



# Technical Memorandum No. 8

## Project No. C SWOO-242

Funding and Financing Strategies  
May 18, 2005





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This technical memorandum (Tech Memo 8) presents the results of the assessment of funding and financing strategies for consideration by the sponsors of this preliminary study, likely stakeholders of the proposed BNSF-UP Front Range Railroad Infrastructure Rationalization Project (Railroad Project or Project), and potential sponsors of the Project itself. The contents of this tech memo include a discussion of the background behind the emergence of innovative funding and finance strategies for mega-projects such as this, a primer on potential funding and finance strategies available for consideration, several case studies that demonstrate the use of these strategies for similar projects, and the implications these strategies may have on the prospects for delivering the Railroad Project.

## Introduction

In sponsoring this Public Benefits Study of the proposed BNSF-UP Front Range Railroad Infrastructure Rationalization Project, the Colorado Department of Transportation (CDOT) is seeking to quantify the extent to which the public sector benefits from the Project. The combination of qualitative, quantitative, and monetized benefits developed earlier in the study can be used to develop and assess potential funding and financing strategies based on the proportion of total Project benefits that accrue to the public and private sectors. The results also provide a basis for ultimately developing a possible public-private partnership between CDOT (the sponsor of the study), the BNSF and UP Railroads (the proposers of the Project), and other interested parties from the public and private sectors.

## Purpose and Objectives

The purpose of the funding and financing strategies assessment is to evaluate alternative strategies to finance the project at lowest costs through an equitable allocation of project development costs among major stakeholders, based on the relative level of benefits that are expected to accrue to these stakeholders over the study planning horizon. The objectives of this task are to:

- Investigate and describe a menu of potential funding mechanisms at the federal, state, and local levels that may be available to implement the Railroad Project. This may include public, private, and public/private funding sources and both traditional and innovative financing strategies.
- Present the advantages and disadvantages of the various funding and financing strategies, in terms of funding availability and timeliness, cost coverage, risk and uncertainty, project control, and value capture of stakeholder benefits.
- Provide a summary of the funding and financing strategies for at least five other mega-projects, involving public-private partnerships between highway, railroad, and/or transit organizations.
- Determine the rationale for the Project by comparing the range of Project benefits and costs, resulting from study assumptions that produced low, medium, and high estimates of the monetary impacts of the Project.
- Estimate potential level of support for the Project, based on the range of Project benefits estimated for private and public sector stakeholder groups through the Year 2030 and consideration of competitive interests, willingness/ability to support the Project, and qualitative benefits among these major stakeholder groups.



This technical memorandum is based on the results of prior technical memoranda which address: Project Costs (Tech Memo 4), Project Benefits (Tech Memo 5), Competitive Impacts (Tech Memo 6), and Passenger Rail Impacts (Tech Memo 7). In calculating the benefits of the Project for the purpose of demonstrating its rationale from both a public and private perspective, both direct and indirect benefits are considered in this technical memorandum.

In Tech Memo 5, only the monetized values of direct project benefits are included in the summary of Project benefits. These include transportation, economic development, environmental, rail passenger capital cost impacts. Tech Memo 5 also projects the number of new jobs likely to result from the Project, due primarily to Project construction (short-term net increase) and economic development associated with new intermodal facilities (long-term net increase). However, the salaries associated with these jobs and their potential impacts on the local economy are not included in the summation of monetized benefits in Tech Memo 5. This is because they are considered indirect benefits and could result from job transfers from other parts of the country. This is a conservative approach to benefits estimation, since it discounts the indirect effects of job creation on the local economy. Exhibit 8-1 reproduces the benefits summary from Tech Memo 5 and includes two more rows of benefits to account for salaries associated with increased employment and severance tax revenues on increased production of Western Colorado coal resulting from the Project.

The focus of Tech Memo 8 is on assessing the potential for garnering sufficient support to fully fund the Project. Therefore the monetized value of both direct and indirect benefits is considered to determine the potential support for the Project from both public and private sector perspectives. Hence, the estimate of total Project benefits shown in Exhibit 8-1 includes the salaries produced by new jobs resulting from the Project, as well as severance tax revenues from additional Western Colorado coal production. These are counted as public benefits in this technical memorandum since they benefit the citizens of Colorado through incremental salaries and tax revenues. By including these indirect public benefits, the total benefits attributed to the Project become \$5.16 billion for the midrange scenario. This produces a more thorough accounting of Project impacts on local businesses and the citizens of Colorado.

The preliminary results of this task provide a broad framework for pursuing Project sponsorship and assessing the level of stakeholder interest in the Project. Given the preliminary nature of this study and the broad range of potential benefits and costs, the results contained in this technical memorandum are not intended to be used to support efforts to raise private financing for the Project. A much more detailed assessment of Project costs and revenues will be required to support an investment grade analysis that could be used to secure private financing through the issuance of bonds and other equity-based financing.

## Financial Challenges

This technical memorandum recognizes a number of financial challenges for sponsors of the Project:

- There is a scarcity of funds for desirable transportation infrastructure improvements that are multimodal in nature due to (1) severe budget constraints among state and federal transportation agencies, (2) limitations on funding for capital improvement programs by private carriers due to competitive pressures, and (3) difficulty in finding enlightened sponsorship for projects affecting both public and private sector transportation modes.
- Transportation infrastructure projects requiring the participation of multiple public agencies and private carriers have more difficulty moving forward due to the institutional barriers that exist between the public and private sectors, and between modal carriers. These barriers impede efforts to coordinate project planning, programming, and delivery and to assign responsibility for the funding and performance of these functions.



Table 8-1 Summary of Potential Net Benefits, Including Direct and Indirect Benefits (Midrange Scenario)

PROJECT BENEFITS	Total Net Benefit, present value (\$1 mil)	Net Increase in Jobs
<b>DIRECT BENEFITS</b>		
<b>Transportation Net Benefits</b>		
Railroad operating efficiency gains	\$693.9	
Avoided capital costs for new grade-separated crossings	\$51.9	
Reductions in travel delay at railroad crossings	\$332.4	
Reduced number of train-auto accidents	\$9.6	
<b>Economic Development and Land Use Benefits</b>		
Western Colorado		
Coal industry	\$118.1	
Front Range		
New economic growth from better rail facilities	\$470.3	
Redevelopment of urban rail yards	\$31.9	
Eastern Colorado		
New economic growth from better rail access	\$34.6	
Benefits to grain producers	\$29.4	
<b>Safety and Security Net Benefit</b>		
<b>Environmental Net Benefit</b>		
Air quality benefits	\$244.8	
Property value benefits due to noise reduction	\$86.7	
Energy reductions for autos	\$21.0	
<b>Quality of Life</b>		
Capital cost savings to future passenger rail	\$178.3	
<b>Direct Benefits Subtotal</b>	<b>\$2,302.8</b>	
<b>INDIRECT BENEFITS</b>		
<b>Economic Development and Land Use Benefits</b>		
Western Colorado		
Job-related Net Income	\$560.8	558
Front Range		
Job-related Net Income	\$1,923.8	3,400
Eastern Colorado		
Job-related Net Income	\$130.6	282
Construction		
Job-related Net Income	\$211.9	1,726
Coal Severance Tax Income to State of Colorado	\$35.4	
<b>Indirect Benefits Subtotal</b>	<b>\$2,862.5</b>	<b>5,966</b>
<b>TOTAL BENEFITS</b>	<b>\$5,165.3</b>	<b>5,966</b>
<b>Totals, excluding temporary construction benefits</b>	<b>\$4,953.5</b>	<b>4,240</b>



- While the costs for the proposed Project are primarily related to the relocation and development of private sector railroad assets, the benefits of the Project spread beyond the individual railroads involved, as demonstrated in Tech Memo 5. The challenge is to find a way to convince non-railroad beneficiaries to share the costs of the Project, commensurate with their proportion of estimated benefits over the service life of Project facilities.
- The public is skeptical of using public funds for private projects. The challenge is to objectively recognize the full variety of potential public benefits that may result from the Project. Showing how the Project provides a so-called “win-win” situation for all affected stakeholders is essential so that a “win-lose” situation does not result, thereby alienating certain groups in the State.
- The Project will have differing impacts on different regions of the State. The challenge is to find an equitable funding strategy that differentiates funding responsibility between stakeholders on a geographic basis as well as a categorical basis.
- Funding programs generally rely on a small number of sources, whether public or private. The challenge is to find the major funding sources among stakeholder groups that have the most to gain from the Project, the greatest interest in the Project, and the most resources available. The more stakeholders that have a significant interest in the Project the more likely that an adequate financing scheme can be arrived at.
- Most of the development costs are incurred during the first years of the Project, while the expected benefits will build over the full service life of the Project. The challenge is to find a financing mechanism that will accommodate the imbalanced cash flow requirements while minimizing the costs of borrowed funds.

The public involvement program for this study provides important mechanisms for recognizing and including the various public stakeholders for the Project. The Project cost and benefits assessment portion of the study shows how both public and private stakeholders are likely to be impacted by the Project, both categorically and geographically. The results of these efforts provide essential inputs for determining whether the Project can be justified from a benefit/cost perspective, and how an equitable and balanced funding plan can be developed for the Project.

## Background

In order to develop an adequate and implementable funding approach, one needs to understand the regulatory, competitive, funding, and institutional context for the Project. It is the changing nature of this context that brings the State of Colorado to consider the possibility of helping to fund what some might consider to be essentially a private railroad investment and responsibility. Significant changes in the freight transportation industry are having profound impacts on goods movement logistics. These changes affect every aspect of the nation’s economy, as well as the economic well-being and competitive position of individual states, regions, and communities. Therefore, decisions regarding surface transportation infrastructure investments are increasingly being considered in the broader context of both public and private stakeholder interests. The following sections discuss a number of these underlying changes in the surface transportation industry that may effect how Colorado views the proposed Project and responsibilities for its funding.



## Economic Deregulation

During the decade of the 1980s, surface transportation underwent a major transformation in the aftermath of deregulating both the railroad and trucking industries in the late 1970s. The consequences of these changes continue as shippers press for lower rates and higher quality services. Representative of the consequences for railroad and trucking firms are the following:

- Significant reductions in freight rates, particularly in highly competitive areas and corridors, resulting in the erosion of profit margins across the surface transportation industry.
- Rationalization of transportation infrastructure systems, as redundant rail lines and truck terminals were closed.
- Consolidation of transportation companies, with the emergence of national firms such as BNSF, UP, CSX, and NS in the railroad industry; and Yellow, Roadway, JB Hunt, and Consolidated Freightways in the trucking industry.
- Emergence of regional service providers to provide local and regional pick-up and delivery services and exchange freight with the national carriers focusing on line-haul movements.
- Greater emphasis on customer service (effectiveness) and operational productivity (efficiency), as transportation carriers compete for business and shipper demands increase (driven by their own competitive forces).
- Greater recognition among transportation companies of the importance of providing reliable, damage-free, and prompt delivery services along the entire logistics supply chain.

These developments have led to greater coordination and cooperation among surface transportation carriers along the entire logistics supply chain, as well as improvements in operating efficiency and service through the application of technology such as:

- GPS-based tracking of containers/trailers
- Automatic train control and signaling
- Electronic billing and payment
- Computer simulation of operational and facility alternatives to increase system capacity

As the competitive pressures for improved service and productivity continue to build, different components of the surface transportation industry are discovering ways to satisfy these needs by entering into partnerships. These partnerships come in various forms and are intended to leverage the resources and capabilities of multiple stakeholders to achieve greater results through corporate, modal, and institutional collaboration. While such partnerships were discouraged and even prohibited when modal economic regulation stifled competitive forces, the advent of open market competition through deregulation has allowed and even encouraged such synergistic combinations.



## Changes in Funding Surface Transportation Infrastructure

Economic deregulation is only one of the major changes that has affected how public and private sector stakeholders perceive their roles and responsibilities for surface transportation infrastructure. The other major change was the completion of the Interstate Highway System in the late 1980s. This capped a massive 30+ year capital investment in a national system of controlled access highways linking the major cities of the country, funded primarily by fuel taxes. Since its inception, the Interstate Highway System has been a major factor in the suburbanization of America's urban population centers and the growth of the long-distance trucking industry, often at the expense of the railroad industry.

During the period of development of the National Highway System (including the Interstate Highway System and primary intercity roadways), fuel tax revenues were primarily used to pay for constructing the system. State and local revenues were used to operate and maintain the highways, as well as to provide the local share of the construction costs (generally 10% to 20%). State transportation agencies served as the organizational vehicle for administering National Highway System program funds at the state and local levels. Projects were funded as revenues from fuel taxes accumulated and were distributed from the federal government to the states. This "pay-as-you-go" approach was used by state transportation agencies to fund their highway capital projects without having to resort to debt financing. As long as the fuel tax-supported federal highway program funds were sufficient to meet the funding needs of the National Highway System, the states did not have to use alternative funding or financing approaches.

Traditional funding sources and financing mechanisms used to pay for the development of the National Highway System are described below.

### Traditional Funding Sources

- **Federal motor fuel taxes** - an excise tax imposed on the sales of motor fuels, including gasoline and diesel fuel on a per-gallon sold basis. The current 18.4 cents per gallon federal gasoline tax, 24.4 cents per gallon federal diesel fuel tax, and other related fuel taxes fund the Federal Highway Trust Fund and generate approximately \$32 billion per year.
- **Other federal taxes** - there are various federal taxes on trucks, trailers, and tires that also go into the Federal Highway Trust Fund.
- **State revenue sources** - states also impose taxes on motor fuels, sales taxes on motor vehicle sales, personal property taxes, motor fees, motor vehicle registration fees, and motor vehicle operator license taxes, with each state determining which tax methods and tax rates to apply.
- **Local revenue sources** - local governments use a variety of strategies to raise transportation funds, including property taxes, sales taxes, vehicle registration fees, and utility taxes.

### Traditional Financing Methods

- **Pay-as-you-go financing** - state and local transportation agencies accumulate funds to fully pay for projects, based on annual proceeds from federal and state sources (noted above). When adequate funding authority is accumulated to pay for the project, then the project can proceed into construction.

During final development of the Interstate Highway System, the growth in fuel tax revenues used to fund highway construction projects did not keep pace with the growth in needs, as the National Highway System aged and the



nation's economy and population grew. As a result, federal, state, and local transportation agencies have been struggling to keep up with the rapid growth in costs associated with rehabilitating, replacing, and expanding the nation's highway system. Given the reluctance of elected officials to raise fuel tax rates commensurate with the growth in highway infrastructure needs and the drop in fuel tax revenue growth due to improving vehicle fuel efficiency, transportation officials at all levels of government have begun to use alternative sources of funding to help keep pace with increasing highway system needs and escalating highway project costs.

Over the past fifteen years, succeeding versions of federal surface transportation authorization legislation have granted state and local transportation agencies increasing flexibility and freedom to apply new financing approaches, including alternative funding sources and financing strategies. In addition, the legislation has permitted innovation in the way highway projects are delivered and processed through various demonstration and pilot programs, and subsequent mainstreaming of these experimental programs. Examples of this include the use of design-build project delivery and streamlining of the environmental clearance process.

Among the innovative funding and financing approaches authorized by the federal government on an trial or mainstreamed basis, several are described below.

### Innovative Funding Sources

- **Toll revenues (direct user charges)** - toll fees charged to users of the facility. Used by independent toll authorities and toll agencies to fund their facilities on a dedicated basis, including operations and maintenance, preservation, debt service associated with revenue bonds, and capital improvements. Until passage of the Transportation Equity Act for the Twenty-First Century (TEA-21) in 1997, federal funds were prohibited from being used to convert untolled interstate highways to toll facilities.
- **Joint development** - coordinated project development activities involving private developers, transit agencies, railroads, and local communities. Applications include constructing related facilities on the same or adjacent rights-of-way, such as parking facilities, multi-modal facilities, intermodal facilities, and air rights development over highway facilities.
- **Developer contributions** - contributions of right-of-way, technical support, and/or cash by private developers to expedite highway projects desired by the developers.
- **Special assessment districts** - special fees or taxes applied to businesses and/or residents in a specified area to pay for highway development or expansion serving those businesses and/or communities.
- **Tax increment financing** - value capture approach whereby a portion of future increases in property taxes (generated in a specified area that can be directly attributed to the facility) are used to pay for project costs over time.
- **Local impact fees** - impact fees collected from developers by local governments to help pay for transportation and other public works requirements resulting directly from the new development, including schools, fire, and police facilities. These are typically applied as a per-unit or ad valorem charge when the development units are sold.
- **Specialized funding sources** - revenues earned from such specialized sources as advertising, naming rights (facility branding), and utility access fees (electric transmission lines, fiber optic cables, microwave towers, and cell towers) along highway corridors.



### Innovative Financing Methods

- **Revenue bonds** - tax-exempt bonds issued to pay for capital projects such as new construction, expansion, rehabilitation, or replacement, whereby accrued interest and principal payments are covered by revenues collected from users of the facility (as in a typical toll facility).
- **Municipal/public bonds** - tax-exempt bonds sold to investors and backed by the full faith and credit of the issuing governmental unit and paid from its general or special tax revenues. This includes general obligation bonds, limited or special tax bonds, and hybrid (general tax and revenue-backed) bonds.
- **Anticipation notes**- these are bonds issued with the expectation that they will be paid off with anticipated bond, tax, or revenue proceeds. A special case includes grant anticipation notes or revenue bonds (GARVEE bonds), which are backed by expected future year grants from the Federal Highway Trust Fund. These have already been used by the CDOT as part of the T-REX financing plan.
- **Private bonds** - these are bonds issued by private or public corporations to pay for the up-front costs of capital projects. Private bonds are not eligible for federal tax exemption, unlike private activity bonds issued for wastewater, multifamily, redevelopment, and waste management facilities.
- **Loan and credit support** - direct federal loans, loan guarantees, and credit enhancements are provided by several special federal programs, authorized by recent federal highway funding legislation. These include the following three programs:
  - US DOT's Transportation Infrastructure Finance and Innovation Act (TIFIA) Program - which leverages available federal resources by lowering the cost of borrowing up to a third of the cost of large projects (over \$100 million total project cost).
  - Section 129 of Title 23 U.S.C. - which is another federal loan and credit support program aimed at lowering the borrowing costs associated with loans to toll projects.
  - FRA's Railroad Rehabilitation and Improvement Financing (RRIF) Program - which provides credit enhancement for railroad capital improvement projects that involve intermodal or rail equipment and/or facilities.
- **State Infrastructure Banks (SIBs)** - revolving fund that provides loans and credit assistance to either public or private sponsors of Title 23 highway capital projects or Title 49 transit capital projects. Credit enhancement features of SIBs includes loan guarantees, standby lines of credit, letters of credit, certificates of participation, debt service reserve funds, and bond insurance. Colorado is one of 38 states with an authorized SIB. In recent years since the latest reauthorization legislation (TEA-21), SIBs have not received additional federal funding. However, they can continue to use the federal funds already provided under earlier legislation, as well as state and local funds that are added to the SIB account.

### Recent Innovations in Project Delivery Mechanisms

In addition to developing innovative funding and financing strategies, surface transportation agencies and companies have adopted innovative project delivery mechanisms on a case-by-case basis to further leverage available public funding. Under the traditional project delivery process, project design is performed by the transportation agency or an engineering firm secured through a qualifications-based negotiated-bid process, while construction is performed by a construction contractor secured through a subsequent competitive low-bid



process. This approach is referred to as Design-Bid-Build (DBB) contracting. Innovative project delivery mechanisms seek to reduce the duration and/or cost of project development, while maintaining or improving product quality through the application of streamlined processes and the latest products and techniques. Several of these mechanisms are described below.

### Innovative Project Delivery Mechanisms

- **Design-Build (DB) Contracting** - this approach combines project design and construction into a single contract, whereby the contract team is responsible for both developing and executing the project plans. This approach reduces project contracting time, promotes greater integration of design and construction responsibilities, and increases contract team accountability for project quality, schedule, and cost.
- **Design-Build-Operate-Maintain (DBOM) Contracting** - this approach extends the design-build contracting approach by enabling the contract team to bid on both the development/delivery of the project and its subsequent operation/maintenance functions. This approach holds the contract team accountable for project compliance with performance-based specifications over the term of the contract. These are also known as “turn key” contracts, in the sense that a single contract team develops, delivers, and operates the project on behalf of the project owner/sponsor.
- **Design-Build-Operate-Maintain-Finance (DBOM-F) Contracting** - in this variation of the prior two project delivery approaches, the contractor not only develops and delivers the project, but also arranges for project financing either directly or through a third party. This approach is used for large-scale projects where available funding sources are not sufficient to fully fund initial start-up costs, but are sufficient to provide the necessary funding over the service life of the project.

### Other Innovative Approaches

- **Public-Private Partnerships** - increasingly, public owners/sponsors of public use transportation infrastructure are seeking partners to share the costs and benefits of needed improvements or additions to transportation infrastructure. This can take the form of public-private partnerships, whereby several stakeholders take responsibility for project funding, development, and/or delivery in order to leverage limited public resources. This approach is particularly useful when project sponsors proactively indicate their interest in having the project built expeditiously and are willing to bear some of the financial responsibility. Examples of partnership sponsors include land developers, retail centers, amusement parks, railroads, port authorities, toll authorities, engineering firms, and local communities.
- **Public-Public Partnerships** - partnerships that include several public entities as project co-sponsors, such as toll authorities, port authorities, community development agencies, and local communities. The sharing of financial responsibilities among multiple public entities is the latest initiative for leveraging available public funds for transportation projects. This arrangement breaks down traditional barriers between institutional competitors, such as transportation departments and their toll authority counterparts, due to the potential for expediting needed projects. In some cases, the advantages of public-public partnerships has resulted in the consolidation of the functions of the public partners. Examples include the establishment of toll entities within state departments of transportation, such as in Colorado, Texas, Oklahoma, and Florida.



## Case Studies

Recently, there have been a number of major transportation projects sponsored by combinations of stakeholders, including highway departments, railroads, transit agencies, toll authorities, and the development community. Six of these projects are listed below:

- Alameda Corridor
- Chicago “CREATE” Rail Upgrade
- Denver T-REX Transportation Corridor Expansion
- Reno ReTRAC Rail Access Corridor
- Spokane “Bridging the Valley” Rail Upgrade
- Texas SH 130 Toll Highway

Each of these projects is summarized on the following pages at Tables 8-2 thru 8-7. These projects share a number of characteristics that positioned them for innovative finance and delivery approaches, including:

- Large size and scope that would take an inordinate amount of time to accumulate adequate funding by the traditional “pay-as-you-go” approach;
- High priority in terms of congestion relief and environmental mitigation;
- Clearly defined major stakeholders with complementary interests in the project;
- Willingness of sponsoring agencies and partners to equitably share project costs, risks, and returns;
- Sufficient funding sources to pay for the project over time and financing mechanisms to permit project development to proceed in an expedited manner; and
- Use of innovative project delivery approaches to better manage project development costs and timing.

These six mega-projects represent the kinds of innovative approaches being used to leverage scarce resources and expedite important transportation projects. These include using public-private partnerships to balance the risks and funding responsibilities of private and public sector sponsors, commensurate with the relative benefits each group expects to receive from the project; applying the design-build approach to project delivery to assure project completion within budget and schedule requirements; and using innovative financing strategies that combine grant, bond, and in-kind funding resources. Through these innovative approaches, project sponsors will be able to realize the benefits of these endeavors much sooner and at lower life-cycle costs than using traditional approaches. Table 8-8 provides a summary of the six case studies.



**Alameda Corridor**

The Alameda Corridor is a 20-mile long multimodal transportation corridor that links the Ports of Los Angeles and Long Beach to the downtown Los Angeles rail yard. These two ports ship and receive thousands of containers for export and import, respectively. Much of the container traffic consists of manufactured goods from Pacific Rim countries destined for markets across the United States. Prior to the project, the rail lines through this corridor were at grade, which meant there were hundreds of roadway crossings that posed operational conflicts between automobiles, trucks, and railroads. This caused significant traffic delays for both roadway and railroad vehicles, as well as resultant air pollution caused by the idling of cars, trucks, and train engines.

The Alameda Corridor project brought together the two major railroads serving the ports, including BNSF and UP, with state and local transportation and planning organizations to devise an arrangement to address these problems. The resulting \$2.4 billion project included excavating a 20-mile open trench into which 90-miles of railroad lines were consolidated. This provided an unobstructed, dedicated rail corridor for the participating railroads to use in accessing the two ports. It also eliminated more than 200 railroad grade crossings, which reduced vehicle idling time and cut auto/truck emissions by 54% and locomotive emissions by 28%.

The Alameda Corridor opened to traffic in 2002 and is operated by the Transportation Corridor Authority, a quasi-public entity which was created to allow the project to issue tax-exempt bonds. Funding for the \$2.4 billion project was in the form of public sector grants and revenue bonds supported by freight railroad tolls applied to each twenty-foot equivalent container unit (TEU) moved through the corridor. Table 8-2 lists the funding program for the project.

**Table 8-2 Alameda Corridor Funding and Financing Program**

<b>GRANTS</b>		
■ Ports of L.A. and Long Beach .....	\$394 M	16%
■ Metropolitan Transportation Authority.....	\$347 M	14%
■ Interest Income and Other State and Federal Sources .....	\$130 M	5%
<b>BORROWING</b>		
■ Senior Taxable Revenue Bonds .....	\$500 M	21%
■ Senior Tax Exempt Revenue Bonds .....	\$494 M	20%
■ TIFIA Loan .....	\$400 M	16%
■ Subordinate Revenue Bonded Debt .....	\$167 M	7%
<b>TOTAL</b>	<b>\$2,432 M</b>	

The Alameda Corridor funding program used public sector grants for 35% of project costs, and private sector tolls for 65% of project costs. This public-private partnership arrangement, which included a design-build project delivery approach, enabled the project to proceed in an expedited manner and be completed achieved within budget and schedule.



**Chicago “CREATE” Rail Upgrade**

The Chicago Region Environmental and Transportation Efficiency (CREATE) project is a proposed \$1.5 billion effort to upgrade and consolidate five key rail corridors in northeastern Illinois. CREATE is intended to improve passenger rail service and reduce motorist delays while achieving economic, environmental, and energy benefits. The project will build 25 highway/rail grade separations and six rail/rail flyovers, replace tracks and switches in the affected corridors, and install improved train control systems. A major beneficiary will be METRA, the Chicago-area commuter rail system.

CREATE is still in the formative stages of development and its funding program has not yet been finalized. An initial breakdown of public and private funding responsibilities for the project is shown in Table 8-3. The CREATE project is planned as a public-private partnership, with funding provided by public and private partners commensurate with the benefits received by each group. As yet, the public sector commitment of funds is not yet determined, in part due to the delay in getting federal surface transportation reauthorization legislation approved by Congress and signed by the President. In the meantime, an analysis of public and private benefits indicated that the project would generate almost \$4 billion in benefits, with 95% public benefits and 5% private (railroad) benefits.

Pending the outcome of the debate over federal transportation legislation, the railroads have committed to a funding ceiling equal to the estimated level of private sector benefits to the railroads (\$212 million). Since the total project cost is expected to be \$1.5 billion, this means that the railroads have committed to an amount that represents 14% of the project cost. Hence, it is expected that public sector funds from federal, state, and local sources (including \$20 million from METRA) will cover the remaining \$1.3 billion for the project.

**Table 8-3 Chicago Rail Upgrade Project (CREATE) Funding and Financing Program**

<b>BENEFITS</b>		
■ Public benefits .....	\$3.9 B	95%
■ Private benefits .....	\$212 M	5%
<b>SOURCES OF FUNDS</b>		
■ Private railroads .....	\$212 M	14%
■ METRA .....	\$20 M	1%
■ Federal surface transportation Reauthorization legislation .....	TBD	
■ City & State contribution from programs like “Illinois First” .....	Remainder	
<b>TOTAL</b>	<b>\$1,500 M</b>	



### Denver T-REX Transportation Corridor Expansion

The Denver metropolitan area has its own multimodal transportation expansion project, dubbed T-REX, for Transportation Corridor Expansion. This \$1.7 billion mega-project will upgrade highway facilities and create a light rail transit (LRT) line, linking downtown Denver with the Tech Center to the southeast along Interstates I-25 and I-225. The highway portion of the project will add lanes, and reconstruct/widen bridges and interchanges along I-25 and I-225. The LRT line will be 19 miles in length and have 13 stations. Highway and transit portions each represent about half of the project costs.

Funding for this mega-project comes from federal, state, and local sources, with the federal government picking up about two-thirds of the total project costs. The two federal transportation agencies providing funding include the Federal Highway Administration and the Federal Transit Administration. State and local funding sources include sales and use tax revenues. The funding program for T-REX is shown in Table 8-4.

**Table 8-4 Denver T-REX Funding and Financing Program**

■ Federal Transit Administration		
Full Funding Grant Agreement .....	\$525 M	31%
■ Federal Highway Grant Anticipation		
Revenue Vehicles (GARVEEs).....	\$600 M	36%
■ Transit Sales Tax Grant Anticipation		
Notes (GANs) .....	\$324 M	19%
■ Sales and Use Tax Revenues .....	\$195 M	12%
■ Local Funds .....	\$30 M	2%
<b>TOTAL</b>	<b>\$1,674 M</b>	

Of the \$1.7 billion project cost, \$900 million is coming from the use of grant anticipation instruments (GARVEEs and GANs). These have enabled project sponsors to tap future federal highway and transit funds and transit sales tax revenues for funding project development. Combining these funding and financing innovations with a design-build project delivery approach will enable the sponsors of T-REX to complete this multimodal improvement project far ahead of when it could have been done using traditional “pay-as-you-go” approaches.



**Reno ReTRAC Rail Access Corridor**

The Reno Transportation Rail Access Corridor (ReTRAC) project calls for building a 2.3-mile depressed rail corridor through the downtown area of Reno, Nevada. This \$264 dollar project is similar to but smaller than the Alameda Corridor project that was described earlier. It will place two UP mainlines and an access road in the proposed trench, thereby replacing ten at-grade crossings with bridges across the trench. Major project sponsors include federal and state transportation agencies, the City of Reno, the UP Railroad, and the gaming-related businesses in downtown Reno. The proposed funding program for the project is shown in Table 8-5.

**Table 8-5 Reno ReTRAC Funding and Financing Program**

■ Sales Tax.....	\$120 M	45%
■ Railroad ROW and Lease.....	\$87 M	33%
■ Special Assessment District Fees .....	\$21 M	8%
■ Federal & State Transportation Funds .....	\$21 M	8%
■ 1% Room Tax.....	\$13 M	5%
■ <u>Interest Income .....</u>	<u>\$2 M</u>	<u>1%</u>
TOTAL	\$264 M	

The ReTRAC funding program envisions the use of both railroad and local dedicated revenues as the major sources of project funding. Dedicated project revenues will include lease income from railroad use of the depressed corridor, downtown special assessment district taxes, hotel room tax increment, and local sales tax increment. Project financing instruments will include municipal bonds and loans/credit support from the TIFIA program.





**Texas SH 130 Toll Highway**

One of the largest transportation infrastructure projects undertaken in the country in recent years is the \$3.6 billion Texas State Highway (SH) 130 toll road. This project involves the construction of 65 miles of tolled highways to provide by-pass accessibility around the eastern side of Austin, Texas. It is one of the earliest segments of the 4,000 mile Trans Texas Corridor program that is proposed to provide multimodal corridors that link all major metropolitan areas across Texas, including international freight hubs within the State. Originally scheduled for opening after 2025, the use of innovative financing and innovative project delivery mechanisms will enable to the State to open the project to traffic in 2007.

The project funding program for the Texas SH 130 Toll Highway, as its name implies, will rely extensively though not exclusively on toll-supported revenue bonds. This is shown in the project funding program summary in Table 8-7. As this funding and financing program indicates, the project relies on a combination of toll-supported revenue bonds, federal transportation grant anticipation notes (TIFIA), State grants, and third-party (developer) contributions in the form of rights-of-way along the project corridor.

According to the funding plan, tolls will pay for 60% of the project cost, with Texas Department of Transportation funds contributing 20% of the project cost and third-party land contributions amounting to 15% of the project cost. The remaining 5% will come from a variety of sources. This innovative financing arrangement enabled the sponsoring agency, the Texas Turnpike Authority (part of Texas DOT) to assemble the necessary funding to expedite project delivery by twenty years.

**Table 8-7 Texas SH 130 Highway Funding and Financing Program**

■ Bond Proceeds .....	\$1,217 M	34%
■ Bond Anticipation Notes Proceeds .....	\$911 M	25%
■ TxDOT Equity Contribution .....	\$700 M	20%
■ 3 <sup>rd</sup> Party Right of Way Contribution.....	\$526 M	15%
■ Interest Earnings .....	\$199 M	6%
■ TIFIA Loan Proceeds .....	\$17 M	<1%
■ Developer Note .....	\$10 M	<1%
■ <u>Accrued Interest .....</u>	<u>\$6 M</u>	<u>&lt;1%</u>
<b>TOTAL</b>	<b>\$3,586 M</b>	



TABLE 8-8 Summary of Case Study Funding and Financing Programs

Characteristics	Project Name					
	Alameda Corridor	Chicago CREATE Rail Upgrade	Denver I-REX Transportation Corridor Expansion	Reno ReTRAC Rail Access Corridor	Spokane "Bridging the Valley" Rail Upgrade	Texas SR 130 Toll Highway
Location	Southern California	Chicago Metropolitan Area	Denver Metropolitan Area	Downtown Reno	Spokane Metropolitan Area	Austin Metropolitan Area
Sponsor	Transportation Corridor Authority	Illinois DOT, Chicago DOT, Metra, and 6 Railroads	Colorado DOT and Denver Regional Transportation District	City of Reno	Spokane Regional Transportation Council	Texas Turnpike Authority - Texas Department of Transportation
Type	Depressed Railroad Cargo Expressway	Urban Railroad System Rationalization	Highway Corridor Expansion and Transit Corridor (LRT) Extension	Depressed Railroad Corridor	Upgrade Railroad Corridor through Consolidation	Toll Highway By-Pass
Size	20 Rail Miles	Upgrade 6 railroad corridors, 25 highway/rail grade crossings, 6 rail/rail flyovers, track/switch replacement, and train control systems	25-mile Highway corridor expansion/19-mile LRT extension	2.3 Rail Miles	42 Rail Miles	65 Road Miles
Cost	\$2.4 Billion	\$1.5 Billion	\$1.7 Billion (53% Highway - 47% LRT)	\$0.3 Billion	\$0.3 Billion	\$3.6 Billion
Opening	2003	TBD	2006	2006	2009	2007
Project Delivery Approach	Design-Build	TBD	Design-Build	Design-Build	TBD	Design-Build
Funding Sources	Railroad Tolls - 65%	Public Funds - 85%	Federal Highway Funds - 36%	City General Revenues - 1%	Federal Railroad Relocation Funds - TBD	Highway Tolls - 65%
	Ports of LA and Long Beach Funds - 16%	Railroad Benefits and Costs - 14%	Federal Transit Funds - 31%	Federal and State Transportation Funds - 8%	Washington State Freight Mobility Strategic Investment Board - 16%	Private ROW - 15%
	Metropolitan Transportation Authority Funds - 14%	Metra - 1%	Local Transit Sales Tax - 19%	UP Railroad ROW and Leases - 33%	BNSF and UP Railroads Remainder TBD	TxDOT Funds - 20%
	State/Federal Funds - 5%		Local Sales and Use Tax - 12%	Downtown District Tax, Hotel Room Tax, and Local Sales Tax - 58%		
			Local Funds - 2%			
Financing Strategies	Toll Revenue Bonds - Taxable - 21%	TBD	GARVEE Bonds (grant anticipation notes) Highway - 36%	Municipal Bonds - 37%	None foreseen	Toll Revenue Bonds - 34%
	Toll Revenue Bonds - Tax-Exempt - 27%		GARVEE Bonds - Transit - 19%	TIFIA Loan - 28%		Bond Anticipation Notes - 25%
	TIFIA Loan - 16%					TIFIA Loan - 1%



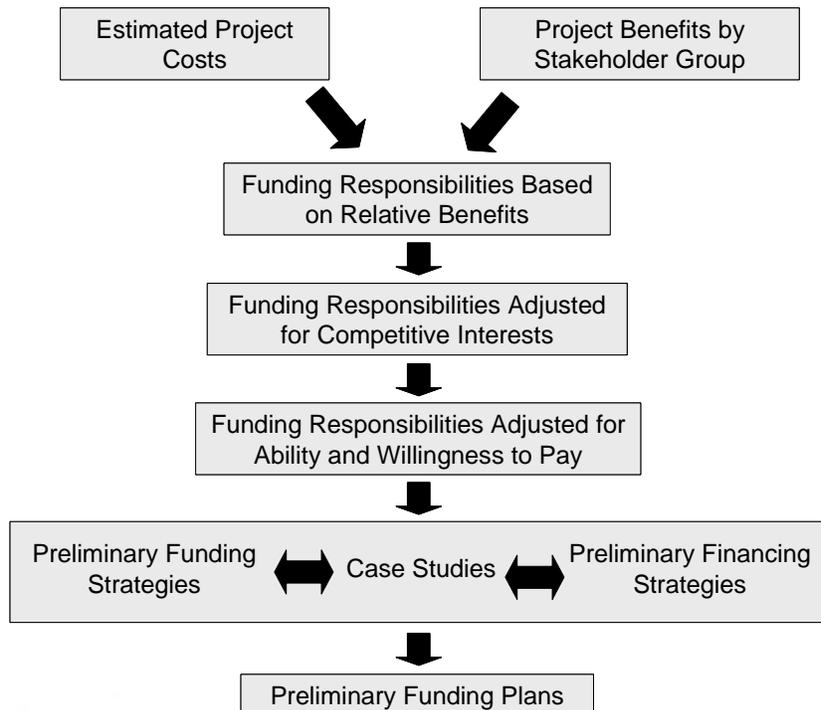
## Distribution of Project Benefits and Potential Support

Project funding/financing programs establish the funding responsibilities of project sponsors and the means to obtain these funding resources in a timely and cost-effective manner. As shown by the prior six case studies, each project has unique features that influence the source, level, and nature of funding that can be assembled for the project. Feature variables that characterize the funding and financing approaches for these projects include:

- Overall cost of the project
- Timing of when project costs are incurred
- Number of project beneficiaries
- Relative benefits major stakeholders expect to receive over the service life of the resulting transportation infrastructure
- Competitive interests expressed by project beneficiaries/stakeholder
- Willingness and ability of beneficiaries to provide funding for the project
- Timing of project funding contributions by each sponsor
- Ability to leverage project funding sources with public grant monies or user fees
- Availability of financing mechanisms to lower the costs of debt incurred to expedite the project

Each of these variables will affect whether and how the proposed Project is paid for. Figure 8-1 below illustrates how these factors could be integrated in the development of preliminary funding and financial strategies for the Project.

Figure 8-1 Project Funding and Financing Assessment Process





**Project Funding Needs**

To determine what funding and financing strategies might be appropriate for the Project the first step was to determine the extent of the Project’s funding needs. This was established in Tech Memo 4. According to the latest estimates, the Project is expected to cost \$1.2 billion in 2004 dollars. This represents the total costs of Project development, including design, land acquisition, and construction. For the purposes of this preliminary study and to reflect the potential that actual project costs may vary from the estimated amount, low and high Project cost levels were established by decreasing the expected Project cost (midrange capital cost scenario) by 10% for the low capital cost scenario and increasing the expected Project cost by 30% for the high capital cost scenario. This produced a range of Project costs of \$1.1 billion to \$1.5 billion.

It was assumed that the Project will be developed over the four-year timeframe 2006 through 2009, with operations starting in 2010. Thus project funding must provide the following cash flows during project development for each scenario, as shown below in Table 8-9.

**Table 8-9 Project Capital Costs by Capital Cost Scenario and Year  
(2004 dollars in millions)**

<b>Year</b>	<b>Low Scenario</b>	<b>Midrange Scenario</b>	<b>High Scenario</b>
<b>2006</b>	\$267	\$297	\$386
<b>2007</b>	\$267	\$297	\$386
<b>2008</b>	\$267	\$297	\$386
<b>2009</b>	\$267	\$297	\$386
<b>Total</b>	\$1,069	\$1,188	\$1,544

**Project Rationale**

Securing funding commitments for a project of this magnitude will require potential sponsors to understand that the project can be supported from a benefits perspective, relative to their individual and collective interests. Given the current economic conditions, there is intense competition for available funding resources in both the public and private sectors. Therefore, the Project needs to generate a high level of benefits relative to costs to gain funding commitments from potential sponsors in both public and private sectors.

As noted in the introduction, both direct and indirect benefits are considered in this technical memorandum to account for the local and regional impacts of the Project and demonstrate its rationale from both a public and private perspective. Therefore, for the purpose of determining the Project benefit-cost ratio and allocating Project funding responsibilities, Project benefits include the sum of:

- Projected salary income from the net increase in jobs created directly and indirectly by the Project (including Project impacts on employment construction); and
- Direct taxes as a result of increased economic activity attributed to the Project, such as severance tax revenues on the mining and shipment of additional western Colorado coal.



As noted earlier, these two additional factors are counted as public benefits in this technical memorandum since they benefit the citizens of Colorado. This produces a more thorough accounting of Project impacts on local businesses and the citizens of Colorado. When taken together, the net present value of these indirect benefits amounts to \$3.4 billion. By including salaries and severance tax revenues, total Project benefits have a net present value of \$5.6 billion for the midrange scenario. There is a similar increase effect on the total benefits projected for the pessimistic and optimistic scenarios.

Based on these results, a strong case can be made for the Project. As shown in Table 8-10 below, under the midrange scenario (which includes the midrange estimates for both the project benefits and costs), the Project is expected to generate \$5.2 billion in total benefits through year 2030, compared to its estimated cost of \$1.2 billion. This represents a benefit-cost ratio of 4.3, indicating that total benefits are expected to be over four times the total cost of the Project. The benefit-cost ratio (the ratio of Project benefits divided by Project costs) indicates the extent to which Project benefits exceed Project costs.

Table 8-10 Summary of Project Benefit-Cost Ratios by Scenario

Project Totals	Pessimistic Scenario	Midrange Scenario	Optimistic Scenario
Total Benefits (NPV \$ mil)	\$2,349	\$5,165	\$16,335
Total Costs (2004 \$ mil)	\$1,544	\$1,188	\$1,069
Cost-Benefit Ratio	1.5	4.3	15.3

For the purposes of the funding assessment, the pessimistic scenario uses the low estimate of Project benefits and the high estimate of Project costs to determine the ratio of Project benefits and costs. Table 8-10 indicates that the benefit-cost ratio for the pessimistic scenario is 1.5, indicating that under the most pessimistic assumptions Project benefits are still expected to be one and a half times the Project costs.

The optimistic scenario uses the high estimates of Project benefits and the low estimates of Project costs to determine the ratio of Project benefits and costs. Table 8-10 shows a benefit-cost ratio of 15.3 for the optimistic scenario, indicating that under the most optimistic assumptions Project benefits could be over fifteen times the Project costs. While the optimistic scenario is unlikely, it demonstrates the potential the Project has for benefiting key stakeholder groups in Colorado.

As shown in Table 8-10, the Project is expected to produce monetized benefits that are substantially more than the costs of the Project. The resulting benefit-cost ratios would be even higher if the various qualitative impacts of the Project were included in the calculation of the benefit-cost ratios. However, since these impacts are difficult to quantify, they are included as further rationale for the Project. Table 8-11 summarizes the projected qualitative impacts of the Project. The contents of this table suggest that the Project will likely generate significant public-interest benefits to the State, especially relating to the quality of life and economic attractiveness of the State, visual attractiveness along the Front Range, and protection of freight movements in the State from possible security threats.



Table 8-11 Projected Qualitative Impacts of the Railroad Project

Type of Impact	Scale*			Discription of Potential Impacts
	Front Range	Eastern Colorado	Western Colorado	
Emergency Vehicle Delay	1	-1	0	Removal of delays in Front Range decreasing response time; potential to increase response times in small Eastern Colorado towns. Improvements in communication technology will help negate some of the impacts of delay.
Trucking Operations	2	0	0	Increased economic activity and increased mileage to intermodal facilities will increase the demand and revenues to trucking operations. Quantitative calculation of impacts is not available due to the uncertainty of the potential for economic development and the location of the BNSF intermodal yard.
Highway Maintenance	-1	0	0	Dollar value cannot be calculated due to uncertainties in impacts to trucking industry. Greater demand will increase maintenance needs.
Pedestrian/Train Accidents	1	0	0	The reduction in the number of coal trains in the heavily populated, pedestrian-oriented Front Range area will reduce the potential for this type of accident; an increase in potential for this type of accident in Eastern Colorado is minimal due to the relatively small level of population living near the proposed rail line.
Terrorism Risk	2	0	0	Creates a redundant route should a terrorist attack occur in the Denver area and close access to the urban core. This assumes Denver is at greater risk of being a target than Eastern Colorado due to population and business densities; removes some coal trains that could be used as carriers for explosives out of the populated Front Range.
Hazardous Materials Transport	1	-1	0	Redundant route in the event of a hazardous materials spill; less populated route through which to transport hazmat lowers exposure risk. Exposure risk is lowered for individuals on the Front Range, but increased for those in Eastern Colorado.
Environmental Impacts	0	-1	0	The level of impact to the environment in Eastern Colorado is considered relatively low. However an environmental impact statement has not been conducted and this could change. Some animals, plants, wetlands, environmental justice sensitive areas, and a historic site could <i>potentially</i> be impacted.
Noise and Vibration	0	-1	0	Could be some noise and vibration disturbances in Eastern Colorado, but due to uncertainties about the exact location of rail line relative to existing development the level of impact is unclear.
Air Quality Impacts	0	-1	0	May be some additional pollutants emitted from locomotives, but air quality is currently not an issue in Eastern Colorado. The Eastern region's airshed has the capacity to hold more pollutants without noticeable effects.
Visual Benefits	2	0	0	Reduction of coal trains and relocation of intermodal yards will improve the visual appearance of Front Range communities, including clearer/less obstructed views of the mountains. There will likely be negligible impacts in Eastern Colorado, but unclear due to the uncertainty of the location of the rail line, this cannot be assured.
Quality of Life	2	2	2	Several aspects of improvements in all areas including increase in number of jobs, increased economic activity, reduction of pollutants, improved community cohesion, and improved transportation accessibility and mobility. All of these factors translate into a stronger competitive image for the State of Colorado for both home ownership and business location decisions.
<b>*Scale of Impacts</b>				
Very Negative			-2	
Somewhat Negative			-1	
Neutral/No Impact			0	
Somewhat Postive			1	
Very Postive			2	



### Distribution of Project Benefits by Major Stakeholder Sector

Having demonstrated that the benefits of the Project will likely significantly exceed its costs, the next step was to determine whether there was likely to be sufficient support for the Project among both public and private sector stakeholders. For the purposes of this study, project support was initially determined based on the relative benefits estimated to be received by the major stakeholders of the Project. For the purposes of this technical memorandum, total Project benefits were broken down into two categories: private sector and public sector. The following list presents the composition of primary stakeholders for each sector. These represent the groups most likely to support the Project.

- **Private Sector Stakeholders:**
  - Railroad Industry
  - Coal Industry
  - Economic Development
  - Grain Industry
- **Public Sector Stakeholders:**
  - General Public
  - Public Transit

Table 8-12 shows the distribution of Project benefits arrayed by private and public sectors for the three Project scenarios. This is based on the initial estimates of total Project benefits shown earlier in Table 8-1.

**Table 8-12 Summary of Total Project Benefits by Sector**  
(net present value in \$ millions)

<b>Sector</b>	<b>Pessimistic Scenario</b>	<b>Midrange Scenario</b>	<b>Optimistic Scenario</b>
Private Benefits	\$721	\$1,378	\$3,723
Public Benefits	\$1,628	\$3,787	\$12,612
<b>Total Benefits</b>	<b>\$2,349</b>	<b>\$5,165</b>	<b>\$16,335</b>

### Project Funding and Financing Strategies

This section discusses potential funding and financing strategies that sponsors of the Project might consider as the Project moves forward towards development. The funding and financing strategies discussed might be used to provide the necessary funds to move the Project to completion in a timely manner. For the purposes of this study, a menu approach is used to identify and portray the various funding and financing strategies that can be tapped for projects of this size and type, and to explore the implications of these various strategies.

#### Possible Project Funding Strategies

Table 8-15 lists the menu of possible funding sources, the major stakeholder group(s) which might use them, and their potential advantages and disadvantages for projects such as this. In reviewing these funding strategies, an important consideration is the form in which the funding might be provided. For many large projects that require extensive amounts of land for rights-of-way, private sector sponsors offer to donate land that they own or have options on as an in-kind contribution to a project. This can significantly lower the cost of a project while not requiring the private sector sponsor to come up with a cash contribution. In the Texas SH 130 Toll by-pass project, private land donations amounted to \$526 million, or 15% of the total project cost of \$3.6 billion. This went a long way in helping other sponsors commit to the project and define their levels of funding participation.



Table 8-15 Menu of Possible Funding Strategies

Funding Source Options	Potential Sources	Advantages	Disadvantages
<b>Federal Railroad Program Funds</b> <ul style="list-style-type: none"> <li>Proposed Rail Relocation Grant (RRG) Program</li> <li>Rail Rehabilitation and Improvement Fund (RRIF) Program</li> </ul>	<ul style="list-style-type: none"> <li>Federal Government - Federal Railroad Administration</li> </ul>	<ul style="list-style-type: none"> <li>RRG is a proposed grant program that would be dedicated to railroad relocation projects like this.</li> </ul>	<ul style="list-style-type: none"> <li>Proposed RRG program not yet authorized by Congress - may be dropped by sponsors in current budget debate.</li> <li>This Project not eligible for RRIF Program funds.</li> </ul>
<b>Federal Highway Trust Funds</b> <ul style="list-style-type: none"> <li>Earmarks</li> <li>Grants</li> <li>Pilot projects</li> <li>Capital program</li> <li>Renewal program</li> <li>Congestion/emission reduction (CMAQ) program</li> <li>State Infrastructure Bank (SIB) program</li> </ul>	<ul style="list-style-type: none"> <li>Federal Government - Federal Highway Administration</li> </ul>	<ul style="list-style-type: none"> <li>Large highway-focused program with some discretion for intermodal projects and projects that reduce congestion and emissions in non-attainment areas.</li> </ul>	<ul style="list-style-type: none"> <li>Major competition for available funds with needs far exceeding available funding.</li> <li>Focused on highway uses - not railroad relocations except where highway facilities are directly impacted (grade separations/crossings).</li> <li>SIBs have not received additional federal funding since 1997.</li> </ul>
<b>State Transportation Program Funds</b> <ul style="list-style-type: none"> <li>Program funds</li> <li>Project funds</li> </ul>	<ul style="list-style-type: none"> <li>State Government - Colorado Department of Transportation (CDOT)</li> </ul>	<ul style="list-style-type: none"> <li>Potentially large pool of transportation-related funds.</li> <li>CDOT has wide latitude in using excess sales tax revenues for various transportation-related purposes, when available, as provided by Senate Bill 1.</li> </ul>	<ul style="list-style-type: none"> <li>High competition for available funds.</li> <li>State highway funds are limited to use on State Highway System by policy and legislation.</li> <li>Economic conditions since 2002 have reduced Senate Bill 1 proceeds to zero.</li> </ul>
<b>Regional Transportation Program Funds</b> <ul style="list-style-type: none"> <li>New Starts Program funds for commuter rail initiatives</li> <li>FasTracks Program funds</li> </ul>	<ul style="list-style-type: none"> <li>Regional Transit Agency - Regional Transit District (RTD)</li> </ul>	<ul style="list-style-type: none"> <li>Local pool of transportation-related funds.</li> <li>Might be eligible for FasTracks funds if program approved by voters this November.</li> </ul>	<ul style="list-style-type: none"> <li>High competition for available funds.</li> </ul>



Table 8-15 Menu of Possible Funding Strategies (continued)

Funding Source Options	Potential Sources	Advantages	Disadvantages
<b>Local Transportation Funds</b> <ul style="list-style-type: none"> <li>State transportation funds allocation</li> <li>General funds</li> <li>Regional Transportation District funds</li> </ul>	<ul style="list-style-type: none"> <li>Local Government                             <ul style="list-style-type: none"> <li>Cities</li> <li>Counties</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Local pool of transportation-related funds</li> </ul>	<ul style="list-style-type: none"> <li>High competition for available funds. May be limited to use on State and local highways and roads.</li> <li>Legislation to permit formation of regional transportation districts still being debated by the State Legislature.</li> </ul>
<b>State Taxes</b> <ul style="list-style-type: none"> <li>Sales tax revenues,</li> <li>Incremental sales tax revenues above 6% growth rate</li> </ul>	<ul style="list-style-type: none"> <li>State Government</li> </ul>	<ul style="list-style-type: none"> <li>Large Statewide pool of general funds that applies to both residents and visitors.</li> <li>Significant revenue potential when State's economic conditions are favorable.</li> <li>High discretion for using incremental sales tax revenues for transportation purposes, when available.</li> </ul>	<ul style="list-style-type: none"> <li>High competition for State sales tax receipts.</li> <li>Funds generally committed to other uses.</li> <li>Revenues subject to economic conditions which can vary significantly.</li> </ul>
<b>Local Taxes</b> <ul style="list-style-type: none"> <li>Sales tax</li> <li>Property tax increment</li> <li>Special assessment district</li> </ul>	<ul style="list-style-type: none"> <li>Local Government</li> </ul>	<ul style="list-style-type: none"> <li>Wide variety of funding instruments possible (e.g., E-470 funding program)</li> </ul>	<ul style="list-style-type: none"> <li>Limited State and local budgets create high competition for limited funds.</li> <li>Current political environment nationwide makes tax increases highly unlikely.</li> </ul>
<b>Private Company Contributions</b> <ul style="list-style-type: none"> <li>Money</li> <li>Right-of-way</li> <li>In-kind services</li> </ul>	<ul style="list-style-type: none"> <li>Railroads</li> <li>Coal Companies</li> <li>Development Community</li> </ul>	<ul style="list-style-type: none"> <li>Access to capital markets and internal funds for projects that offer high competitive returns.</li> <li>Private sector players need to realize benefits commensurate with their contributions.</li> </ul>	<ul style="list-style-type: none"> <li>High competition for available funds.</li> <li>Project must produce a higher rate of return than typical for the public sector.</li> </ul>



Table 8-15 Menu of Possible Funding Strategies (continued)

Funding Source Options	Potential Sources	Advantages	Disadvantages
<b>Joint Development</b> <ul style="list-style-type: none"> <li>• Public-private partnership</li> </ul>	<ul style="list-style-type: none"> <li>• Development Community, Railroads</li> <li>• State Government</li> <li>• Local Government</li> </ul>	<ul style="list-style-type: none"> <li>• Significant opportunity to leverage scarce resources by combining public and private resources and interests. Major emphasis by leadership of US DOT and FHWA.</li> </ul>	<ul style="list-style-type: none"> <li>• Requires careful balancing of project risks, returns, and responsibilities among project partners. Potential loss of control over public assets by the public sector.</li> </ul>
<b>User Fees</b> <ul style="list-style-type: none"> <li>• Tolls</li> <li>• Shadow tolls</li> <li>• Access fees</li> </ul>	<ul style="list-style-type: none"> <li>• Railroads, Development Community</li> <li>• State Government</li> </ul>	<ul style="list-style-type: none"> <li>• Provides direct linkage between the users of the facility and its funding.</li> <li>• Provides a long-term cash flow stream to support bond financing methods.</li> <li>• Colorado has favorable legislation for development of tolled highways.</li> <li>• One option is for the private sector to pay for the construction costs and then be reimbursed by the public sector through use-based shadow tolls. This would encourage greater use of the relocated facilities by the private sector, which would increase the level of benefits produced over time.</li> </ul>	<ul style="list-style-type: none"> <li>• Uncertainty over user willingness to pay the fees and the level of utilization of the facility when user fees are applied or adjusted over time.</li> </ul>
<b>Other Sources</b> <ul style="list-style-type: none"> <li>• Utility easements</li> <li>• Right-of-way sale</li> <li>• Land development</li> <li>• Trackage rights</li> </ul>	<ul style="list-style-type: none"> <li>• Utility Companies                             <ul style="list-style-type: none"> <li>- Power</li> <li>- Pipeline</li> <li>- Cable/Phone</li> </ul> </li> <li>• Developers</li> <li>• Regional or Shortline Railroads</li> </ul>	<ul style="list-style-type: none"> <li>• Additional sources of funding to augment primary funding sources.</li> </ul>	<ul style="list-style-type: none"> <li>• Revenue levels may be limited by scope of project.</li> <li>• Right-of-way likely to be owned by private railroads, who would likely determine its concurrent use.</li> </ul>



Another issue that may affect the type and level of funding by stakeholder group is who will own the facility when completed. In this case, the new rail lines and terminals built as a result of the Project could be:

- Owned by the railroads on an individual basis;
- Jointly owned by the two major railroad stakeholders, particularly for new shared-access lines;
- Jointly owned by the principle public funding agency and the railroads; or
- Owned outright by the principle public funding agency(s).

Given the private-sector nature of the Class 1 railroads, it is unlikely that the public sector will own the new or improved rail facilities. That leaves the issue of joint ownership between the railroads to be sorted out. If either the UP or the BNSF were to implement any portion of the Project, the implementing railroad should receive the appropriate “credit” for that expenditure during the development of the Project funding and financing plan.

For projects such as this, sponsors should consider several funding sources to spread funding responsibilities and risks over the broadest group of project beneficiaries, thereby leveraging what scarce resources might be available from any one source. When combining funding sources, the resulting funding program should be tailored to take into consideration the financial capabilities and constraints of each participant, as well as the timing in which such funding resources could be made available to the project. This last point is why Project sponsors might consider financing strategies that relate the timing of project spending with the availability of sponsor funds. Potential financing strategies to accomplish this are discussed in the following section.

### Possible Project Financing Strategies

The costs of major infrastructure facilities are incurred in the initial years of the facility life-cycle. These are the costs of plan development, right-of-way acquisition, utility clearance, environmental mitigation, and construction and inspection. All of these costs are incurred before the project can be opened and represent the largest component of the life-cycle costs for large infrastructure facilities. Given the up-front nature of these costs, project sponsors are confronted with the challenge of accumulating adequate project funding prior to beginning the project, or employing financing strategies to borrow the necessary funds up front and then pay back the debt service (including principle, debt origination, and interest costs) over a specified period of time and rate of return to the lending parties. The former approach is the traditional method that has been used by state transportation agencies over the past five decades to fund most highway projects under the Federal-Aid Highway Program. It is called the “pay-as-you-go” method of project financing. While this method avoids debt service payments, it limits sponsor agencies to those projects that could be fully paid for up front. As a result, many necessary projects, including mega-projects, have been deferred up to thirty years until the necessary funding could be accumulated from the annual distribution of Federal Highway Trust Fund monies.

Recognizing that such projects could be advanced at lower life-cycle costs by borrowing against future federal funding allocations in order to more quickly gain the mobility and economic benefits of the projects, Congress authorized the Federal Highway Administration in the late 1990s to allow state transportation agencies to issue grant anticipation notes/bonds. These Grant Anticipation Revenue Vehicles (GARVEEs) permit state transportation agencies to use future federal highway funding for needed project by borrowing the money and using the future allocations to pay the principle and interest associated with these notes/bonds. The use of GARVEEs depends on the willingness of the state transportation agency to use this innovative form of project financing, and the legal capability of the state to issue such debt. In Colorado, GARVEEs were used to help finance the T-REX mega-project, as noted earlier.



Financing strategies are usually used to help project sponsors afford large projects, where most of the costs are in the early years of the project, by enabling them to pay for the project over period of years. This can take the form of a construction loan that is paid off over the period of project development. Alternatively, project debt financing can also take the form of long-term bonds that are paid off over many years, usually up to 25 years. In both cases, the timing of principal and interest payments can be allowed to vary. This is particularly true for new toll facilities, where the ability to service the debt gradually increases over time as facility usage grows. During this initial ramp-up period, the financing program is structured to defer or lower debt service payments in the early years of the project.

Table 8-16 lists various financing strategies that sponsors consider to help finance project and lower the costs of borrowing. It also lists the potential sources of financial assistance, and the advantages and disadvantages of each respective strategy. There are many financing strategies and structures to select from to match the cash flow needs of a project. The choice of financing strategies depends on the sponsors willingness and ability to issue debt, to obtain a favorable rating for the debt instruments to be used, and to match the cash flow requirements of the project at minimum life-cycle costs.

No matter how sophisticated and innovative the financing strategy and structure, the ultimate test of financial feasibility is the ability of the project to develop the funding resources needed to fully cover the debt service payments over the term of the financing, including principal, debt origination, and interest costs. These related costs of financing are discussed in the next section.

### Cost Implications of Debt Financing

Debt financing is used to match project expenditures with the availability of sponsor funds. Bonds are a frequently used financing method in both the private and public sectors. Bonds are somewhat similar to a home mortgage, in that the lending institution is repaid the original principal amount borrowed, as well the cost of issuing the bonds at a stated rate of return on the bonds. An advantage of bond financing for public sector entities is the tax-exempt status of public-issue bonds at the federal, state, and local levels. Since bond holders are not taxed on their earnings, lower interest rates are required to sell tax-exempt bonds, thereby resulting in lower cost of debt repayment over the life of the bond. Several possible options for project financing when both public and private sector sponsors are involved are listed below:

- **No Financing**- Total project cost is funded on a pay-as-you-go basis out of cash reserves from both private and public sector sponsors.
- **Private Financing of the Public Share** - Public sector portion of the project cost is financed by private-issue, taxable debt which is repaid by public sector sponsors over the 20-year term of the financing. Private sector also finances its portion of the Project cost using taxable debt.
- **Public Financing of the Private Share Financing**- Private sector portion of the project cost is financed by public-issue, tax-exempt debt which is repaid by private sector sponsors over the 20-year term of the financing. Public sector also finances its portion of the Project cost using tax-exempt debt.
- **Public and Private Financing**- Project cost is financed by both public-issue, tax-exempt debt and private-issue, taxable debt, commensurate with the allocation of funding responsibilities among public and private sector sponsors of the Project. The debt issuances are repaid by the public and private sector sponsors over the 20-year terms of the financing.



Table 8-16 Menu of Possible Financing Strategies

Financing Options	Sources	Advantages	Disadvantages
<b>Direct Project Grants or Contributions</b> <ul style="list-style-type: none"> <li>Funds</li> <li>Rights-of-way</li> <li>In-kind services</li> </ul>	<ul style="list-style-type: none"> <li>Public Sector                             <ul style="list-style-type: none"> <li>US DOT                                     <ul style="list-style-type: none"> <li>FHWA</li> <li>FTA</li> <li>FRA</li> </ul> </li> <li>CDOT</li> <li>State Infrastructure Bank (SIB)</li> <li>RTD</li> </ul> </li> <li>Private Sector                             <ul style="list-style-type: none"> <li>State and local governments</li> <li>Railroads</li> <li>Coal companies</li> <li>Developers</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Avoids costs of debt and need to pursue voter approval due to Colorado Taxpayer Bill of Rights (TABOR) Law requirements.</li> <li>Provides funds up front when project capital costs are highest.</li> </ul>	<ul style="list-style-type: none"> <li>None - except for scarcity of these kinds of funds, particularly in times of economic distress.</li> <li>SIBs have not received additional federal funding since 1997.</li> </ul>
<b>Revenue Bonds</b>	<ul style="list-style-type: none"> <li>Public Infrastructure Finance Markets</li> </ul>	<ul style="list-style-type: none"> <li>Allows funds to be made available up front to pay for capital costs of project and then paid off over time.</li> </ul>	<ul style="list-style-type: none"> <li>Needs defined user-fee or other direct revenue source, which is unlikely for this Project.</li> <li>Costs of debt service over term of bonds.</li> </ul>
<b>State Bonds</b>	<ul style="list-style-type: none"> <li>State Government                             <ul style="list-style-type: none"> <li>CDOT</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>High credit rating of State due to lower risk of default.</li> </ul>	<ul style="list-style-type: none"> <li>Tabor Law requiring voter approval of referendum authorized by legislative action to allow State to incur debt represents significant roadblock to State support of debt for the Project.</li> </ul>
<b>Municipal Bonds</b>	<ul style="list-style-type: none"> <li>Local Government                             <ul style="list-style-type: none"> <li>Cities</li> <li>Counties</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Ability to issue tax-exempt bonds at relatively low rates.</li> </ul>	<ul style="list-style-type: none"> <li>Reluctance or inability of local jurisdictions to incur debt for railroad infrastructure.</li> </ul>
<b>Private Bonds</b>	<ul style="list-style-type: none"> <li>Companies</li> </ul>	<ul style="list-style-type: none"> <li>Uses credit-worthiness of corporate entity to gain access to private bond markets for financing up-front project costs.</li> </ul>	<ul style="list-style-type: none"> <li>Typically taxable debt, which significantly raises the cost of borrowing for the project.</li> </ul>



Table 8-16 Menu of Possible Financing Strategies (continued)

Financing Options	Sources	Advantages	Disadvantages
<b>Private Activity Bonds (PABs)</b>	<ul style="list-style-type: none"> <li>Financial Markets                             <ul style="list-style-type: none"> <li>- Railroads</li> <li>- Developers</li> <li>- Other private companies</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Tax exempt bonds for private investment in public use transportation infrastructure with favorable rates to sponsor entity.</li> <li>Currently available for intercity passenger rail infrastructure.</li> </ul>	<ul style="list-style-type: none"> <li>Federal permission for transportation-related PABs contingent on Reauthorization legislation now being developed by Congress.</li> <li>PAB limitation to public use infrastructure may limit use for private railroad facilities.</li> </ul>
<b>Anticipation Notes</b>	<ul style="list-style-type: none"> <li>FHWA                             <ul style="list-style-type: none"> <li>- GARVEES</li> <li>- State Infrastructure Bank (SIB)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Expedites the availability of Federal and State funds for needed projects.</li> </ul>	<ul style="list-style-type: none"> <li>Commits State to pledge future Federal highway program funds until GARVEE is paid off, including debt service.</li> <li>Not a direct source of funding.</li> <li>SIBs have not received additional federal funding since 1997.</li> </ul>
<b>Loan and Credit Support</b>	<ul style="list-style-type: none"> <li>FHWA                             <ul style="list-style-type: none"> <li>- TIFIA Program</li> <li>- Railroad Rehabilitation-Improvement Financing Program</li> <li>- State Infrastructure Bank (SIB)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Leverages available Federal resources by lowering the cost of borrowing up to a third of the cost of large projects (over \$100 million).</li> <li>RRIF Program lowers cost of debt by providing credit enhancement for railroad capital improvement projects that involve intermodal or rail equipment or facilities</li> </ul>	<ul style="list-style-type: none"> <li>NO down side, except where the sponsors cannot incur debt for the project.</li> <li>Not a direct source of funding.</li> <li>SIBs have not received additional federal funding since 1997.</li> </ul>



While bonds represent an expedient way to fund a project in a timely manner, there is a cost of issuing bonds (as is the case for any external financing method that involves the borrowing of funds). This can be as high as one and a half times the cost of the project. While the cost of debt financing may seem high, the effect is similar to the debt service costs of mortgages used by millions of Americans to enable them to purchase homes without waiting until they have accumulated the necessary cash to buy the home outright. As Americans have found over the years, a mortgage not only allows them to get into the home earlier and start enjoying its benefits when they need it the most (for raising a family), it is also a major hedge against the rising costs of housing over time. Similarly, the use of debt financing for transportation infrastructure projects expedites the flow of facility benefits while allowing sponsors to hedge against future increases in project development costs (such as the current spike in the costs of structural steel and rebar, which are critical components of highway and bridge facilities).

## Conclusions

This technical memorandum has shown that the Project offers significant benefits to both public and private sector stakeholders to warrant moving forward along the development process. The challenge will be to translate these benefits from support to ultimate sponsorship so that the Project can be funded. Accomplishing this will require accommodating the interests and concerns of all parties in crafting a project solution whose success can be best measured by the willingness of primary stakeholder groups to commit the necessary resources to complete the project.

The analysis of Project stakeholder benefits, interests, and capabilities suggests that the major stakeholder groups for the Project include: the railroad industry, coal industry, economic development community, and grain industry on the private sector side and the general public/governments and regional transit agencies on the public sector side. These results are further supported by the qualitative benefits projected as a result of the Project. The distribution of Project benefits for these respective groups produces a wide distribution of support levels by group. This provides significant flexibility to establish Project support levels in the future, as the Project development process evolves.

The case studies of similar mega-projects demonstrate that a wide variety of traditional and innovative funding and financing arrangements is available to expeditiously move these kinds of projects from concept to construction. These six mega-projects represent the kinds of innovative approaches being used to leverage scarce resources and expedite important transportation projects. These include using public-private partnerships to balance the risks and funding responsibilities of private and public sector sponsors, commensurate with the relative benefits each group expects to receive from the project; applying the design-build approach to project delivery to assure project completion within budget and schedule requirements; and using innovative financing strategies that combine grant, bond, and in-kind funding resources. While debt financing approaches raise the total costs of projects over their service life, project sponsors are able to realize the benefits of these endeavors much sooner and potentially at lower life-cycle costs than using traditional approaches.

At this stage of Project consideration, it is too early to develop actual funding/financing combinations for the Project. This should be done when Project sponsors have indicated their level of interest and the underlying estimates of Project costs and benefits have been analyzed in more detail. At that point, Project sponsors might consider one or more of the funding sources and financing strategies noted earlier for crafting an adequate financial plan for the Project. Should the Project development process proceed, the Project funding and financing plan should be tailored to take into consideration the capabilities, constraints, and interests of each potential Project sponsor.



As this process evolves, changes in the economic outlook for the nation, the region, and the State will likely play key roles in determining whether the Project can attain the needed support to move forward into design and construction. The projected long-term benefits suggest that when evaluating whether to proceed with further development of the Project, careful consideration be given to the potential role the Project could play in:

- Promoting Colorado's economic vitality;
- Providing greater mobility and accessibility for both freight and passenger travel in the State;
- Improving air quality along the Front Range;
- Reserving Colorado's quality of life for its citizens; and
- Enhancing the State's competitive position within the region.