MEMORANDUM

DEPARTMENT OF TRANSPORTATION

Colorado Department of Transportation
4201 East Arkansas Ave
Denver, CO 80222
(303) 757-9793
Scott.richrath@state.co.us

Date: February 19, 2014

To: Transportation Commission, High Performance Transportation Enterprise (HPTE) Board of Directors, and Colorado Bridge Enterprise (CBE) Board of Directors

From: Scott Richrath, Chief Financial Officer
Tony DeVito, Region 1 Transportation Director
Mike Cheroutes, Director of the HPTE
Ben Stein, Office of Major Project Development

CC: Don Hunt, CDOT Executive Director and Director of the CBE

Subject: Next Steps for the I-70 East / Viaduct Project

Purpose

During the workshop for the I-70 East / Viaduct project on January 15, 2014, staff provided a variety of potential funding sources and scenarios with the intent of returning in February to facilitate additional discussion on policies related to

- tolling through use of managed lanes;
- concessionaire agreements as a means of operating such tolled facilities;
- Public-Private Partnerships as a means of investing in the viaduct.

Staff will reply to questions raised at January's workshop. Staff also intends in February to obtain approval with proceeding with initial procurement to engage private sector expertise and competition through Public Private Partnership (P3).

Background

Last month staff provided an overview of available funding sources and impacts to the Colorado Bridge Enterprise (CBE) for financing the I-70 East / Viaduct project. This was the latest in several events and presentations on the project. Table 1, presented in January, summarizes the financial impacts of financing the project using CDOT Enterprise financing authority.

Table 1 – Summary Table

Millions Available to CBE	'15-'46	Avg.	Min	Max
1 - Viaduct-Only Alternative - All CBE	$3,008.1	$94.0	$45.9	$172.3
2 - Macquarie Alternative - CBE + SB 09-228	$2,988.5	$93.4	$45.1	$172.1
3a - FASTER Safety Alternative - CBE + 228 + FS	$3,070.2	$95.9	$48.6	$172.9
3b - MPO Alternative - CBE + 228 + FS + DRCOG	$3,151.9	$98.5	$52.2	$173.8

Information: Staff Recommendation

The staff analysis examines ways for engaging the private sector. The Private Public Partnership would be a useful tool for achieving this goal.

Staff asks that the Transportation Commission:

- **Part I:** Review staff responses to questions raised during January workshops
- **Part II:** Discuss staff recommendation to move forward with engagement of private sector

Figure 1 – Map of corridor with staff recommended segments highlighted in red

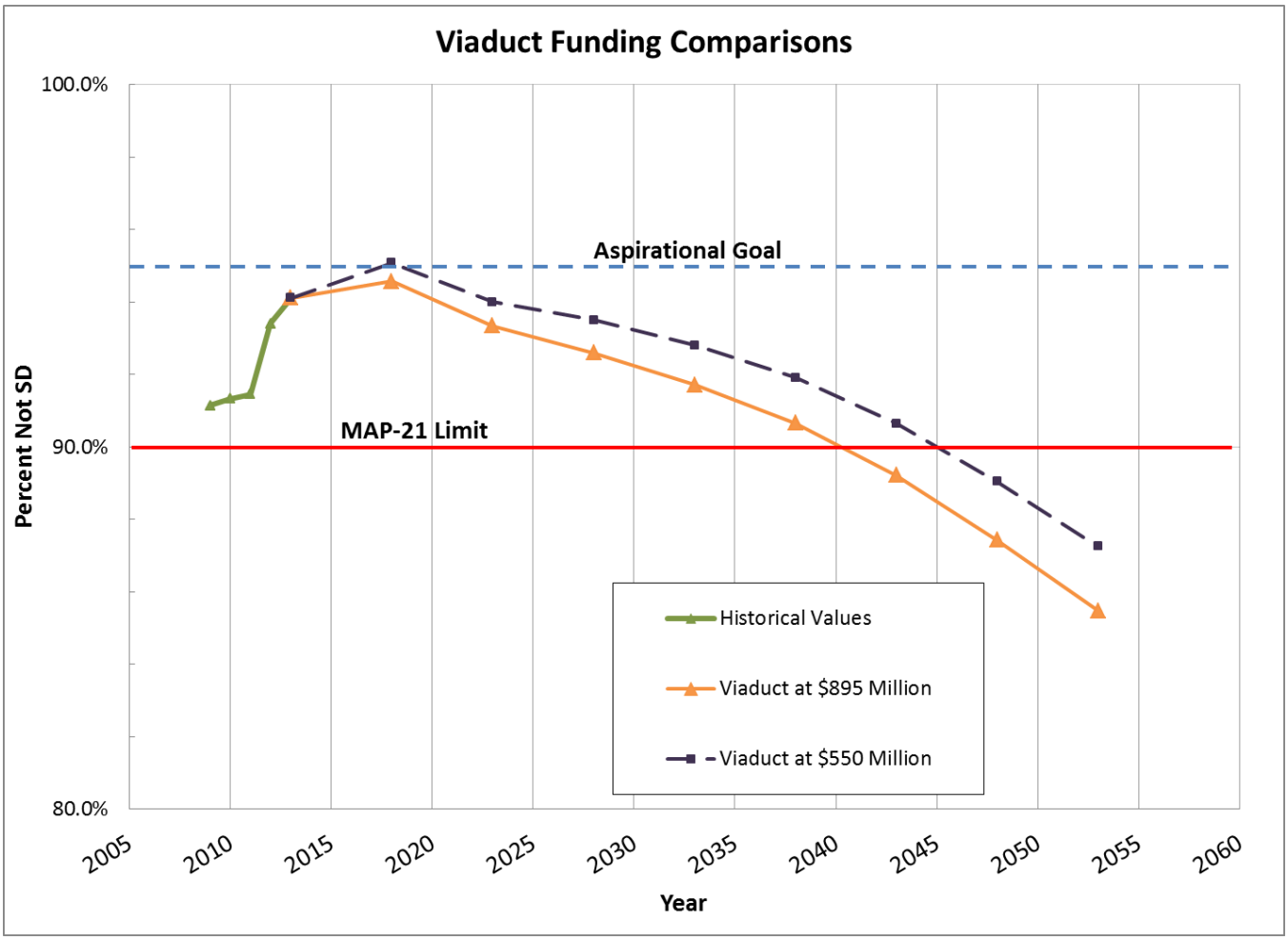
In 2003, CDOT began an Environmental Impact Statement (EIS) to improve safety, access, and mobility along I-70 from Brighton Boulevard to Tower Road. An overview of the EIS study and the larger context surrounding this work is included in Appendix A.

PART I: Respond to January Workshop Questions

Question #1: Show the impact to the Bridge Network assuming an $895 million total CBE commitment.

Last month staff presented the deterioration curve of CDOT's entire bridge network assuming a $550 million ("Do Nothing" alternative) viaduct replacement cost. Figure 2 shows the deterioration curve at $895 million (allowing for additional capacity).

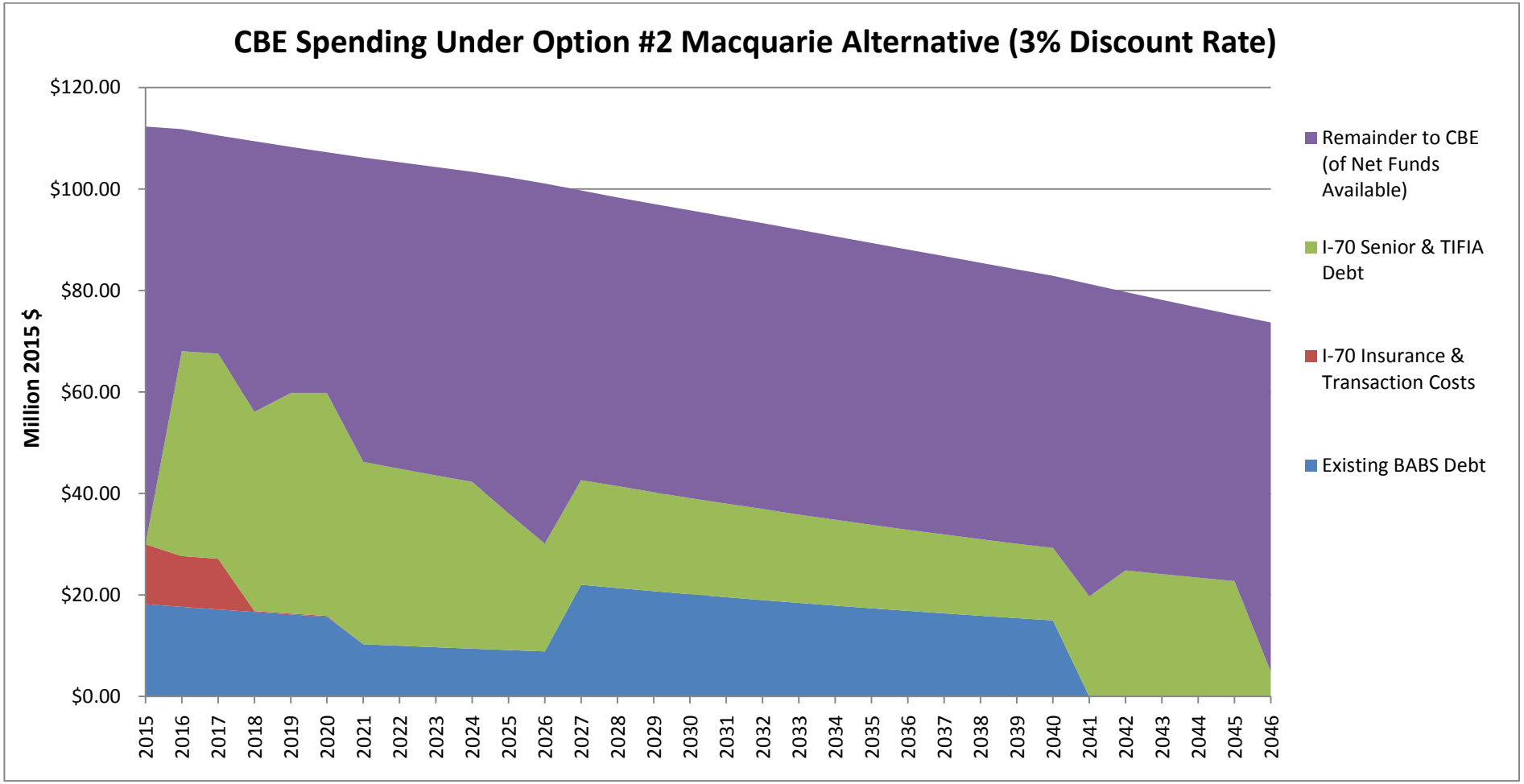
Figure 2 – Bridge Network Deterioration Curves



Question #2: Discount the annual cash flow analysis back to Year One, showing the net present value (NPV) impact to the CBE.

In January, staff presented a graph of dollars available to CBE in the year of expenditure. The Transportation Commission requested that staff show the same graph in 2015 dollars so that CBE purchasing power would be better represented.

Figure 3 – CBE Spending under Option #2 Macquarie Alternative in 2015 Dollars



Question #3: Show an Option 3C that increases FASTER Safety and MPO funding, and delays SB 228 funding requirement.

Option #1 – Viaduct-Only Alternative: Funded Exclusively by CBE

Viaduct-Only Alternative: All CBE	2015-2046	AVG	2015-2046 NPV (2015 Dollars)	AVG NPV (2015 Dollars)
Net Funds Available to CBE	$4,177.00	$130.50	$2,610.24	$81.57
Less: Construction Insurance & Transaction Costs	($32.80)	($1.00)	($31.79)	($0.99)
Senior Debt and TIFIA Debt Payments	($1,136.10)	($35.50)	($742.37)	($23.20)
Remainder to CBE	$3,008.10	$94.00	$1,836.07	$57.38

Option #2 – Macquarie Alternative: Add $270 million of SB 09-228 and extend to I-270

Macquarie Alternative: CBE + SB 09-228	2015-2046	AVG	2015-2046 NPV (2015 Dollars)	AVG NPV (2015 Dollars)
Net Funds Available to CBE	$4,177.00	$130.50	$2,610.24	$81.57
Less: Construction Insurance & Transaction Costs	($33.30)	($1.00)	($32.32)	($1.01)
Senior Debt and TIFIA Debt Payments	($1,155.20)	($36.10)	($754.80)	($23.60)
Remainder to CBE	$2,988.50	$93.40	$1,823.10	$57.00

Option #3A – FASTER Safety Alternative: Add $50 million total to Option #2

FASTER Safety Alternative: CBE + 228 + FS	2015-2046	AVG	2015-2046 NPV (2015 Dollars)	AVG NPV (2015 Dollars)
Net Funds Available to CBE	$4,177.00	$130.50	$2,610.24	$81.57
Less: Construction Insurance & Transaction Costs	($31.00)	($1.00)	($30.10)	($0.94)
Senior Debt and TIFIA Debt Payments	($1,075.80)	($33.60)	($702.92)	($21.97)
Remainder to CBE	$3,070.20	$95.90	$1,877.22	$58.66

Option #3B – MPO Alternative: Add $50 million total to Option #3

MPO Alternative: CBE + 228 + FS + DRCOG	2015-2046	AVG	2015-2046 NPV (2015 Dollars)	AVG NPV (2015 Dollars)
Net Funds Available to CBE	$4,177.00	$130.50	$2,610.24	$81.57
Less: Construction Insurance & Transaction Costs	($28.70)	($0.90)	($27.88)	($0.87)
Senior Debt and TIFIA Debt Payments	($996.30)	($31.10)	($651.00)	($20.34)
Remainder to CBE	$3,151.90	$98.50	$1,931.35	$60.35

Option #3C – Certainty-Based Timing Alternative: Expand Scope as SB 228 Firms

This alternative was requested by the Transportation Commission in January, with an additional $100 million of FASTER Safety and MPO funding in early years, deferring SB 228 and reducing the amount of loan by $100 million. In actuality, the timing of the project may allow SB 228 to lock in at desired levels before those funds are needed. See the Timeline on page 10 for more detail.

Certainty-Based Timing: CBE + FS + DRCOG + Deferred 228	2015-2046	AVG	2015-2046 NPV (2015 Dollars)	AVG NPV (2015 Dollars)
Net Funds Available to CBE	$4,176.96	$130.53	$2,610.24	$81.57
Less: Construction Insurance & Transaction Costs	($27.88)	($0.87)	($27.08)	($0.85)
Senior Debt and TIFIA Debt Payments	($651.00)	($20.34)	($457.59)	($14.30)
Remainder to CBE	$3,498.08	$109.31	$2,125.57	$66.42

PART II: Public-Private Partnerships

Policy Discussion

The purpose of this discussion is to:

- Review the specific risk transfer features and cost analysis of the US 36 transaction and reaffirm that P3 remain an essential delivery model in the eyes of the Transportation Commission.
- As noted above, consider the staff recommendation to pursue a full P3 Design Build Finance Operate Maintain (DBFOM) model for the I-70 East / Viaduct Project.

An internally prepared Value for Money report for the U.S. 36 project, the latest update of the financial analysis prepared by KPMG Auditing for HPTE, and a flow chart detailing the specific risk transfer elements of the U.S. 36 project have been compiled in a separate document uploaded by HPTE.

Implied in the decision of the HPTE Board and Transportation Commission to move ahead with a P3 delivery model for U.S. 36 was the assumption both bodies were open to P3 as an essential tool in CDOT's tool box. Table 2 summarizes the key public policy issues at play.

Table 2 – Policy Issues & Alternatives

Issue		Alternatives	Pro	Con
1.	**Construction**: Who designs and builds the project	A. CDOT contracts for design and construction, probably using fixed-price Design/Build model.	A. CDOT more familiar with D/B contracting; can have more involvement.	A. Complicated projects, in particular, are uncertain as to cost and schedule-even D/B contracts often accrue substantial change order costs and delays or build in an extra risk premium into price. Universe of competitors may be smaller.
		B. Private party performs or subcontracts design and construction at a price built into the concession contract.	B. Lowest cost. Private party generally better able and more incentivized to control and expedite construction schedule and to absorb unforeseen costs. Avoids contingencies. Key for innovation and project savings.	B. CDOT, having initially negotiated the contract guardrails, will have less control over project implementation.
2.	**Operation/Maintenance/ Replacement**: Routine maintenance, snowplowing, life-cycle replacement (i.e., major reconstruction)	A. CDOT retains responsibility	A. CDOT uses existing equipment and personnel to maintain. CDOT decides when/whether major reconstruction necessary.	A. O&M costs unpredictable and subject to higher budget priorities. Deferred maintenance not always performed. CDOT may not have budget to reconstruct.
		B. Transfer to private partner	B. Private partner can bring economies of scale and "best practices". Required by contract to meet performance standards and assume risk of cost increases.	B. Displaces CDOT personnel. Requires high level of oversight.
		C. Split responsibility	C. Sometimes possible to divide responsibilities between express and general purpose lanes.	C. Not economically efficient and difficult to coordinate. Will add to cost.

Issue		Alternatives	Pro	Con
3.	**Tolls:** Who sets, collects, and is entitled to tolls	A. HPTE sets and collects tolls (E-470 is current back-office)	A. HPTE retains flexibility; perceived as more accountable to user reaction. Has upside potential (though in most cases we would want to share in upside even if private partner takes toll risk).	A. HPTE/CDOT will need to make up the difference in order to pay debt service and O&M costs if tolls are below projections. Additional FTE required.
		B. Private partner requests HPTE to set tolls within contract limits and uses collection subcontractor designated/permitted by HPTE (E-470 is current designated back-office)	B. Private partner better able to administer toll regimen and control congestion using dynamic tolling. Able to leverage projected revenues more aggressively, with resulting project savings to CDOT.	B. Private partner realizes additional profit if toll revenues are above projections.
4.	**Concession Term**: Given the uncertainties of tomorrow, how long should CDOT permit a private partner to operate and (if toll risk is transferred) collect tolls from express lanes.	A. 30 years	A. May be more acceptable politically. CDOT captures toll revenues sooner.	A. Project costs higher. Greater strain on annual CDOT financial resources
		B. 40 years	B. May be more economically efficient. Shorter than many comparable transactions.	B. Greater political suspicion.

Not all new capacity projects are necessarily good candidates for P3. C-470, for example, may well be an appropriate case for conventional public financing. P3 appears to offer little value in view of the anticipated project scope, among other things. HPTE and the Office of Major Project Development (OMPD) will, though, test that preliminary view with our financial advisors.

In the staff's view, I-70 East / Viaduct Project is a different story. As you know, the HPTE and OMPD have been working with Macquarie to explore a number of funding/financing alternatives. If the Transportation Commission decides to go forward with the project and reaffirms P3 as an acceptable alternative, HPTE and OMPD will continue to explore its potential.

After participating in a half-day workshop with Macquarie, Federal Highway Administration (FHWA), and Region 1 engineers and personnel, HPTE/OMPD compiled an inventory of significant project risks that could/should be transferred to a private partner for a project like this in Table 3.

Table 3 – Risk Analysis

Risk	Risk Allocation		
	CDOT/HPTE	Private	Shared
Design of highway and structures		✓	
Construction of highway and structures (risk of time and cost overruns)		✓	
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 contract term's end 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, 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	✓		
Undertaking soils or other remediation as a result of the discovery of undisclosed contaminated soils	✓		
Phasing railroad relocation	✓		
Relief events (render the private party unable to comply with all or a material part of its obligations and are beyond the reasonable control of the private party)	✓		
Relief events - events for which insurance can be obtained together with events which are beyond the reasonable control of the private party (change in law, unplanned revenue impacting facility, contract breach)	✓		
Approvals from the state, locals, railroads and utilities			✓
Contaminants found during construction			✓
Requirements for moving utilities to construct the highway and structures, and the risk that utility companies will not move quickly enough to meet private party's schedule, or that they will levy higher than expected charges for the relocation work			✓
Archaeological remains, paleontological and historic site found during construction			✓
Increases in the future of general insurance premium cost charged by the insurance industry for the insurance required by the contract			✓

This risk transfer analysis, along with the financial modelling done by Macquarie in its Value for Money report, led HPTE/OMPD to the conclusion that it made good sense to pursue a full P3 DBFOM to deliver the I-70 East / Viaduct Project.

Next Steps

As with any large project, local support is critical to moving forward with the I-70 East project. The Department has received strong endorsement for the basic Partially Covered Lid (PCL) alternative from the City of Denver, the City of Commerce City, and Adams County along with key business associations and stakeholders including the Denver Chamber of Commerce, the Downtown Denver Partnership, and the National Western Stock Show. In addition, Mayor Hancock has included I-70 reconstruction among the six projects under the umbrella of the North Denver Cornerstone Collaborative, which has been formed to bring new attention and resources to the neighborhoods adjacent to I-70.

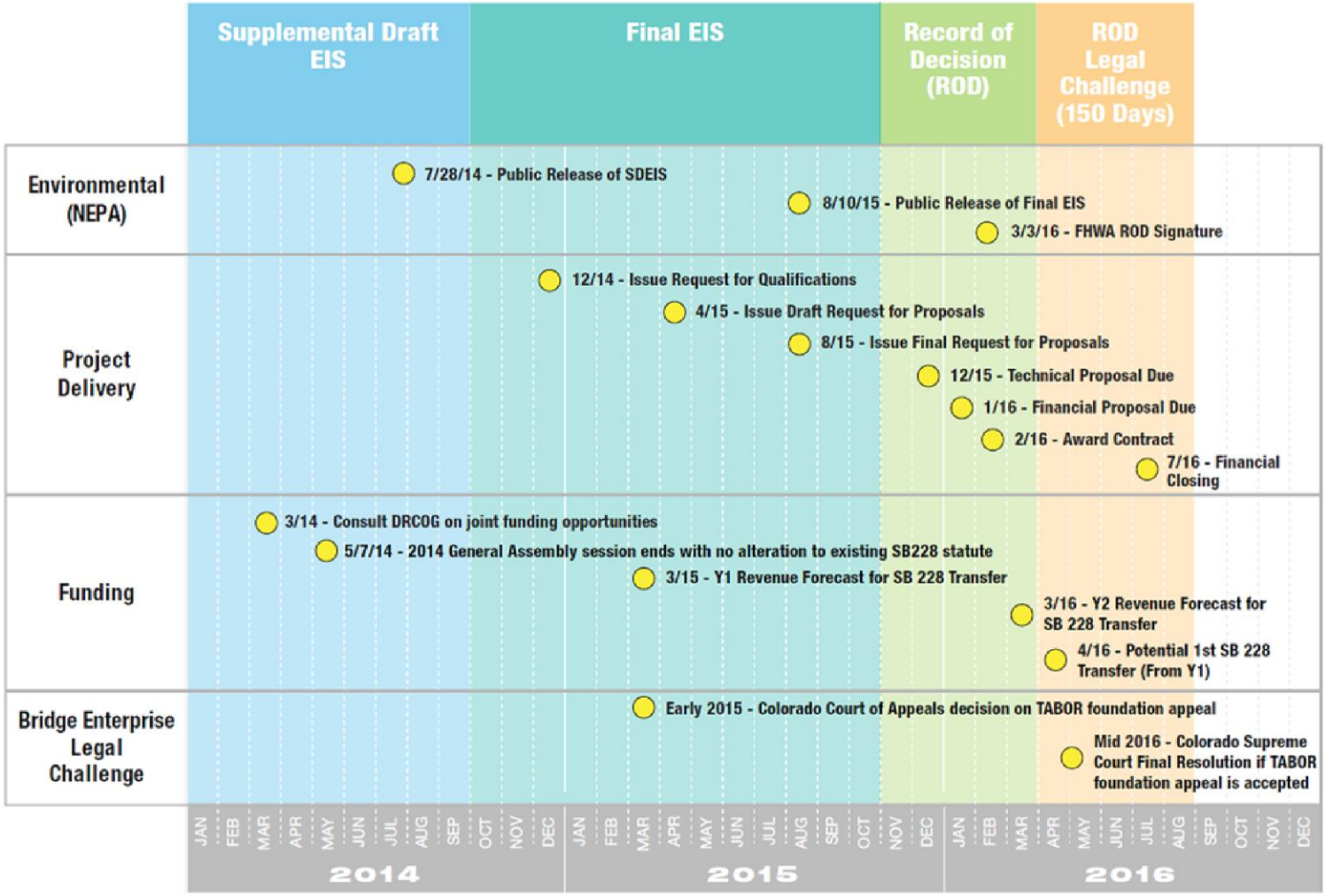
Receiving a statement of support or proclamation from the Denver City Council would be an important next step. This statement would demonstrate united support across city government and provide political certainty for the project as we move closer to engaging the private sector. Currently, staff is working closely with Denver City Council to answer any outstanding questions with the goal of receiving a statement of support by April 2014.

Another critical step is determining the details of the preferred alternative so that progress on the EIS can continue. The extensive analysis and review periods inherent in the EIS require certainty on the preferred alternative by April 1, 2014. This includes the future of the Steele/Vasquez interchange (and second lid) along with the location of 46th Avenue near Swansea Elementary School.

Regarding the status of the *TABOR Foundation v. the Colorado Bridge Enterprise* lawsuit, an appeal process is currently underway. The CBE was successful on all counts at the trial court level and the TABOR Foundation is appealing, arguing that the bridge surcharge fee is really a tax and that the CBE is not a valid enterprise. To the extent it can, the CBE will seek an expedited ruling. However, it is not anticipated that the appellate phase will be speedy. It is anticipated that the Colorado Court of Appeals will hold oral arguments in this matter and a decision is not expected until early 2015. If the Colorado Supreme Court accepts an appeal in this matter, then the date for a final resolution in this matter could be extended until early or mid-2016.

I-70 East Project Schedule

(Draft Subject to revision)



Draft schedule. Subject to revision. Project delivery dates are dependant on current NEPA dates.

Appendix A

I-70 EAST BACKGROUND AND CONTEXT

ENVIRONMENTAL IMPACT STATEMENT

Began EIS in 2003 with study area including I-70 from Brighton Blvd to Tower Road. CDOT leadership directed study to include mobility and congestion relief while replacing the aging viaduct. Initial EIS also partnered with RTD to study transit and future East corridor.

Purpose and Need: implement a transportation solution that improves safety, access, and mobility and addresses congestion along I-70.

Community involvement and outreach exceeds any project in CDOT history, including years of input from the diverse stakeholders in the region. Dozens of alternatives have been evaluated, including concepts that would move the location of a portion of the interstate.

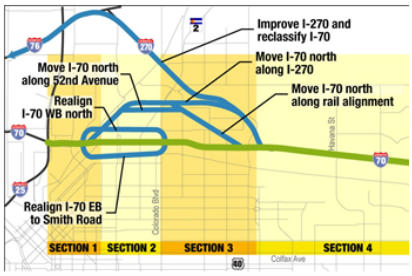
Three alternatives will be presented in the 2014 Supplemental DEIS:

1. NO BUILD: Would reconstruct the viaduct to meet FHWA standards for lane and shoulder width without new lanes ($540-5550m)

2. VIADUCT REBUILD: Rebuilds viaduct and adds two new tolled express lanes in each direction either shifting the structure north, requiring relocation of Swansea Elementary School) or a south, requiring relocation of Purina Plant ($1.64-$1.66B)

3. PARTIAL COVER LOWERED (PCL): Removes viaduct and places highway below ground with two new tolled express lanes, reconnecting neighborhoods and improving community facilities with a cover over the highway ($1.8B)

PCL Alternative is first concept to receive broad community and political support since start of study.



COMMUNITY/RESIDENTS

Original decision to locate I-70 in Denver along 46th Ave. was controversial and debated for many years in the late 1950s, including several City Council votes.

By 1960, I-70 location was a well-established industrial area and home to freight rail lines, Purina Plant, and several smelters. Also was the location of several historic neighborhoods, largely housing workers from adjacent companies.

Interstate location divided Swansea, Elyria and Globeville neighborhoods. Today, Swansea and Elyria are designated environmental justice communities. CDOT has focused EIS outreach on these neighborhoods.

POLITICAL CONTEXT

I-70 East has generated a significant amount of discussion. CDOT's original realignment option which would have relocated I-70 along I-270 and 52nd Avenue, was developed in response to community impacts in Denver. It was strongly opposed by Commerce City.

CDOT formed the Preferred Alternative Collaboration Team (PACT) in 2011 after reaching an impasse following the publication of the 2008 DEIS. The Partial Covered Lid (PCL) alternative was supported by the members of the PACT, which included Denver, Commerce City, Adams County, Denver Chamber of Commerce, the Downtown Denver Partnership, the National Western Stock Show, residents and others. The alternative also kept the Purina plant in its current location and shifted the highway closer to Swansea Elementary.

Mayor Hancock has brought a renewed focus to this part of Denver and recently formed the North Denver Cornerstone Collaborative (NDCC). I-70 reconstruction is one of six projects under the NDCC umbrella and has been termed the Corridor of Opportunity by the Mayor. Redevelopment focuses on the National Western Stock Show, RiNo and the neighborhoods.

ADAMS COUNTY DENVER COMMERCE CITY

June 6, 2013

Dan Hunt, Executive Director
Colorado Department of Transportation
4201 E. Arkansas Ave
Denver, CO 80222

Dear Mr. Hunt:

It has come to our attention that a small number of people believe the decision by CDOT and the I-70 PACT stakeholder group to leave I-70 on its current alignment should be disregarded and that the option of realigning I-70 along the I-270 route should be unilaterally pursued. The City and County of Denver, Adams County, and the City of Commerce City continue to support CDOT's decision to keep I-70 on its current alignment and place it below grade for the following reasons:

- The City and County of Denver, Adams County and the City of Commerce City continue to honor the tremendous work of the I-70 PACT, which consisted of key stakeholders, including residents, businesses and community leaders. The I-70 PACT spent many months carefully analyzing all available data, objectively reviewing every alternative and listening openly to everyone affected by the alignment alternatives. CDOT relied heavily on the I-70 PACT's recommendation to leave I-70 on the current alignment. We trust and respect the work of the I-70 PACT and intend to honor its thoughtful recommendations.
- It is crucial that I-70, I-76 and I-270 remain separate, regional routes as incident responders have non-congested options on the freeway. These freeways also serve as critical evacuation routes from east to west.
- The I-70 PACT was extremely concerned about the negative impact realigning I-70 along the I-270 route would have on the National Western Stock Show facility, the new FasTracks station planned for the NWSS and Denver Coliseum, as well as the very negative impact this alignment would have on the potential for Transit Oriented Development around the NWSS FasTracks station. The I-70 PACT believed that new TOD development around the NWSS light rail station will be a key catalyst to the overall continued revitalization of the neighborhoods, including the proposed re-investment of the National Western Complex into a year-round destination in this area, which will have positive local, regional and statewide economic impacts.

NDCC Projects

1. I-70 Recons.
2. RTD Station
3. RiNo (River North)
4. NWSS
5. Brighton Blvd Redev
6. Neighborhood plans

ECONOMIC CONTEXT

Denver has developed along I-70. The interstate serves as an economic thread connecting DIA to Downtown, and Denver to the rest of the Rocky Mountain region.

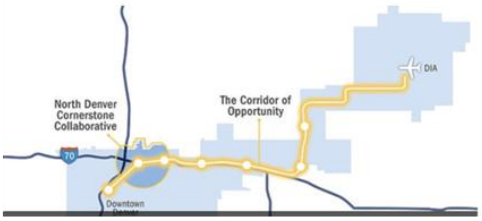
Today, 684 businesses, employing approx. 11,000 people, are located along I-70 between I-25 and I-270. There are another 600 – 700 businesses and 10,000 employees in the area between I-270 and Tower Road.

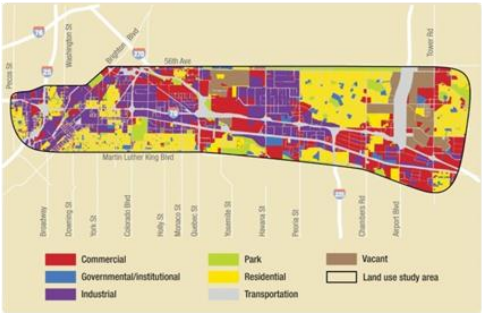
Nearby businesses are heavily reliant on the I-70 corridor, including major distribution and trucking centers (e.g. UPS and Safeway).

Close to 200,000 cars travel I-70 every day, and that number is expected to increase to 350,000 by 2035.

At full completion, the project will generate significant economic benefits:

- Benefit the regional economy by $1.513 billion annually
- Generate 23,950 new jobs in the region (9,790 recurring)
- Generate $21.8 million from construction sales and use taxes; $26.4 million from productivity improvements and time savings
- Reduce the average time spent by a vehicle traversing any part of the I-70 East Corridor by approximately 12 minutes





Colorado High Performance Transportation Enterprise

US 36 Managed Lanes Toll Concession Project

Project Value Analysis

January 2014

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APPENDIX A – DETAILED PVA RESULTS

EXECUTIVE SUMMARY

This report describes the rationale, objectives and processes that led to the High Performance Transportation Enterprise Board's ("Board") decision to use a Concession Model public private partnership for the US36 Managed Lanes Project. The report is intended to give a clear sense of how and why the decision was reached to proceed with the Concession Model. The report details how the Board determined it would receive value from the Concession Model under which significant project risks are transferred to the private sector in return for some control contractually granted to the concessionaire.

Project Value is a broad term that captures both quantitative factors such as costs, and qualitative factors such as service quality and public interest. The Project Value Analysis ("PVA") was developed to assist the Board in evaluating and selecting the project delivery model that best met its goals and objectives, appropriately addressed project risks and optimized the use of scarce taxpayer dollars. The PVA quantifies value by comparing the potential cost to HPTE under a range of outcomes upon the occurrence of certain risks under both the traditional Public Model and the Concession Model.

This report is an update of the PVA dated June 2012 ("2012 PVA") and reflects the results of the competitive bidding process leading to the selection of the Concessionaire. The Board made its decision to proceed with the procurement of US 36 ("Project") as a Concession based in part on the results of the 2012 PVA. At that time the Board decided that the use of the Concession Model provided significant value to HPTE and ultimately the residents of the State of Colorado through the transfer of revenue and other project risks to the concessionaire. The 2012 PVA also indicated that the Concession Model required the lowest amount of upfront funding in order to deliver the Project.

Following a competitive P3 procurement process, on April 5, 2013 the Board selected Plenary Roads Denver ("PRD") as the Preferred Proposer for the Project. This update was prepared to brief the Board on changes to estimated Project Values under both the Concession Model and the Public Model as a result of the P3 Procurement and the negotiated Concession Agreement.

PROJECT BACKGROUND

In February 2012, the High Performance Transportation Enterprise ("HPTE") initiated a two-stage competitive procurement to select a private partner to design, build, finance, operate and maintain the Project (as defined further below). A Request for Qualifications was issued and four teams submitted Statements of Qualifications. The HPTE Board ("Board") shortlisted the three highest ranked teams ("Proposers") as the best qualified and sufficiently capitalized to move into the Request for Proposal stage of the procurement. These teams included Denver Access Partners led by Cintra Infraestructuras S.A., Plenary Roads Denver led by The Plenary Group, and US 36 Development Partners led by Isolux Corsan.

After the shortlist was determined, HPTE staff and advisors prepared a draft Concession Agreement and Request for Proposals ("RFP") and engaged in a series of one-on-one negotiations with Proposers that culminated in the issuance of a final RFP and Concession Agreement on December 14, 2012. On March 1, 2013 binding proposals were received from Plenary Roads Denver and US 36 Development Partners. Evaluation of proposals was conducted during the month of March and on April 5, 2013 the Board announced that Plenary Roads Denver ("PRD") was the Preferred Proposer.

This update to the 2012 PVA reflects changes made to Project scope and numerous other factors, such as changes in interest rates and HOV policy that were considered during the procurement process and therefore results may not be directly comparable to the earlier analysis. In addition to the quantitative component of the PVA, the Board determined that certain qualitative factors were important to the decision process, including the following:

- delivering the Project with the lowest amount of upfront subsidy;
- transferring revenue risk to the concessionaire;
- relieving CDOT of its contingent obligations to the Project under the CDOT O&M Loan Agreement for Phase 1;
- constructing the Phase 2 Managed Lanes and the Phase 2 General Purpose Lanes in an effective and economic way and in accordance with HPTE/CDOT requirements;
- facilitating RTD's Bus Rapid Transit programs in the corridor;
- optimizing asset condition over the long term; and
- minimizing inconvenience to the public and maximizing safety of workers and the travelling public.

PROJECT DESCRIPTION

After discussions with Proposers and evaluation of available funding, the base Project scope was redefined to include the following components:

- Construct Phase 2 of the US 36 Corridor:
  - Construct one managed lane in each direction
  - Reconstruct two general purpose lanes in each direction
  - Construct a Divergent Diamond Interchange at McCaslin Boulevard (this scope was not part of the 2012 PVA analysis)
- Operate and maintain (routine and major maintenance):
  - US 36 Managed Lanes
  - US 36 General Purpose Lanes*
  - I-25 Express Lanes
  - I-25 Works Package (this scope was not part of the 2012 PVA analysis)
  - Snow and ice removal on US36 (including both managed lanes and general purpose lanes)
  - Snow and ice removal on I-25 Express Lanes (but <u>not</u> including the I-25 general purpose lanes)
- Perform major maintenance:
  - US 36 Managed Lanes
  - I-25 Express Lanes

*Based on the proposal submitted by the Preferred Proposer, the US36 GP Lanes Routine Maintenance will be performed by PRD while major maintenance of the GP Lanes will be CDOT's responsibility.

BASIS FOR COMPETITIVE P3 PROCUREMENT

Best Value Proposal: The P3 procurement was based on selecting the "best value" proposer. Best value was determined by the relative weightings of the evaluation criteria with the financial aspects of the proposal weighted at 65% of the total score and technical proposals at 35%. Of the 65% weighting for the financial components of the proposals, 55% was assigned to the amount of subsidy requested ("HPTE Capital Payment Request"). This weighting reflected HPTE's goal of minimizing the amount of subsidy required for the Project. The remaining 10% of the weighting for the financial proposal was based on the overall feasibility of the Proposer's financial plan including the proposed schedule of events to reach financial close.

General Purpose Lanes Maintenance Proposal: Proposers were also asked to submit a price to perform routine maintenance on the US36 General Purpose Lanes. If the proposed price for this work was less than a benchmark price predetermined by CDOT, but not provided to the proposers, the concessionaire

selected under the best value proposal would receive the fees and perform the work associated with this work. This element of the procurement was not scored as a part of the bid evaluation process.

RISK ALLOCATION SUMMARY

Prior to the P3 procurement, HPTE carefully considered a range of project risks and developed an initial project risk allocation that assigned each project risk to the party best able to cost-effectively manage that risk. As a result of negotiations with shortlisted Proposers during the P3 procurement, minor changes were made to the original risk allocation and the final Concession Agreement reflects the negotiated risk allocation which was acceptable to both HPTE and PRD.

Under the Concession Agreement, PRD is primarily responsible for the risks associated with the following:

- Sufficiency of toll revenues;
- Level of HOV traffic in the managed lanes and the impact on revenue;
- Repayment of the Phase 1 TIFIA Loan and new debt issued to finance Phase 2;
- Toll collection and enforcement;
- Effectiveness and ability to implement the proposed project design;
- Construction costs, schedule, labor availability and geotechnical conditions;
- Price and availability of operations and maintenance resources;
- Snow and ice removal;
- Rehabilitation;
- Handback of the facility with the required residual life; and
- A portion of the costs associated with availability of and changes to the cost of financing through financial close.

Of the risks that will be transferred to PRD, HPTE and the Board considered the most important of these to be revenue risk, debt repayment risk, and long-term operations and maintenance risk. Transfer of these risks was considered to be particularly important given HPTE and CDOT's limited ability to contribute additional funds to the Project in the event revenues are less than estimated, and the TABOR restrictions limiting the use of taxpayer funds for costs such as debt service.

PVA METHODOLOGY

In reaching its decision to use the Concession Model, the Board evaluated the Project several times as project scope, revenues and costs were refined. The PVA includes an analysis of a Base Case which measures the value under both the Public and the Concession models by the amount of upfront subsidy required. The Base Case under the Public Model includes HPTE's P50 traffic and revenue estimates, CDOT cost estimates and traditional tax-exempt bond financing structure. The Concession Model Base Case includes PRD's traffic and revenue estimates, costs and finance plan. The Base Case is not risk adjusted to account for the cost or value of many key project risks retained by HPTE in the Public Model, such as: construction risk, cost overruns and revenue risk. Accordingly, the PVA also includes a range of

sensitivities to test the impact on Project Value of several project risks that would be retained by HPTE under the Public Model.

This PVA report provides the most reasonable assessment of whether the Concession Model better satisfies the Board's goals and objectives and anticipated value because it is based on the actual risk allocation negotiated in the Concession Agreement. However it should be noted that while the Concession Model is based on PRD's proposal, the Public Model is still an estimate based on high level assumptions as described below.

ASSUMPTIONS

This updated PVA incorporates the following assumptions which are the result of changes in the project scope, final terms of the Concession Agreement, revised costs or actual data based on the Preferred Proposer's proposal.

1. Revenue

The Public Model uses the traffic and revenue forecasts prepared by CDM Smith which are consistent with the revenue forecasts HPTE would rely on if it financed the Project itself. These revenue estimates are typically referred to as P50. It is noted that the Public Model traffic and revenue forecasts were updated from those used in the June 2012 PVA to account for the change in the regional HOV policy from HOV 2+ to HOV 3+ beginning in 2017.

The Concession Model is based on the traffic and revenue estimates prepared by the PRD's traffic and revenue consultant. Of note, the Concession Model revenue forecasts were very close to CDM Smith's P50 case for the first 15 years of the operating period which is unusual based on prior precedent transactions and serves to dampen the financing capacity of the Project. While it is common for the private sector to take a more optimistic view of the potential traffic and revenue that may be generated in a project, there are a few possible reasons that this did not occur during the procurement for the Project. Several project-specific characteristics most likely contributed to more conservative forecasts than expected including uncertainty around timing and impact of the HOV policy, the impact of RTD's bus service on the amount of toll-paying traffic in the corridor and the fact that the project is only one Managed Lane in each direction which is uncommon for these types of projects. Additionally, the private sector has generally become more conservative in estimating revenues on managed lanes projects due to changes by the rating agencies in assessing credit quality of managed lanes projects and the residual effects of the global financial crisis.

1. Construction Costs

The Public Model was updated to incorporate the Design-Build price bid by PRD as it is now a more accurate reflection of the prices HPTE would have likely received in a public procurement. As part of the competitive P3 procurement process the project scope changed significantly to include certain improvements that were not included in the initial PVA, such as improvements in the I-25 corridor and a divergent diamond interchange at McCaslin Boulevard. In addition, HPTE is required to pay a stipend of $500,000 to proposers submitting a responsive proposal. As two responsive proposals were submitted,

$1.0 million has been included as a cost in the Public Model. This payment would need to be made by HPTE if it elected to finance the Project using the Public Model approach after the receipt of proposals.

2. Operations and Maintenance (O&M) Costs

O&M costs for the managed lanes in the Public Model were developed by CDOT. The Public Model was updated to include an ongoing HPTE oversight cost for the Project equal to the HPTE Reimbursement Amount to be paid by the concessionaire, i.e. $375,000 per year inflated. This cost was included in the Public Model to account for costs that would be incurred by HPTE that would not otherwise be captured as on-going project costs.

PRD's price of $675,000 per year for the US36 GP Lanes Routine Maintenance was less than the CDOT Benchmark of $798,900 per year. Therefore the difference of $123,900 per year was added as a cost in the Public Model to account for the higher cost CDOT would incur for GP Lanes maintenance if it performed this work.

3. Toll Collection Costs

Toll collection costs for the Public Model were based on the preliminary pricing provided by E-470 for the Project. While these costs are higher than E-470 is currently charging for the I-25 Express Lanes, they are representative of E-470's actual passthrough costs and do not include any mark-up or profit. PRD assumed that E-470 would provide back office toll collection services so the Concession Model uses the same toll collection costs.

4. Major Maintenance Costs

Major maintenance costs for the Public Model were developed by Jacobs and are the same as those used in the initial PVA.

5. Financing Assumptions

Both models contemplate that the Phase 1 TIFIA loan remains in place without change to the loan repayment schedule. The Public Model financing assumptions, including a Phase 2 TIFIA Loan and tax-exempt bonds, have not changed except to update interest rates which are higher now than when the PVA was completed in 2012. The Concession Model includes a subordinate Phase 2 TIFIA Loan, Private Activity Bonds, a subordinate shareholder loan and equity, however this financing has not yet been executed and the interest costs will change until financial close occurs. In addition to customary debt service reserve accounts, the Concession Model also contains several important reserve funds for long term project costs such as major maintenance, ramp up and O&M. The Public Model includes only a debt service reserve account and a major maintenance reserve account.

6. Term of Analysis

The analysis considers the subsidy and net revenues over the 50 year operating term of the Concession Agreement.

7. Net Present Value of the Project

The Project Value Analysis considers the net present value (npv) of both the upfront subsidy as well as the value of "excess" revenues over the period analyzed. The net present value of the Project has been calculated as follows: *Upfront Subsidy + Excess Revenues*

The Concession Agreement requires the concessionaire to share a portion of excess revenues with HPTE in the event actual revenues are higher than the concessionaire's projections.

8. Discount Rates

Consistent with the 2012 PVA, the results for each model are shown on a net present value basis. A discount rate of 14% was used for this update. This rate is slightly higher than the 13% used in the initial PVA but reflects the average equity return expectations bid by proposers. This rate therefore represents the most accurate assessment of the cost of the Project's risks. A discount rate of 5% has been applied to the upfront subsidy requirements and the difference in CDOT General Purpose Lanes Maintenance costs and PRD's GP Lane price. The 5% discount rate approximates HPTE's cost of funds as the subsidy is being paid from state and local resources and is contributed over a relatively short time frame.

SENSITIVITY ANALYSES

1. Revenue Sensitivities

   a. Revenue sensitivities were prepared to illustrate the impact to HPTE if the Public Model revenues (P50) were 25% and 40% lower than projections after the Project has been financed and is open to traffic.

      There is no impact to HPTE if revenues are lower than projections under the Concession Model therefore no downside sensitivities were performed.

   b. Two sensitivities were prepared to estimate the positive benefit to HPTE under the Public Model if revenues were higher than projections after the Project is open to traffic. These sensitivities are: 1) if revenues are 10% higher than projections throughout the term of the analysis period; and 2) if revenues meet projections for the first five years, exceed projections by 5% for the next five years, and exceed projections by 10% for the remainder of the term of the analysis period.

   c. Sensitivities were also prepared to estimate the positive benefit to HPTE under the Concession Model if revenues are higher than projected in PRD's base case model and revenue sharing is triggered. These are: 1) if revenues are 10% higher than projections throughout the term of the Agreement; and 2) if revenues meet projections for the first five years, exceed projections by 5% for the next five years, and exceed projections by 10% for the remainder of the term of the Agreement.

In determining the impact on HPTE's ability to meet its Project obligations, the revenue sensitivity analysis considers the priority of the use of revenues as required by the rating agencies and lenders, i.e. 1) routine O&M, 2) debt service and 3) major maintenance.

Basis for Revenue Sensitivities

There are a limited number of operating managed lanes projects in the U.S. and information about actual performance against initial projections is not readily available. However, the rating agencies have developed an approach to rating managed lanes projects which considers the revenue risk of these types of projects and applies various sensitivities in order to test a project's resilience to underperformance. The downside revenue sensitivities used in the PVA were selected based on information contained in published reports from Moody's[1] and Fitch[2] on managed lanes ("ML projects").

In particular, Moody's notes "that managed lanes projects have a limited history in the US and the demand for them among motorists is highly discretionary….we expect in general managed lanes projects to exhibit a higher degree of revenue volatility compared to traditional toll roads." Fitch notes that "ML projects have sound foundation, but will be more volatile." Further, Fitch's report goes on to say that "…sensitivity testing reveals that a 10% reduction in total corridor volume …results in a more than 25% reduction in ML volume…This sensitivity also results in a 48% reduction in revenue from the base scenario." These comments indicate that due to the sensitive nature of managed lane pricing, small changes in overall corridor traffic volume (e.g. 10% reduction) can have a large impact on ML toll volume (25% reduction) and revenues (48%). Based on this data ML revenue reductions of 25% and 40% were considered appropriate.

Even less information was available about positive project performance and while the upside of a corridor wide traffic increase may be symmetrical with the downside impact (i.e. 10% increase in corridor traffic resulting in 48% increase in ML revenues) there is little evidence to date to support this assertion or that managed lanes projects in general or this project in particular will outperform projections. Therefore the PVA considered a somewhat conservative upside revenue scenario in which Project revenues are increased by 10%.

2. <u>O&M Sensitivities</u>

   a. An updated O&M sensitivity analysis was conducted to determine the impact of potential savings on O&M costs. As noted above, the PRD price for the US36 GP Lanes Routine Maintenance was approximately $123,900 per year or 15% below the CDOT Benchmark cost. This price gives an indication of the savings that may be realized for all O&M costs on the Project under the Concession Model and is in line with the empirical data and O&M sensitivity analysis performed under the 2012 PVA. Therefore the Public Model considered the impact of O&M costs 15% higher than the Concession Model.

[1] Moody's Special Comment: Managed Lanes are HOT! Unique risks and benefits versus traditional tolling. Dated: May 9, 2013.
[2] Fitch Ratings Special Report: Paying for Predictability, U.S. Managed Lanes Projects. Dated: April 2, 2012.

b. An O&M sensitivity was also undertaken to estimate the potential financial exposure to CDOT under the O&M Loan assumed in the Public Model. The CDOT O&M Loan was provided to enhance the credit quality of the Phase 1 financing but placed a contingent liability on CDOT to provide funds for the Project if excess revenues from I-25 were insufficient to pay O&M on Phase 1. The PVA assumes that under the Public Model, CDOT would also provide an O&M Loan to support the funding of Phase 2, thereby increasing its contingent liability risk. A sensitivity was performed on the Public Model to estimate the amount of funding that CDOT may be required to contribute to the Project if excess I-25 revenues only covered 50% of annual O&M costs. Under the Concession Model, CDOT has no liability or risk for providing funds for O&M.

RESULTS

Net Project Value is the net present value of excess revenues less the net present value of the upfront subsidy. Table 1 presents the estimated upfront subsidy requirements under the Base Case for the Concession Model and the Public Model. Table 2 shows total Project Values for the Base Case and the sensitivities described above.

Upfront Subsidy Observations

As shown in Table 1, the npv of the upfront subsidy is ($45.4) million under the Concession Model while the npv of the upfront subsidy is ($63.9) million under the Public Model. Under the Public Model, HPTE would retain all revenues from the Project after paying debt service, operations and maintenance costs. As these revenues are not guaranteed, the discount rate used reflects the potential risk of HPTE receiving the excess revenues as discussed in "Assumptions" above. Under the Concession Model HPTE would not be entitled to receive any project revenues under the Base Case.

Table 1 – Upfront Subsidy Requirements

	Base Case Total Upfront Subsidy in $ (millions)	
	Concession Model(1)	Public Model(1)
Nominal	$(48.8)	$(70.1)
NPV	$(45.4)	$(63.9)

(1) The total subsidy includes $13.5 million from the cities of Louisville and Superior and $1.3 million from Boulder County.

Summary of Project Values

Table 2 presents the Base Case Project Values as well as the Project Values resulting from the various sensitivity analyses.

The results indicate that the Concession Model Base Case shows a higher Project Value than the Public Model Base Case. Further, Project Values change considerably once the sensitivities have been added to the Base Case Project Values. The results of the sensitivity analysis presented in Table 1 are shown on a standalone basis therefore if more than one sensitivity were combined, Project Values could change significantly.

Project Values are presented on a net present value basis in order to effectively compare the results under each model. Detailed analyses for all sensitivities are included in Appendix A.

Table 2 – Summary of Project Values

Base Case	Concession Model (NPV)	Public Model (NPV)
Net Project Value[1]	($45,400,000)	($51,181,000)
25% Downside Revenue Sensitivity		
25% Downside Revenues[1]	$0	($33,100,000)
Net Project Value	($45,400,000)	($84,281,000)
10% Upside Revenue Sensitivity		
10% Upside Revenues[1]	$2,700,000	$13,300,000
Net Project Value	($42,700,000)	($37,881,000)
O&M Sensitivity		
15% Higher HPTE Managed Lanes O&M Costs[1,2]	$0	($13,200,000)
Net Project Value	($45,400,000)	($64,381,000)
CDOT O&M Contingent Liability Sensitivity		
50% of estimated annual O&M exposure[1, 2]	$0	($14,500,000)
Net Project Value	($45,400,000)	($65,681,000)

1. Net present value at 14% discount rate for revenues and 5% discount rate for the upfront subsidy amounts
2. Includes O&M costs for US36 Phase 1 and US36 Phase 2

Revenue Sensitivity Observations

Revenue forecasts over a 50 year time horizon are only estimates and include an element of risk whether they are "most likely" revenue estimates or otherwise. Given HPTE and CDOT's limited financial resources, the Board was concerned about the potential financial exposure if revenues were less than the estimates supporting the Project financing under both delivery models. The PVA results show that if revenues are 25% below projections, the Project Value under the Public Model changes from ($51.2) million to ($84.3) million, while the Project Value under the Concession Model remains at ($45.4 million). This sensitivity shows the magnitude of risk associated with revenue projections and project performance.

The revenue upside sensitivity highlights the potential benefits of better than expected project performance and results in a Project Value of ($37.9) million under the Public Model compared to a Project Value of ($42.7) million under the Concession Model.

O&M Sensitivity Observations

Isolating the O&M cost sensitivities indicates that Project Values change significantly. Project Value under the Public Model decreases from ($51.2) million to ($64.4) million if O&M costs are 15% higher

than Public Model estimates. Comparing this result with the Concession Model shows that the Concession Model provides a higher value to HPTE.

Lastly, if I-25 excess revenues only covered 50% of annual O&M costs on US 36, CDOT's potential exposure to paying US36 O&M costs would result in a Project Value of ($65.7) million under the Public Model versus a Project Value that remains unchanged at ($45.4) million under the Concession Model.

The sensitivity analysis highlights that Project Values under the Concession Model, when compared to estimated costs of HPTE retaining risks under the Public Model, provides the better value to HPTE, CDOT, and the State through the risk transfers it achieves. As noted above, these results do not quantify the impact to Project Value if two or more of the sensitivities are combined.

CONCLUSIONS

The updated PVA confirms that the Concession Model delivers significant value to the State of Colorado. Not only does the Concession Model reduce the requisite upfront subsidy, it also meets the Board's priorities for the Project including an appropriate allocation of risk between HPTE and PRD, in particular the transfer of revenue, operations and maintenance risks; relieving HPTE of its obligation to repay the Phase 1 TIFIA; eliminating the potential financial risks associated with the CDOT O&M Loan for Phase 1; and realization of the benefits of a performance-based contract such as a more efficient use of financial resources for construction and guaranteed level of long-term maintenance of the Project.

The Project Value results indicate that on a net present value basis the benefit of the Concession Model over the Public Model is $5.8 million. Public Model value is primarily driven by the expectation the HPTE will receive revenues which otherwise would accrue to the concessionaire under the Concession Model. The value of the revenues in the Public Model are approximately $12 million in npv terms (i.e. today's dollars). However, those revenues would likely not be realized for approximately 20 years while HPTE's exposure to potential revenue shortfalls is most likely to occur in the early years of the Project's operation. The $12 million benefit of excess revenues is eliminated once the $18.5 million (npv) higher upfront subsidy for the Public Model is considered.

Additionally, the results of the sensitivity analyses demonstrate that the Concession Model will provide the highest Project Value under each scenario except the revenue upside sensitivity.

Accordingly, the Board concluded that the Concession Model provided significant value to the HPTE by trading protection from a potential revenue shortfall, lower upfront subsidy and $5.8 million higher Project Value versus approximately a $4.8 million higher value for the Public Model, if the project were to exceed projections by 10% annually each year over the project's life. These financial considerations were especially important to the Board given HPTE's limited financial resources.

The Concession Agreement between PRD and HPTE delivers value to the State by providing:

- *Revenue risk transfer that protects taxpayers and the State from underperformance of the Project:* The revenue sensitivity indicates that under the Public Model there would be a shortfall of $129 million (nominal) or $19.5 million (npv) if revenues were 25% lower than projected resulting in insufficient funding for HPTE to make its debt service payments for 17 years.

- *The lowest amount of Upfront Subsidy*: PRD requested an HPTE Capital Payment of $44.1 million (nominal) while the Public Model indicated an upfront subsidy of $70.1 million which is $21.3 million higher than the available funds. HPTE will realize the benefit of transferring the majority of financing risk as its contribution to the Project is limited to $48.8 million. Analysis as of January 2014 indicates that without a cap on the HPTE Capital Payment, HPTE may have been required to contribute at least $50.9 million mainly due to changes in interest rates. This risk transfer has resulted in additional value to the State under the Concession Model.

- *Elimination of CDOT's contingent liabilities under the CDOT O&M Loan:* PRD does not have the benefit of the CDOT O&M Loan agreement and is assuming all project risks relating to operations and maintenance. Based on the Phase 1 O&M estimates, this contingent liability on average may have been as much as $3 million annually (nominal) over the Term. Additionally, if the Project were delivered under the Public Model, and assuming that CDOT would include Phase 2 under the CDOT O&M Loan, potential exposure under the O&M Loan could be approximately $14.5 million (npv) assuming revenues were insufficient to fund 50% of the total Project O&M.

- *Taxpayer protection from cost overruns during construction*: The Concession Agreement contains a fixed price, date-certain construction contract and HPTE receives liquidated damages in the event PRD does not meet the Full Services Commencement Date Deadline;

- *Taxpayer protection from cost overruns during operations:* PRD is responsible for all operations and maintenance activities and is at risk if these costs increase over the Term.

- *Savings on maintenance costs on the US36 General Purpose Lanes*: PRD's cost proposal to maintain the GP Lanes was $123,900 or approximately 15% lower than CDOT's estimate for the same works.

- *A well-maintained asset*: PRD must meet performance standards set by HPTE on the Project and is subject to penalties if it is not in compliance with those standards, regardless of the facility's revenue performance. A well-maintained asset reduces the total major maintenance costs through a whole-life approach to developing the project and the avoidance of deferred maintenance. Deferred maintenance can significantly increase long term project costs as more rehabilitation work will be needed the longer the project is under-maintained and the inflationary impacts of deferring those costs.

The Project will bring other qualitative benefits to the State. Such qualitative benefits include more reliable and efficient travel throughout the corridor for passenger cars and RTD buses, improved safety, and improved air quality. Macro economic benefits such as job creation in the short and long term and increased productivity due to reduced travel times will also be derived from the Project. These benefits have not been quantified in this analysis and would be derived under both delivery models however the timing of these benefits depends upon when Phase 2 of the Project could be delivered under each model. Given CDOT's financial constraints it is unlikely the Public Model could deliver the Project on the same schedule as will be achieved by the Concession Model.

APPENDIX A – DETAILED PVA RESULTS

SUMMARY OF PVA RESULTS

The following table shows the Net Project Value under the Base Case as well as the impact on Project Value under each of the sensitivities.

Base Case	Concession Model (NPV)	Public Model (NPV)
Net Project Value	($45,400,000)	($51,181,000)

25% Downside Revenue Sensitivity		
25% Downside Revenues[1]	$0	($33,100,000)
Net Project Value	($45,400,000)	($84,281,000)
40% Downside Revenue Sensitivity		
40% Downside Revenues	$0	($53,000,000)
Net Project Value	($45,400,000)	($104,181,000)
10% Upside Revenue Sensitivity		
10% Upside Revenues[1]	$2,700,000	$13,300,000
Net Project Value	($42,700,000)	($37,881,000)
Escalating Upside Revenue Sensitivity		
Escalating Upside Revenues[1]	$1,800,000	$8,100,000
Net Project Value	($45,600,000)	($43,081,000)
O&M Sensitivity		
15% Higher HPTE Managed Lanes O&M Costs[1,2]	$0	($13,200,000)
Net Project Value	($45,400,000)	($64,381,000)
CDOT O&M Contingent Liability Sensitivity		
50% of estimated annual O&M exposure[1,2]	$0	($14,500,000)
Net Project Value	($45,400,000)	($65,681,000)

1. Net present value at 14% discount rate for revenues and 5% discount rate for the upfront subsidy amounts
2. Includes O&M costs for US36 Phase 1 and US36 Phase 2

BASE CASE RESULTS

Upfront Subsidy – Nominal

The HPTE Capital Payment Request was the primary financial metric evaluated under the concession procurement and was an important factor considered in the 2012 PVA and in HPTE's decision to utilize the Concession Model. The results of the updated PVA show the upfront subsidy on a nominal basis (see Table 1) and a Net Present Value basis (see Table 2).

The upfront subsidy is presented in nominal or year-of-expenditure terms in order to provide consistency in comparing the results of each delivery model against the amount of available funding. The results show that the nominal amount of upfront subsidy required under the Public Model is approximately $70.1 million. PRD is likely to be paid an HPTE Capital Payment of $48.8 million, an amount $21.3 million or approximately 30% less than the amount of upfront subsidy required under the Public Model. This represents a significant savings for the Project and when coupled with other risk factors, a key fact supporting the Board's decision to utilize the Concession Model.

Table 1 – Nominal Upfront Subsidy Requirements

Base Case Total Upfront Subsidy in Nominal $ (millions)	
Concession Model(1)	Public Model(1)
$48.8	$70.1

(1) The total subsidy includes $13.5 million from the cities of Louisville and Superior and $1.3 million from Boulder County.

Total Project Value – Net Present Value

Table 2 presents the PVA results on a net present value basis in order to effectively compare the results of the full Project Value under each model as excess revenues are received over time. Total Project Value is the net present value of excess revenues less the upfront subsidy. Under the Public Model, HPTE would retain all revenues from the Project after paying debt service, operations and maintenance costs. As these revenues are not guaranteed, the discount rate used reflects the potential risk of HPTE receiving the excess revenues as discussed above.

Total Project Value and upfront subsidy are the same number under the Concession Model as the concessionaire has the right to retain revenues from the Project, except to the extent the Project performs better than expected in which case the concessionaire would be required to share a portion of these revenues with HPTE.

As discussed above, the upfront subsidy is shown separately for the Public Model given the importance of the Board's goal for the Project of minimizing the upfront subsidy. The results indicate that while the Project may generate excess revenues for HPTE over time under the Public Model, the lower upfront subsidy required under the Concession Model provides an immediate benefit. Additionally, under the Public Model HPTE would need time to raise the required additional upfront funding needed and therefore it is likely the Project could not be delivered on the same schedule as the Concession Model. The costs associated with later project delivery have not been quantified in this PVA.

Table 2 – Total Project Value

	Concession Model	Public Model		
	Upfront (Subsidy)/ Total Project Value(1)	Upfront (Subsidy)(2)	NPV of Excess Revenues	Total Project Value(2)
Project Value	$(45.4)	$(63.9)	$12.7	$(51.2)

(1) Under the Concession Model the Upfront Subsidy and the Total Project Value are the same as no excess revenues will flow to HPTE during the concession term. This analysis does not consider any revenues that may be available to HPTE under the revenue sharing mechanism of the Concession Agreement. NPV using a 5% discount rate for subsidy amount.

(2) NPV using discount rate of 14% for excess revenues and a 5% discount rate for the upfront subsidy amounts.

The Total Project Value under the Public Model is approximately 10% lower than the Concession Model.

SENSITIVITY ANALYSIS RESULTS

A. Revenue

While Table 2 indicates that the Total Project Value under the Base Case is lower under the Public Model, revenue forecasts over a 50 year time horizon are only estimates and include an element of risk whether they are "most likely" revenue estimates or otherwise. Given HPTE and CDOT's limited financial resources, the Board was concerned about the potential financial exposure if revenues were less than the estimates supporting the Project financing under both delivery models. The PVA analyzes the potential impact to HPTE and CDOT in terms of additional funding that may be required to support the Project under two downside revenue cases as well as the greater benefits that may accrue under two better than expected revenue outcomes.

There are a limited number of operating managed lanes projects in the U.S. and information about actual performance against initial projections is not readily available. However, the rating agencies have developed an approach to rating managed lanes projects which considers the revenue risk of these types of projects and applies various sensitivities in order to test a project's resilience to underperformance. The downside revenue sensitivities used in the PVA were selected based on information contained in published reports from Moody's[3] and Fitch[4] on managed lanes ("ML projects").

In particular, Moody's notes "that managed lanes projects have a limited history in the US and the demand for them among motorists is highly discretionary….we expect in general managed lanes projects to exhibit a higher degree of revenue volatility compared to traditional toll roads." Fitch notes that "ML projects have sound foundation, but will be more volatile." Further, Fitch's report goes on to say that "…sensitivity testing reveals that a 10% reduction in total corridor volume…results in a more than 25% reduction in ML volume…This sensitivity also results in a 48% reduction in revenue from the base scenario." These comments indicate that due to the sensitive nature of managed lane pricing, small changes in overall corridor traffic volume (e.g. 10% reduction) can have a large impact on ML toll volume (25% reduction) and revenues (48%). Based on this data ML revenue reductions of 25% and 40% were considered appropriate.

Even less information was available about positive project performance and while the upside of a corridor wide traffic increase may be symmetrical with the downside impact (i.e. 10% increase in corridor traffic resulting in 48% increase in ML revenues) there is little evidence to date to support this assertion or that managed lanes projects in general or this project in particular will outperform projections. Therefore the PVA considered a somewhat conservative upside revenue scenario in which Project revenues are increased by 10%.

Downside Revenue Sensitivity: The downside revenue sensitivity analysis considered 25% and 40% reductions in the Public Model revenues (P50) revenue during the operating period. The results demonstrate that in both cases there are periods where revenues are insufficient to pay operations and

[3] Moody's Special Comment: Managed Lanes are HOT! Unique risks and benefits versus traditional tolling. Dated: May 9, 2013.
[4] FitchRatings Special Report: Paying for Predictability, U.S. Managed Lanes Projects. Dated: April 2, 2012.

maintenance, debt service and major maintenance. In such circumstances HPTE or CDOT will need to consider allocating other funds to cover these unanticipated costs.

Debt service reserve funds would cover debt service obligations however debt service reserve funds are typically only sufficient to cover one year of debt service. Under the Concession Model, a concessionaire has the obligation to undertake major maintenance activities to ensure it meets the performance standards of the Concession Agreement and could contribute additional equity if the project revenues were lower than anticipated. Deferring major maintenance may also result in higher routine maintenance costs and in significantly higher costs for these repairs in the future. While the Public Sector has some discretion to defer major maintenance activities this analysis did not quantify the impact of such a deferral.

Table 3 shows that in the Base Case (i.e. Public Model with no risk adjustments) if revenues were 25% and 40% below projections there would be a shortfall that would result in insufficient funding for routine operations and maintenance as well as debt service and major maintenance.

In the first scenario (25% downside), the revenue shortfall would be approximately $129 million, comprising $4.6 million for O&M, $26.1 million for debt service and deferred deposits to the major maintenance reserve account of approximately $98.3 million. Deferred deposits to the major maintenance reserve account means that necessary major maintenance will not be completed as scheduled. Some of this shortfall may be recovered in later years and is reflected in the Total Project Value calculation.

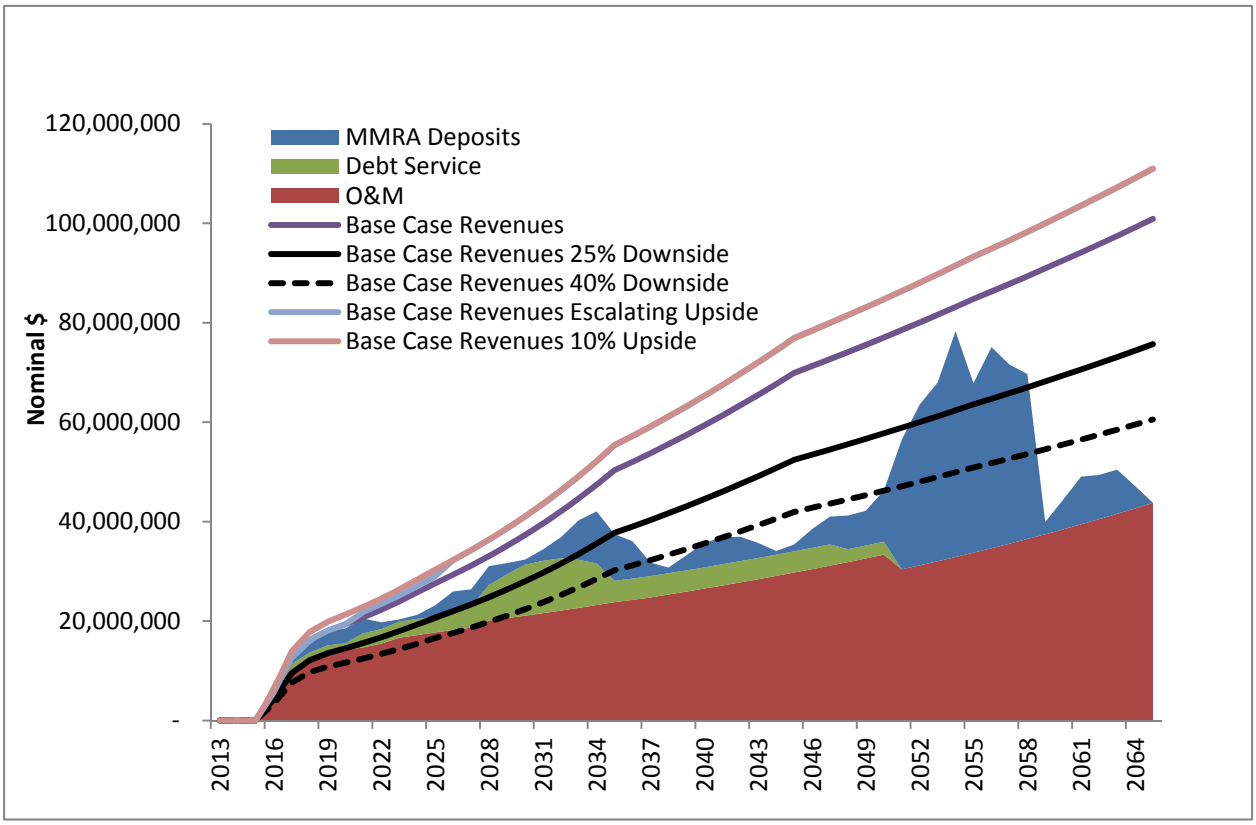
If revenues are 40% lower than estimated, the total shortfall would be approximately $319.4 million, consisting of approximately $25.5 million of O&M, $79.4 million of debt service and $214.5 million of deferred deposits to the major maintenance reserve account.

Table 3 – Public Model Revenue Sensitivities

	O&M Service Shortfall			Debt Service Shortfall			Major Maintenance Shortfall			Total Shortfall		
$ Million	Nominal	NPV @ 5%	NPV @ 14%	Nominal	NPV @ 5%	NPV @ 14%	Nominal	NPV @ 5%	NPV @ 14%	Nominal	NPV @ 5%	NPV @ 14%
Base Case	-	-	-	-	-	-	-	-	-	-	-	-
25% Downside	(4.6)	(4.0)	(3.2)	(26.1)	(15.0)	(6.8)	(98.3)	(31.3)	(9.5)	(129.0)	(50.3)	(19.5)
40% Downside	(25.5)	(18.5)	(11.3)	(79.4)	(39.8)	(14.1)	(214.5)	(50.4)	(11.0)	(319.4)	(108.7)	(36.4)

Figure 1 shows that under the 25% downside scenario the Project can pay all routine operations and maintenance by 2020 but does not regain a positive cash flow position until 2035, while under the 40% downside scenario, there would be a revenue shortfall until 2037.

Figure 1 – Public Model Revenue Sensitivities



Public Model Upside Revenue Sensitivity: The upside revenue sensitivity considered two upside scenarios. The first scenario demonstrates the impact to HPTE if revenues were 10% higher than the base case for the entire term. The second scenario considered escalating revenues in which revenue is assumed to remain at the base case level for five years, show an increase of 5% over base case revenues for each of the next 5 years and then revenues are assumed to be 10% higher than base case revenues until the end of the term (Escalating Upside case).

Table 4 shows that on a net present value basis HPTE may realize approximately $8 - 13 million in additional Project Value under the two upside sensitivity scenarios. These revenues are the incremental revenues that would be generated in excess of the Public Model revenue estimates (P50).

Table 4 – Public Model Upside Revenue Sensitivities

Upside Revenue Sensitivities $ (millions)		
Public Model	Add'l Revenue Nominal*	Add'l Revenue PV @14%*
10% Upside	$290.0	$13.3
Escalating Upside	$276.9	$8.1

*Does not include the effect of any TIFIA prepayments which would be paid prior to revenue sharing with HPTE.

Concession Model Upside Revenue Sensitivity: Under the terms of the Concession Agreement, HPTE will share in excess revenues once PRD achieves its Initial Equity IRR. The Concession Model upside revenue sensitivity considered the same scenarios that were applied to the Public Model upside sensitivity analysis. The first scenario assumes that revenues are 10% above PRD's base case estimates from day one of operations. The second case tests the impact of escalating growth, i.e. revenues equal PRD's base case revenues for the first five years of the operating period, revenues are 5% higher than the base case revenues for the next five years and are 10% higher than base case revenues for the remainder of the term of the agreement.

Table 5 shows the potential revenue that may be received by HPTE under each of the two sensitivities during the term of the Concession Agreement and the year in which revenue sharing would begin. Under each sensitivity scenario HPTE would not benefit from revenue sharing until the Project is reasonably mature, i.e. 18 - 21 years after the Project opens to traffic and therefore on a net present value basis, the sharing amounts are relatively small. Additionally the revenue share amounts would be paid periodically over the remaining term of the agreement.

Table 5 – Concession Model Upside Revenue Sensitivities

Upside Revenue Sensitivities $ (millions)			
Concession Model	Add'l Revenue Nominal*	Add'l Revenue NPV @14%*	Year of 1st Payment*
10% revenue increase above Base Case	$375.3	$2.7	2033
Escalating revenue increase above Base Case	$281.7	$1.8	2036

*Does not include the effect of any TIFIA prepayments which would be paid prior to revenue sharing with HPTE.

B. Operations and Maintenance

As noted in the 2012 PVA, there is a significant amount of empirical evidence to suggest that the public sector will receive value through reduced O&M costs under the Concession Model. For example, savings ranging from 22.5% - 25% have been experienced when these activities have been outsourced. As noted above, the PRD price of $675,000 for the US36 GP Lanes Routine Maintenance was approximately $123,900 per year or 15% below the CDOT Benchmark cost of $798,900. While this pricing was for the General Purpose Lanes, it is reasonable for HPTE to expect to receive a similar level of savings in the cost of operating and maintaining the Managed Lanes. This sensitivity results in a reduction in Project Value of approximately $19 million.

The second O&M sensitivity considers the potential risk of CDOT having to advance funds under the CDOT O&M Loan. The results show that if CDOT had to pay for 50% of the O&M costs on the Project (including both Phase 1 and Phase 2), the Project Value under the Public Model would be ($65.7) million compared to ($45.4) million under the Concession Model.

Project Report: Achieving Value for Money

U.S. 36 Express Lanes Public-Private Partnership

COLORADO DEPARTMENT
OF TRANSPORTATION

February 12, 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
Total	**$772**	**$300**	**$167**
*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.

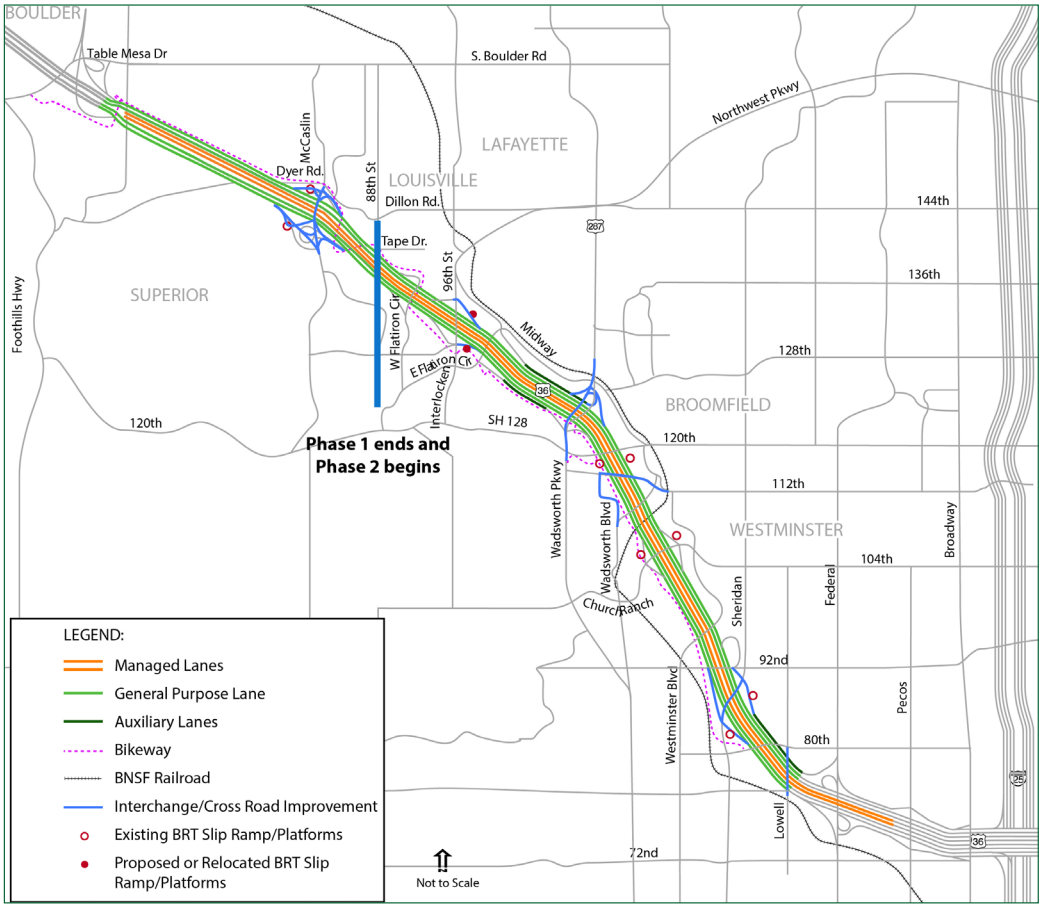
At the completion of the U.S. 36 Express Lanes project, the traveling public will have more choices—pay toll, carpool or ride bus for a more efficient trip, or travel free in existing lanes—creating a more effective transportation system that supports economic and job growth. Additionally, the project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

Project Scope

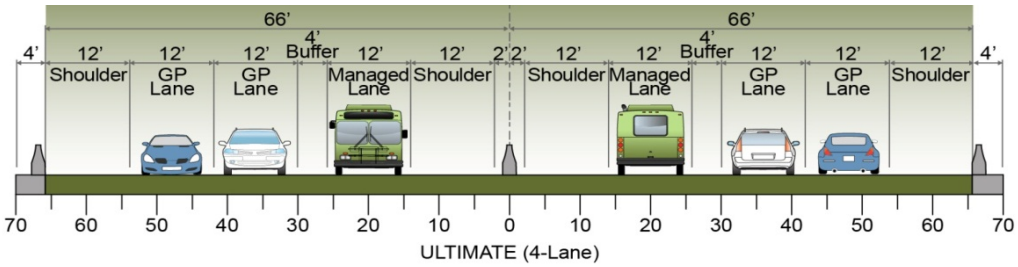
U.S. 36 Express Lanes is a two-phase multi-modal project led by the Colorado Department of Transportation (CDOT) and the Regional Transportation District (RTD) to reconstruct and widen U.S. 36 between Denver and Boulder. Project scope includes:

- 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
RTD	$124,000,000	$18,500,000	$142,500,000
DRCOG	46,600,000	15,000,000	61,600,000
CDOT (including Bridge Enterprise)	77,700,000	15,000,000	92,700,000
HPTE (including TIGER Grant)	10,000,000	–	10,000,000
Plenary Debt & Equity (including TIFIA 1 & 2)	54,000,000	120,000,000	174,000,000
Local Government	5,600,000	11,000,000	16,600,000
TOTAL	**$317,900,000**	**$179,500,000**	**$497,400,000**

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.

Upfront Public Subsidy

The cost of Phase 2 is expected to be approximately $190 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[1] 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 $70.1 million. The concessionaire's proposal required a public subsidy of $48.8 million, or $21.3 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)	$(70.1)	$21.3

[1]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 $70.1 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.[2] 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[3] 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[4] 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 then the nominal upfront subsidy difference of $21.3 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 $5.8 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)	$(63.9)	$12.7	$(51.2)	$5.8

[2]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.

[3]Discount rate is the percentage that is applied to a dollar in order to calculate its net present value.

[4]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 nearly $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	(26.1)	(15.0)	(6.8)	(4.6)	(4.0)	(3.2)	(98.3)	(31.3)	(9.5)	(129.0)	(50.3)	(19.5)
40% Downside	(79.4)	(39.8)	(14.1)	(25.5)	(18.5)	(11.3)	(214.5)	(50.4)	(11.0)	(319.4)	(108.7)	(36.4)

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.