



**Project Report: Achieving Value for Money**  
U.S. 36 Express Lanes Public-Private Partnership

**COLORADO DEPARTMENT  
OF TRANSPORTATION**

March 14, 2014

## U.S. 36 Express Lanes Public Private Partnership



### BACKGROUND AND OBJECTIVES

The FASTER transportation measure passed by Colorado lawmakers in 2009 authorized state officials to look for innovative ways to finance and construct major highway projects since traditional sources of roads funding, including federal and state fuel taxes, are insufficient.

Passage of the law followed the release in 2008 of a special report on Colorado’s transportation crisis, commissioned by then Governor Bill Ritter that highlighted the need to invest billions of dollars in highway and bridge modernization in a period of diminishing resources.

The \$500 million project to expand and rebuild U.S. 36 between Denver and Boulder is the first highway venture in Colorado that will rely on the expertise of a private consortium to finance, build, operate and maintain a major roadway under a long-term contract.

Given the age and constrained lane capacity of U.S. 36, the deal forged between Colorado and the private consortium represents an opportunity to dramatically accelerate construction of a state-of-the-art multimodal transportation corridor and transfer the project risks—financing, operation and maintenance, and replacement risks—while retaining for the state the right to share in excess revenues generated by the highway if toll income exceeds pre-determined targets over the life of the agreement.

This report describes the project need and benefits, delivery method, and value received by the state by entering into a Public Private Partnership.

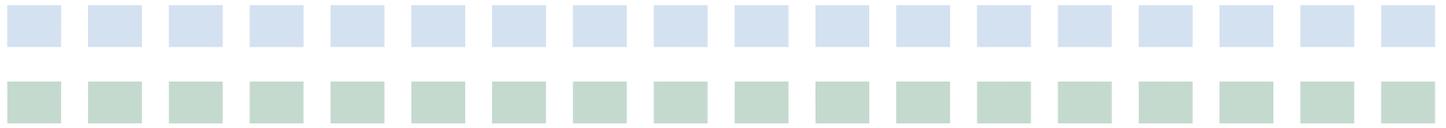
### Funding Transportation

Currently over 80% of CDOT’s \$1.1 billion budget is dedicated to maintenance of the system, providing little to improve congestion and mobility. Despite innovative approaches to budgeting that will increase construction, as well as the retirement of the TRANS bonds, CDOT projects an approximately \$600 million/year shortfall to maintain and expand our transportation system.

ANNUAL FUNDING GAP—After RAMP/TRANS Bond Debt Retirement			
	Annual Funding	RAMP	TRANS Retirement
Transportation Category	Annual Gap*	2013–17	2018–22
Maintain the System	\$157	\$150	\$167
Rural Road Safety/Reliability	\$100	\$0	\$0
Congestion Relief/Mobility	\$500	\$150	\$0
Inter-Regional Transit	\$15	\$0	\$0
<b>Total</b>	<b>\$772</b>	<b>\$300</b>	<b>\$167</b>
*TBD Colorado		Deficit	Deficit
*All \$ in millions		\$432	\$605

CDOT’s ability to keep pace with that growth is hamstrung by state and federal gas taxes that have not changed in the last twenty years. Due to inflation and increases in fuel efficiency, CDOT is unable to keep pace with the growing demands on the statewide transportation system.

In the meantime, CDOT is not sitting still. The agency has initiated several programs to do more with the available resources. Public private partnerships (P3) are a strategy to leverage limited state resources with the private sector.



## PROJECT NEEDS AND BENEFITS

The U.S. 36 Express Lanes project builds upon the success of the existing I-25 Express Lanes by extending the regional managed lanes system to form a continuous network from downtown Denver all the way to Boulder. It is a priority regional transportation project in one of the highest growth corridors in the state.

A congested and rapidly growing corridor carrying between 80,000 and 100,000 vehicle trips per day and operating at nearly 90 percent capacity, U.S. 36 currently experiences three to four hours of severe bi-directional congestion daily.

Overall, the project need was clear:

- Improve the condition of the highway
- Replace bridges that are in poor condition
- Provide congestion relief
- Expand mode of travel options
- Increase efficiency of transit service



Because CDOT revenue only provides the funds to maintain the statewide transportation system, with no planned-for funds available for highway expansion, the department, through the Colorado High Performance Transportation Enterprise, has been exploring innovative partnerships to expand capacity and mobility in congested corridors. The U.S. 36 Express Lanes Project is the first of several potential projects to include tolled express lanes that will enhance the reliability of travel in the area by providing an additional lane of capacity for transit, high occupancy vehicles and single occupancy vehicles willing to pay a toll.

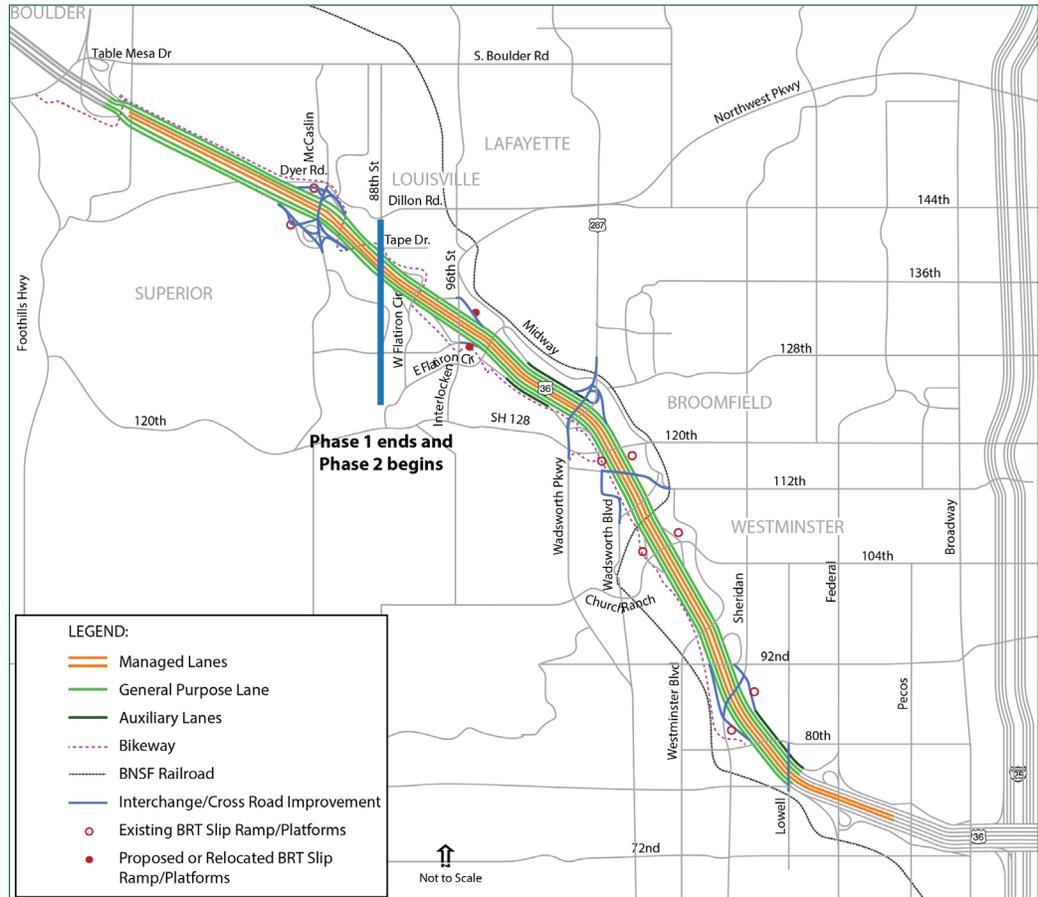
At the completion of the U.S. 36 Express Lanes project, the traveling public will have more choices—pay toll, carpool or ride bus for a more efficient trip, or travel free in existing lanes—creating a more effective transportation system that supports economic and job growth. Additionally, the project will reduce congestion, improve gas mileage and air quality.

### Project Scope

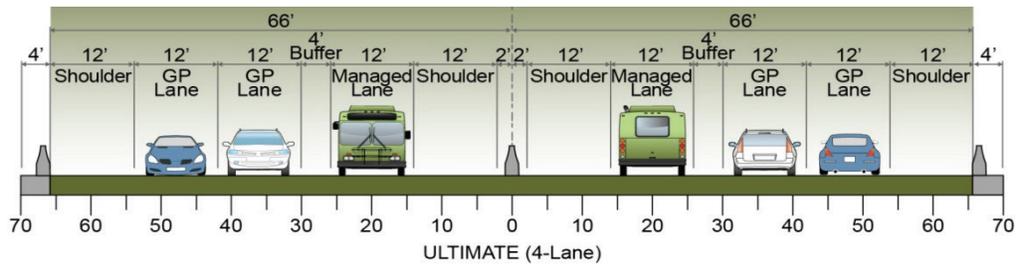
U.S. 36 Express Lanes is a two-phase multi-modal project led by the Colorado Department of Transportation (CDOT) and the Regional Transportation District (RTD) to reconstruct and widen U.S. 36 between Denver and Boulder. Project scope includes:

- Add a single express toll lane in each direction between Pecos Street and Table Mesa Drive for Bus Rapid Transit (BRT), High Occupancy Vehicles (HOV) and tolled Single Occupancy Vehicles (SOV);
- Reconstruct the highway throughout a 15.2 mile stretch of the corridor;
- Widen the highway to accommodate 12-foot-wide inside and outside shoulders;
- Add Bus Rapid Transit improvements, including new electronic display signage at stations and bus priority improvements at ramps. The improvements also will allow buses to operate on the shoulders of US 36 between interchanges to decrease bus travel time;
- Replace the Wadsworth Parkway, Wadsworth Boulevard (at 112th Avenue), Lowell Boulevard and Sheridan Boulevard bridges, and the US 36 bridge over the Burlington Northern Santa Fe Railway;
- Construct a diverging diamond interchange at McCaslin Boulevard to improve safety and better flow for buses, cars, bicyclists and pedestrians;
- Install Intelligent Transportation Systems (ITS) for tolling, transit and traveler information, and incident management;
- Install a separate commuter bikeway along much of the corridor; and
- Improve RTD stations along the corridor, including new canopies with enhanced weather protection.

## US 36 Express Lanes Project Map and Elements



## Final Configuration



## PROJECT DELIVERY

While the project is being delivered in two phases with separate project delivery models, the goals of both Phase 1 and Phase 2 are the same and include:

- Maximize scope and improvements within the project budget;
- Minimize operating and life cycle maintenance costs and provide a quality product;
- Meet or beat schedule;
- Minimize inconvenience to the public and maximize safety of workers and traveling public;
- Maximize engagement of local workers, businesses, and communities in the development, construction and sustainability of improvements.

### Phase 1 Delivery Details

The first phase of the project, which broke ground in July 2012, includes the construction of the project elements between Pecos Street and 88th Street in Louisville. Managed by CDOT, the \$317.9 million project is being constructed using a Design-Build (DB) delivery model. The new express lanes will connect to the northern terminus of the existing reversible I-25 Express Lanes. The BRT component of the project will become part of Regional Transportation District's (RTD) FasTracks system. Construction of Phase 1 is expected to be completed by early 2015.

Phase 1 of the project is being financed with Federal, State and Regional Transportation District (RTD) funds, including a federal Transportation Infrastructure Finance and Innovation Act (TIFIA) loan (the repayment of which will be supported by tolls), a federal Transportation Investment Generating Economic Recovery (TIGER) grant, as well as contributions from the City and County of Broomfield and the City of Westminster.

### Phase 2 Delivery Details

RTD's substantial commitment to Phase 1 of the project came with an understanding that partial completion does not fill the need, and commencement of Phase 2 should begin before completion of Phase 1. CDOT and our local partners share in that view. Given current constraints on funding and the financing risks attached to the additional cost, the second phase of the U.S. 36 project is being constructed using a Public-Private Partnership ("P3") with Plenary Roads Denver (Plenary).

### Benefits of Phase 1: Design Build Delivery

Design build allows for a best value selection rather than lowest bid. The Ames/Granite team:

- Successfully addressed all five goals outlined in the Request for Proposals;
- Beat the project completion schedule by six months;
- Committed to build many Additional Requested Elements (improvements that were desired but not included in the base project), including extending the terminus of the project ¾ miles to the west to 88th Street and reconstructing two additional bridges on the corridor.

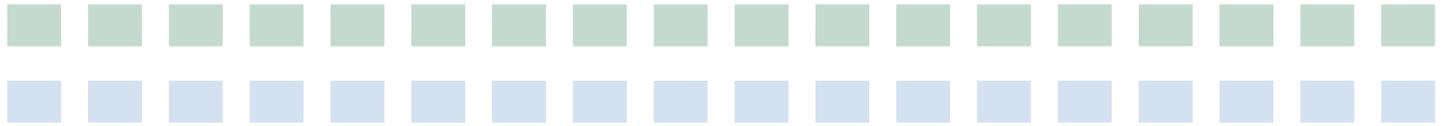


### Phase 2: Public Private Partnership Selection Process

The selection process included several steps which involved partner agencies and local governments:

- Request for Qualifications (RFQ) released February 2012
- Four teams responded by April 2012 and three were short-listed
- Final Request for Proposals (RFP) released August 2012
- Submissions were evaluated on technical proposal, financial capacity, experience and qualifications of team
- Plenary Roads Denver selected April 2013

*All RFQ and RFP materials available for public review*



**Phase 2 Delivery Details (continued)**

Plenary’s Canadian parent company is a major participant in large North American infrastructure projects. Phase 2 will extend approximately five miles, from 88th Street in Louisville to Table Mesa/Foothills in Boulder, and will carry forward the features of Phase 1. BRT will have priority in the express lanes and HOV free travel (starting with HOV 2+ and changing to HOV 3+ in 2017 or earlier if congestion warrants) will be permitted. It is expected that Phase 2 will be open in early 2016.

Plenary was selected on a competitive basis in April 2013, at the end of an extended and open procurement process lasting almost a year, with local governments consulted throughout the process. Plenary will build the tolled express lanes and reconstruct the general purpose lanes in Phase 2 and will operate and maintain the entire corridor (I-25 Express Lanes, Phase 1 and Phase 2) over a 50 year period. The contract includes strict performance measures and requires Plenary to return the express lanes to CDOT in reconstructed condition at the end of the concession term.

Plenary will have the right, subject to contractual limitations, to collect tolls from the express lanes. Under terms of the pact, Plenary also will retain tolls collected from the 7.7-mile express-toll operation on Interstate 25 between downtown Denver and the Pecos Street interchange on U.S. 36. The I-25 High Occupancy Toll, or “HOT lane”, facility opened in 2006 and currently generates about \$2.6 million in annual toll revenues.

Plenary will assume the Phase 1 TIFIA loan and will contribute more than \$120 million in equity and new debt (including a new \$60 million loan from TIFIA) to the Phase 2 project cost, which is estimated to total about \$180 million. Plenary will be solely liable for the project’s debt.

In addition, CDOT/HPTE, RTD, DRCOG, Boulder County and the cities of Superior and Louisville will contribute to the Phase 2 cost. By financing almost two-thirds of the Phase 2 cost rather than waiting until funds become available over time, construction is accelerated for the Phase 2 projects by 20 years.

**The Plenary Roads Denver Team includes:**

- Ames Construction, Inc.–Construction
- Granite Construction–Construction
- HDR–Engineering Design
- Transfield Services–Maintenance
- Goldman Sachs–Financial Advisor



US 36 Phase 1 and 2 Funding Sources			
	Phase 1	Phase 2	Total
<b>RTD</b>	\$124,000,000	\$18,500,000	\$142,500,000
<b>DRCOG</b>	46,600,000	15,000,000	61,600,000
<b>CDOT</b> (including Bridge Enterprise)	77,700,000	15,000,000	92,700,000
<b>HPTE</b> (including TIGER Grant)	10,000,000	–	10,000,000
<b>Plenary Debt &amp; Equity</b> (including TIFIA 1 & 2)	54,000,000	120,000,000	174,000,000
<b>Local Government</b>	5,600,000	11,000,000	16,600,000
<b>TOTAL</b>	<b>\$317,900,000</b>	<b>\$179,500,000</b>	<b>\$497,400,000</b>

## PROJECT VALUE ANALYSIS AND RATIONAL FOR PUBLIC PRIVATE PARTNERSHIP

The decision to enter into a Public Private Partnership (P3) for Phase 2 of the U.S. 36 Express Lanes project was based on a Project Value Analysis (PVA). A PVA is a risk-adjusted analysis that attempts to quantify the benefits and costs of the HPTE Board retaining risks under the “public model” and compares those risks to the risks of utilizing the “concession model.”

HPTE asked KPMG, a national consulting firm, to analyze the value Colorado and its taxpayers are getting from having a private concessionaire build, operate and maintain the entire U.S. 36 project, along with the I-25 express lanes, under a long-term agreement instead of having the state try to handle the venture itself. The analysis considers the subsidy and net revenues over the 50 year operating term of the concession agreement.

### Summary of Assumptions

**Revenue:** The public model uses traffic and revenue forecasts prepared by CDM Smith and are the forecasts HPTE would rely on if it financed the project itself. The concession model utilizes the Plenary traffic and revenue consultant for its model. The concession model forecasts are very similar to the CDM Smith forecasts for the first fifteen years of the concession. This is a bit unusual, as traditionally the private sector forecasts higher traffic and revenue numbers than those of the public sector. The concessionaire has the right to collect and retain all estimated revenues during the fifty years. However, if revenue is higher than projected under the concession model, the HPTE will share in those “excess” revenues. Revenue assumptions include the change in the regional HOV policy from HOV 2+ to HOV 3+ beginning in 2017.

**Construction:** Because the public model would utilize a design-build delivery method, overall construction costs are expected to be similar in both the public and concession delivery models. It should be noted that because the term of the Final Request for Proposal included a \$500,000 stipend for responsive bidders if the state financed the project using a public delivery model, \$1 million has been included in the cost of the public model.

### Qualitative Factors Influencing P3 Decision

- Deliver project with lowest upfront subsidy
- Transfer risk to concessionaire
- Relieve CDOT of Phase 1 O&M obligations
- Construct Phase 2 Managed Lanes Reconstruction of General Purpose Lanes in an effective and economical way
- Facilitate RTD’s Bus Rapid Transit programs
- Optimize asset condition over long term
- Minimize inconvenience to public and maximize safety of workers and the traveling public.



## Summary of Assumptions (continued)

**Operations and Maintenance (O&M):** CDOT asked proposers to submit a price to perform routine maintenance on the U.S. 36 General Purpose Lanes. If the proposed price was less than a benchmark price predetermined by CDOT but not provided to the proposers, the concessionaire would receive the fees and perform the associated maintenance work. Because Plenary's proposer was less than the benchmark, the O&M agreement covers "fence to fence," meaning the concessionaire will be responsible for not only operations and maintenance of the express lanes, but also the general purpose lanes and highway right-of-way on either side of the travel lanes, and includes snow removal activities. Both Phase 1 and Phase 2 of the project will be maintained by the concessionaire, as well as the I-25 Express Lanes (not General Purpose Lanes).

**Major Maintenance:** Major maintenance includes both periodic surface treatments to maintain the quality of the managed lanes, but also full reconstruction during the fifty year life of the agreement. The concessionaire will be responsible for both the U.S. 36 Express Toll Lanes, as well as the I-25 Express Toll Lanes. Major maintenance of the U.S. 36 General Purpose Lanes will remain CDOT's responsibility.

**Toll Collection:** Because both the public and concession models assume utilizing the E-470 Public Highway Authority to provide back office toll collection services, these costs do not impact the overall PVA.

**Financing:** Both models assume the Phase 1 TIFIA loan remains unchanged, although Plenary takes the loan over as part of the concession. The public model assumes a Phase 2 TIFIA loan and tax-exempt bonds. The concession model includes a subordinate Phase 2 TIFIA loan, senior level Private Activity Bonds, and a subordinate shareholder loan and equity. Both models include a debt service reserve account and major maintenance accounts, while the concession model also includes reserve funds for ramp up and O&M.

**Terms of Analysis:** The analysis considers the subsidy and net revenues over the 50 year operating term on the Concession Agreement.

### Upfront Public Subsidy

The cost of Phase 2 is expected to be approximately \$179.5 million. The upfront public subsidy is that portion of the construction cost that the state and other public partners (such as RTD) must produce in order to fully fund the project. The upfront subsidy is presented in nominal<sup>1</sup> or year-of-expenditure terms to provide consistency in comparing the results of each delivery model against the amount of available funding. KPMG found that the concession model could deliver the project with a lower upfront public subsidy. Overall, the subsidy under the public model, assuming a design-build delivery method, is \$66.0 million. The concessionaire's proposal required a public subsidy of \$48.8 million, or \$17.2 million less than the required subsidy under the public model.

Base Case Upfront Public Subsidy (millions)—Nominal Value		
Concession Model Public Subsidy	Public Model Public Subsidy	Public Savings from Concession Model
\$(48.8)	\$(66.0)	\$17.2

<sup>1</sup>Nominal value considers the value of money in today's dollars, without considering when the dollar was earned or spent. Therefore, it doesn't account for variables such as how increases in inflation over time may lessen the buying power, and therefore the value, of the dollar.

## Total Project Value

Total Project Value is a metric that allows the HPTE to compare whether the public model or concession model requires the public to bear the greater financial burden (actual and at risk) for initial construction and long-term maintenance over the fifty year term. As you can see from the table above, if the only factor for consideration was reducing the upfront public subsidy, the concession model is the clear winner.

However, while an important goal of the HPTE Board was to minimize the upfront public subsidy—and it is unclear whether the project could even move forward at a cost to the public of \$66.0 million—it is only a piece of the overall financial picture. In order to effectively determine which delivery method provides the most value to the public, the PVA must consider not only the nominal value, but also net present value.<sup>2</sup> For example, the PVA considers the net present value of both the upfront subsidy and future “excess” toll revenues over the fifty year analysis. Because the excess toll revenues do not come until the later years, the net present value accounts for expected inflationary changes that reduce the value of those dollars as compared to the reduced construction costs today. The net present value is calculated as *upfront subsidy + excess revenues = net present value*. The model uses a 14% discount rate<sup>3</sup> for excess revenues and a 5% discount rate for the upfront and additional subsidy amounts to cover the difference in the U.S. 36 General Purpose Lane O&M costs.

The following table shows the Base Case<sup>4</sup> Total Project Value based on the proposal received from Plenary and adjustments, including savings that accrue on O&M costs, interest rates and project costs. The total project value (and public savings) under the concession model is a bit more narrow than the nominal upfront subsidy difference of \$17.2 million. However, working with toll revenue estimates and forecasts of operating and maintenance expenses, KPMG determined that the concession model under a base case scenario still offers Colorado a \$2.2 million advantage in value over the public alternative when the figures are expressed in “net present value.”

Base Case Total Project Value (millions)—Net Present Value				
Concession Model Upfront Subsidy (Changed to NPV) and Total Project Value	Public Model			Total Project Value of Concession Model Over Public Model
	Upfront Subsidy (changed to NPV)	Excess Revenues (in NPV)	Total Project Value	
\$(45.4)	\$(60.2)	\$12.6	\$(47.6)	\$2.2

<sup>2</sup>Net present value accounts for when a dollar is earned or spent and what inflation has done to the value of that dollar over time.

<sup>3</sup>Discount rate is the percentage that is applied to a dollar in order to calculate its net present value.

<sup>4</sup>The Base Case does not assume risk variables such as the possibility that toll revenues come in higher or lower than projected. The risk analysis and how it impacts project value is discussed in the next section.



## PROTECTING THE TAXPAYERS: TRANSFER OF RISK

While the total project value (and public savings) is slightly greater under the concession model, revenue and other forecasts over a 50 year time horizon are only estimates and include an element of high risk. Given HPTE and CDOT's limited financial resources, the Board was concerned about the potential financial exposure if revenue were less than estimates over fifty years, or other costs were higher forecast.

The analysis indicated that even if Colorado could build, operate and maintain Phase 2 of the U.S. 36 highway complex itself instead of having a P3 concessionaire perform the tasks, the public model carried significant risks for the state, especially if traffic counts and toll revenues are lower than anticipated in the coming decades.

It is in this risk analysis where the nominal value of the public model is overshadowed by the value of transferring the long-term risks to the private sector. The transaction HPTE reached with Plenary calls for the concessionaire to assume nearly all the project risks, including financing and maintenance risks, while retaining for the state the right to share in excess revenues generated by the highway if toll income meets forecasted targets over the life of the agreement. The nominal value of this risk transfer could equate to several hundred million dollars over the fifty year agreement. Moody's estimates that a 10 percent reduction in total corridor volume results in a more than 25 percent reduction in managed lane volume. This sensitivity results in a 48 percent reduction in revenue from the base scenario, and reflects the potential volatility of revenue projections.

### Revenue Risks

Lower Than Expected Revenue: HPTE's prime motivation for selecting the P3 model was to shift the bulk of the project's risk to the concessionaire. With highway projects using the express lanes model having limited experience in the United States, there is more than a little uncertainty about how the U.S. 36 project will fare financially over the long term. So, the PVA includes a sensitivity analysis that considers 25 percent and 40 percent reductions in revenue from base-case projections. For example, if toll revenues come in 25 percent below the base-case projections, there would be insufficient funding for HPTE to make debt service payments on the project for 17 years, according to consultant's analysis. In nominal terms, the total shortfall to fund O&M, debt service, and major maintenance would be \$130 million.

If revenues are below projections for the concession model HPTE has no liability. Lower-than-expected toll revenues are among the risks being borne by the P3 concessionaire. Shortfalls could mean a decline in toll income totaling tens of millions of dollars, yet Plenary still will have the responsibility for paying off loans and operating and maintaining the highway over the 50-year period. The concessionaire may request toll increases, up to a capped amount, to secure its investment and guarantee that enough revenue is generated to meet loan obligations and operate and maintain the roadway over the decades. However, approval from HPTE's Board is required before a toll increase can go into effect.

Public Model Revenue Sensitivities												
\$M	Debt Service Shortfall			O&M Service Shortfall			Major Maintenance Shortfall			Total Shortfall		
	Nominal	NPV @ 5%	NPV @ 14%	Nominal	NPV @ 5%	NPV @ 14%	Nominal	NPV @ 5%	NPV @ 14%	Nominal	NPV @ 5%	NPV @ 14%
25% Downside	(26.6)	(15.3)	(6.9)	(4.6)	(4.0)	(3.2)	(99.1)	(31.6)	(9.6)	(130.3)	(50.9)	(19.7)
40% Downside	(80.7)	(40.3)	(14.2)	(25.5)	(18.5)	(11.3)	(215.1)	(50.6)	(11.0)	(321.43)	(109.3)	(36.5)

**Higher Than Expected Revenue:** HPTE’s consultant also looked at scenarios in which toll revenues might exceed predictions, including one where income would be 10 percent higher. Such a case would reward Plenary for the risks it took on the project by accelerating the concessionaire’s return on its investment, including the payment of interest. To attract involvement from the private sector in the U.S. 36 venture, it was necessary to provide an adequate return on the equity investment a consortium would be making in the project.

HPTE’s contract with Plenary calls for the state to share in revenues generated by the U.S. 36 project after minimum rate-of-return targets are met. The revenue-sharing formula is designed to maintain an incentive for the concessionaire to maximize revenue, but also increases the state’s revenue share as the return to Plenary increases. On a nominal basis, the HPTE may realize up to \$290 million in additional revenues if the express lanes immediately generate 10 percent more revenue than the base case, and slightly less than that if the revenue escalates up to a 10 percent over time. In this way, HPTE has a stake in the financial upside of the project while leaving in place the primary incentive for securing participation of a private investor. The amount of revenue-sharing and its timing, likely a decade or more into the concession term, depends on just how robust the toll income turns out to be.

Upside Revenue Sensitivities (millions)		
Public Model	HPTE Revenue Nominal	HPTE Revenue NPV @14%
10% Upside Immediately	\$290.0	\$13.3
Escalating Upside	\$276.9	\$8.1

**Local Benefits to Cost-Sharing**

HPTE has signed an agreement with cities and counties in the U.S. 36 corridor that allows them to participate in deliberations over how the state would spend excess toll revenue, should it materialize, to boost mobility and transit options in the corridor.

**Operations & Maintenance Risks:** There is significant empirical evidence nationally to suggest that the public sector will receive value through reduced O&M costs under the concession model. CDOT estimates this maintenance to be approximately \$798,900 per year for the state to maintain over the fifty year review period under the public model. The concessionaire proposal requires a state payment of \$675,000 per year, or \$123,900 per year less than the benchmark set by the department, resulting in savings to the state of approximately 15 percent. In both the public and concession model, the new express lanes would be maintained using toll revenues.

Maintenance costs assume a 5% discount rate to determine Net Project Value and include both Phases 1 and 2 of the project, as well as the I-25 Express Lanes.

Annual Operations and Maintenance Costs for GP Lanes	
Concession Model	Public Model
\$675,000	\$798,900

**State Employee Impact**

No state employee will lose their job because of the new P3 arrangement. CDOT crews will be deployed to other critical areas to provide maintenance and operations for the traveling public. CDOT may also adjust staffing levels over time based on retirement and attrition.

**Risks Related to Maintenance Costs:** O&M cost variances could result from higher materials cost due to inflation as well as higher than expected snow and ice removal costs. If highway maintenance and operation costs are greater than \$675,000 annually, the concession model puts the entire liability for those additional costs on Plenary, increasing the value to CDOT of the concession model. Under the public model CDOT would be responsible for those additional costs, with potential liability to CDOT as high as a \$3 million nominal cost over the term. In Net Present Value terms, the potential exposure to the state could total approximately \$14.5 million assuming revenues were insufficient to fund 50% of the total project O&M.

**Lower Than Expected Maintenance Costs:** If O&M over the term is 15% less than expected, it would match the CDOT benchmark costs for O&M. In other words, the value of the concession model would be equal to the public model.

**Overall Risk Analysis:** Colorado weighed risks vs. rewards in selecting the concession model for the U.S. 36 project. It limits the state’s exposure if toll revenues come in lower than expected, or if maintenance costs are higher than anticipated, yet the revenue-sharing provision allows for upside gain if toll-lane traffic and income are more robust than predicted. The following table provides a checklist of all risks associated with the concession model, and whether the risk belongs to the state, Plenary, or the risk is shared.

The following table provides a summary of the risk allocation for the project, including risks transferred to PRD, risks retained by CDOT/HPTE and shared risks.

Risks Relating to:	Risk Allocation		
	CDOT/HPTE	Private (PRD)	Shared
Design of highway and structures		•	
Construction of highway and structures (risk of time and cost overruns)		•	
Revenue risk, that is, the risk that toll revenue is not sufficient to pay off debt raised for the project		•	
Majority of risks associated with environmental factors including changes to restrictions and permitting (with the exception of permits obtained by CDOT or HPTE)		•	
Geotechnical (for example, soil below the highway surface)		•	
Operations and maintenance, including routine maintenance and life cycle maintenance, life cycle maintenance in relation to non-separable tasks on the general purpose lanes		•	
Snow and ice removal on both the general purpose lanes and the managed lanes		•	
Handback of the facility at the end of the term of the contract which fulfills CDOT and HPTE requirements in relation to the residual life of the highway at that time		•	
Acquisition of property required for highway construction—including risks related to cost and timeliness to acquire such property	•		
Responsibility for repairing any latent defects in work which as completed prior to the contract commencement date or for works undertaken by other CDOT contractors	•		
Bringing the highway back into agreed-upon condition after the occurrence of a significant natural event	•		
Require to undertake soils or other remediation as a result of the discovery of undisclosed contaminated soils	•		
Requirements for moving utilities to construct the highway and structures and the risk that utility companies will not move quickly enough to meet PRD's schedule or that they will levy higher than expected charges for the relocation work			•
Increases in the future of general insurance premium cost charged by the insurance industry for the insurance required by the contract			•

## VALUE TO THE TAXPAYERS

According to the PVA consultant, the concession agreement reflects “an optimal balance of risks” between HPTE and Plenary. Additionally, the infusing of private sector resources accelerates the construction schedule of this critical project by 20 years, providing an immediate return on investment to the traveling public through reduction in delay of travel time on this currently heavily congested corridor.

Under the agreement, Plenary is responsible for risks associated with the level of traffic in the express lanes and the sufficiency of toll revenues to support repayment of loans, as well as the long-term operation and maintenance of the highway.

Tolls on the U.S. 36 and I-25 express lanes will be variable, with higher tolls set for peak travel periods. HPTE and the concessionaire will have the capability of introducing dynamic pricing at some future point. This would allow toll rates to be adjusted in real time to help meter traffic flows and limit congestion in the express lanes.

Express lanes give commuters options to carpool, take public transportation or pay a toll to get reliable, congestion-free travel in a busy transportation corridor.

HPTE’s consultant found the concession model “delivers significant value” to the state by transferring revenue, operations and maintenance risks to the private operator, and by having the concessionaire assume financial risks associated with loans on the project. Regardless of how much revenue is produced by the express lanes, Plenary must meet high performance standards set by HPTE that ensure the lanes will be well maintained and adequately plowed during snowstorms, or the concessionaire is subject to penalties established by the agreement. Plenary also is responsible for returning to the state a highway in first-class condition at the end of the concession agreement.

### High Occupancy Vehicles

In the concession agreement, HPTE directors approved a provision that after Jan. 1, 2017 will only allow vehicles with three or more occupants to travel toll-free in the U.S. 36 and I-25 express lanes. Until then, vehicles with at least two occupants, so-called HOV 2+ vehicles, can continue free use of the lanes, unless congestion increases to a level that impedes the reliable flow of RTD buses and other vehicles in the corridor. Current congestion levels on the I-25 Express Lanes may trigger HOV 3+ sooner than 2017.

The HOV 3+ policy was needed as a market mechanism to forestall excessive use of the express lanes, which would slow travel times to unacceptable levels. The policy also was designed to raise enough toll income to attract private sector interest and investment in the project. HOV 3+ tolling is a policy employed by a number of toll road operators around the country.



## FINAL CONTRACT

The contract with Plenary Roads Denver is designed to protect the public interest by maintaining public ownership of the roads while specifying service standards under which the concessionaire will operate and maintain the system. Any tolling decisions are the final decision of the HPTE Board and the contract permits CDOT and any other transportation agency to make future improvements to the roads or transportation system in the area.

Other key terms of the contract include:

- Plenary will design, construct, and finance its portion of the corridor improvements;
- The state retains ownership of the highway and Plenary is granted a non-exclusive license for 50 years to access and use the highway and its structures for the purpose of carrying out the operations;
- Plenary will operate, maintain and rehabilitate the whole corridor including the express tolled lanes as well as the general purpose lanes;
- Plenary will operate, maintain and rehabilitate the I-25 express tolled lanes;
- Plenary will receive payment from the state for fulfilling its maintenance obligations on the general purpose lanes;
- If Plenary fails to meet the specified performance standards, they can incur financial penalties. Examples of performance failures include:
  - Failure to meet the operations and maintenance standards such as snow plowing;
  - Travel time delays to transit;
- Plenary will assume certain risks, such as construction schedule and budget and is responsible to ensure the asset meets acceptable conditions such as highway surfaces and bridge quality
- The state will monitor compliance against the contract requirements
- The state can make further improvements to the highway at its own option and cost
- The state will share in revenues generated by the U.S. 36 project after minimum rate-of-return targets are met
- Plenary must return to the state a highway in first-class condition at the end of the concession agreement

The U.S. 36 concession agreement could be a model for other major highway ventures in Colorado, including expansion and improvement projects being considered for C-470; I-25 north of the Denver metro area; and I-70 in both the mountain corridor and central Denver.

