

**Innovative Approaches to Improved Intermodal Transportation
Infrastructure Funding and Financing through Public-Private
Partnerships: A Denver Case Study**

by

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ABSTRACT

For many years, cities and states in the U.S. have been facing a shortage of funding for transportation infrastructure. Increasingly, public entities are turning to the private sector for help with building, financing, or operating major transportation projects. Until recently, most of the transportation public-private partnerships (PPPs or P3s) in the U.S. have been toll roads or bridge projects. The purpose of this research is to examine the recent use of transit public-private partnerships (PPPs or P3s) in the Denver Regional Transportation District's (RTD) FasTracks program, a 2004 voter-approved \$4.7 billion transit expansion program. After a shortfall in funding, RTD partnered with several private consortia to enable the FasTracks program to move forward. We identified five transit PPPs in the FasTracks program with varying levels of private sector participation: Eagle P-3 commuter rail; Denver Union Station redevelopment; U.S. 36 bus rapid transit; I-225 light rail; and North Metro commuter rail. Using in-depth interviews with key stakeholders and policymakers in the Denver region, we seek to identify the degree to which the P3s in Denver have been successful and could serve as a model for transit infrastructure expansion in other metropolitan regions in the U.S.

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INTRODUCTION

Cities across the United States are grappling with a looming transportation crisis as a result of ever-increasing passenger and freight transport demands and overburdened networks of aging infrastructure. All levels of government, but particularly state and local governments, need to develop innovative funding and financing mechanisms to maintain and enhance transportation infrastructure. Public-private partnerships (PPPs or P3s) have increasingly been utilized in a number of cases to help address ongoing shortfalls in public infrastructure funding, and to accelerate project build-out.

This research analyzes the increasingly important role of PPPs in transit infrastructure provision in the Denver, Colorado, metropolitan region. It examines five PPP projects in the Regional Transportation District (RTD) voter-approved FasTracks program: Eagle P3 commuter rail; Denver Union Station redevelopment; U.S. 36 bus rapid transit; I-225 light rail; and North Metro commuter rail. Each of these transit projects has employed some form of a public-private partnership to facilitate RTD's transit expansion, and we discuss the nature of each P3 agreement.

Using in-depth interviews and surveys with key stakeholders and decision-makers, we analyze the financial and social benefits of the projects for the public and private partners as well as the Denver community at large. We examine the impact of P3s on regional collaboration and the delivery of public information. We also discuss the benefits and shortcomings of using the P3 delivery method and the extent to which Denver's use of PPPs can serve as a model for other transit agencies seeking alternative procurement methods.

We found Denver's five PPP projects were rated favorably by nearly all the respondents. Denver Union Station in particular has exceeded expectations in several areas. The most important benefits of utilizing a P3 delivery model were accelerated delivery of a project and appropriate allocation of risk. The main shortcoming that we identified was that P3s can be complex and opaque, especially to the general public. Overall, we found that the Denver P3s can serve as a useful model for other transit agencies seeking to expand their transit infrastructure. We recommend that agencies seeking to follow Denver's P3 example invest in specialized legal and financial expertise to ensure the inclusion of appropriate safeguards for project quality and to protect the public interest, and that agencies should do so in a way that fully integrates P3s within existing structures of regional collaboration.

OBJECTIVE

This research study examines the nature of public-private partnerships (PPPs) that have been established to facilitate construction and operation of several transit projects in the Denver metropolitan area. Public-private partnerships have become more widely utilized in recent years throughout the U.S. as a way to expand transportation infrastructure. This research seeks to identify the degree to which transit public-private partnerships in Denver have been successful or not, and whether they could serve as models for other agencies and local jurisdictions seeking to expand transit infrastructure.

SCOPE

The Denver Regional Transportation District (RTD) has entered into agreements with several private sector consortiums to design, build, finance, operate, and/or maintain certain projects that were designated as part of the FasTracks transit expansion plan approved by metropolitan area voters in 2004. This study includes an evaluation of five PPP projects as follows: Eagle P-3 (composed of the East Rail Line to Denver International Airport, the Gold Line to Arvada and Wheat Ridge, and the Northwest Rail Line to Westminster); Denver Union Station; US 36 Bus Rapid Transit to Boulder (in partnership with the Colorado Department of Transportation); the I-225 Rail Line through Aurora; and the North Metro Rail Line to Thornton.

The study focuses on whether the financing of rail transportation is being met through new types of PPPs, the success of these projects, and the use of Denver as a model for transit PPPs around the country. This research does not include discussion of detailed contractual or financial components of these P3 agreements.

METHODOLOGY

This research utilized multiple methods to accomplish the principal objectives of the study. First, we conducted a desktop analysis of transportation and transit public-private partnerships in the U.S. Second, we conducted a survey and a sample of face-to-face interviews with twenty strategic actors and policymakers in Denver to elicit their views on the structure and nature of the transit PPPs in the region. We conducted the survey face-to-face to control its dissemination and preserve the quality of the data. Interviewees were identified through personal knowledge and snowball sampling. We sought to gather a variety of perspectives in our interviews, with responses from members of the business community, local, state, and federal government, community and advocacy groups, transit agency representatives, and private contractors.

We input the survey responses into survey analysis software called Qualtrics. We used this software to analyze the survey data and generate summary statistics for the close-ended survey questions. The survey used a Likert-type scale for close-ended questions, and the survey also included several open-ended questions. We reported the descriptive statistics, such as mean, maximum, and minimum values on a Likert scale, and the percentage of responses for each choice. We also audio recorded, transcribed, and coded the interview responses to identify common themes. Our methods and the survey were approved by the University of Denver's Institutional Research Board.

LITERATURE REVIEW

1. Transport PPPs in the U.S.

Public-private partnerships (PPPs) have been used widely throughout the world to deliver many types of infrastructure. The United States (U.S.) has lagged behind the international community in its use of PPPs. Nevertheless PPPs are becoming increasingly popular in the U.S. as a tool for leveraging funds by cash-strapped state and local transportation agencies. Between 1989 and 2011, 81% of transportation public-private partnerships in the U.S. were for highways, bridges, and tunnels, and only 19% of transport PPPs were for rail transit projects (Istrate and Puentes, 2011). Most of the transit PPP research has focused on international transit projects (for a review of international light rail P3¹ projects, see Mandri-Perrott, 2009). The list of transit P3s in the U.S. is small but growing (see a summary of U.S. transit P3s in Thomas, 2014), and more transit and transportation agencies are interested in pursuing them to expand their transit infrastructure. Papajohn et al. (p. 127, 2011) found that of the 32 U.S. states that responded to their survey, 25 had either experienced, were currently adopting or had plans to implement transportation PPPs in the future, while only 7 stated they do not plan to pursue them. With the increasing interest in utilizing the private sector in transit infrastructure delivery, more research is needed on the implementation of transit-specific P3 projects in the U.S, especially long-term concessions (i.e., those typically covering 20 or more years) that include a financing element.²

PPPs are defined in different ways by different entities. Typically, PPPs are comprised of a consortium of private sector firms, which is under a contract with a public authority to deliver and/or finance the infrastructure in question. The definition that most applies to transit PPPs discussed in this paper is from the U.S. Department of Transportation (USDOT). The USDOT defines PPPs as a form of procurement. According to the USDOT's 2004 Report to Congress on Public-Private Partnerships (cited in FHWA, 2007), "a public-private partnership is a contractual agreement formed between public and private sector partners, which allows more private sector participation than is traditional. The agreements usually involve a government agency contracting with a private company to renovate, construct, operate, maintain, and/or manage a facility or system." Private sector financing does not

¹ We use the terms PPPs and P3s interchangeably throughout the report but we are referring to the same thing.

² DBOM and DBFO(M) contracts, as described in this section, typically include an operating and maintenance agreement of 25 years or more according to USDOT (2004). O'Steen and Jenkins further describe DBOM contracts as averaging between 15-25 years and DBFO averaging about 20 years, with some as long as 50 years (for example the U.S. 36 toll lane project discussed here).

have to be included as a component of the PPP, but innovative financing has become more prevalent in recent years. This research project looks at financing in particular as a component of PPPs in Denver.

PPPs can take several forms and the most common in transit procurement are: design-build (DB) and design-build-operate-maintain (DBOM) (Thomas, 2014). In the U.S., design-build contracts made up 62% of the total transport PPPs from 1989-2011, and DB is also the most common for highway projects (Thomas, 2014). These are considered “alternative methods” of project delivery because they differ significantly from the more traditional design-bid-build method of contracting (Thomas, 2014). In a design-bid-build project, the public agency has more control over the design of the infrastructure. The agency either designs it themselves or contracts out the design according to their precise specifications, and then companies bid on the construction of that project. In the DB and DBOM models, the public agency develops certain performance specifications for the project, and the detailed design is left up to the private groups who bid for it. This allows more flexibility for the private sector to utilize efficiencies and develop innovative ways ideally to decrease the cost of the project. DBOM then adds operations and maintenance responsibilities to the contract, which is usually for a longer-term of 15 or more years. One advantage of including operate and maintain (O&M) in the PPP is to incentivize the private sector to produce a high quality project because it will also be paying for the operating and maintenance costs over time. The Hudson-Bergen light rail system in NJ is an example of the DBOM model.

Financing can also be added to these alternative delivery methods whereby the private sector brings in equity or takes on some of the debt burden of the project. The public entity will use revenue generated from the project (usually farebox or toll revenue) to pay the private sector or issue availability payments over the course of the O&M period. A full design-build-finance-operate-maintain or DBFOM delivery method can further transfer financial risk to the private sector as well as generate life-cycle cost savings (Thomas, 2014). The Denver Eagle P3 project is the first full transit DBFOM in the U.S. The Maryland Purple Line is being modeled after the Eagle P3 project and is in the early stages of development.

The benefits of using P3s to procure new transportation infrastructure have been identified in several research articles and federal publications. P3s are expected to deliver projects faster and at a lower price than traditional methods (see next section) (FHWA, 2007). The on-budget on-time expectation was tested by the National Audit Office of the U.K. (NAO, 2003), which found that only 24% of PPP projects were delivered late compared to 70% of projects delivered by traditional methods. The NAO (2003) study also found that budgets were exceeded in 22% of PPPs versus 73% of traditional procurements.

Increased innovation and expertise from the private sector in the construction and operation phases is another benefit of PPPs. Proponents argue that innovation leads to a better quality product at a lower cost (Thomas, 2014 p. 6; Papajohn et al., 2011, p. 130-131). PPPs can also stretch limited capital funds of an agency by allowing it to finance a project over a longer period of time, as well as utilize private financing and capital to build more transportation infrastructure than through public financing alone. P3s also have the potential to allocate appropriately some risks to the private sector (FHWA, 2007). Interestingly, Papajohn, et al. (2011) found in their survey that 57% of U.S. states implemented PPPs because of financing reasons, while 21% used PPPs for cost-saving reasons. None of the states identified risk transfer as the reason for setting up a PPP. Measuring and quantifying these benefits is not always easy, and the extent to which a state or agency realizes these benefits is project-specific.

There are also potential drawbacks to consider when it comes to choosing to conduct a transportation project as a P3. The initial costs at the bidding stage and other transaction costs are much higher for a P3 because of the need to hire experts in P3 contracts (Valila, 2005; Vining et al., 2005). Critics of P3s also have concerns about the loss of public accountability when the private sector takes over the operation of a public asset (Siemiatycki, 2006; Forrer et al., 2010). Some people are concerned that profit maximization will come at the expense of the public good. Siemiatycki (2006) analyzed the Canadian Richmond-Airport-Vancouver (RAV) urban rail line PPP and found that it did not deliver on expected benefits such as limiting cost escalations and producing technological innovation. P3s are not a viable alternative of infrastructure delivery in all cases; a cost-benefit analysis should be conducted to assess the viability of a project to be conducted as a P3 (Reinhardt and Utt, 2012).

Much of the research on transport PPPs comes from the evaluation of international projects (e.g. Transport Reviews 2015 special issue on PPPs, Banister, 2016). Previous research on transport PPPs in the U.S. has focused mainly on toll roads and highway infrastructure (e.g. van der Hilst, 2012), which is where the majority of P3 funds are spent (Istrate and Puentes, 2011). These studies, however, are somewhat applicable to transit PPPs because the contracts are often modeled after toll road PPP contracts, according to our interviews. Papajohn et al. (2011) stated that innovative financing is usually involved in P3s. According to our research, the experts tended to agree that a “full P3” has to include financing, and DB contracts are becoming the standard procurement method. More research is needed on transit-specific P3 projects in the U.S., especially those that include financing. Notably, the new generation of transit P3s need to be assessed in the context of historical approaches to financing infrastructure in the U.S., to which we now turn.

2. Financing Urban and Regional Infrastructure in the U.S.

In the U.S. context, private sector involvement in financing urban infrastructural provision is not new, but the funding sources and institutional arrangements supporting urban infrastructural projects involving PPPs have evolved substantially over the past 100 years or more (Jonas and McCarthy, 2010). Since at least the early nineteenth century, cities and states have raised capital for major infrastructure projects (e.g. canals, roads, railroads, water and sewerage extensions, transit systems, etc.) by issuing long-term municipal and revenue bonds.³ Municipal bonds are issued against the general revenue of a municipality and accrue tax benefits for the private bondholder. Revenue bonds – which today are much more widely used in infrastructure projects – are funded from dedicated revenues from the project or service in question (e.g. user fees and fares). Municipal and revenue bonds are effectively legal instruments that establish close and binding relationships between public and private sector interests over the lifetime of a bond issue (up to 30 years in many cases).

Besides bond financing, public authorities in many U.S. states and cities have also turned to other mechanisms for funding infrastructure, including Tax Increment Financing (TIF) and Transit Oriented Development (TOD) districts. TIF and TOD districts are typical of the new generation of public-private infrastructure finance arrangements, which are funded and administered by special purpose districts operating at a distance from municipal and county government. Most infrastructure PPPs involve private sector firms operating under a service contract to a special purpose district, such as a regional transportation district. In addition to raising capital and issuing debt from the sale of municipal or revenue bonds, PPPs increasingly leverage funds from secondary markets such as global equities. It is in this context that P3s have emerged as significant players in the landscape of infrastructure delivery within the U.S. and also on a global scale.⁴

A P3 involves a contract between a public authority, such as a regional transportation district, and a single private entity -- the ‘concessionaire’ -- which is usually a consortium of private companies responsible for all aspects of the design, construction, financing and delivery of the infrastructure project in question (i.e., the DBFOM model described above). A key

³ Much of the capital invested in U.S. infrastructure during the nineteenth century was raised by financial institutions based in the United Kingdom. During the twentieth century, however, cities were able to lobby for federal and state legislative reforms that made it easier for capital to be raised in U.S. financial markets. Sbragia (1996) argues that local governments’ increasing ability to circumvent federal and state restrictions on debt issuance was a major contributory factor. The tax-exempt status of interest on municipal bonds has been a further incentive for private investment in public infrastructure in the U.S..

⁴ For case studies of mass rail transit PPPs in different countries, see Mandri-Perrott (2009).

criterion for private-sector involvement in financing a P3 is the opportunity to accrue relatively risk-free returns on investment equity over the medium-to-long term. The private team invests its own money through borrowing or equity and assumes much of the risk associated with a project. This allows the public entity to spread the extra costs of major infrastructural investments over the lifetime of the project, thereby releasing funds for current service demands. The public entity can impose conditions on the concessionaire in respect of the future ownership, distribution and control of any project-related assets. Crucially, P3s provide regional transportation districts with an alternative means of raising capital for long-term investment projects especially in situations where traditional sources of funding are not sufficient, the costs of a project escalate, or existing models of project operation, management and delivery encounter difficulties. A case-in-point is the financing of regional mass transit infrastructure in Denver, to which we now turn.

3. Infrastructure Delivery and the Crisis of Regional Collaboration in Metro Denver
Over the past two decades or so, the Denver Metro region has successfully fostered institutions of regional collaboration to drive forward major regional infrastructure and economic development projects (Jonas, Goetz and Bhattacharjee, 2014). A specific case-in-point is regional mass transit. In November 2004, voters in the Denver-Aurora and Boulder metropolitan areas approved a 0.4% increase in the regional sales tax to support the FasTracks rail transit program, which promised to add 122 miles of light and commuter rail transit to Denver's existing 35-mile light rail system. FasTracks would expand rail transit into six new corridors, including a new link to Denver International Airport, extend three existing corridor lines, complete a bus rapid transit line to Boulder, and refurbish Denver Union Station into a multimodal transportation hub for intercity and regional rail and bus service. At an initial cost of \$4.7 billion, the FasTracks project was at the time one of the largest urban rail transit construction programs in the U.S..

One of the major challenges faced by RTD while implementing this massive program was to increase the regional sales tax by 0.4%. The activation of mechanisms of regional collaboration was a necessary condition for obtaining public support for the sales tax initiative. The RTD had already secured the backing of regional business groups and local political leaders working with the Metro Mayors Caucus (MMC). Established by the Denver Chamber of Commerce in 1993, the MMC is a political institution designed to facilitate regional collaboration outside of the arguably more confrontational public arenas of municipal, county and state politics. Specifically, the MMC brings together the 39 mayors of the Denver region and other powerful regional organizations, such as the Metro Denver Chamber of Commerce and the Denver Regional Council of Governments (DRCOG).

Throughout the 1990s and early 2000s, the MMC helped to broker major regional deals around land use planning, smart growth and economic development.

When it was approved by 57.2% of the voters in November 2004, the FasTracks regional sales tax vote was the latest of several notable successes attributed to regional collaboration in Denver (Katz and Bradley 2013). However, delays in construction soon led to an increase in the costs of the FasTracks project. Between 2003 and 2008, construction material costs rose much faster than RTD had predicted. Moreover, in the wake of the global financial crisis of 2007-8 and its effect on the regional economy in Denver, sales tax revenues were not as large as originally projected and public authorities faced difficulties raising capital from traditional sources. In 2012, the *RTD 2011 Annual Report to DRCOG on FasTracks* estimated that \$7.4 billion would be required to complete the entire FasTracks project, which was \$2.7 billion more than the initial RTD cost estimate back in 2004 (RTD, 2012: 25).

The crisis of collective provision deepened and the RTD soon entertained the idea of shortening some of the new rail lines proposed for FasTracks. The exceptions were the East and West lines, which were already included in a funding bid submitted to the Federal Transit Administration (FTA). Risking the ire of public officials and voters in jurisdictions not included in corridors earmarked for federal funding, RTD tried to resolve the crisis by increasing the construction time of corridor extensions to 2034 and proposing a further sales tax hike. Despite receiving support from the MMC, the RTD Board rejected proposals to place an additional sales tax measure on the ballot in three consecutive years from 2010 to 2012.

It became clear that relying solely upon the prevailing mechanisms of regional collaboration was not sufficient for resolving the chronic infrastructural challenges confronting the Denver region. Specifically, costs associated with completing the remaining FasTracks transit corridors had escalated, from US\$4.4 billion in 2004 to \$7.8 billion in 2012. As regional officials looked to the federal government to cover the growing gap in the regional funding of collective provision, it was clear that further measures were required.

In 2007, the FTA had launched its Public Private Partnership Pilot Program (Penta P) to encourage transit agencies to explore how P3s could reduce risk on federally funded projects. Denver RTD was one of three agencies selected for the program, and the only one that continued with it. In May of 2011, the FTA awarded a \$1.03 billion full-funded grant to the RTD for the completion of three major corridors in the FasTracks system. A key factor in the FTA's decision was the RTD's commitment to creating a new public-private partnership to deliver the project in a timely and cost effective fashion. In awarding the money to Denver,

the head of the FTA, Peter Rogoff, praised the RTD’s plans as a “model of private-sector involvement in transportation” (cited in Lieb, 2011). The creation of a P3 having access to non-traditional sources of capital was a centerpiece of the RTD’s plan.

4. Making a P3: The Eagle P3 Project

An example of a new generation P3, the Eagle P3 project in Denver is described as “an innovative financing and project delivery method in which a public entity partners with the private sector on a public infrastructure project” (RTD, 2015a). Central to the Eagle P3 project is the delivery and completion of three key components of the FasTracks project (see Table 1), namely, the East Rail Line and the Gold Line (which together comprise the main East-West extension) and the first segment of the Northwest Rail Line, along with the Commuter Rail Maintenance Facility (a site for storing and maintaining the commuter rail vehicles that serve parts of the FasTracks system). These lines are significant because they connect downtown Denver to major edge urban developments, including Stapleton and Denver International Airport (DIA), as well as the cities of Aurora, Arvada, Wheat Ridge and South Westminster (Figure 1). They are integral to ongoing regional efforts to retrofit mass transit to the new metropolitan geography of urban development, to promote smart growth, and to encourage transit-oriented developments throughout the Denver region.

Corridor name	Distance (miles)	Corridor description	Local jurisdictions and major developments served
East Rail Line	22.8	Electric commuter rail linking Denver Union Station and Denver International Airport (DIA)	City/County of Denver, downtown Denver, DIA
Gold Line	11.2	Electric commuter rail linking Denver Union Station and Wheat Ridge	City/County of Denver, Adams County, Arvada, Wheat Ridge
Northwest Line (first segment only)	6.2	Electric commuter rail linking Denver Union Station and Westminster	City/County of Denver, Westminster

Table 1: Major transit corridors covered by the Eagle P3 PPP project (Source: RTD, 2015c)



Figure 1: Map of rail corridor extensions covered by the Eagle P3 project (source: DTP, 2015).

The Eagle P3 Project is described as a “Design, Build, Finance, Operation and Maintenance (DBFOM) project” (FasTracks 2015c), meaning it involves all stages from project construction to financing and maintenance. Some \$2.2 billion in capital has been committed to the project, which is comprised of \$1.03 billion in grant funding from the Federal Transit Administration (FTA), regional sales tax bonds, and private equity of at least \$450 million raised by the private consortium, Denver Transit Partners [DTP] (see Table 2; RTD FasTracks, 2015a, 2015c). The RTD makes payments to the private partners over the lifetime of the project whilst retaining ownership of all assets relating to the FasTracks system. Phase 1 of the project began in August 2010. The remaining construction phase of the project (Phase 2) is scheduled for completion in 2016. DTP (the private consortium) will continue to operate the project thereafter and for the remainder of its contracted lifetime of 29 years.

Funding source	Amount (\$US millions)
Regional: RTD funds including bonds raised against regional sales tax revenue	684
Federal: Federal Transit Administration Grant	1,030
Global: private equities and revenue bonds	486
Total investment in Eagle P3 project	2,200

Table 2: Sources of capital funding for Eagle P3 (data sources: various including RTD FasTracks, 2015a, 2015c).

Who are the partners in the Eagle P3 project? The first thing to note is that most of the players are established global actors involved in financing and delivering infrastructure

projects in countries around the world. DTP represents a consortium of private concessionaires, including Fluor Enterprises, Inc.,⁵ Denver Rail (Eagle) Holdings, which is a subdivision of John Laing PLC,⁶ and Aberdeen Infrastructure Investments, a unit of Aberdeen Global Infrastructure Partners LP (DTP, 2015).⁷ John Laing and Aberdeen Infrastructure Investments are the majority partners in DTP, each with a 45% interest (John Laing, 2015).⁸ Whilst concessionary arrangements legally bind together the Eagle P3 project into a consortium, it is important to note that this arrangement has already undergone some significant changes over the course of the project.

5. Assembling a P3: Global Governance and Coalition Building

Eagle P3 is an assemblage of global firms having a significant stake in the development of the metropolitan economy of Denver. It is not a traditional metropolitan ‘growth coalition’ (see Cox and Mair, 1988) in the sense that its *raison d’être* is political lobbying of local and regional government. Nor is it a traditional partnership between local firms and other economic actors that are based solely in the region. Nevertheless, the consortium involved in Eagle P3 does have a significant stake in the regional economy and, as such, needed to be fully integrated into the existing structures of regional collaboration. The key difference, however, is that it is P3 involving regional actors and global investors that has been forged in a context of global financial instability, one that was set up in order to leverage private funding for an infrastructure program in which there are already significant public fixed investments and private sunk costs. The private sector assumes some of the risk of the

5 Fluor Corporation is a Fortune 500 global engineering and construction firm headquartered in Irving, Texas. In 2013, it employed more than 40,000 worldwide and earned revenues of \$27.4 billion (Reuters, 2015).

6 John Laing PLC specializes in raising capital for transportation, renewable energy, and social infrastructure projects involving state-led PPPs in the UK, Europe, Asia, the Pacific, and North America (John Laing, 2015). In the last 30 years, it has invested in more than 100 such projects worldwide, including most recently the I-4 Ultimate Highway project in Florida, which is financed by a combination of debt equity and a loan provided by the US Department of Transportation under its Transportation Infrastructure Finance and Innovation Act (TIFIA) program (see http://www.laing.com/project_portfolio/109/145/i-4-ultimate-highway-project-florida-us.html).

7 Aberdeen Global Infrastructure Partners LP is a collective investment scheme registered in the island of Guernsey, a recognized tax haven for UK-based investors. Aberdeen invests in global infrastructure projects, which are underpinned by long term secure government contracts that generate stable cash flows (The Hedge Fund Journal, 2014).

8 Other members of the Eagle P3 consortium are Balfour Beatty Rail Inc., ACI, Ames Construction, and HDR.

investment, allowing the public sector (in this case, the Denver RTD) to defer upfront costs and release cash for other project-related purposes.

In building a regional coalition around FasTracks, it was recognized at quite an early stage that outside global investors would be necessary to put the project on a secure financial footing. Reliance on traditional local funding sources, such as revenue bonds, was not sufficient; a factor that became much clearer when bond issues linked to the project received low credit ratings. Revenue bonds to the value of \$397 million, which were issued for FasTracks in 2010, received ratings of Baa3 and BBB-, which while ‘investment grade’ were nevertheless among the lowest ratings possible for such bonds (Long, 2012). Facing high interest payments, escalating costs, and a public unwilling to vote in extra taxes, proponents of the FasTracks project needed to secure a global investment partnership willing to raise capital in secondary markets.

Shortly after the passage of the regional sales tax measure, it emerged that the preferred partner was Macquarie Group, a global investment bank specializing in financing infrastructure projects worldwide. By 2010, Macquarie had already invested heavily in U.S. infrastructure, capitalizing on an emerging market for privatized infrastructure assets (Roumeliotis, 2012). Besides the Eagle P3 project, Macquarie was behind a \$1.7 billion upgrade of a tunnel between the cities of Norfolk and Portsmouth in Virginia. In 2012, it raised a further \$2 billion for its investments in North American infrastructure and real estate. However, returns to its US investments were starting to decline. According to market research conducted by Preqin, private equity-type vehicles investing in infrastructure assets raised an aggregate \$16 billion in 2011, which was down some 49 percent from 2010 (cited in Roumeliotis, 2012; see also Preqin, 2012). It later became clear that Macquarie intended to sell off its interests in the Eagle P3 project long before it was completed.

Macquarie contributed \$2 billion in capital towards the initial cost of the Eagle P3 project, of which \$54 million was an equity investment.⁹ In exchange, Macquarie was granted a concession to run the commuter rail system upon completion (Long, 2012). The remainder of Macquarie’s portion came from construction payments from the RTD. Macquarie promised to complete Phase 2 of the project 11 months ahead of the 2016 scheduled deadline. However, further construction delays occurred, in part, due to problems securing rights-of-way approvals from private rail freight companies for the use of existing tracks and/or corridors (Long, op. cit.). Colorado State politicians expressed concerns about the

⁹ Macquarie’s proposal was selected by the RTD at the expense of that of a rival consortium comprised of HSBC, Siemens and Veolia Transport.

management of the FasTracks project and demanded regular audits of RTD accounts. In this context, Macquarie began to re-evaluate its role in the Eagle P3 project.

In the event, Macquarie sold its share in DTP to Uberior Infrastructure Investments, which is part of the Lloyds Banking Group, and Eagle Rail Holdings Inc., the John Laing subsidiary. Assets held by Lloyds Banking Group, such as the Eagle P3 investments, are managed on behalf of the Group by Aberdeen Asset Management, which is based in Aberdeen, Scotland. In the meantime, the global regulatory landscape of infrastructure investment had changed, prompting a realignment of the investment priorities of project participants. This in turn has influenced how other FasTracks P3 projects have fared.

6. Other P3 FasTracks Projects

Besides Eagle P3, the FasTracks program is being delivered through four other types of P3 arrangements. We describe and discuss each of these arrangements in turn below.

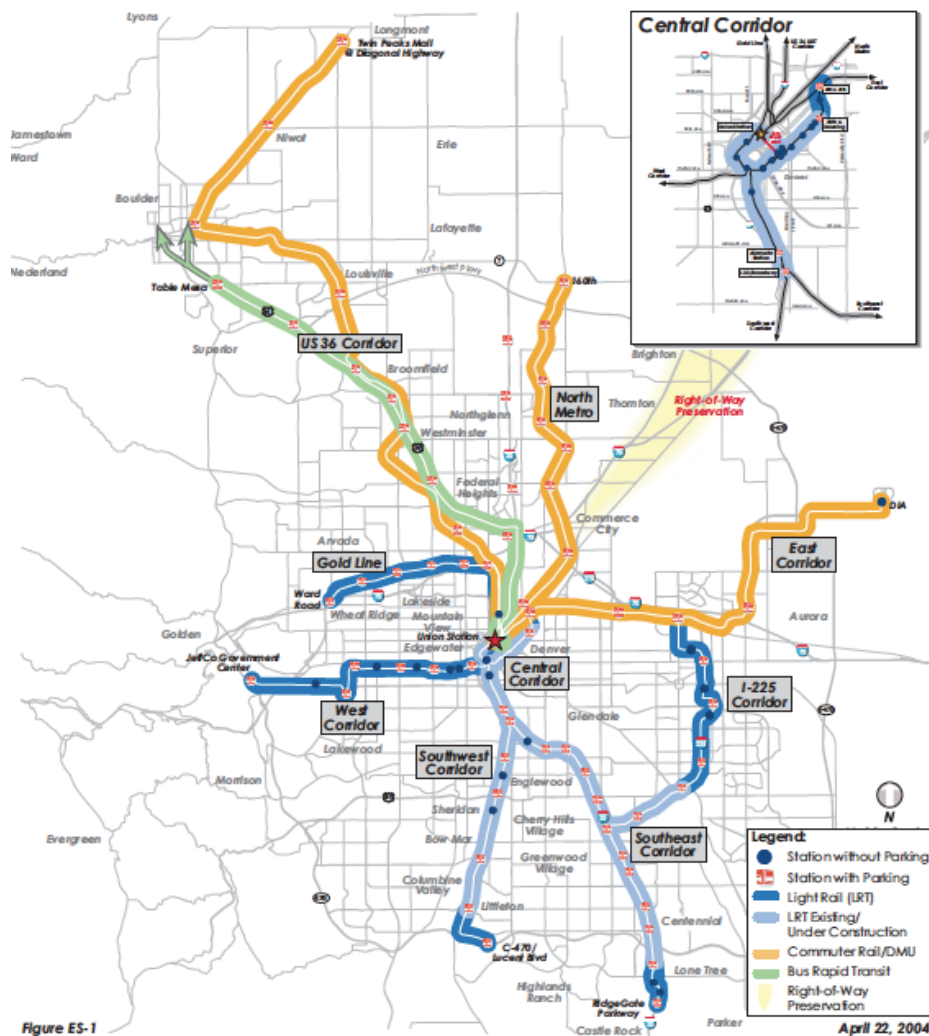


Figure 2: Original FasTracks program map (source RTD, 2004)

P3 project	Aims	Partners	Funding sources	Type of P3
Denver Union Station <ul style="list-style-type: none"> • Eight-track commuter rail station • Relocation of light rail station • 22-bay underground bus concourse • MetroRide downtown circulator • Renovation of historic Union Station building with hotel, retail, and dining 	Create dense, mixed-use transit-oriented development around the station Create an intermodal hub for light rail, commuter rail, Amtrak, bus, taxi, pedestrians, and bikes Renovate historic Union Station building	RTD, DRCOG, CDOT, City and County of Denver, Union Station Neighborhood Company, Kiewit	RRIF and TIFIA loans FHWA grant ARRA grant FTA grant Senate Bill 1 (CO) funds RTD property sales and FasTrack funds	DBF
U.S. 36 bus rapid transit/HOT lanes <ul style="list-style-type: none"> • Bus rapid transit (BRT) Flatiron flyer service • Express HOV and toll lanes • U.S. 36 Bikeway • Intelligent transportation system solutions 	To reduce congestion on U.S. 36 corridor Offer transportation choices	CDOT, RTD, HPTE, Plenary Roads, Aims Granite Joint Venture	RTD funds TIGER grant (USDOT) Colorado Bridge Enterprise funds DRCOG TIFIA loans CDOT funds	DBFOM
I-225 light rail <ul style="list-style-type: none"> • 10.5 mile light rail line through Aurora 	Provide connectivity to major activity and employment centers in Aurora Provide key regional access to East and Southeast rail lines	RTD, Kiewit	RTD FasTrack funds	DB
North Metro commuter rail <ul style="list-style-type: none"> • 18.5 mile electrified commuter rail from Denver Union Station to Northglenn 	Connect downtown to Northglenn in the first segment	RTD, Graham and Balfour Beatty Rail (Regional Rail Partners)	RTD FasTrack funds	DB

Table 3: Overview of P3 projects in the FasTracks program (sources: RTD 2016a,b,c,d; FHWA 2014, n.d.; CDOT 2012, 2014; Khorkhyrahova 2013; Lien 2014; USDOT 2016)

i. Denver Union Station

Denver Union Station (DUS) is different from the other FasTrack transit P3 projects because it utilized innovative financing through real estate and development value. The DUS public-private partnership included four public agencies, RTD, Colorado Department of Transportation (CDOT), Denver Regional Council of Governments (DRCOG), the City and County of Denver, and one private group, Union Station Neighborhood Company (USNC), a joint venture of Continuum and East West Partners. The private sector was engaged in the project as a “master developer.” DUS is the intermodal hub of the RTD transit network, where light rail, commuter rail, bus operations, and Amtrak service all converge. In addition, the historic union station building and great hall were refurbished, and now house a boutique hotel and very popular retail and dining options.

The financing of DUS came from several sources including federal and state grants, property sale proceeds, and federal TIFIA and Railroad Rehabilitation and Improvement Financing (RRIF) loans. The money to repay these loans came from FasTracks sales tax revenue and TIF revenue. DUS opened the light rail facilities in 2011, the bus concourse and great hall in 2014, and commuter rail service began in 2016.

Funding source	Amount (\$US millions)
Federal: Railroad Rehabilitation and Improvement Financing (RRIF) loan	155
Federal: TIFIA loan	145
Federal: FHWA grant (CDOT)	50
Federal: American Recovery and Reinvestment Act funds (ARRA) (DRCOG and RTD)	28.6
Federal: Federal Transit Administration Grant	9.6
Federal: Transportation Improvement Program (TIP) funds (DRCOG and RTD)	2.5
State: Senate Bill 1 (CO)	18.6
Regional: Property sale proceeds (RTD)	37.4
Total investment in Union Station project	446

Table 4: Sources of capital funding sources for Denver Union Station (data sources: FHWA n.d.; Khokhryahova 2013; Lien 2014; USDOT 2016; RTD 2016a).

ii. U.S. 36 Bus Rapid Transit

Also known as the Flatiron Flyer, the bus rapid transit service operated by RTD runs 18 miles between Boulder and Denver Union Station. In conjunction with the BRT expansion, CDOT entered into a PPP agreement with Plenary Roads and the High-Performance Transportation Enterprise 10 (HPTE) within CDOT to expand highway capacity on U.S. 36 by building High-Occupancy Toll (HOT) lanes. The BRT service was included in the original FasTracks plan in conjunction with CDOT’s highway improvements. The BRT and toll lanes began service in 2016.

Funding source	Amount (\$US millions)
Federal: TIGER Grant	4.8
Federal: TIFIA Loan	54
State: CDOT Bridge Enterprise	41.5
State: CDOT federal/ state grant	41.4
Regional: DRCOG federal funds	46.6
Regional: RTD funds	112.1
Local funds and other	12
Total investment in U.S. 36 improvements	312.4

Table 5: Sources of capital funding for U.S. 36 improvements (data sources: FHWA 2014, CDOT 2012, CDOT 2014, RTD 2016d).

iii. I-225 light rail line

The I-225 light rail line is 10.5 miles and connects the Southeast and East (A-line) rail lines through Aurora, Colorado. It is being built as a design-build agreement with Kiewit, who put in an unsolicited bid in 2012. Kiewit is the same contractor who completed in 2006 the Southeast Corridor light rail line along I-25 and I-225 (up to Parker Road) as part of the \$1.7 billion TRansportation EXpansion (T-REX) design-build project that also widened those highways. Because Kiewit had previous experience with building light rail in the same

¹⁰ The High-Performance Transportation Enterprise is a government-owned business within CDOT that was formed to pursue innovative means of more efficiently financing important surface transportation infrastructure projects.

corridor, it was able to generate a bid that was lower than RTD cost estimates for that corridor. The I-225 line is scheduled to open in 2016.

iv. North Metro commuter rail line

The North Metro electric commuter rail project is a proposed 18.5 mile line from Denver Union Station to Thornton, Colorado, with 13 miles currently under construction and due to begin service in 2018. In 2013, RTD received an unsolicited proposal to construct the line, then opened a competitive bidding process and awarded a design-build contract to Regional Rail Partners (RRP) (RTD, 2016b). The private group is a Joint Venture of Graham and Balfour Beatty Rail.

DISCUSSION OF RESULTS

1. Measuring the success of P3 projects in Denver

This section assessed the success of P3 projects in Denver, drawing on the results of our surveys and interviews with key stakeholders. We have included brief quotes by interviewees in a fashion that respects the anonymity of respondents.

i. Effectiveness in addressing transportation needs in the Denver region.

Respondents rated Denver Union Station, US 36 BRT, and the Eagle P-3 projects as the most effective at addressing transportation needs in the region. One interviewee responded that there should be a category for “beyond extremely favorable” for Denver Union Station because of the incredible transformation that has taken place in lower downtown around the station. DUS is the multimodal hub of the RTD transit network, with connections to bus, light rail, commuter rail, Amtrak, taxis, and bike and pedestrian routes. The Eagle P-3 is also highly ranked, but with three corridors included in the project, some are better at meeting transportation needs than others. The A-line to Denver International Airport is seen as the most effective line in the Eagle project because of its access to the airport and the ability to bring in economic benefits. US 36 was previously a widely used transit corridor, and the BRT and lane improvements have already produced increases in ridership and reduced travel time along the corridor for both drivers and transit users.

I-225 and the North Metro Line were also expected to meet transportation needs effectively, but to a lesser degree. Both lines will increase connectivity in the region, however, the I-225 line deviates from a straight alignment with the interstate to serve areas in Aurora’s downtown and the Fitzsimmons Medical Center. These alignment issues will result in increased travel time on the rail, making it tougher to compete with the automobile. The North Metro line is expected to have lower ridership than other corridors with less frequent service, but it will fill a void in the system because there is currently no alternative for people traveling on I-25 to the north. The rail line is also competing with the exclusive bus and HOT lane on I-25, so it may be less effective than that option at meeting transportation needs.

ii. Financial benefit to involved parties

Financial benefit to RTD. The respondents were careful to point out that as a transit agency, RTD does not financially profit from running their services. The financial benefit of a P3 comes in the way of a “bang for the buck” in spending on transit projects. All of the P3 projects came in under the internal cost estimates for RTD to complete the projects themselves so they are mostly viewed as financially favorable for RTD. The projects with a

full P3 financing structure are viewed as providing the most financial benefit for RTD. The Eagle P3 project came in \$300 million below internal cost estimates, and that savings was redirected to other projects, including the I-225 and North Metro lines. The actual debt rates for the private financing was higher than RTD could have raised itself, but the projected savings and benefit come from financing over a longer timeframe, which again allows RTD to fund more projects and accelerate the delivery of the FasTracks program. In addition, the private equity that was used to finance a quarter of the Eagle project reduced the debt burden of RTD so they can complete the other projects. The FTA full-funding grant agreement awarded points for cost effectiveness or "bang-for-buck" efficiency, and the P3 financing structure helped RTD score well on that part of FTA's assessment for federal funding.

Denver Union Station produced the highest return on RTD's investment according to some experts because RTD ended up getting a half a billion-dollar project for half the cost. RTD was able to make use of the real estate value of their property surrounding the station to fund DUS and also make use of federal loans and private sector investment. Therefore RTD had to invest less upfront cash to complete the project. The revenue from DUS tax increment financing (TIF) is already ahead of performance schedule to pay back the TIFIA loans.

A few people saw the US BRT project as financially unfavorable for RTD because it did not add much to the service while sacrificing a lot of political goodwill. Most people, however, recognized its benefit to RTD as favorable because they were able to leverage about \$200 million in investments to get \$500 million in improvements through the P3. Several interviewees stated that they would not have been able to do the BRT without partnering with CDOT and the private partners. One even saw this as the best financial deal for RTD because of the comparatively low investment in exchange for high quality of service improvements on a much faster timetable than without the P3.

While the I-225 and North Metro lines were not viewed as favorably as the others, they still came in below internal costs through unsolicited bids. The I-225 bid was over \$90 million below cost estimates. Any time the transit agency works with the private sector, even on a design-build contract, they should see cost benefits because the private sector is motivated by profits to save money.

Financial benefit to the private consortium. Overall, the financial benefit for the private consortium involved in the P3 projects is generally favorable. Respondents were more conservative in their assessment of the concessionaire's finances because most respondents (except for representatives from the private consortium) have no real way to know if they are making money, but the general consensus is that they are. The global

investment firms involved in the Eagle P3 have experience with these types of long-term infrastructure projects and are looking for a “steady, long stream revenue source with fairly predictable and manageable risk” for investors like the California school board retirement group and the Australia Teachers Union. The consensus is that DTP got “a good deal, but not a smoking deal,” and “nobody is walking away broke,” even with significant unexpected expenses for the private sector, such as having to rebuild the Jersey Cutoff bridge in the Eagle P3 project at the cost of \$10 million.¹¹ The most important factor for DTP to make money on the Eagle project was to complete the project on time, which the consortium has succeeded in doing, in order to begin receiving availability payments to service their debt.

Denver Union Station was assessed somewhat more favorably for the financial benefit of the private sector because the property values of the real estate that was sold around the station is publicly known and published in the newspapers. The successful and explosive redevelopment of Lower Downtown (LoDo) is evident to everyone. A representative of the private master developer, however, did comment that while the private group ended up averaging out to make a profit, it was only due to market conditions and not from any money that RTD was paying them. The real estate developers had a difficult time early on when the real estate market was still recovering from the 2007-8 financial crisis, and they had to wait until the end of the deal to realize any profits. They assumed a lot of risk, and ended up making money with a combination of historical luck and effective solutions of the transit hub problem.

The US 36 toll lane project financials remain to be seen, and it is really too early to tell what toll revenues will be. Many respondents think this will be one of the last toll road projects that transfers the toll revenue risk to the private sector because toll project revenue projections can be “wildly inaccurate.” Recently, several large U.S. toll road projects have gone bankrupt, notably the Indiana Toll Road in 2014 and the Texas Toll Road/ SH 130 in 2016. The private sector is increasingly less likely to bear the toll revenue risk in these arrangements. The I-225 and North Metro lines were seen as typical design-build contracts where the contractor will likely make money as long as they work within their budgets.

Financial and social benefits for the Denver community at-large. The interviewees agree that PPP projects benefit the Denver community financially and socially. Generally

¹¹ This bridge goes over the BNSF railway tracks just south of I-70 along the Gold line/ Northwest line alignment in the Eagle P3 project (Source: Eagle P3 update presented at RTD board update Sept. 2, 2014: http://rtd.iqm2.com/Citizens/Detail_LegiFile.aspx?Frame=&MeetingID=1954&MediaPosition=&ID=2051&CssClass=).

speaking, all of the transit projects deliver the social benefit of providing an alternative to the car and getting drivers off the road. This is truly the mission of transit. The projects facilitate cost-effective mobility and livability in the region. The P3 delivery model has enabled more transit to get built faster, without having to go back to the taxpayers after the funding shortfall. The consensus is that taxpayers are getting a good deal with these P3s and seeing value for their tax dollars. Most people stated that they expect the region as a whole to benefit from future economic development due to investment in transit infrastructure in Denver. The projects for which respondents expected to see the most economic development and financial benefits are the Eagle P3 and Denver Union Station.

The Eagle P3 project is economically important to the region because of the access it provides to the airport. Interstate 70 east of downtown is the major thoroughfare that most travelers use to access the airport, but that highway has been experiencing crippling levels of traffic congestion and substantially increased travel times especially during peak hours. Everyone agreed that the “train to the plane” will bring economic development opportunities to the Denver region, and it has already brought in industry along its corridor, including Panasonic. The A-line provides a certainty of travel time as a social benefit to citizens. Moreover, the “aerotropolis” concept is something that Denver and Adams County hope to further capitalize on to bring more jobs to the region.¹²

Redevelopment of Denver Union Station is also credited with the relocation of several national firms’ headquarters to downtown Denver. Many companies cite access to transportation options as an amenity they hope to provide their employees. DUS has also reinvigorated the LoDo neighborhood and facilitated higher real estate values in the area.

The BRT and HOT lanes on US 36 provide transportation choices in an important highway corridor. The improvements have provided more reliable and faster travel times for the community, and the P3 delivered an “autobahn-like system” decades before it otherwise could have.

iii. Public accountability of P3s

Since P3s are relatively new in both the U.S. and Denver contexts, questions have been raised about matters of public accountability and access to information. Regardless of how much information an agency feels they provide to the public, they know that what matters is

¹² The aerotropolis concept, a term coined by John Kasarda, is an airport city linking airport dependent industries and other commercial land uses near the airport. Denver’s Mayor Michael Hancock has expressed interests in developing the land around DIA and along the A-line corridor into an airport city as an engine for economic development.

how the public views projects like P3s. The agencies most heavily involved in these projects, namely RTD and CDOT, both felt that they did a good job informing citizens of the impacts of their projects. However, the public did not always agree. RTD's projects in general received higher marks for public information than the CDOT project. Transit agency respondents also gave themselves high marks for public information, citing RTD's philosophy of active transparency.

Every RTD project has a public information team that is responsible for engaging with the community and local stakeholders. For the Eagle P3 project, RTD held a public meeting in a large auditorium downtown for the public to hear presentations from the private groups competing for the contract. People were interested in the high profile A-line to the airport, and the public could see it being built along the airport boulevard. Moreover, quite detailed information about the project and the concessionaire is accessible on RTD and other websites. Nevertheless, the public and even some elected officials still do not know many details about the projects, including the procurement model or even the differences between light rail and commuter rail.

Denver Union Station was seen as a different animal because the P3 was more real estate driven. The project had more scrutiny by more people, according to individuals involved in the station redevelopment. The project has had multiple public and private stakeholders involved, so they felt they were always out there explaining the project- to CDOT, RTD, Lower Downtown neighborhood groups, etc. The project also had a citizens group, Union Station Alliance, which has had input into what type of tenants they wanted to see in the station. Although Eagle P3 and Denver Union Station were seen as providing more information to the public, some people were quick to point out that these projects were not controversial. In the end, the public was mostly just glad the projects were being built, and there was little opposition to them. People were not as concerned about the P3 delivery model being used in transit projects as they were with the highways.

Toll lanes are inherently more controversial according to some interviewees. With the US 36 project, some of the public got the wrong impression that they were going to have to pay to drive on all the lanes on U.S. 36. People were also confusing CDOT and RTD, thinking that RTD was building toll lanes. Some interviewees also attributed the backlash against the US 36 toll lanes and BRT to the failure of the Northwest rail line to get built. People felt they had voted for rail and now all they were getting were buses, even though the BRT had always been a part of the FasTracks plan. The project turned political, and state legislators stepped in questioning the P3 contract with the Plenary Roads group. Some elected officials interviewed cited a "total lack of transparency" from CDOT, stating that the "agreement was

negotiated behind closed doors, nobody including legislators, got to see the agreement until it was signed.”

An audit of the US 36 project found that CDOT failed to provide enough information to the public, “even though all [of the RTD transit projects] provided much less information- a lot less,” according to one interviewee. As a result, a few state legislators sponsored a bill to restrict PPPs for CDOT in the future, but the governor vetoed the bill. The public outreach part of the bill was kept, requiring at least two public meetings if a project is delivered using a P3. In hindsight, a few respondents felt that the private and public partners failed to reach out to key stakeholders, including state legislators, to make sure they understood the procurement process and key contract terms. Interviewees did feel that it is important for the public to understand and be involved in P3s, but because they are “complex and opaque transactions that are difficult to explain and communicate,” it is hard to know how much the public really wants to know.

iv. Regional collaboration

Over the past few decades, the Denver metropolitan region has become known for its strong model of regional collaboration (Jonas, Goetz, and Battacharjee, 2014). Most of the interviewees credited regionalism created through the Metro Mayors Caucus, the Metro Denver Chamber of Commerce, and other regional organizations with getting the initial FasTracks ballot initiative passed in 2004. The Metro Mayors Caucus is collaboration between Denver metro area mayors to address issues that cross jurisdictions such as transportation. Denver’s mayor at the time, John Hickenlooper, was also a strong regionalist.

After the funding shortfall was discovered, it became evident that not all the rail lines would be built, and there was potential for the strong regional collaboration to become fragmented based on which corridors would move forward. Choices had to be made; however, the decisions were not political, but based on the availability of federal funding and private sector interest in the projects. The lines eligible for federal funding in the PentaP project, the Gold Line, the B line, and the A line, were packaged together as the Eagle P3. After the Eagle P3 project came together, there were some negative sentiments expressed against the core city (Denver), but most people supported the airport line getting built as a benefit to the region. The Eagle P3 also enabled part of the Northwest rail line to get built to Westminster. Communities to the northwest, however, were unhappy that their corridor was not being built. RTD’s ability to get the I-225 and North Metro lines built with savings from Eagle P3 was “brilliant” because it showed a good faith effort to get something built for Adams County and Aurora.

Denver Union Station and the Eagle P3 rated the highest for contributing to stronger regional collaboration. These projects met little opposition, and it was hard to argue that the transit hub and the airport line were not good for the region. Everyone in the region supported the projects, but DUS did not have to deal with multiple jurisdictions- it is located only in the City and County of Denver. The US BRT project required collaboration between CDOT, RTD, and local communities, and ironically the backlash against CDOT and the toll lanes coalesced the region.

The opinions of the P3 contribution to regional collaboration varied. Some experts either thought that the P3 delivery model itself did not hurt regional collaboration or it did not affect it much at all. Others, however, said that a P3 is the very definition of collaboration. It requires government to be more proactive with regional partners and to think about the regional benefit of the transit lines rather than what a certain jurisdiction wants. Another pointed out that RTD is regional by definition and requires strong collaboration between many different government entities. Another felt that the mayors stood by one another and supported each other's projects, not just their own. One respondent spoke about the importance of local match grants in the Southeast corridor, where local government and private groups collaborated to provide matching funds to get the Southeast light rail extension back on the table.

There were a few people who felt that regional collaboration has suffered more recently because of the 'corridor versus corridor' mentality, with the south metro arguably getting everything, or so it has been claimed. The issues with the Northwest rail contributed to this "Mason-Dixon type line." The FasTracks plan was supposed to be funded as a regional system, but instead was being funded, through FTA funding and private money, corridor by corridor.

v. Overall success of the projects

Denver Union Station stands out among these projects, with 100% of survey respondents rating the success extremely favorable. DUS was assessed by some respondents as "beyond extremely favorable" and an "unmitigated, outstanding super success." It is "hard to find a problem" with the project, and the region and public is already seeing economic and social benefits from it.

Eagle P3 was also highly rated, either extremely favorable or generally favorable by all respondents, because of the economic development and connectivity it will bring to the region. The actual success depends on strong ridership, which remains to be seen. The success of the other projects was also favorable. The success of the BRT is attributed to the

high ridership and improved travel time in the corridor, and the North Metro and I-225 lines are expected to be successful because they should be on-time, on-budget and provide high quality service to customers. After considering all of the measures of success, meeting transportation needs, financial success, and public information, the P3 projects overall get high marks from interviewees.

2. Major Benefits of Private-Public Partnerships

Most of the benefits cited by respondents apply to a full P3, with DBFOM aspects. The two most important and most cited benefits of these PPPs were accelerated delivery of the projects and appropriate allocation of risk. RTD was able to deliver more infrastructure sooner than it could have with traditional revenue streams. The private sector has a better ability to deliver multiple projects on-time and on-budget because of incentives such as availability payments that take effect when the project is complete. Most of the interviewees believe that the private sector is “faster, smarter, and better”, and through their operating efficiencies plus incentives for profit, they can complete projects faster than the transit agency alone. Even a design-build project, without the financing, operating, and maintenance agreements, gets built faster than a traditional design-bid-build because of private sector efficiencies, such as utilizing the connection between the designer and the contractor for smoother and faster implementation.

A few people named allocation of risk as the primary reason to conduct a project as a P3. The risks must be shifted appropriately, with the private concessionaire (and its constituent firms) assuming those risks that they can manage better and cheaper than RTD. For example, the private sector is much more equipped to assume construction risk or interest rate risk, while the public sector is better equipped to handle risks such as environmental hazards and public utilities. Shifting some of the risk to the private sector is a significant financial advantage in a P3 contract. However, the distribution and allocation of risk should not undermine control of public assets. Most respondents felt that the contracts negotiated in several of the P3s had provisions that allowed the regional public agency to retain or reassume control of strategic assets should the private sector fail to deliver. These provisions are discussed further in section five: the role of the regional transit agency.

A P3 can reduce some costs, as evidenced by the lower cost estimates that came in for all of the projects discussed in this report. For the Eagle project the cost estimate came in \$300 million under initial internal projections. This freed up more money for other transit projects, but it is not always cheaper to do a P3 in the long-term. The ability to finance over time gets more infrastructure built faster, but it would have been cheaper for RTD as a government agency to finance the debt than the private sector assuming that bond ratings were strong.

There is not really a cost savings through private financing, but if the public sector needs capital from elsewhere because they have reached their debt capacity, as was the case with RTD, then the financing element is a very important benefit. The financing element is also important because it gives the private sector “skin in the game.” For the Eagle P3, the private consortia contributed \$54 million to the funding of the infrastructure. If they walk away, they lose the equity they have contributed. One person noted that the financing element of the P3 is overrated, and “if you (the transit agency) are doing it for money, you are doing it for the wrong reasons.” Benefits such as allocation of risks and accelerated delivery are the primary reasons for doing a P3 in this respondent’s opinion.

Another key to realizing all of the benefits of a P3 is to include financing, operations, and maintenance in the partnership. The public sector benefits by being able to pay for the full life-cycle cost of operations and maintenance. In a DB contract, some construction savings may be reaped but possibly at the expense of operations and maintenance. With a full DBFOM contract, the private sector is incentivized to build a better product that will require less maintenance to increase their profit over the long-term concession lease. There is also a guaranteed condition of the asset in the Eagle P3 that requires the infrastructure to be returned to the agency in a certain condition after the 30 year O&M period. Instead of building a system to last 50 years and using it and abusing it, this contract funds a mid-life overhaul of the system.

Another way the public sector benefits from partnering with the private sector is the expertise that hired consultants and the private consortia bring to the table. These specialized individuals and companies are better at executing projects at a higher level of skill and reliability. The public sector does not have the expertise or experience to negotiate these contracts, so they bring together a group of very sharp legal and financial minds to represent them, resulting in a better deal for the agency. In addition, the knowledgeable resources that the private consortia contribute during the design, construction, and operation phases also results in a better overall team overseeing the project.

Bringing in the private sector results in more innovation. According to some respondents, the public sector is used to doing things in a certain way, with a “this is the way we have always done it” mentality. A P3 helps “get the bureaucratic bologna out of the way.” The public sector provides robust design criteria for the transit infrastructure, but the P3 model provides flexibility for the private sector to find efficiencies and cost savings by building things the way they know how or by coming up with innovative solutions to design or construction issues. In this way they are not hamstrung by the agency’s design.

3. Major Shortcomings of Public-Private Partnerships

The nature of P3s, at least in the U.S., is that they are “complex and opaque,” and difficult to explain to the public because PPPs are misunderstood, unfamiliar, and still novel. From the public perspective, and as evidenced here by reactions to the U.S. 36 project, there is a lack of transparency in P3 agreements and negotiations. The public and private entities must spend a lot of time on public information, in order to ease the increased public suspicion of corruption and uneasiness of the private sector taking over public assets. Keeping the public informed is even harder with a P3 than with traditional projects because everything moves so much faster.

Changes can also be difficult in a P3. The public agency loses some flexibility and ability to request changes from their original design. For example, the City of Denver and RTD wanted to add another station at 61st and Pena on the A-line to the airport very late in the construction phase. While some change orders can be done, it is not usually in the best interest of the private sector. In this instance, the private side was able to add the station, but everything comes at a cost. Some people view some loss of control by the agency as a shortcoming. The public entity has less control of the design and building specifications compared to a design-bid-build contract, but one response from RTD was “we have plenty of control over what we should worry about.” RTD does not need to be concerned about the specific way the contractor builds a bridge or station platform, as long as it is safe, reliable, and produces quality transit service.

The expense to hire private expertise in the negotiation phase can cost millions in upfront soft costs. The public sector does not have the skills to negotiate these complex deals themselves. The risk of ending up with a bad contract is more expensive than the cost of hiring the experts, but there is also a risk that the project will never get to the bid phase and the agency will have spent millions of dollars on lawyers, designers, bankers, consultants, and other experts. There is no standardization of contracts for full DBFOM agreements, so for the Eagle P3, financial and legal experts from Goldman Sachs, JP Morgan, and Freshfields were required to ensure that the public entity was adequately prepared to enter into the P3 arena.

There is also the issue of cost. It is complicated to precisely identify whether P3s provide a cost savings or not. As discussed in the benefit section, P3s can result in a cost savings in the short term and allow projects to get completed that may have had funding issues. However, over the longer term, the agency will end up paying more for a P3 project because they are paying a higher debt rate through the private sector financing. As one expert put it, rarely will the agency’s “green-visored accountant” in the back room look at the spreadsheets and

say that a P3 makes financial sense, because the agency will pay more over time. But the agency should take into account all of the other benefits of a P3, especially the transfer of risk, which also adds to the increased cost. Experts agreed, financing is not funding, and P3s are not a magic bullet to address the lack of transportation funding in U.S. states and cities.

4. Using Denver P3s as a Model

Many people stated that the Eagle and Denver Union Station P3s could serve as models for other cities and regions looking to expand their transit infrastructure, especially for transit agencies with constrained revenue streams. In fact, these projects already are serving as models for projects such as the Baltimore, Maryland Purple Line. RTD has hosted numerous cities that have visited Denver to see how they were able to get these projects done. RTD also produced a “Lessons Learned” document [http://www.rtd-fastracks.com/media/uploads/main/Eagle_P3_Procurement_Lessons_Learned_final_with_cover_letter.pdf] after the procurement phase of Eagle P3 and hope to produce another one after the transition to O&M. They have shared their experiences with others at conferences and shared transit exchanges as well.

The Eagle P3 is considered a good model contractually and financially. The contract was based on toll road and international deals, and the “risk transfer was nearly perfect,” according to one expert. The way these projects were financed is also considered a model for future transit PPPs. Denver and RTD were able to maximize all sources of funding including federal funding and grants as well as private equity. Cities looking to replicate Denver Union Station’s success are especially interested in how to use TIFIA loans and Certificates of Participation (COPs) to leverage economic development dollars. The Eagle P3 and DUS project are also models of intergovernmental cooperation and regional collaboration. Part of the model of Denver’s success is the strong regionalism that has characterized regional governance and economic development for several decades. For instance, the Denver model was cited in an important national study of metro regionalism published by the Brookings Institution (Katz and Bradley, 2013).¹³

The most repeated answer to whether Denver can serve as a model was “yes, but...” Respondents cautioned that Denver and RTD had a special set of circumstances with the Eagle P3 and DUS that might not be replicable in other situations. They stressed that every P3 deal is different, and as former general manager Phil Washington was prone to say, “if you have done one P3, you have done one P3.” Perhaps it would be better to call Denver an example, as suggested by some interviewees. As the first full-scale transit PPP (DBFOM) in

¹³ Whilst the Brookings study did discuss the FasTracks vote it did not assess the role of P3s in regional collaboration.

the United States, the Eagle P3 can serve as a useful example of how a transit PPP can be done. The federal PentaP program was one of a kind, and while other agencies can learn from RTD by leveraging as much federal funding as possible, they may not be able to replicate the exact circumstances and funding sources. RTD has produced a checklist of things to address in P3 contracts, but not every agency will have to address the issues in the same way as RTD. No one can pick up RTD's contract and say, in effect, "now we do not have to draft our own". Transit agencies interested in P3s can also learn from Denver how transit can court private investment. Prior to entering into the Eagle P3 agreement, the private sector already viewed RTD as a good business partner based on their experience with DB contracts and contracting out some paratransit and bus operations.

Other regions should consider whether a P3 is even the right delivery model for them. Not every transit agency needs to do their project as a P3. Because of the Colorado Taxpayer Bill of Rights (TABOR) law that requires all new tax requests to go to the voters for approval and revenue shortfalls, RTD had to be innovative with their financing structure. Cities looking to Denver as a P3 model must understand that financing is not funding, and it is not a magic bullet.

5. The Role of the Regional Transit Agency

The transit agency interviewees were asked additional questions regarding their preference for P3s, the protection of public interests and potential for default from the private sector. These questions address concerns from some legislators and the public about private operators defaulting on public assets.

i. Should projects be conducted as a P3 or by transit agency alone.

Transit agency representatives were asked if they could choose whether these projects would be conducted as PPPs or conducted by the transit agency alone, which they would choose. There were two schools of thought. Some people would prefer the transit agency to conduct the projects as design-bid-build because the agency would have more control and involvement over the project, and the agency's ability to control costs is better. Most people, however, said it depends on the project and the circumstances surrounding it. For example, for the Eagle P3, it made sense to do a DBFOM P3 because the agency was short on funding, and electrified commuter rail was a new technology that required coordination with the FRA, and for which RTD did not have experience operating. The I-225 line, however, would not have made sense to do with an operate and maintain component because it is light rail technology, which RTD already runs in several corridors. The take away was that each project should be analyzed, and using a P3 as the delivery model should be considered as a part of the cost/ benefit analysis, and if it makes sense, then do it. Construction on toll lanes

in the C-470 highway corridor is another example where CDOT decided after analyzing the options, that it would make more sense for the agency to build and operate the lanes rather than a private entity. A full DBFOM agreement does not make sense in every case, but DB agreements also allow the agency to benefit from bringing in the private sector through risk transference, efficiencies, lower cost, and the ability to complete multiple projects at the same time.

ii. Assurances that the public interests are being protected.

We also asked the agency respondents what elements of the PPP contracts provide assurances that the greater public interest is being protected. It all comes down to the contract, according to RTD representatives. The Eagle P3 contract has robust requirements with default provisions and tender provisions should something happen with the private sector's ability to pay for or run the service. The quality of service is also specified in the contract, with penalties that apply if the service is not performing up to required levels. The contract was negotiated by leading financial and legal experts that RTD hired, so the transit agency felt that the contract fully protected the public interests. On the Eagle project, RTD also had an oversight team of more than 60 people overseeing DTP and conducting QA/ QC, as well as four inspectors in the field.

iii. The potential for the PPP being deliberately bankrupted.

The transit agency was not concerned about the concessionaire defaulting because of the numerous levels of protection in the contract. First, it would be incredibly unlikely that the private consortium would intentionally bankrupt the project because of the repercussions to the private firm and its parent company, Fluor. If Fluor (or the other partners) were to walk away from the debt of over \$400 million in private activity bonds, they would never be allowed to work on a federal contract for the next ten years or borrow money from anyone. In addition, they would lose the equity they previously invested in the project. Secondly, the contract and financing agreement do not allow the private group to foist its project debt on the transit agency. The bonds specifically state that RTD is not responsible for repayment on the offering statement; all of the debt is with the private sector. Thirdly, even in the worst-case scenario, if the private concessionaire did default or they do not perform up to contract requirements, RTD retains ownership of the infrastructure asset. If they fire the private concessionaire or the private group defaults, RTD has the right to re-tender and sell the lease to someone else or operate the service itself. The most damaging consequence of such default to the public would be that the trains would not run until RTD or another operator could take over the service. There is really no additional risk to the public compared to the case if RTD owned the bonds.

CONCLUSIONS

Public-private partnerships (PPPs or P3s) are being used increasingly to support transportation infrastructure expansion in the U.S. According to the USDOT's Report to Congress on Public-Private Partnerships (2004), "a public-private partnership is a contractual agreement formed between public and private sector partners, which allows more private sector participation than is traditional. The agreements usually involve a government agency contracting with a private company to renovate, construct, operate, maintain, and/or manage a facility or system." While more prevalent in other countries, the U.S. has been using various P3 models over the last 20-30 years especially for toll roads and toll lane highway projects. PPPs have not typically been used in the U.S. for public transit projects but that is starting to change, especially with the use of transit P3s in Denver, Colorado.

In 2004, voters in the Denver metropolitan area approved a 0.4% increase in sales taxes to support a major expansion of its rail transit system. The Denver FasTracks plan called for adding 122 miles of commuter and light rail transit in six corridors, creating a bus rapid transit line, and redeveloping the centrally-located Union Station as the intermodal hub of the expanded rail and bus transit network for an estimated total cost of \$4.4 billion. Shortly after the plan was approved, however, the Denver Regional Transportation District (RTD) divulged that the costs for building FasTracks had risen unexpectedly due to material and other cost increases. By 2007-08, it also became apparent that revenues from sales taxes were less than original projections, so that RTD was facing a funding shortfall of \$2.7 billion.

After implementing several cost-saving measures and while considering asking voters for an additional increase in sales tax, RTD explored the possibility of using PPPs to build some of its transit lines as part of the Federal Transit Authority's Penta-P (PPP Pilot Program) initiative. RTD packaged the East rail line to Denver International Airport, the Gold line to Arvada and Wheat Ridge, and a segment of the Northwest rail line to Westminster into the Eagle P3 project, that subsequently was accepted by the FTA. After reviewing several private contractor bids, RTD selected the Denver Transit Partners (DTP) consortium for a design-build-finance-operate-maintain (DBFOM) contract to initiate rail service on these lines by 2016, and to operate and maintain the lines for the remainder of the 29-year contract.

Additional P3s were negotiated to complete other parts of the FasTracks program. Private sector interest in the Union Station project led to a partnership between the four government agencies that owned Union Station (RTD, the Colorado Department of Transportation [CDOT], the Denver Regional Council of Government [DRCOG], and the City and County of Denver) and several private developers. The US 36 Bus Rapid Transit (BRT) project

involved the construction of a high occupancy toll (HOT) lane that would be used by a new express bus service, and CDOT conducted a P3 with a private firm to construct and operate the HOT lane. In 2012, RTD received an unsolicited private bid to design and build the I-225 light rail line in Aurora, and shortly after, another unsolicited private bid was offered to build 13 miles of the proposed 18.5-mile North Metro line from Denver to Thornton. In the span of several years, RTD was able to jump-start five of its FasTracks lines, as well as Union Station redevelopment through the mechanism of PPPs. While announcing a \$1.03 billion full funding grant award from the FTA for the Eagle P-3 project, administrator Peter Rogoff praised RTD's plans as a "model of private-sector involvement in transportation" (Lieb 2011).

The purpose of this research project was to investigate whether the P3s contracted to complete parts of the Denver transit system have actually been successful, and whether they could serve as models for other transit agencies seeking to expand their infrastructure. Agency and company documents, as well as responses from in-depth interviews with knowledgeable experts, provided the data used to assess the FasTracks P3 projects.

Results from the data analysis show that almost all of the respondents rated the P3s in Denver quite favorably. The Union Station project received the highest ratings including several responses for "beyond extremely favorable." Union Station has been a tremendous success, especially the impressive amount of redevelopment that has occurred in and around the station itself. The financial benefit for the owners of Union Station and the land near it has been very strong, and has resulted in an accelerated repayment of loans well ahead of the original schedule. The Eagle P-3 project was also rated quite high. Respondents commented favorably on the importance of the rail line to Denver International Airport, which opened in April 2016, especially the economic development and connectivity it will bring to the region. The U.S. 36 BRT project, completed in January 2016, was also rated high because of the improvement in service quality, but it was rated much lower based on the level of information provided to the public. There was some controversy about public disclosure and transparency of the P3 conducted between CDOT and the private firm. State legislators and many people in the community were unaware that a private firm had been contracted to build a HOT lane on U.S. 36 and that RTD would be using it to run express BRT service. There were many misconceptions about the project that led to its somewhat lower rating. The I-225 and North Metro lines, while still rated generally favorable, also had somewhat lower ratings. These lines have yet to be completed so most respondents were still unsure about their outcomes. Furthermore, these projects were only design-build projects (not the full-scale DBFOM model) so some respondents did not rate them in the same way.

The two most important and most cited benefits of the full-scale PPPs were accelerated delivery of the projects at low cost and appropriate allocation of risk. RTD was able to deliver more infrastructure sooner and cheaper than it could have with traditional revenue streams. The private sector has a better ability to deliver multiple projects on-time and on-budget because of incentives such as availability payments that take effect when the project is complete. Most of the interviewees believe that the private sector is “faster, smarter, and better”, and through their operating efficiencies plus incentives for profit, they can complete projects faster than the transit agency alone. In a full-scale DBFOM contract, the private sector is incentivized to build a better product that will require less maintenance to increase their profit over the long-term concession lease.

The major shortcoming of P3s is that they are “complex and opaque,” and difficult to explain to the public because PPPs are misunderstood, unfamiliar, and still novel. Change orders can be difficult in a P3 and upfront costs can be higher because of the need to engage specialist experts to negotiate and collaborate with the private sector partners. Overall costs might be higher as well in a P3, but these costs must be balanced with the benefits that a P3 provides.

Most respondents felt that the P3s in Denver, especially the Eagle P-3 project, can be a model for other transit agencies seeking to expand their infrastructure. Many respondents were also quick to point out that each P3 is different based on local circumstances, and that what works in one case may not work in others. Former RTD general manager Phil Washington has been known to say, “if you have done one P3, you have done one P3.” Nevertheless, Denver's P3s are being studied as examples, and new transit projects, such as Baltimore's Purple Line, are using Denver's P3 experience to help guide them.

RECOMMENDATIONS

1. **The Denver experience with transit P3s can serve as a useful model.** The Eagle P-3 project was the first full-scale (Design-Build-Finance-Operate-Maintain) transit P3 created in the US. Denver Union Station and several other FasTracks transit projects are also being implemented as P3s. Because the results from this study suggest that these projects have been successful so far, the P3 approach to expanding transit infrastructure should be given full consideration. Denver has been a pioneer in the development of transit P3s, and there is much that other transit agencies can learn from the Denver experience. Denver RTD has produced a "Lessons Learned" guidebook that can be useful for transit agencies considering P3s.
2. **Invest in specialized expertise if exploring a P3 approach.** P3s are complex and opaque, and require specialized expertise to pursue a P3. Even though it may be more costly for a transit agency to hire specialized P3 experts, it will be worth the expense if the negotiations and contracts are conducted so that the transit agency's interests are ensured. The same can be said for the private sector partner, and the increased scrutiny and attention to detail by experts on both sides should enhance the quality of the final project.
3. **Build in appropriate safeguards in the contracts to ensure project quality and to protect the public interest.** Respondents in our study maintained that appropriate safeguards, such as providing availability payments based on scheduled opening of service, penalties that apply if the service is not performing up to required levels, and default and tender provisions should something happen with the private sector's ability to pay for or run the service, are critical to the success of the P3. The public interest can be protected if the contract is written with these and other appropriate safeguards.
4. **Ensure that P3 structures are fully integrated within existing structures of regional collaboration.** Given the concerns of local jurisdictions and the public about the potential loss of local control of key regional economic development assets, it is important to ensure that safeguards are built into P3 arrangements in a manner that protects locally strategic public assets and does not undermine or threaten existing models of regional collaboration.

ACRONYMS, ABBREVIATIONS, AND SYMBOLS

BRT	Bus rapid transit
CDOT	Colorado Department of Transportation
DB	Design-build
DBFOM	Design-build-finance-operate-maintain
DIA	Denver International Airport
DRCOG	Denver Regional Council of Governments
DTP	Denver Transit Partners
DUS	Denver Union Station
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
HOT	High-occupancy toll lanes
HPTE	High-Performance Transportation Enterprise
MMC	Metro Mayors Caucus
NAO	National Audit Office, U.K.
P3	Public-private partnership
Penta P	Public Private Partnership Pilot Program
PPP	Public-private partnership
RRIF	Railroad Rehabilitation and Improvement Financing
RTD	Regional Transportation District
TIF	Tax increment financing
TIFIA	Transportation Infrastructure Finance and Innovation Act

TOD	Transit oriented development
U.S.	United States of America
USDOT	United States Department of Transportation
USNC	Union Station Neighborhood Company

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APPENDIX

Survey instrument

Interview Questions

1. Which of the following categories best describes your current affiliation:

- Transit agency _____
- Private contractor _____
- Local Government _____
- State Government _____
- Federal Government _____
- Business community _____
- Non-profit advocacy organization _____
- General public _____
- Other (please specify) _____

2. Please rate your level of familiarity with each of the following public-private partnership (PPP) projects in the Denver area:

Eagle P-3

Extremely Familiar _____ Generally Familiar _____ Somewhat Familiar _____ Not Familiar _____

Denver Union Station

Extremely Familiar _____ Generally Familiar _____ Somewhat Familiar _____ Not Familiar _____

US 36 Bus Rapid Transit

Extremely Familiar _____ Generally Familiar _____ Somewhat Familiar _____ Not Familiar _____

I-225 Line

Extremely Familiar _____ Generally Familiar _____ Somewhat Familiar _____ Not Familiar _____

North Metro Line

Extremely Familiar _____ Generally Familiar _____ Somewhat Familiar _____ Not Familiar _____

Additional comments:

3. How would you rate each of these projects based on how effectively they address transportation needs in the Denver region:

Eagle P-3

Extremely Effective _____ Generally Effective _____ Fairly Effective _____ Fairly Ineffective _____ Generally Ineffective _____ Extremely Ineffective _____

Denver Union Station

Extremely Effective ____	Generally Effective ____	Fairly Effective ____	Fairly Ineffective ____	Generally Ineffective ____	Extremely Ineffective ____
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US 36 Bus Rapid Transit

Extremely Effective ____	Generally Effective ____	Fairly Effective ____	Fairly Ineffective ____	Generally Ineffective ____	Extremely Ineffective ____
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I-225 Line

Extremely Effective ____	Generally Effective ____	Fairly Effective ____	Fairly Ineffective ____	Generally Ineffective ____	Extremely Ineffective ____
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North Metro Line

Extremely Effective ____	Generally Effective ____	Fairly Effective ____	Fairly Ineffective ____	Generally Ineffective ____	Extremely Ineffective ____
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Additional comments:

4. How would you rate each of these projects based on their financial benefit for the Denver Regional Transportation District (RTD):

Eagle P-3

Extremely Favorable ____	Generally Favorable ____	Fairly Favorable ____	Fairly Unfavorable ____	Generally Unfavorable ____	Extremely Unfavorable ____
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Denver Union Station

Extremely Favorable ____	Generally Favorable ____	Fairly Favorable ____	Fairly Unfavorable ____	Generally Unfavorable ____	Extremely Unfavorable ____
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US 36 Bus Rapid Transit

Extremely Favorable ____	Generally Favorable ____	Fairly Favorable ____	Fairly Unfavorable ____	Generally Unfavorable ____	Extremely Unfavorable ____
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I-225 Line

Extremely Favorable ____	Generally Favorable ____	Fairly Favorable ____	Fairly Unfavorable ____	Generally Unfavorable ____	Extremely Unfavorable ____
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North Metro Line

Extremely Favorable ____	Generally Favorable ____	Fairly Favorable ____	Fairly Unfavorable ____	Generally Unfavorable ____	Extremely Unfavorable ____
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Additional comments:

5. How would you rate each of these projects based on their financial benefit for the private consortium involved in each project:

Eagle P-3

Extremely Favorable ____	Generally Favorable ____	Fairly Favorable ____	Fairly Unfavorable ____	Generally Unfavorable ____	Extremely Unfavorable ____
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Denver Union Station

Extremely Favorable ____	Generally Favorable ____	Fairly Favorable ____	Fairly Unfavorable ____	Generally Unfavorable ____	Extremely Unfavorable ____
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US 36 Bus Rapid Transit

Extremely Favorable ____	Generally Favorable ____	Fairly Favorable ____	Fairly Unfavorable ____	Generally Unfavorable ____	Extremely Unfavorable ____
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I-225 Line

Extremely Favorable ____	Generally Favorable ____	Fairly Favorable ____	Fairly Unfavorable ____	Generally Unfavorable ____	Extremely Unfavorable ____
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North Metro Line

Extremely Favorable ____	Generally Favorable ____	Fairly Favorable ____	Fairly Unfavorable ____	Generally Unfavorable ____	Extremely Unfavorable ____
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Additional comments:

6. How would you rate each of these projects based on their financial and social benefits for the Denver community at-large:

Eagle P-3

Extremely Favorable ___ Generally Favorable ___ Fairly Favorable ___ Fairly Unfavorable ___ Generally Unfavorable ___ Extremely Unfavorable ___

Denver Union Station

Extremely Favorable ___ Generally Favorable ___ Fairly Favorable ___ Fairly Unfavorable ___ Generally Unfavorable ___ Extremely Unfavorable ___

US 36 Bus Rapid Transit

Extremely Favorable ___ Generally Favorable ___ Fairly Favorable ___ Fairly Unfavorable ___ Generally Unfavorable ___ Extremely Unfavorable ___

I-225 Line

Extremely Favorable ___ Generally Favorable ___ Fairly Favorable ___ Fairly Unfavorable ___ Generally Unfavorable ___ Extremely Unfavorable ___

North Metro Line

Extremely Favorable ___ Generally Favorable ___ Fairly Favorable ___ Fairly Unfavorable ___ Generally Unfavorable ___ Extremely Unfavorable ___

Additional comments:

7. How would you rate each of these projects based on the level of information provided to the general public about these projects:

Eagle P-3

Extremely Favorable ___ Generally Favorable ___ Fairly Favorable ___ Fairly Unfavorable ___ Generally Unfavorable ___ Extremely Unfavorable ___

Denver Union Station

Extremely Favorable ___ Generally Favorable ___ Fairly Favorable ___ Fairly Unfavorable ___ Generally Unfavorable ___ Extremely Unfavorable ___

US 36 Bus Rapid Transit

Extremely Favorable ___ Generally Favorable ___ Fairly Favorable ___ Fairly Unfavorable ___ Generally Unfavorable ___ Extremely Unfavorable ___

I-225 Line

Extremely Favorable ___ Generally Favorable ___ Fairly Favorable ___ Fairly Unfavorable ___ Generally Unfavorable ___ Extremely Unfavorable ___

North Metro Line

Extremely Favorable ___ Generally Favorable ___ Fairly Favorable ___ Fairly Unfavorable ___ Generally Unfavorable ___ Extremely Unfavorable ___

Additional comments:

8. How would you rate each of these projects based on its contribution to stronger regional collaboration:

Eagle P-3

Extremely Favorable ___ Generally Favorable ___ Fairly Favorable ___ Fairly Unfavorable ___ Generally Unfavorable ___ Extremely Unfavorable ___

Denver Union Station

Extremely Favorable ____	Generally Favorable ____	Fairly Favorable ____	Fairly Unfavorable ____	Generally Unfavorable ____	Extremely Unfavorable
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US 36 Bus Rapid Transit

Extremely Favorable ____	Generally Favorable ____	Fairly Favorable ____	Fairly Unfavorable ____	Generally Unfavorable ____	Extremely Unfavorable
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I-225 Line

Extremely Favorable ____	Generally Favorable ____	Fairly Favorable ____	Fairly Unfavorable ____	Generally Unfavorable ____	Extremely Unfavorable
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North Metro Line

Extremely Favorable ____	Generally Favorable ____	Fairly Favorable ____	Fairly Unfavorable ____	Generally Unfavorable ____	Extremely Unfavorable
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Additional comments:

9. Overall, how would you rate the success of each of these projects thus far:

Eagle P-3

Extremely Favorable ____	Generally Favorable ____	Fairly Favorable ____	Fairly Unfavorable ____	Generally Unfavorable ____	Extremely Unfavorable
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Denver Union Station

Extremely Favorable ____	Generally Favorable ____	Fairly Favorable ____	Fairly Unfavorable ____	Generally Unfavorable ____	Extremely Unfavorable
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US 36 Bus Rapid Transit

Extremely Favorable ____	Generally Favorable ____	Fairly Favorable ____	Fairly Unfavorable ____	Generally Unfavorable ____	Extremely Unfavorable
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I-225 Line

Extremely Favorable ____	Generally Favorable ____	Fairly Favorable ____	Fairly Unfavorable ____	Generally Unfavorable ____	Extremely Unfavorable
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North Metro Line

Extremely Favorable ____	Generally Favorable ____	Fairly Favorable ____	Fairly Unfavorable ____	Generally Unfavorable ____	Extremely Unfavorable
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Additional comments:

10. How far do you agree or disagree with the following statements about transit public-private partnerships (circle your response as follows: 1=Strongly Agree / 2=Agree / 3=Neutral / 4=Disagree / 5=Strongly Disagree).

Such partnerships

(1) Reduce the financial burden on local taxpayers: 1 / 2 / 3 / 4 / 5

(2) Reduce public risk for major infrastructure projects: 1 / 2 / 3 / 4 / 5

(3) Transfer most of the burden to the private sector: 1 / 2 / 3 / 4 / 5

(4) Transfer most of the risk to the private sector: 1 / 2 / 3 / 4 / 5

(5) Spread the financial burden equitably between the

- public and private sectors: 1 / 2 / 3 / 4 / 5
- (6) Spread the risk equitably between the public and private sectors: 1 / 2 / 3 / 4 / 5
- (7) Make the local economy too dependent on federal funding: 1 / 2 / 3 / 4 / 5
- (8) Make the local economy too dependent upon global investors: 1 / 2 / 3 / 4 / 5
- (9) Enhance the delivery of major infrastructure projects: 1 / 2 / 3 / 4 / 5
- (10) Reduce local public accountability for key infrastructure: 1 / 2 / 3 / 4 / 5
- (11) Foster regional collaboration: 1 / 2 / 3 / 4 / 5

Additional comments on any or all of the above:

11. Overall, what in your view are the major benefits of these public-private partnerships?

- (1) _____
- (2) _____
- (3) _____

12. Likewise, what are their major shortcomings?

- (1) _____
- (2) _____
- (3) _____

13. To what extent do you feel that these transit public-private partnerships in Denver could serve as a model for other regions seeking to expand their transit infrastructure? Please be specific in explaining why or why not these PPPs could serve as a model.

(For transit agency and other respondents)

1. If you could choose whether these projects would be conducted as PPPs or conducted by the transit agency alone, which would you prefer and why?

2. What elements, if any, in these PPP contracts provide assurances that the greater public interest is being protected?

3. Do you know what the debt burden will be? Is there a danger that PPP instruments will deliberately be bankrupted and stick the public with a huge tab?

14. Please provide any additional comments about the public-private partnerships mentioned in this survey.

Thank you for your time and input!

Tables of Survey Results

Q3. How would you rate each of these projects based on how effectively they address transportation needs in the Denver region:																	
	Extremely effective		Extremely/ Generally		Generally effective		Generally/ Fairly effective		Fairly favorable		Fairly effective		Generally ineffective		Extremely ineffective		Total
	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	
Eagle P-3	70.0%	14	0.0%	0	25.0%	5	0.0%	0	5.0%	1	0.0%	0	0.0%	0	0.0%	0	20
Denver Union Station	95.0%	19	0.0%	0	5.0%	1	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	20
US 36 Bus Rapid Transit	73.7%	14	0.0%	0	26.3%	5	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	19
I-225 Line	27.8%	5	0.0%	0	55.6%	10	5.6%	1	11.1%	2	0.0%	0	0.0%	0	0.0%	0	18
North Metro Line	33.3%	6	0.0%	0	44.4%	8	0.0%	0	22.2%	4	0.0%	0	0.0%	0	0.0%	0	18

Q3	Minimum	Maximum	Mean	Std Deviation	Variance	Count
Eagle P-3	4	6	5.65	0.57	0.33	20
Denver Union Station	5	6	5.95	0.22	0.05	20
US 36 Bus Rapid Transit	5	6	5.74	0.44	0.19	19
I-225 Line	4	6	5.14	0.62	0.38	18
North Metro Line	4	6	5.11	0.74	0.54	18

Q4. How would you rate each of these projects based on their financial benefit for the Denver Regional Transportation District (RTD):																	
	Extremely favorable		Extremely/ Generally		Generally favorable		Generally/ Fairly		Fairly favorable		Fairly unfavorable		Generally unfavorable		Extremely unfavorable		Total
	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	
Eagle P-3	85.0%	17	0.0%	0	15.0%	3	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	20
Denver Union Station	84.2%	16	0.0%	0	15.8%	3	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	19
US 36 Bus Rapid Transit	47.4%	9	0.0%	0	42.1%	8	0.0%	0	0.0%	0	10.5%	2	0.0%	0	0.0%	0	19
I-225 Line	46.7%	7	6.7%	1	33.3%	5	6.7%	1	6.7%	1	0.0%	0	0.0%	0	0.0%	0	15
North Metro Line	40.0%	6	6.7%	1	20.0%	3	6.7%	1	20.0%	3	6.7%	1	0.0%	0	0.0%	0	15

Q4	Minimum	Maximum	Mean	Std Deviation	Variance	Count
Eagle P-3	5	6	5.85	0.36	0.13	20
Denver Union Station	5	6	5.84	0.36	0.13	19
US 36 Bus Rapid Transit	3	6	5.26	0.91	0.83	19
I-225 Line	4	6	5.4	0.64	0.41	15
North Metro Line	3	6	5.07	0.95	0.9	15

Q5. How would you rate each of these projects based on their financial benefit for the private consortium involved in each project:																	
	Extremely favorable		Extremely/ Generally		Generally favorable		Generally/ Fairly		Fairly favorable		Fairly unfavorable		Generally unfavorable		Extremely unfavorable		Total
	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	
Eagle P-3	18.8%	3	0.0%	0	62.5%	10	6.3%	1	12.5%	2	0.0%	0	0.0%	0	0.0%	0	16
Denver Union Station	41.2%	7	0.0%	0	52.9%	9	0.0%	0	5.9%	1	0.0%	0	0.0%	0	0.0%	0	17
US 36 Bus Rapid Transit	25.0%	3	0.0%	0	58.3%	7	0.0%	0	16.7%	2	0.0%	0	0.0%	0	0.0%	0	12
I-225 Line	30.0%	3	0.0%	0	50.0%	5	0.0%	0	20.0%	2	0.0%	0	0.0%	0	0.0%	0	10
North Metro Line	30.0%	3	0.0%	0	50.0%	5	0.0%	0	20.0%	2	0.0%	0	0.0%	0	0.0%	0	10

Q5	Minimum	Maximum	Mean	Std Deviation	Variance	Count
Eagle P-3	4	6	5.03	0.57	0.33	16
Denver Union Station	4	6	5.35	0.59	0.35	17
US 36 Bus Rapid Transit	4	6	5.08	0.64	0.41	12
I-225 Line	4	6	5.1	0.7	0.49	10
North Metro Line	4	6	5.1	0.7	0.49	10

Q6. How would you rate each of these projects based on their financial and social benefits for the Denver community at-large:																	
	Extremely favorable		Extremely/ Generally		Generally favorable		Generally/ Fairly		Fairly favorable		Fairly unfavorable		Generally unfavorable		Extremely unfavorable		Total
	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	
Eagle P-3	80.0%	16	5.0%	1	15.0%	3	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	20
Denver Union Station	85.0%	17	0.0%	0	15.0%	3	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	20
US 36 Bus Rapid Transit	68.4%	13	0.0%	0	26.3%	5	0.0%	0	0.0%	0	0.0%	0	5.3%	1	0.0%	0	19
I-225 Line	41.2%	7	5.9%	1	41.2%	7	0.0%	0	11.8%	2	0.0%	0	0.0%	0	0.0%	0	17
North Metro Line	43.8%	7	6.3%	1	37.5%	6	0.0%	0	12.5%	2	0.0%	0	0.0%	0	0.0%	0	16

Q6	Minimum	Maximum	Mean	Std Deviation	Variance	Count
Eagle P-3	5	6	5.83	0.36	0.13	20
Denver Union Station	5	6	5.85	0.36	0.13	20
US 36 Bus Rapid Transit	2	6	5.53	0.94	0.88	19
I-225 Line	4	6	5.32	0.66	0.44	17
North Metro Line	4	6	5.34	0.68	0.46	16

Q7. How would you rate each of these projects based on the level of information provided to the general public about these projects:																	
	Extremely favorable		Extremely/ Generally		Generally favorable		Generally/ Fairly		Fairly favorable		Fairly unfavorable		Generally unfavorable		Extremely unfavorable		Total
	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	
Eagle P-3	45.0%	9	0.0%	0	25.0%	5	0.0%	0	25.0%	5	0.0%	0	5.0%	1	0.0%	0	20
Denver Union Station	45.0%	9	5.0%	1	35.0%	7	0.0%	0	10.0%	2	0.0%	0	5.0%	1	0.0%	0	20
US 36 Bus Rapid Transit	25.0%	5	0.0%	0	15.0%	3	0.0%	0	35.0%	7	5.0%	1	20.0%	4	0.0%	0	20
I-225 Line	44.4%	8	0.0%	0	33.3%	6	0.0%	0	16.7%	3	0.0%	0	5.6%	1	0.0%	0	18
North Metro Line	41.2%	7	0.0%	0	29.4%	5	0.0%	0	29.4%	5	0.0%	0	0.0%	0	0.0%	0	17

Q7	Minimum	Maximum	Mean	Std Deviation	Variance	Count
Eagle P-3	2	6	5.05	1.07	1.15	20
Denver Union Station	2	6	5.22	0.98	0.96	20
US 36 Bus Rapid Transit	2	6	4.2	1.4	1.96	20
I-225 Line	2	6	5.11	1.05	1.1	18
North Metro Line	4	6	5.12	0.83	0.69	17

Q8. How would you rate each of these projects based on its contribution to stronger regional collaboration:																	
	Extremely favorable		Extremely/ Generally		Generally favorable		Generally/ Fairly		Fairly favorable		Fairly unfavorable		Generally unfavorable		Extremely unfavorable		Total
	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	
Eagle P-3	52.6%	10	10.5%	2	31.6%	6	0.0%	0	5.3%	1	0.0%	0	0.0%	0	0.0%	0	19
Denver Union Station	63.2%	12	10.5%	2	15.8%	3	0.0%	0	10.5%	2	0.0%	0	0.0%	0	0.0%	0	19
US 36 Bus Rapid Transit	36.8%	7	10.5%	2	36.8%	7	0.0%	0	5.3%	1	5.3%	1	0.0%	0	5.3%	1	19
I-225 Line	27.8%	5	11.1%	2	50.0%	9	0.0%	0	11.1%	2	0.0%	0	0.0%	0	0.0%	0	18
North Metro Line	31.6%	6	10.5%	2	52.6%	10	0.0%	0	5.3%	1	0.0%	0	0.0%	0	0.0%	0	19

Q8	Minimum	Maximum	Mean	Std Deviation	Variance	Count
Eagle P-3	4	6	5.53	0.57	0.33	19
Denver Union Station	4	6	5.58	0.65	0.43	19
US 36 Bus Rapid Transit	1	6	5.05	1.22	1.5	19
I-225 Line	4	6	5.22	0.61	0.37	18
North Metro Line	4	6	5.32	0.54	0.3	19

Q9. Overall, how would you rate the success of each of these projects thus far:																	
	Extremely favorable		Extremely/ Generally		Generally favorable		Generally/ Fairly		Fairly favorable		Fairly unfavorable		Generally unfavorable		Extremely unfavorable		Total
	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	
Eagle P-3	60.0%	12	0.0%	0	40.0%	8	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	20
Denver Union Station	100.0%	20	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	20
US 36 Bus Rapid Transit	40.0%	8	0.0%	0	55.0%	11	0.0%	0	0.0%	0	5.0%	1	0.0%	0	0.0%	0	20
I-225 Line	28.6%	4	0.0%	0	50.0%	7	0.0%	0	21.4%	3	0.0%	0	0.0%	0	0.0%	0	14
North Metro Line	38.5%	5	0.0%	0	53.8%	7	0.0%	0	7.7%	1	0.0%	0	0.0%	0	0.0%	0	13

Q9	Minimum	Maximum	Mean	Std Deviation	Variance	Count
Eagle P-3	5	6	5.6	0.49	0.24	20
Denver Union Station	6	6	6	0	0	20
US 36 Bus Rapid Transit	3	6	5.3	0.71	0.51	20
I-225 Line	4	6	5.07	0.7	0.49	14
North Metro Line	4	6	5.31	0.61	0.37	13

Q10. How far do you agree or disagree with the following statements about transit public-private partnerships: Such partnerships...	Strongly agree		Strongly Agree/ Agree		Agree/ Neutral		Neutral		Disagree		Strongly Disagree		Total		
(1) Reduce the financial burden on taxpayers	31.6%	6	0.0%	0	31.6%	6	5.3%	1	31.6%	6	0.0%	0	0.0%	0	19
(2) Reduce public risk for major infrastructure projects	60.0%	12	5.0%	1	25.0%	5	0.0%	0	5.0%	1	5.0%	1	0.0%	0	20
(3) Transfer most of the burden to the private sector	20.0%	4	0.0%	0	45.0%	9	0.0%	0	20.0%	4	10.0%	2	5.0%	1	20
(4) Transfer most of the risk to the private sector	25.0%	5	0.0%	0	45.0%	9	5.0%	1	15.0%	3	10.0%	2	0.0%	0	20
(5) Spread the financial burden evenly between the public and private sectors	15.0%	3	0.0%	0	40.0%	8	5.0%	1	25.0%	5	15.0%	3	0.0%	0	20
(6) Spread the risk evenly between the public and private sectors	15.0%	3	0.0%	0	45.0%	9	5.0%	1	15.0%	3	20.0%	4	0.0%	0	20
(7) Make the local economy too dependent on federal funding	0.0%	0	0.0%	0	0.0%	0	0.0%	0	15.0%	3	40.0%	8	45.0%	9	20
(8) Make the local economy too dependent upon global investors	0.0%	0	0.0%	0	5.0%	1	0.0%	0	10.0%	2	45.0%	9	40.0%	8	20
(9) Enhance the delivery of major infrastructure projects	85.0%	17	0.0%	0	10.0%	2	0.0%	0	5.0%	1	0.0%	0	0.0%	0	20
(10) Reduce local public accountability for key infrastructure	0.0%	0	0.0%	0	5.0%	1	0.0%	0	10.0%	2	45.0%	9	40.0%	8	20
(11) Foster regional collaboration	35.0%	7	5.0%	1	45.0%	9	0.0%	0	10.0%	2	0.0%	0	5.0%	1	20

Q 10	Minimum	Maximum	Mean	Std Deviation	Variance	Count
(1) Reduce the financial burden on taxpayers	3	5	3.97	0.8	0.64	19
(2) Reduce public risk for major infrastructure projects	2	5	4.47	0.8	0.64	20
(3) Transfer most of the burden to the private sector	1	5	3.65	1.06	1.13	20
(4) Transfer most of the risk to the private sector	2	5	3.88	0.89	0.8	20
(5) Spread the financial burden evenly between the public and private sectors	2	5	3.58	0.91	0.83	20
(6) Spread the risk evenly between the public and private sectors	2	5	3.58	0.97	0.93	20
(7) Make the local economy too dependent on federal funding	1	3	1.7	0.71	0.51	20
(8) Make the local economy too dependent upon global investors	1	4	1.8	0.81	0.66	20
(9) Enhance the delivery of major infrastructure projects	3	5	4.8	0.51	0.26	20
(10) Reduce local public accountability for key infrastructure	1	4	1.8	0.81	0.66	20
(11) Foster regional collaboration	1	5	4.13	0.95	0.9	20