway segments and all transit routes adjacent to these corridors.

6.4 FasTracks Public Information/Public Involvement Program
The mission of the FasTracks Public Information/Involvement Program is to support the implementation of the FasTracks plan by creating and maintaining a comprehensive and proactive internal and external communications program. The Program Public Information Team has established a “big picture” approach to communicating to the entire region about FasTracks. Selected public outreach materials for the FasTracks Plan are included in Appendix G.
To establish coordination and consistency of messaging with the corridor public involvement teams, the FasTracks Public Information/Involvement (PI) Team has assigned staff members to serve as corridor liaisons to the various FasTracks corridor project teams. These PI liaisons work closely with the corridor teams and provide a consistent link from the Program PI Team to the corridor teams through each phase of FasTracks implementation, (environmental, design and construction). The PI liaison concept ensures a convenient and streamlined flow of communication between the FasTracks PI Team and the corridor PI teams.

The FasTracks Public Information/Involvement (PI) team focuses on two major elements, Public Information Strategic Planning and Communications Implementation.

- **Public Information Planning.** A Strategic Public Information/Involvement Plan serves as the overarching approach to program-wide public information and involvement. The team develops an Annual Public Information Plan to define the anticipated tasks and approaches necessary for the coming year. Each quarter, the team then fine-tunes the work plan into a Quarterly Plan of specific tasks and activities for the upcoming quarter, which also includes a progress report of activities from the previous quarter.

- **Communications Program Implementation.** The FasTracks PI Team communicates and engages internal and external stakeholders through eight strategic communication programs: Issues Management, Crisis Communications, Environmental Impact Statement (EIS) Coordination, Internal Relations, Public Involvement, Public Outreach, Government Relations, and Media Relations.

PI Team primary activities for 2007 were:

- **Annual Program Evaluation Outreach.** In an effort to keep internal and external stakeholders informed about the progress of the Annual Program Evaluation, the PI Team developed a Communications Work Plan identifying audiences, activities and key messages as the evaluation evolved. The PI Team fielded dozens of media requests from local and national media organizations regarding the FasTracks budget challenges and strategies for moving forward. When the findings of the evaluation were presented to the RTD Board, the PI Team distributed an e-mail summary of the evaluation to several hundred elected officials and key stakeholders across the district, and posted the information on the FasTracks Web site. The team also initiated stakeholder presentations and individual media visits with the local media to share information about FasTracks and RTD’s plan to implement the program within the general scope, timeframe and financial capacity passed by voters in 2004.

- **Public Input on Revised FasTracks Financial Plan.** The PI Team publicized the opportunity for public input on the revised FasTracks Financial Plan. Information on the plan was posted on the FasTracks Web site with the ability to comment on the plan through the Web site. An overview of the Financial Plan was presented to the FasTracks Citizens Advisory Committee, which unanimously supported the revised plan, and advised the RTD Board of its support for the plan. A public participation opportunity was provided at the September 25th RTD Board Meeting, when the Board took final action on the Financial Plan. A public notice about the public input opportunity appeared in the Denver Post and Rocky Mountain News the week of September 17th.
• **Commuter Rail Education Program.** Due to misperceptions about commuter rail, the PI Team has been educating stakeholders about the different modes of transit included in the FasTracks plan and the characteristics of electrified and diesel commuter rail. The team incorporated transit technology information into numerous stakeholder presentations, and compiled video footage of Electric Multiple Unit (EMU) and Diesel Multiple Unit (DMU) trains to show them in operation.

• **Commuter Rail Technology Public Involvement Processes.** Public involvement was a key part of the decision-making process on the four commuter rail corridors during the selection of a commuter rail technology for each corridor. The recommendations of each project team were presented to the FasTracks Citizens Advisory Committee, which concurred with the recommendations and forwarded their support to the RTD Board for approval. For details on each corridor’s public involvement processes, please see Appendix G.

• **Public-Private Partnership Education.** Now that RTD is pursuing Public-Private Partnerships (PPPs) as a strategy for delivering FasTracks within the general scope and timeframe originally intended, the PI Team has developed a Communications Work Plan on educating the public about PPPs. Information about the concept of PPPs and how it is being incorporated into FasTracks has been incorporated into a simple fact sheet, a program brochure, group presentations, team-initiated articles, and the FasTracks Web site (Appendix G).

• **Stakeholder Participation Policy.** Public participation is a key element of the FasTracks Program. One of the program’s goals is to achieve maximum public involvement from our community members while delivering FasTracks. To guide the FasTracks team and the public on this very important process, the RTD Board has adopted a Stakeholder Participation Policy. The policy establishes how the type and level of public involvement changes as each corridor project moves from one phase to the next, becoming more focused as the project progresses. Public input is a highly valued element of the decision-making process and is analyzed along with other key criteria in each of the corridor processes. A proactive education process has been underway to help the public understand that their best opportunity to help shape a project in their community is by providing input at the appropriate time—usually during the planning phase—for that input to have the most impact (Appendix G).

• **Pullin’ Up the Rails Event.** The PI Team coordinated and hosted a special event on May 16 to mark a major FasTracks milestone—the first FasTracks construction-related activity. The event began the pulling up of old rail along the West Corridor to make way for utilities relocation that need to occur prior to general construction of the project. The “Pullin’ Up the Rails” event was the start to nearly a decade of FasTracks construction.

• **Speakers Bureau.** The PI Team documents the group presentations that members of the FasTracks team deliver in an effort to track how many people the collective team is reaching each year. Through November 2007 the FasTracks program team reached 4,000 people at a variety of stakeholder presentations providing status updates on the FasTracks program. In addition, the team reached another 1,800 at community festivals, exhibits, and display opportunities. The program PI Team also tracks the presentations that the individual corridor teams provide. Through November 2007, the corridor teams collectively reached 7,100 people through corridor-specific presentations.
6.5 Citizens Advisory Committee
The FasTracks Citizens Advisory Committee (CAC) is in its second year serving in an advisory capacity to the RTD Board of Directors and the FasTracks Team on the implementation of the program. The 11-member committee holds regular meetings each quarter and work sessions on the off months. Some of the accomplishments of the CAC thus far include:

- Review and input to the 2006 Annual Report to DRCOG.
- Input on the Stakeholder Participation Policy.
- Lessons learned on public participation from citizens engaged in RTD’s public involvement processes.
- Assistance with development of the Stakeholder Participation Education Plan.
- Review of the Annual Program Evaluation and input on strategies for moving forward.
- Review of commuter rail technology analysis and input to the RTD Board on respecting the environmental and public input processes before making a recommendation on commuter rail technology for the program.

6.6 Sustainability Program
RTD is committed to maintaining its national leadership in public transportation by integrating sustainable practices throughout the RTD organization. On October 17, 2006, the Board of Directors adopted a district-wide sustainability policy and guidelines to implement sustainable transportation principles for existing and new transit systems and facilities throughout the District.

The Policy Goal Statement includes developing and adopting best practices for sustainable planning, design, construction, operations and maintenance activities. The ultimate goal is to instill a culture of sustainability throughout the RTD organization.

The following goals were submitted to the Board of Directors during October, 2007:

- **Improve and Increase Energy Efficiency** by complete testing of energy efficient light bulbs for park-n-Ride lights; continued ongoing upgrade of electrical systems and mechanical systems, installing variable frequency drives to decrease energy use, reducing energy use during non-peak hours, conducting a district-wide lighting audit by Xcel Energy and a district-wide energy audit.

- **Reduce Vehicle Fuel Emissions** by maintaining hybrid (electric/CNG) buses on 16th Street Mall, and by implementing and monitoring use of ultra low sulfur diesel fuel for bus fleet and testing other over the road hybrid/alternative fuel buses.

- **Planning, Design, and Construction Best Management Practices.** Formulate measurable goals and monitor measured progress, include sustainability measures and practices in technical criteria manuals, and evaluate previous projects for sustainable practices and measurements (lessons learned).
• **New Technology Research.** Investigate more frequent use of locally available products to reduce transportation impacts; promote use of products that increase life cycle value and/or reduce long term maintenance.

• **Staff Training and Education.** Encourage and fund LEED Accreditation for staff, reach out and engage District staff in sustainability training and awareness, continue to provide bus/LRT passes to 100% of staff, encourage all consultants to participate in the EcoPass program, promote overall health and a sense of well being by maintaining and allowing the use of existing RTD bikes around the general work location for staff exercise.

• **Resource Management.** Revise construction specifications to include concrete with fly ash, begin to develop a noxious weed eradication program; include hand dryers in all new driver restrooms in lieu of paper towels.

Some measures that have already been implemented include: providing paper recycle bins at each desk in all RTD offices, providing aluminum and plastic recycle containers in all lunch rooms at each office location, and begin documenting recycle efforts for tires, batteries, lubricants and bus and LRT wash/rinse water.

### 6.7 FastConnects

The basic components of FastConnects are the transit services and facilities themselves (Figure 5 and Figure 6). Two additional components are becoming important to design of the FastConnects system; these are land development and transit priority. FasTracks introduces six new rapid transit corridors and two extensions, and FastConnects will help link them and all the supporting services together. Prior to the FasTracks vote, RTD had already completed a preliminary study of the FastConnects concept with the report Network Development Timed Transfer Sketch Plan, February 2003.

FastConnects supports efficient connections for those transferring from one transit vehicle to another. During 2006, RTD staff further developed the FastConnects concepts. Two types of connections are envisioned: grid transfer and timed transfer. Grid transfer refers to locations where intersecting routes offer a high frequency of service (better than every 15 minutes) and, therefore, simultaneous timing of vehicle schedules is not required for a convenient transfer. For timed transfer, schedules need to be written on clock-face headways (for the RTD, multiples of 15 minutes) and transfer centers are carefully selected so that bus, call-n-Ride and rapid transit lines all have vehicles timed to arrive at the same time, minimizing the time a passenger has to wait.
Figure 5. FastConnects
Figure 6. Boulder Transit Village Land Use Map
Critical factors in design of timed transfers include:

- Bus route and schedule designed to provide efficient clock-face headway.
- Call-n-Ride service area and circuit designed to provide efficient clock-face headway.
- Reliable running times.
- Efficient transfer window (ideally, around three minutes).
- A suitable site for vehicles to wait and passengers to make their connections.

With this progress in defining FastConnects, investments then can be directed to putting the available resources to their most productive uses as the FasTracks rapid transit corridors begin to open in the coming years.

As part of the DRCOG approved FasTracks finance plan, RTD included $60M in Congestion Mitigation Air Quality (CMAQ) funds for FasTracks. DRCOG Transportation Improvement Program (TIP) policy reflects the intent to distribute the $60M, ($7.5M annually) to RTD. RTD plans to fund construction of FastConnects stations on each of the FasTracks rapid transit corridors. Construction improvements may include park-n-Ride construction, ITS real time information for passengers, shelter construction, bus turn-around improvements, bicycle and pedestrian access improvements, and similar projects or combinations of projects. FY 2008 funds will be used to construct the relocated Broomfield park-n-Ride and access improvements for pedestrians and from US 36. FY 2009 funds will be used for the Cold Spring park-n-Ride in the West Corridor.

7.0 TRANSIT ORIENTED DEVELOPMENT (TOD)

Station Area Planning
RTD staff in 2007 collaborated with local government jurisdictions on 18 station area plans and one TOD implementation plan within this calendar year. The affected stations are listed by corridor below.

- Central/CPV: 10th/Osage (Denver), Alameda (Denver)
- Southeast: Louisiana/Pearl (Denver), Colorado Boulevard (Denver), Southmoor (Denver)
- I-225: Nine Mile (Aurora)
- West: Auraria West (Denver), Federal-Decatur (Denver), Sheridan (Denver), Wadsworth implementation (Lakewood)
- East: 40th/40th (Denver), Stapleton (Denver), 40th/Airport (Aurora)
- Northwest: 30th/ pearl (Boulder) (Figure 6)
- Gold Line: Pecos (Adams County), Federal (Adams County), Sheridan (Arvada), Olde Town (Arvada), Arvada Ridge (Arvada)
Five station area plans were completed and adopted in 2007: Arvada for Sheridan, Olde Town and Kipling; Boulder for 30th/Pearl; and Denver for Louisiana/Pearl. RTD staff expects to participate in an additional eight station area plans and two TOD implementation plans beginning in the fourth quarter of 2007. The affected stations are listed by corridor below.

- **Southwest**: Evans (Denver)
- **West**: Federal Center implementation (Lakewood)
- **Northwest**: 71st/Lowell implementation (Westminster)
- **Gold Line**: 38th (Denver)
- **North Metro**: Globeville-Swansea (Denver), Commerce City, 124th Avenue (Thornton)
- **I-225**: 4th Avenue (Aurora), Fitzsimons South/Colfax (Aurora), Peoria/Smith (Aurora)

Local government jurisdictions in 2007 adopted transit-supportive zoning changes at seven station areas based on station area plans completed in 2006 or TOD proposals from developers. The affected stations are listed by corridor below.

- **Southwest**: Mineral (Littleton—Quadrant property)
- **Southeast**: University (Denver), Colorado Blvd (Denver)
- **West**: Sheridan (Lakewood), Wadsworth (Lakewood), Oak (Lakewood), Federal Center (Lakewood)

**Corridor-wide Workshops**

RTD conducted four corridor-wide TOD workshops with local jurisdictions in 2007: Northwest Rail/US36 BRT, North Metro, East and Gold Line. The purpose of these workshops was to create a corridor-scale TOD plan identifying specific action items, implementation timeframes, and responsible parties. These workshops also provided an opportunity for all the stakeholders in a given corridor to coordinate land-use planning efforts. Example actions items included refining the transit design to better connect to or enhance TOD opportunity sites, and encouraging local jurisdictions to adopt TOD-supportive policies and implementation tools, and to make transit-supportive infrastructure improvements in station areas.

- **The Northwest Rail Corridor/US36 BRT Workshop** was held in two phases: an issues forum was conducted with jurisdictional staff and elected officials in mid-December 2006, and a series of mini-charrettes for six station areas was held in late January-early February. The final report was published in June 2007. The corridor’s non-profit transportation mobility organization, 36 Commuting Solutions, agreed to act as a convener for a corridor-wide group to meet regularly to oversee implementation of the report’s recommendations.
- **The North Metro Corridor Workshop** was also conducted in two phases: an initial series of mini-charrettes was held in mid-May to provide recommendations on station locations to the DEIS process, while a more detailed series of charrettes were held in the fall to provide specific recommendations for the EIS-selected station locations.
• The East Corridor and Gold Line Workshops were held jointly in October 2007 to coordinate land-use planning efforts between various local jurisdictions and examine how a public-private partnership as the corridors’ project-delivery mechanism poses opportunities and challenges to TOD implementation.

• RTD staff continued to hold quarterly meetings in 2007 with the West Corridor TOD Working Group to implement the recommendations of that corridor’s workshop report, issued in 2006.

• A TOD workshop for the I-225 Corridor is planned for 2008.

Research and Reporting
RTD will issue its 2007 TOD Status Report in December 2007, detailing new real estate development within a half-mile of existing and planned stations and transfer centers (Figure 7). Combining the data for the existing RTD system and planned FasTracks expansion, 13,464 housing units, 3,729 hotel rooms, 5.2 million square feet of office space, 4.3 million square feet of retail, 1.6 million square feet of governmental space, 3.3 million square feet of medical-related space, 154,373 square feet of cultural space, and 2.4 million square feet of convention/sports space have either already been built or are currently under construction. An additional 12,178 housing units, 2,051 hotel rooms, 2.5 million square feet of retail, 4.4 million square feet of office space, 175,155 square feet of governmental space, and 5.9 million square feet of medical-related space have been proposed.

RTD will issue an updated TOD Status Report for 2007 by year’s end. This data has been integral to the FasTracks Quality of Life Study, as well as a regional TOD economic and market study conducted by Maryland-based Basile Baumann Prost & Associates for the City and County of Denver, RTD, Metro Denver Economic Development Corporation, and DRCOG. It was also made available to the public on the Internet via DRCOG’s TOD webpage, where visitors can access detailed information about specific projects’ from RTD’s TOD database through a GIS-based interface.

Joint Development
RTD staff in 2007 actively worked with developers on five joint development proposals:

• Denver Union Station: Union Station Neighborhood Company, a private consortium led by Continuum Partners and East West Partners, was selected by an RFQ/RFP process in 2006 to be the developer of the 19.5-acre Union Station site. In addition to the public transportation improvements, which are expected to be completed in 2011, the group proposed 557 new residential units, 732,500 square feet of retail, and 246,100 square feet of office space. Negotiations between Union Station Neighborhood Co., and the public partners—RTD the City and County of Denver, Colorado Dept. of Transportation, and DRCOG—are ongoing and may result in changes to the development program.

• Denver Federal Center: RTD in September released an RFP for the development of transit facilities with the option of additional supportive uses at the Denver Federal Center, a 15.5-acre site acquired from the federal General Services Administration (GSA) via the city of Lakewood. RTD has asked for proposals to develop a 1,000-space park-n-Ride and 16-bay bus transfer facility on this site to replace the Cold Spring park-n-Ride prior to its demolition for construction of the West Corridor rail alignment. St. Anthony’s Central Hospital is planning to relocate from Denver to a site just south of the
Figure 7. New Development at Station Areas
Federal Center Station—a $440 million project on a 45-acre site comprising of 900,000 square feet of hospital space with 386 beds and an expected 1,500 jobs. The relocated transit center and hospital facility are both slated to open in mid-2010—more than 2 years prior to the completion of the West Corridor—which should create a market for medical and transit-supportive uses on the site. RTD is coordinating with the GSA and Lakewood on this process.

- **I-25/Broadway:** RTD is currently in an exclusive negotiation phase with Cherokee for a joint development on 18-acres RTD owns at I-25/Broadway. RTD is participating in the design process for the construction of a pedestrian bridge between the Joseph Freed property along Santa Fe and the RTD station. The bridge is expected to open in 2009. RTD and Cherokee have been negotiating the bus facility redesign and RTD received a formal proposal for a joint development from Cherokee in August. RTD is coordinating with Denver on this proposal.

- **Mile High Development in 2007 rezoned RTD’s 2.7-acre University Station for an expected joint development proposal to build an 11-story apartment building adjacent to the station and add a deck of parking to the station parking garage for the residents’ use. RTD is in exclusive negotiations with Mile High Development, and coordinating with Denver on this process.**

The former bus barn site at Santa Fe and Alameda is currently under contract by the Alameda LLC group, which was selected under an RFP process. A requirement of RTD selling the land to the developer is building a pedestrian bridge from the bus barn site to the Alameda station. RTD is coordinating with Denver on this process.

In addition to the above projects, RTD intends in 2008 to issue a solicitation for the planned parking garages at the Sheridan and Wadsworth stations on the West Corridor, which could include incidental transit-supportive uses. RTD staff in 2007 has been conducting due diligence and coordinating with the City of Lakewood in anticipation of the solicitation, which will occur after RTD acquires the two four-acre sites.

Though not technically a joint development project, the City of Boulder in October released an RFP for a conceptual development and infrastructure plan for the 11-acre Boulder Transit Village site jointly owned by the City and RTD, and construction-quality designs for a new RTD bus transfer facility on a portion of the site. After this study is complete, RTD will issue an Invitation for Bids to construct the bus facility.

### 8.0 CORRIDOR UPDATES

The following sections provide an update on the individual FasTracks corridors and projects.
8.1 Central Corridor Extension and Upgrades

Figure 8. Central Corridor Extension

Central / CPV Corridor

Figure 8. Central Corridor Extension

Project Status
Enhancements to improve track infrastructure and capacity have been completed for the Central Corridor and the Central Platte Valley (CPV) Corridor, including the construction of 4-car station platforms on the Central Corridor (Figure 8). The planning and environmental analysis for extension of the Central Corridor from 30th/Downing to connect to the East Corridor at the 40th/40th Station was originally included with the East Corridor Draft EIS. Because this will be a locally-funded project, the Central Corridor Extension is no longer being evaluated as part of the East Corridor EIS. Evaluation of this corridor extension will continue separately as an Environmental Evaluation (EE). It is anticipated that future public meetings will continue during the design phase.

The FasTracks Plan cost was based on a light rail extension. As part of the East Corridor EIS process and in response to concerns regarding property acquisition, other alternatives for the Central Corridor extension were developed. The selected alternative for the extension is a
single light rail vehicle that will operate like a streetcar. It will utilize single track located in a traffic lane along Downing Street in each direction between 30th and Downing and the 40th/40th Station (terminal station for the Central Corridor Extension). This service will continue along Welton Street to Downtown and operate through the Central Corridor loop allowing transfers to the Southeast and Southwest Corridors at 18th and 16th Streets. Both the East Corridor and North Metro Corridor connect with the 40th/40th Station so it provides a transfer point between those corridors. The PE is scheduled for completion in 2007 with Final Design completed in 2012. Construction will be completed in 2015.

Originally, the Central Corridor Extension and upgrades were budgeted for $118.4 million dollars. The September 2007 revised budget for the extension and upgrades is $113.1 million. The original FasTracks budget for this corridor was based on the cost of a light rail extension. Although the technology for the extension did not change, only a single light rail vehicle will be utilized. Because of this change, budgeted costs have decreased slightly.

**Downtown Circulator.** The Downtown Circulator, a new shuttle route that is designed to complement the 16th Street Mall Shuttle and local bus network, continues to be an integral part of the FasTracks plan (Figure 9). It is a product from the Denver Multimodal Access Plan (DMAP), which was led by the City and County of Denver, with participation from RTD. The DMAP study identified a detailed, integrated plan for vehicular, freight, pedestrian, bicycle, and transit access into and throughout downtown Denver.

Figure 9 shows the recommended route for the proposed Downtown Circulator. The new shuttle would operate between DUS and the Denver Art Museum at 12th Avenue and Acoma Street and utilize 18th and 19th Streets and Broadway and Lincoln Avenue. The vehicles for this new route would have similar performance to the 16th Street Mall Shuttle, would operate on frequent headways, and stop every two to three blocks.
Funding for the Downtown Circulator rolling stock and operations were included in the FasTracks financial plan. Further determination of commitments for infrastructure by all parties involved is anticipated during 2008. The next planning phase for the Downtown Circulator is occurring in the fall of 2007 and 2008. RTD anticipates opening the Downtown Circulator in 2013 to coincide with the opening of the West Corridor LRT with service into DUS.

8.2 Denver Union Station (DUS)

Figure 10. Denver Union Station

Project Status
On November 15, 2006, the Union Station partnering agencies, RTD, the City and County of Denver, CDOT and DRCOG, selected Continuum/East West as the Master Developer team to head the redevelopment and preservation of Denver’s historic Union Station (Figure 10). Negotiations with the Master Developer for a contract to allow the public-private partnership to proceed with the development of the DUS site are underway.

The Master Developer, known as Union Station Neighborhood Company (USNC), in conjunction with the development team and agencies, will be responsible for the following:

- Private development of the DUS site
- Final design and construction of the public transportation elements of the DUS Master Plan (which will be amended to reflect the USNC proposed plan)

The USNC proposed plan includes additional transit elements not included in the original FasTracks Plan. Financing tools such as Tax Increment Financing (TIF) will help pay for these additional elements. Design changes that in the USNC plan, when it is finalized, will be documented in the FEIS.
The FEIS for DUS was placed on hold pending selection of a Master Developer. The FEIS is scheduled to be completed in fall 2008. Milestone dates for this project are:

- Identification of a preferred alternative—December 2007
- Completion of Final Design (method of delivery is design-build)—July 2009 (includes LRT Facility, CRT Facility, Bus Facility, and LRT Systems Design)
- Begin Construction—Winter 2008 -2009
- Completion of Testing and Startup—June 2012

These fall within the SB 208 time frame for completion.

DUS was originally budgeted for $268.5 million dollars. The current budget is $215.4 million. The change in RTD project costs from 2006 to 2007 reflects the change from RTD to USNC as the project lead. As a result of this change, grant funds previously obtained through RTD, are now provided through USNC, as reflected in the lowered total for RTD costs. Additional revenue sources that can be reasonably expected include $61.7 million (funds from SB-1, FHWA, and FTA); $186 million (TIF, Metro District, and Development Rights); and $16.9 million (other sources). These revenues will meet the completion costs of $480 million.

### 8.3 East Corridor

#### Project Status

Since 2006, following a determination by FTA and FHWA that the East Corridor highway and transit projects meet the test of independent actions under NEPA, RTD and CDOT have proceeded with independent EISs for the transit and highway elements, respectively (Figure 11). They are cooperating agencies on each EIS, and the City and County of Denver is a participating agency.

An alternatives analysis (AA) was conducted as part of the EIS process. In AA evaluated the transit alternatives for the East Corridor concluded that the EMU commuter rail was the Locally Preferred Alternative (LPA). The alignment follows the Union Pacific (UP) Corridor between Denver Union Station (DUS) and Airport Boulevard and the Pena Transportation Corridor to Denver International Airport (DIA). In refining the alignment, several grade-separated crossings...
have been removed. These include three industry lead flyovers; grade separations at Chambers, Peoria, 48th Avenue, and Tower Road; and the DIA approach structure has been replaced with bridges at the airport entrance, exit, and turn-around roadway. The location of a commuter maintenance facility for all CRT corridors is being evaluated in the EIS. Additionally, the Colorado Station has been accepted as the sixth station on the East Corridor. Previously, the location of this station had not been determined.

The original FasTracks budget for the East Corridor Extension was $702.1 million. This budget has been revised to an estimated $1,141.6 million. This increase is the result of a variety of factors in addition to escalation in labor, materials, and ROW costs. Other factors affecting the budget include a change in technology to EMU; additional drainage and ROW needs; and the cost to relocate utilities under UP right-of-way.

8.4 Gold Line

Project Status
The Alternatives Screening and Detailed Evaluation phases of the Environmental Impact Statement (EIS) process began in late fall 2006. In spring 2007 commuter rail technology was recommended to the RTD Board as the preferred alternative (Figure 12). On July 24, 2007, the RTD Board voted to include EMU commuter rail vehicles on the BN/UP Railroad right-of-way alignment. The change from light rail (LRT) to EMU commuter rail (CR) occurred for several reasons. EMU was determined to be more cost effective than DMU. Although EMU has higher capital costs, these are offset by lower operating costs. It was also found that the change from LRT to CR would result in a reduction in vehicle and systems costs. These savings repay the capital costs. The Draft EIS will be completed in 2008 and the Final EIS is scheduled for completion in late 2008.
8.5 I-225 Corridor

Project Status
In April 2007 an MOU between RTD and CDOT was signed that allows RTD to lead the environmental process to study the impacts associated with the implementation of transit for the I-225 Corridor (Figure 13). RTD released a Request for Proposal (RFP) in April 2007 for the Environmental Evaluation (EE) and 30% Preliminary Engineering (PE) phase of the project. In June, a consultant team was selected. In August 2007, the Notice to Proceed (NTP) was issued. It is anticipated that this phase of the project will be completed in the fall of 2009. The project is on schedule for an opening day in the summer of 2015.

Work toward construction of the Aurora City Center bus transfer facility (FastConnects project) is well underway with negotiations between the developer, City of Aurora, and RTD ongoing. It
is anticipated that the construction project will go out for bid in late 2007 and that construction will take approximately 5-months. It is anticipated that the transfer facility will open in October 2008. This facility will also serve as the City Center LRT station upon completion of the I-225 corridor.

This corridor was originally budgeted for $442.3 million dollars. However, as a result of a more complicated bridge structure and an elevated station at Colfax; a tunnel under northbound I-225 at Exposition; increased design development for electrification and signaling; and increased environmental mitigation, the current budget has increased to $619.6 million.

8.6 North Metro Corridor

![Figure 14. North Metro Corridor](image)

**Project Status**

The Draft Environmental Impact Statement (DEIS) project and basic engineering was initiated for the North Metro Corridor in August 2006 (Figure 14). Scoping meetings were held in September 2006 and station planning meetings were held during the spring and summer of 2007. The preferred technology and screening results for build alternatives were completed in September 2007 and were adopted by the RTD Board in October 2007. The alternatives analysis will be complete and the draft EIS will be released to the public in spring 2008. The final EIS is anticipated for late 2008 with a ROD in the first quarter of 2009.
The purpose of the Northeast Area Transit Evaluation (NATE), part of the North Metro study, is to determine how to preserve right-of-way for a future transit line between Denver and Brighton that would serve Commerce City and unincorporated areas of Adams County.

The original FasTracks budget for the North Metro Corridor was $420 million dollars. This budget has been revised (September 2007) to an estimated $637.2 million. The budget increase was created by the change in the alignment from the BNSF right-of-way to the UP right-of-way which requires additional retaining walls and structures; a change in the alignment to avoid the Sand Creek Junction (UP/BNSF railroad junction); and increased utility relocation and environmental mitigation costs. It was also decided to build three-car rather than four-car platforms.

8.7 Southeast Extension and Upgrades

Figure 15. Southeast Corridor Extension
Project Status
The Environmental Evaluation and Basic Engineering is scheduled to begin in early 2008. The schedule for completion of the Southeast Corridor Extension has been accelerated by approximately one year, with a current completion date in 2015. Figure 15.

The original FasTracks budget for the Southeast Corridor Extension and upgrades was $183.0 million and the current working estimate is $208.1 million. This cost increase is due to a rise in materials cost, in particular concrete and steel; labor costs; the escalation in the cost of right-of-way acquisition; and the need to purchase additional light rail vehicles to meet demand. To address the increase, RTD has sought ways to mitigate the cost increase. For one, RTD is moving forward with an accelerated schedule, which will lessen overall expenditures due to the purchase of labor and materials prior to future cost increases and inflation. As the project goes forward RTD will continue to evaluate additional cost containment measures, alternative delivery options, and design and engineering refinements. The delivery option that has been selected for this corridor is to include it with I-225 as design-build.

8.8 Southwest Extension and Upgrades

Figure 16. Southwest Corridor Extension

Southwest Corridor
8.8.1 Project Status
The budget for the Southwest Corridor Extension and upgrades in the original FasTracks Plan was $164.1 million. Costs have increased since the original budget and are currently estimated at $216.9 million. This increase is due to a rise in materials costs due to major bridge structures over railroad right-of-way, County Line Road, and C-470. RTD is moving forward with this project, committed to providing the same level of service with completion within the same timeframe on this corridor (Figure 16). One measure utilized to save costs includes moving forward at an accelerated schedule, which would result in project completion in 2015, rather than 2016. Additional strategies will include cost containment measures, alternative delivery options, and design and engineering refinements.

8.9 US 36 BRT and Northwest Rail (Longmont Extension)

Figure 17. US 36 BRT Corridor
Project Status
It was determined in 2006 by FTA and FHWA that the highway/BRT and rail transit projects met the regulatory test to be treated as independent actions under NEPA. The rail project from DUS to Longmont, now referred to as the Northwest Rail Corridor, is proceeding as a separate environmental document from the US 36 Corridor (Figure 17). For the Northwest Rail Corridor, the US Army Corps of Engineers (USACE) is the lead federal agency because of the federal action required for wetlands permits. The USACE has determined that an EA is appropriate NEPA action for the corridor. For the US 36 EIS for the roadway and BRT improvements, RTD continues to partner with FTA and FHWA as the joint lead agencies. CDOT is a cooperating agency on the US 36 EIS also.

US 36 BRT Phase I
RTD is proceeding with the final project to implement the first phase of BRT, which are the improvements associated with the Broomfield Events Center and Arista Development remain. Project descriptions and status are included below.

US 36/McCaslin – Located on the south side of US 36, this 294-space park-n-Ride includes an internal local service bus loop. On the north side of US 36 is a 172-space parking area that is provided through a lease arrangement with a local movie theater. The two parking areas are connected by a pedestrian bridge over US 36 with regional service bus pull-outs along the US 36 access ramps. This project was completed and put into service in the 2nd quarter of 2006.

US 36/Church Ranch – This project includes a 252-space park-n-Ride, with on-street local bus service, on the south side of US36. A 144-space parking area is provided through an IGA with the City of Westminster on the north side of US 36 adjacent to an existing retail center. The two parking areas are connected by an existing US 36 roadway underpass that was constructed by the City of Westminster. Regional bus service utilizes pull-outs along the US 36 access ramps. The new park-n-Ride opened on May 27, 2007.

US 36/116th Avenue at Broomfield Event Center (site of the soon-to-be-relocated Broomfield park-n-Ride) – This project is in process and includes four major components, which are listed below. It is anticipated that this project will be constructed and put into service in late 2009 or early 2010.

1. In 2006, a 1,500-space parking structure was constructed as part of the Broomfield Event Center. RTD acquired the right to use 940 of these spaces for transit purposes (200 spaces guaranteed at all times, with the remaining 740 spaces on a first-come first-serve basis).

RTD is nearing the 90% design level of the following items.

2. Local Bus Transfer Facility: A 9 bus bay passenger transfer facility to be constructed between the existing parking structure and US36.

3. Bus Only Slip Ramps and Pullouts: To be constructed along US 36 to provide regional service connections.
4. Pedestrian Bridge over US 36: Will connect the Boulder-bound regional bus stop with other overall project elements, including the Denver-bound regional bus stop.

**Bus Superstops on 28th Street** – The superstops were completed by the City of Boulder in coordination with RTD. Funding that was programmed for these improvements have been moved to Phase 2.

The following projects were completed prior to FasTracks, but serve the US 36 Corridor and augment the US 36 BRT Phase I improvements.

**Westminster Center** – This project includes a 959-space park-n-Ride structure that is located on the north side of US 36, and a 351-space surface park-n-Ride on the south side. These are connected by a pedestrian bridge and are served by both local, regional, and express bus service utilizing bus pullouts along the US 36 access ramps near Sheridan Boulevard.

**US 36 and East Flat Iron Circle** – Improvements completed with the project include a 264-space surface park-n-Ride with an internal local service bus loop. The park-n-Ride is constructed on the north side of US 36 and has regional service bus pull-outs along the access ramps.

The original budget for the US 36 BRT—Phase 1 was $36.9 million dollars, including funding for the 28th Street Superstops. This funding has been reallocated to increase the Phase 2 budget. The costs for this project are now estimated at $21.6 million.

**US 36 BRT Phase 2**

In April, 2007, the US 36 Mayors and Commissioners Coalition (US 36 MCC) submitted an application for the Urban Partnership Agreement, requesting $235 million to construct bus/HOV lanes in the median of US 36. The grant application, though rejected, would have provided interim highway improvements in the corridor.

The US 36 MCC received Senate Bill 1 funds on behalf of RTD to construct a pedestrian bridge at the Table Mesa park-and-Ride and a new eastbound bus slip ramp on the south side of US 36. RTD provided the match for these funds from the US 36 Phase 2 BRT.

The US 36 DEIS was completed and made available for public review on August 3, 2007. Three public hearings were held and comments received from the public, local agencies, US EPA, and advocacy groups. Support was expressed for a “hybrid” alternative which would combine elements of Package 2 (a barrier-separated BRT/HOV/HOT lane alternative and Package 4 (a BRT/HOV alternative that is buffer-separated). Concerns were expressed about traffic noise, impacts and mitigation, continuing direct BRT access to the Table Mesa park-n-Ride in Boulder, providing sufficient access along the US 36 corridor for interim destinations, effects to the South Boulder Creek floodplain, effects to traffic and local streets in Boulder and others.

RTD, CDOT, and the US 36 MCC are currently discussing the process for completing the Final EIS. Per the master IGA, identification of funds for construction of the preferred alternative is necessary. RTD has committed to funding for in-line stations and a proportionate share of bus/HOV lane improvements. RTD will continue to hold discussions with CDOT and the US 36 MCC regarding funding alternatives for this project. The Final EIS effort will likely begin in early 2008.
The original budget for US 36 BRT—Phase 2, $189.4 million, has increased to the current budget of $214 million due to an increase in material, labor, and costs for right-of-way, and the reallocated 28th Superstops.

Northwest Rail

Figure 18. Northwest Rail Corridor
The environmental analysis that has been completed to date on the US 36 EIS and the Longmont Environmental Evaluation (EE) will be input into the Northwest Rail Corridor EA (Figure 18).

The first round of public meetings for the Northwest Rail EE were held in July 2007. The Northwest Rail project considered both diesel and electric commuter rail technology for the corridor. In July 2007, RTD received a letter from the BNSF Railway Company (BNSF) describing additional construction needed to implement electrified commuter rail in their corridor when sharing with freight operations. The requirements included the reconstruction of at least 10 existing bridges, amounting to an additional cost of $400-565 million. This extra capital cost was a significant factor in the decision to recommend diesel technology for the Northwest Rail corridor. The technology decision was adopted by the RTD Board.

Additionally, the corridor was extended from the original end-of-line station at Twin Peaks Mall to 1st and Terry Streets in downtown Longmont. This location was found to be problematic due to upgrades that would be required to the surrounding roadway network to satisfy traffic concerns. The extension to 1st and Terry Streets was found to be cost-neutral when compared against the roadway upgrades that would have been required in the vicinity of Twin Peaks Mall.

Stations and alignment alternatives were considered in the 4th quarter of 2007 and the draft EA is scheduled to be released to the public in late spring 2008. A FONSI is anticipated by the end of 2008.

The original budget for the Northwest Rail Corridor, $565.1 million, has increased to the current budget of $684.4 million. This increase is the result of escalation in material costs, as well as changes in BNSF and US DOT new station requirements.

Project Status
RTD completed value engineering (VE) studies in early 2007. To evaluate recommended design and operational changes identified in the VE study, an Environmental Assessment (EA) was undertaken to assess the impacts of design and construction changes (Figure 19). The EA public meetings were held in summer of 2007, with a public hearing conducted on September 19, 2007. On November 16, 2007, the FTA issued a Finding of No Significant Impact (FONSI) for the West Corridor.
8.10 West Corridor

Figure 19. West Corridor

Major Cost containment recommendations included:

- Changes to operating plan from 5 minutes to 15 minute headways between Federal Center and Jefferson County Government Center, single tracking from Denver Federal Center to Jefferson County end-of-line station.
- Realignment of LRT to south side of US 6 between the Denver Federal Center and Indiana Street.
- Acceleration of design and project construction by two years and project opening by one year, as disclosed in last year’s report to DRCOG.
- Hiring a CM/GC contractor during the final design phase to help reduce construction risks and costs.
- Changes in drainage criteria.
- Narrowing of guideway sections and changing from side walks to center walkways.
- Early procurement of materials.
- Early construction activities.
- Eliminate walls where possible through alignment refinements.
- Build three car platforms in lieu of four car with right-of-way and construction alternatives to allow 4-car stations to be built when needed.
- Eliminate concrete encasement for systemwide ductbanks.
- Eliminate tail tracks at Jefferson end-of-line station.

To address Jefferson County concerns regarding the use of single track from the Federal Center to the Jefferson County Government Center, RTD agreed to increase service and expand from single to double track if predetermined ridership thresholds or ridership “demand milestones” are reached sooner than currently projected based on the adopted DRCOG model. A demand milestone is reached whenever, over a four-month ridership reporting period, RTD has documented that the average number of passengers per hour during peak periods exceeds the seating capacity provided. On opening day, the seated capacity will be 512 people per hour, using 2-car trains and 15-minute service frequencies.

The expanded service includes:

- Increasing train lengths from two to three-car trains with peak period service remaining at 15-minute frequencies (seated capacity increase to 768 people per hour).
- Lengthen station platforms and operate four-car trains at 15-minute frequencies (seated capacity increase to 1,024 people per hour).
- Provide for 10-minute peak period frequencies using three-car trains (seated capacity increase to 1,152 people per hour) and construct Colfax passing track (if not already constructed) and modify the Red Rocks passing track.
- Run four-car trains at 10-minute peak period frequencies (seated capacity increase to 1,536 people per hour).
- Add a second track from the Jefferson County Government Center to the Federal Center to provide 5-minute peak period frequencies.

RTD is working with Jefferson County to request supplementary funds through the SB 97-01 and DRCOG Transportation Improvement Program processes. If successful, RTD has agreed to restore passing tracks east of Red Rocks Community College and west of I-70 to allow for 10-minute headways ($11.9 million, CDOT SB 97-01 funds), along with a third level to the
proposed parking structure at the Government Center ($7.4 million, DRCOG TIP funds). RTD has agreed that when the funding is secured, they will issue the direction necessary to implement these improvements to the West Corridor Contractor.

RTD submitted a New Starts submittal to FTA in August 2006, and has recently completed an updated New Starts report issued to FTA in September 2007. The 65 percent final design submittals were received in November 2006. An updated 65% submittal with incorporation of value engineering and cost containment items was completed in late July 2007. RTD anticipates applying for a full-funding grant agreement (FFGA) with FTA in December 2007, with a signed FFGA in late spring/early summer of 2008.

In 2007 the Construction Manager/General Contractor (CM/GC) Services on the West Corridor Project, Denver Transit Construction Group, a joint venture of Herzog Contracting Corporation of St. Joseph, MO and Stacy & Witbeck, Inc. of Alameda, CA, brought on board through a competitive procurement process continues to coordinate with the design team through value engineering, design and constructability reviews. The CM/GC services include pre-construction services such as scheduling, planning, constructability reviews, preparation of a conduct of construction plan, subcontractor plan including DBE participation and cost estimating during the final design. A CM/GC contracting approach was selected as the best means to minimize cost increases, control interfaces and ensure a cost-effective approach on means, methods and constructability in the design phase.

In May 2007 rail and tie removal began on the West Corridor. It was completed on July 31, 2007. Also in August 2007, utility relocation began with Xcel. Qwest, Comcast, water, and sewer relocations will begin later in 2007 with the majority of utility relocations completed by summer 2008. Construction of the West Corridor is scheduled to begin in mid-2008 and be completed in by the end of 2012. Opening day is scheduled for 2013.

As part of RTD’s ongoing efforts to mitigate rising costs of materials and labor impacts to the West Corridor budget, and as a part of the FTA guidance in the conduct of the project, RTD, the design team and the CM/GC conducted a review of the project and determined that there were measures that could be taken to curtail the impacts of rising material cost on the project, accelerate the schedule by having major bridge elements ready to erect, thus opening longer expanses for construction of the fixed guideway.

Costs of steel and copper, in particular, experienced an escalation of 11.1% and 44.4% respectively in 2006, and 3.3% and 17.3% respectively for the first quarter of 2007. Steel prices have seen some recent indications of leveling off, while copper is expected to continue its rise given current Producer Price Indexes (PPI). Given these current cost trends and the labor market, Staff recommended and the RTD Board approved contract amendments that would allow early procurement and fabrication of steel for the steel girder and truss bridges, which will help mitigate not only future escalation but also allow an earlier start on construction of the major structures.

The West Corridor was estimated in the original FasTracks budget at $511.8 million dollars. This estimate has increased to $634.7 million (December 2007). Though costs increased as a result of program-wide increases in labor, materials, and ROW; as discussed above, a number
of approaches to contain costs, including VE to identify strategies for cost control have been employed.

8.11 Maintenance Facilities

8.11.1 Commuter Rail Maintenance Facility

The Commuter Rail Maintenance Facility will accommodate both Electric Multiple Unit (EMU) and Diesel Multiple Unit (DMU) technologies. After the number of candidates for the commuter rail maintenance facility site was narrowed to two, the BNSF 31st Street Yard and the UPRR 36th Street Yard, both were further evaluated (Figure 20). At present, the UPRR 36th Street Yard is the favored alternative. RTD is currently conducting the environmental analysis for the maintenance facility site and access. This analysis will be included in the East Corridor EIS.
8.11.2 Light Rail Maintenance Facility

The Elati Maintenance Facility opened in 2004 with the capacity to maintain and store 100 vehicles initially and up to 150 vehicles at buildout. In 2006 RTD completed the construction of additional storage tracks and catenary systems to accommodate the West Corridor fleet at the Elati facility.

In the 2006 SB 208 submittal, RTD was in the process of completing an environmental assessment at the Union Pacific Railroad's Burnham Shops, which was being considered for an LRT maintenance facility. An Alternatives Analysis and public workshops were conducted during the course of 2006 and a locally preferred alternative was identified. Concurrent with this analysis, negotiations were initiated with the Union Pacific Railroad to secure the site and ascertain the cost of the land purchase.

With the change of the Gold Line technology from LRT to commuter rail, however, it was determined that an expanded Elati facility could accommodate the entire FasTracks LRT fleet, eliminating the need for a second LRT maintenance facility. This expansion of the Elati maintenance facility would occur on the northern portion of the existing site and will not require the purchase of additional property (Figure 21).
The scope of work for the extension of the light rail maintenance facility includes additional parts storage capacity, additional power supply into and for the system elements for the added light rail vehicles to be stored at the site, modifications to the drainage system, added tracks, yard lighting, walks, and access drive improvements. Associated with the expansion of the Elati Facility is the expansion of the Mariposa Facility where RTD conducts its heavy maintenance on the light rail vehicles. As the scope is developed, a final cost estimate will be prepared.

8.11.3 Bus Maintenance Facility
By 2020 RTD will need additional bus maintenance facility capacity. To address this need, RTD anticipates issuing a request for proposals (RFP) in 2013; conducting an environmental assessment (EA) and preliminary engineering (PE) in 2014 to 2015; completing final design and beginning construction in 2016; with opening day occurring in 2020.
APPENDIX A:
SB 208 LEGISLATION AND DRCOG RESOLUTIONS
APPENDIX B:
DETAILED FASTTRACKS FINANCIAL PLAN UPDATE
APPENDIX C:  
COST ESTIMATE METHODOLOGY
APPENDIX D:
RESPONSIBLE RAIL AMENDMENT
APPENDIX E:
20-YEAR NEEDS ASSESSMENT REPORT
APPENDIX F:
QUALITY OF LIFE REPORT

To be submitted under separate cover