

# Interstate 80 Tolling Feasibility Study

## *Final Report*

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# Executive Summary

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## Introduction

Traffic levels in Wyoming on Interstate 80 are relatively low compared to other Interstates, averaging about 12,920 vehicles per day on a typical segment in 2007. This equates to a level of service 'A' on the Transportation Research Board traffic congestion scale, which ranges from A (best: free-flow) to E (worst: traffic flow breakdown). However, approximately half of the vehicles on I-80 in Wyoming are heavy trucks, which cause much greater roadway damage than a typical passenger car. Exhibit ES-1 shows historical and forecast traffic data on I-80 for an average segment. Robust truck traffic growth (3% per year) in excess of passenger car growth (1.8% per year) is expected to cause the proportion of trucks on I-80 to rise from about 50% today to 57% in 2037.

Federal Interstate Maintenance funding levels are currently insufficient to properly maintain the Wyoming span of I-80 due to high levels of truck traffic. This situation of low congestion but very high highway maintenance costs is unique to I-80 in Wyoming and will require a funding solution outside the typical tool box of federal and state sources.

**Exhibit ES-1: Historical and Forecast Traffic Growth on I-80 in Wyoming**

Traffic	1970	1980	1990	2000	2007	2017	2027	2037
Cars	2,935	3,962	4,842	5,764	6,734	8,073	9,699	11,675
Trucks /1	747	2,482	3,257	6,170	6,506	8,722	11,695	15,682
<b>Total</b>	<b>3,682</b>	<b>6,444</b>	<b>8,098</b>	<b>11,934</b>	<b>13,240</b>	<b>16,795</b>	<b>21,394</b>	<b>27,357</b>
<b>Percent of Total</b>								
Cars	80%	61%	60%	48%	51%	48%	45%	43%
Trucks	20%	39%	40%	52%	49%	52%	55%	57%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

/1 Historical data from WYDOT traffic database. Truck forecast for 2007 to 2037 reflects FHWA Freight Analysis Framework forecast.

This Final Report covers an evaluation of the feasibility of implementing tolling on I-80 in Wyoming, from the eastern State border with Nebraska to the western State border with Utah. The Wyoming Department of Transportation has not implemented tolling on its Interstate or State highway system and is relying on this evaluation to provide background information on all aspects of tolling, including forward looking estimates of costs and revenues as well as the potential financial capacity of certain tolling approaches that might be used in lieu of federal Interstate Maintenance funding for I-80.

An Interim Report dated July 10, 2008 covered aspects of the I-80 project related to specific approach screening, the statutory issues that will need to be addressed at the state and federal levels, and potential public private partnership arrangements that WYDOT could consider in the implementation of the selected tolling approach to help mitigate risks involved in startup toll roads. This report covers the extended feasibility analysis of certain tolling approaches, including revenue and cost estimation and financial capacity analysis.

To execute this level of feasibility analysis, a Base Case tolling approach was established and used as a "control case" to help build the analysis and test assumptions. The Base Case will be referred to throughout the study and is outlined in the following bullets.

- No roadway capacity expansion is performed (assumes WYDOT receives special permission from FHWA to toll under these conditions, either through a pilot program or other arrangement).
- One tolling point is established near the center of the State, between WY 789 and Rock Springs.

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- All traffic is tolled. Cars are tolled at 10% of the truck rate.
- Passenger car diversion is assumed to be 1.25 times that of trucks at a given toll rate.
- Trucks will divert from I-80 to alternative non-tolled routes if the alternative's cost (consisting of time and fuel cost) is less than the toll rate on I-80.<sup>1</sup>

## Key Study Findings

### Tolling Approaches

Of the six tolling approaches evaluated in the initial screening, the following four were recommended to be eliminated from financial review.

- **Managed lanes (1) and Managed Facilities (2):** These are tools developed to manage congestion. Since there is little congestion on I-80, traffic management is not the most appropriate solution to meeting the challenges faced by WYDOT.
- **Building New Toll Roads (3):** A parallel facility would be prohibitively expensive and congestion on the primary competing free road, I-80 is not sufficient to cause motorists to use the toll road.
- **Tolling Bridges (4):** The toll revenue from the two small bridges in the corridor, according to FHWA guidance, could not be used on portions of I-80 other than the bridges themselves. As such, this approach would not solve the maintenance funding problem faced by WYDOT.

The two approaches that merited further consideration from a financial feasibility perspective were (1) Truck only toll lanes and (2) Tolling of all traffic on the existing capacity without any roadway expansion. These two approaches are politically challenging, but financially, have promise in solving WYDOT's roadway maintenance funding dilemma.

Truck only toll lanes could be a viable option only if the truck lanes' use are mandatory and toll rates are set sufficiently high to cover the additional construction, operation and maintenance costs of the truck lanes along with, potentially, the maintenance cost of the existing I-80 lanes. It is possible that federal Interstate Maintenance funding for I-80 would not be lost under this scenario, but the facility design and the tolling programs the roadway qualifies under within the next federal funding authorization will ultimately determine funding levels from FHWA.

Tolling existing capacity would require WYDOT to qualify under a special FHWA tolling program similar to the Interstate System Rehabilitation and Reconstruction Pilot program that is part of the current federal funding authorization, the 2005 "Safe, Accountable, Flexible, Efficient Transportation Equity Act, a Legacy for Users" (SAFETEA-LU). SAFETEA-LU will expire in 2009 and it is possible that the subsequent federal funding authorization will enhance opportunities for WYDOT to toll existing I-80 lanes without capacity expansion. Under this scenario, WYDOT could employ a variable toll rate schedule based on vehicle type, targeting heavy trucks for a higher percentage of the revenues as they cause far more damage to the roadway. The toll collection facility(s) could be strategically located away from urban areas to minimize tolling of local users and minimize the ability of cross-state traffic to divert around the collection facility. The fundamentals of this approach are captured in the Base Case, outlined above.

### Statutory Requirements

SAFETEA-LU contains several tolling programs and pilots that allow tolling on state highways and Interstates. The next authorization is expected to contain major changes, including more flexibility for states in implementing public private partnerships, increased emphasis on freight movement efficiency gains, less reliance on traditional gasoline tax funding, and more opportunities for tolling, including tolling

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<sup>1</sup> It is conceivable, due to variations in payment structures and expense reimbursement policies, that some truck drivers may not make route choice decisions based on economic costs. This behavior is not expected to be common or prevail in the long-term.

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on existing facilities and Interstates. This said, if Wyoming wishes to participate in future tolling opportunities allowed by the FHWA, it is critical to establish tolling legislation and organizational plans for a smooth implementation.

While many variations of tolling organizations exist at the State and local level, the nature of the issues faced by WYDOT regarding I-80 suggests the need for an organizational structure that is statewide in scope, such as a statewide toll authority. This enterprise would operate most effectively if it existed within the DOT and could, as needs dictate, be the basis for a system of toll roads.

It is conceivable that other roadway issues may surface in Wyoming that can be addressed with tolling, such as congestion relief near urbanized areas. As no enabling legislation for tolling currently exists, any legislation drafted should allow for the potential of other more locally oriented tolling organizations to be formed to address such local needs if they arise. An example of this approach would be the Regional Mobility Authorities in Texas that are formed locally and approved by the Texas Transportation Commission.

**Public Private Partnerships**

Public-private Partnerships (PPPs) have a broad array of definitions that can range anywhere from fee-based public contracting for services to full privatization. The fundamental premise of PPPs is transferring both risk and control from the public sector to the private sector. The greater the desire for control by the public owner, the less risk transfer can occur to the private parties. The range of PPP options is captured in Exhibit ES-2, showing that as more risk is transferred to the private sector (either in development or operation of the asset), less control is retained by the public sector sponsor of the project. However, with the exception of a fully privatized facility, ownership of the facility and overall control is retained by the public through the requirements of the agreements.

**Exhibit ES-2: PPP Structures and Risk Matrix**

	Development	Delivery	Operations	Maintenance	Finance	
Public	Public	D-B-B	Public	Public	Public	Design-Bid-Build
Public	Public	D-B-B	Private	Public	Public	Private Contract Fee Services
Public	Public	D-B-B	Private	Private	Public	
Public	Public	D-B	Public	Public	Public	Design-Build
Public	Public	D-B	Private	Private	Public	Build-Operate-Transfer (DBOM)
Public/Private	Public/Private	D-B	Private	Private	Public/Private	Long-Term Lease Agreement / DBFO
Private	Private	D-B	Private	Private	Private	Build-Own-Operate

An important first step in using basic PPP approaches is for Wyoming to adopt PPP legislation, at least allowing for design-build. Design-build approaches to construction, operation and maintenance of toll facilities have been widely used to reduce the risk borne by the public agency developing the facility, by potentially eliminating its exposure to price fluctuations, labor problems, revenue shortfalls and financing risks. Traditional state procurement practices that mandate selection of construction services based on the lowest bid, and engineering services based on best value create an intrinsic disconnect from design-build, which is a combination of all of these functions.

In today's environment, many would not place design-build as a major PPP delivery mechanism. The approaches more typically described as PPPs include those where design-build is combined with operations and/or maintenance as well as adding financing. When all of these elements are transferred to the private sector on a long-term lease with ownership and oversight retained by the public agency,

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the commonly used term is a concession. A concession may be either a "brownfield" which requires an up front payment to transfer an existing asset or a "greenfield" where a new facility or capacity is designed and constructed by the concessionaire. Unless new capacity is required for I-80, a greenfield concession would not be an option. A desire to put together any form of brownfield concession for an Interstate would require approval and negotiations with FHWA and would be breaking new ground.

**Traffic Forecasts on a Tolled I-80**

The traffic forecast to remain traveling on I-80 when tolling is instituted reflects trips where drivers found it to their advantage to pay the toll rather than to divert to a different, more circuitous route. The diversion analysis undertaken in this study focused on truck movements both across Wyoming and within the State.

Using the FHWA Freight Analysis Framework (FAF), a database of hundreds of truck origin/destination (O/D) pairs was inventoried to model diversion from I-80. Mapping software was used to establish the next best route for each O/D pair and the cost of diversion from I-80 using the next best route was calculated. The diversion cost was calculated by combining the cost of fuel used to travel the additional distance and the cost of the additional time estimated to divert.<sup>2</sup> This cost was compared to the toll rate to determine whether or not the trip would divert (all trips having diversion costs less than the assigned toll rate were assumed to divert).

Converting this methodology into an analysis tool allowed the team to establish a range of expected diversion based on toll rates charged on the I-80 facility. Additionally, the team was able to estimate the revenue curve at different rates and identify the theoretical "optimal toll rate" at which point the "maximum revenue" could be collected from the facility.

Exhibit ES-3 provides the toll diversion and revenue modeling results for the year 2010, showing that the estimated optimal toll rate is \$116 for trucks and \$9.50 for passenger cars. At these rates, over \$180 million in total toll revenues would be collected from approximately 4,000 trucks and 3,400 passenger cars, after diverting about 45% of all potential traffic from the road.<sup>3</sup>

**Exhibit ES-3: Base Case Tolled Traffic and Revenue, 2010 (millions\$)<sup>4</sup>**

Truck				Passenger Car				Total Traffic	Total Revenue
Toll Rate	Diversion	AADTT	Revenue	Toll Rate	Diversion	AADT	Revenue		
\$32	4%	7,228	\$83.1	\$3.15	5%	5,912	\$6.8	13,140	\$90.0
\$42	8%	6,960	\$106.8	\$4.20	10%	5,636	\$8.6	12,597	\$115.4
\$53	16%	6,375	\$122.2	\$5.25	19%	5,031	\$9.6	11,406	\$131.9
\$63	19%	6,121	\$140.8	\$6.30	24%	4,768	\$11.0	10,889	\$151.8
\$74	26%	5,615	\$150.7	\$7.35	32%	4,245	\$11.4	9,859	\$162.1
\$84	32%	5,163	\$158.4	\$8.41	39%	3,778	\$11.6	8,942	\$170.0
\$95	36%	4,803	\$165.8	\$9.46	45%	3,405	\$11.8	8,208	\$177.5
\$105	43%	4,267	\$163.6	\$10.51	54%	2,851	\$10.9	7,118	\$174.6
\$116	46%	4,051	\$170.9	\$11.56	58%	2,628	\$11.1	6,679	\$182.0
\$126	54%	3,499	\$161.0	\$12.61	67%	2,057	\$9.5	5,556	\$170.5
\$137	58%	3,188	\$158.9	\$13.66	72%	1,736	\$8.7	4,924	\$167.6
\$147	59%	3,090	\$165.9	\$14.71	74%	1,635	\$8.8	4,725	\$174.7
\$158	60%	2,996	\$172.3	\$15.76	75%	1,560	\$9.0	4,557	\$181.3
\$168	78%	1,658	\$101.7	\$16.81	75%	1,560	\$9.6	3,219	\$111.3
\$179	79%	1,602	\$104.4	\$17.86	75%	1,560	\$10.2	3,162	\$114.6
\$189	85%	1,145	\$79.0	\$18.91	75%	1,560	\$10.8	2,706	\$89.8
\$200	86%	1,062	\$77.4	\$19.96	75%	1,560	\$11.4	2,622	\$88.7

Exhibit ES-4 displays the truck revenue curve fitted with a trend line. It shows that revenues fluctuate in a narrow band near the top of the curve between toll rates of approximately \$95 and \$150. In this

<sup>2</sup> The fuel cost was calculated using standard metrics of truck fuel efficiency and the value of time (VOT) was calculated as 1.25 times the cost of the driver's average wage and benefits plus an operating cost factor, equating to about \$32 per hour in 2009 terms.

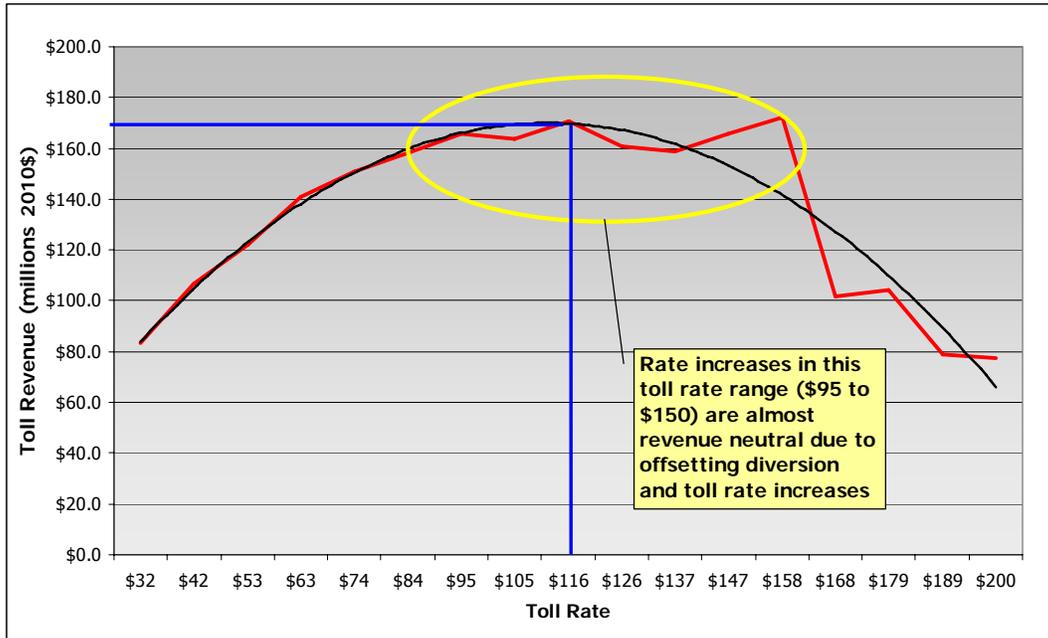
<sup>3</sup> Diversion from I-80 would cause increased wear and maintenance costs on diversion routes, both in Wyoming and in other states.

<sup>4</sup> Toll rates used in this analysis are escalated unrounded 2010 rates, based on 2.5% annual increases. Rates shown are for a single tolling point representing the entire 400 mile span of I-80 in Wyoming.

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range, the rate of diversion increase is roughly the same as the rate of toll increase. As the toll rate increases above \$160, a sharp increase in diversion causes revenues to drop off more dramatically.

**Exhibit ES-4: Truck Toll Revenue Curve, 2010**



**Facility Costs**

Capital and operating and maintenance (O&M) costs were estimated for both the roadway and the proposed toll facility using standard unit costs, contingencies and the assistance of WYDOT staff when applicable. Construction costs were escalated at 5% annually and most non-construction costs were escalated at 3% annually based on Bureau of Labor Statistics inflation statistics for the Western Region.<sup>5</sup>

**Roadway Capital Costs:** Costs for three roadway configurations were estimated with assistance from WYDOT staff. The costs of the three configurations are summarized in Exhibit ES-5, and the configuration layouts are further detailed below.

**Exhibit ES-5: Roadway Capital Cost Estimates (billions\$)**

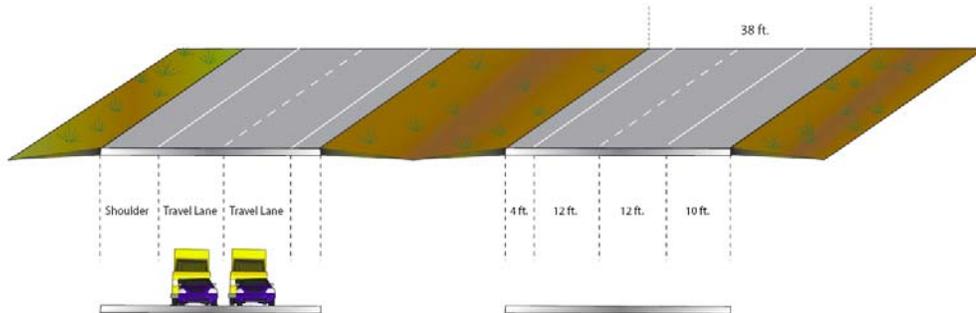
	2009 \$ Cost	Escalated Costs
Configuration 1 (Base Case)	N/A	N/A
Configuration 2 (expand to 6 lanes)	\$2.1	\$2.8
Configuration 3 (expand to 8 lanes)	\$5.3	\$7.0

*Includes 15% contingency and 15% program and construction mgt. cost*

- Configuration 1 (Base Case):** No capacity expansion would be undertaken – existing lanes are shared by passenger vehicles and trucks. All lanes are tolled. No capital expansion cost for roadway would be necessary.

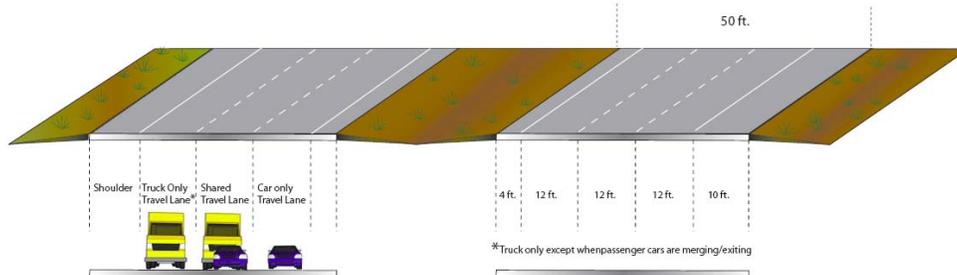
<sup>5</sup> The construction cost inflation factor of 5% is somewhat lower than realized inflation in recent years. Since the project is not expected to be constructed in the near future, the 5% factor was deemed reasonable as it represents expected long-term escalation.

**Configuration 1 – Existing Capacity (Base Case)**



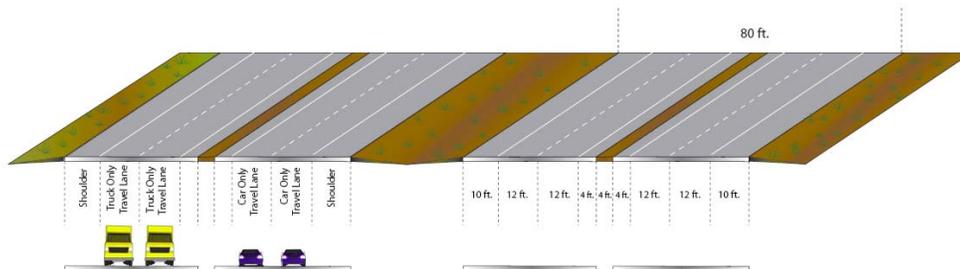
2. **Configuration 2:** One additional lane is added in each direction such that the current four-lane Interstate is expanded to six lanes. The inside (left) lane is for passenger cars only. The center lane is shared by trucks and passenger cars but used by trucks only when passing. The outside (right) lane should be used by trucks if not passing, and should only be used by cars when exiting or entering the interstate. All lanes are tolled. Roadway capital costs are estimated at \$2.1 billion in 2009 dollar terms. Assuming a 10 year build and 5% escalation, the total cost of this configuration would be approximately \$2.8 billion.

**Configuration 2 – Third (Truck) Lane**



3. **Configuration 3:** A new independent truck only facility is constructed next to the existing highway. Passenger cars would continue to use the existing roadway while trucks would be required to use the truck only facility. The independent truck only facility would have two lanes operating in each direction, thereby increasing the capacity from four to eight total lanes. All lanes would be tolled. Roadway capital costs are estimated at \$5.3 billion in 2009 dollar terms. Assuming a 10 year build and 5% escalation, the total cost of this configuration would be approximately \$7.0 billion.

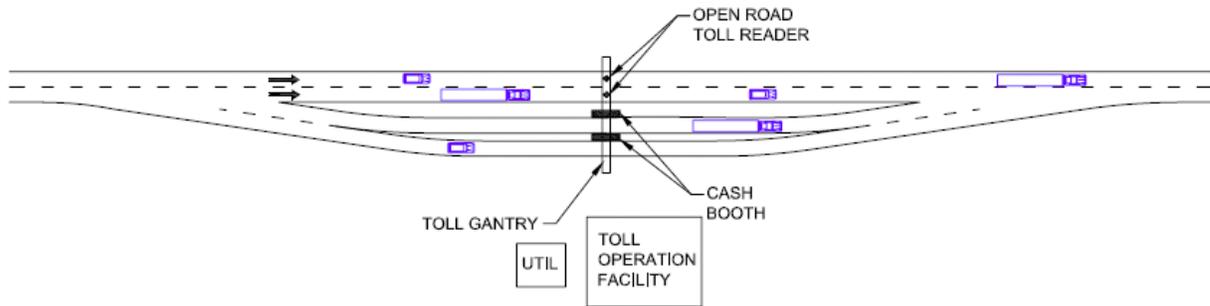
**Configuration 3 – Independent Truck Only Facility**



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**Toll Infrastructure Capital Costs:** An open road tolling (ORT) configuration is envisioned for the tolling point(s), where the primary lanes are equipped with overhead ORT readers. Vehicles with transponders could continue driving on the primary lanes at full speed and the toll would be electronically deducted from their account with WYDOT. Vehicles without transponders would stop to pay the toll at a toll booth. The toll point configuration is illustrated in Exhibit ES-6. This configuration would be located on each side of the highway to collect tolls from vehicles traveling in both directions.

**Exhibit ES-6: Proposed Tolling Point Configuration**



Tolling infrastructure including pavement for the toll lanes, gantries, open road toll readers, computer systems and software, buildings, and installation were included in the capital cost of the toll infrastructure. In 2009 dollar terms, these items are expected to cost \$12.9 million including a 15% contingency.

**Operations and Maintenance Costs:** Roadway O&M costs include the costs of minor pavement maintenance as well as non-pavement maintenance activities such as trash collection, mowing, snow removal, guardrail repair, fence and snow fence repair, and other annually recurring costs associated with preserving the functionality and safety of Interstate 80.

The tolling O&M costs include five major cost categories as listed Exhibit ES-7. While tolling costs do not fluctuate with the roadway configuration, adding lanes increases the roadway portion of O&M substantially.

**Exhibit ES-7: Total Annual Facility O&M Costs, 2009**

<b>Roadway Configuration</b>	<b>Configuration 1 Existing Capacity</b>	<b>Configuration 2 Third Lane</b>	<b>Configuration 3 New Truck Facility</b>
<b>Cost Category</b>			
<b>Roadway Maintenance</b>			
<b>Unit Costs (Per Lane Mile)</b>			
Pavement Maintenance	4,000	4,000	4,000
Snow Removal	2,300	2,300	2,300
Other Roadway Maintenance	1,200	1,200	1,200
<b>Total Unit Roadway Maintenance Cost</b>	<b>7,500</b>	<b>7,500</b>	<b>7,500</b>
Lane Miles	1,728	2,592	3,456
<b>Annual Roadway O&amp;M Cost (2009\$)</b>	<b>\$12,960,000</b>	<b>\$19,440,000</b>	<b>\$25,920,000</b>
<b>Toll Operations &amp; Maintenance</b>			
General & Administrative	810,400	810,400	810,400
Toll System Maintenance	591,600	591,600	591,600
Enforcement and Courtesy Patrol	4,124,400	4,124,400	4,124,400
Staffing	1,624,000	1,624,000	1,624,000
Transaction & Violation Processing	5,059,500	5,059,500	5,059,500
<b>Annual Tolling O&amp;M Cost (2009\$)</b>	<b>\$12,209,900</b>	<b>\$12,209,900</b>	<b>\$12,209,900</b>
<b>Total Annual Operations &amp; Maintenance</b>	<b>\$25,169,900</b>	<b>\$31,649,900</b>	<b>\$38,129,900</b>

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**Cash Flow and Financing**

When issuing bonds to pay for capital improvements, gross toll revenues from trucks and passenger cars are the starting point for the calculation of cash flow available for debt service. Gross revenue is reduced by uncollectable accounts (violators) and annual tolling and roadway O&M costs to arrive at net operating revenues available to structure the financing. Exhibit ES-8 illustrates the cash flow calculation for I-80 for select years under the Base Case using the revenue maximizing rates discussed above.

**Exhibit ES-8: Base Case Project Cash Flow (millions\$)**

	2009	2010	2011
<b>Gross Revenue</b>			
Annual Nominal Truck Toll Revenue	161.8	170.9	184.8
Total Annual Nominal Passenger Toll Revenue	10.6	11.1	12.0
<b>Total Revenue</b>	<b>172.5</b>	<b>182.0</b>	<b>196.8</b>
<b>Toll Operating and Maintenance Costs</b>			
Total Transaction & Violations Cost	5.1	5.3	5.8
Total Enforcement and Courtesy Patrol	4.1	4.3	4.4
Total G&A Overhead Costs	1.4	1.4	1.5
Total Staffing Costs	1.6	1.7	1.7
<b>Total Toll O&amp;M Costs</b>	<b>12.2</b>	<b>12.7</b>	<b>13.4</b>
<b>Roadway Operating and Maintenance Costs</b>			
Pavement Maintenance Costs	7.0	7.3	7.7
Snow Removal	3.9	4.0	4.2
Sign, Gaurdrail, Etc Replacement	2.1	2.2	2.3
<b>Total Roadway O&amp;M Costs</b>	<b>13.0</b>	<b>13.6</b>	<b>14.2</b>
<b>Total O&amp;M Costs (Toll &amp; Roadway)</b>	<b>25.2</b>	<b>26.3</b>	<b>27.5</b>
<b>Net Revenue Available for Debt Service</b>	<b>147.3</b>	<b>155.7</b>	<b>169.3</b>

If tolling began in 2009, \$25 million in annual O&M costs would be subtracted from toll revenue collections of \$173 million to arrive at net revenue available for debt service of \$147 million. Under the Base Case, net revenue available for debt service grows steadily as a result of traffic and toll increases to approximately \$290 million by 2020 and \$550 million by 2030.

This revenue stream was used in a calculation of construction funds that could be raised though a 40-year municipal bond issuance. After paying issuance costs and funding required reserve accounts, approximately \$3.0 billion in construction funds could be raised from toll revenues.

**Findings and Next Steps**

The bonding capacities of all three configurations are similar at just over \$3.0 billion. The Base Case has a relatively strong bonding capacity due to its lower roadway O&M costs, while Configurations 2 and 3 have slightly decreased diversion (due to additional capacity relative to competing routes) that to some degree is offset by the additional roadway O&M costs that would be borne due to the expansion lanes. Configuration 3's additional four lanes of roadway O&M negatively impacts net revenues and is expressed in the slightly lower bonding capacity than Configuration 2.

**Exhibit ES-9: Toll Revenue Bonding Capacity (billions\$)**

	Bonding Capacity	Escalated Roadway Costs
Configuration 1 (Base Case)	\$3.01	N/A
Configuration 2 (expand to 6 lanes)	\$3.21	\$2.8
Configuration 3 (expand to 8 lanes)	\$3.13	\$7.0

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While the bonding capacity of Configuration 3 falls far short of the cost at \$7 billion, Configuration 2 has a strong net revenue stream and resulting bonding capacity in excess of the estimated \$2.8 billion capital cost of the project. Under Configuration 2, the toll revenue maximizing truck rate could be reduced from \$116 in 2010 dollar terms to about \$90. Similarly, the passenger car rate could fall from \$9.50 to about \$9.00.

Given that congestion is not an issue, especially under a tolled scenario when some traffic is diverted to other routes, an approach where existing capacity is tolled (the Base Case) is a viable solution to WYDOT's funding dilemma.

Referring to Exhibit ES-8 above, total operating costs begin at about \$25 million annually in 2009 and grow thereafter. If an additional amount equal to the annual O&M cost were set aside in a facility rehabilitation and replacement fund, (together, \$50 million in the first year) ample funds would be available each year to properly operate and maintain the roadway at a significantly reduced toll schedule of about \$20 per truck and \$2.00 per car assuming toll rate and traffic growth predicted in this study.<sup>6</sup>

An approach where no bonds are issued would require the State to raise approximately \$13 million through other sources that would be required to build the tolling facility. Theoretically, this approach could be effectively marketed to the trucking community since the toll would be relatively small. Still, FHWA approval would be required within the provisions of the next federal transportation authorization.

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<sup>6</sup> The major rehabilitation and replacement account would accumulate funds annually for large scale rehabilitation projects expected to occur periodically, including grinding and resurfacing the pavement surface and replacing tolling system components and software. Matching the annual O&M cost with an R&R fund deposit would accumulate approximately \$440 million if invested after 10 years.

# Introduction

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## 1.1 Consulting Engagement

PB was engaged by WYDOT in May of 2008 to evaluate its ability to use various tolling approaches on Interstate 80 (I-80) through Laramie, Albany, Carbon, Sweetwater and Uinta counties. The feasibility study (the Study) was conceived to inform the Wyoming Department of Transportation (WYDOT) and the Joint Interim Transportation, Highways and Military Affairs Committee of the Wyoming State Legislature on the following seven aspects of tolling:

1. What is the current practice in tolling on highways and Interstates?
2. What Public-Private Partnership arrangements may be applicable to said tolling approaches in Wyoming?
3. What tolling arrangements are currently allowed by federal law and what types of legislation would the State need to pass in order to institute tolling?
4. What is a reasonable expectation for toll traffic and revenue under the various scenarios?
5. What is a reasonable cost estimate for capital and toll infrastructure needed under each tolling approach?
6. What environmental considerations should be evaluated if any of the tolling approaches are carried forward?
7. How financially feasible are the tolling approaches and would instituting any one of them improve WYDOT's ability to maintain I-80 at an acceptable condition, provided that federal Interstate Maintenance (IM) funding is not expected to meet funding needs in the future.

The Study began in mid May and was completed in early October. An Interim Report dated July 10, 2008 covered the first three items listed above. This Final Report includes revisions to the Interim Report and coverage of the remaining four analysis tasks.

## 1.2 Methodology and Outline

The PB Team's approach to the Study was to illuminate current practices in tolling and provide estimates of costs and revenues from tolling I-80. These feasibility-level estimates were grounded in the engagement team's experience working with toll roads across the country and abroad. As such Section 2 contains information detailing common approaches to tolling in the United States and describes a preliminary screening process the PB Team went through to establish, from a practical perspective, which tolling approaches should be considered in a preliminary financial analysis.

Section 3 provides an overview of the regulatory environment that tolling must operate within, especially on Interstate Highways. Federal laws, outlined in SAFETEA LU are discussed first, followed by commentary on the types of tolling organizations that could be considered by WYDOT for this project. Finally, a detailed discussion on specific tolling laws that should be included in any state legislative tolling package is presented.

Section 4 provides an overview of public-private partnerships used in tolling projects, including delivery approaches such as design-build and variations thereof as well as combining design-build with financing, operating and maintaining to form the basic concession model.

Section 5 provides an overview of the tolling diversion analysis and tolled traffic forecasts. Methodological statements of the diversion model developed for I-80 and detailed analysis of the trucking diversion results are provided in appendices C and D respectively.

Section 6 details all capital and operating costs associated with the toll facility and the assumptions used to develop these estimates.

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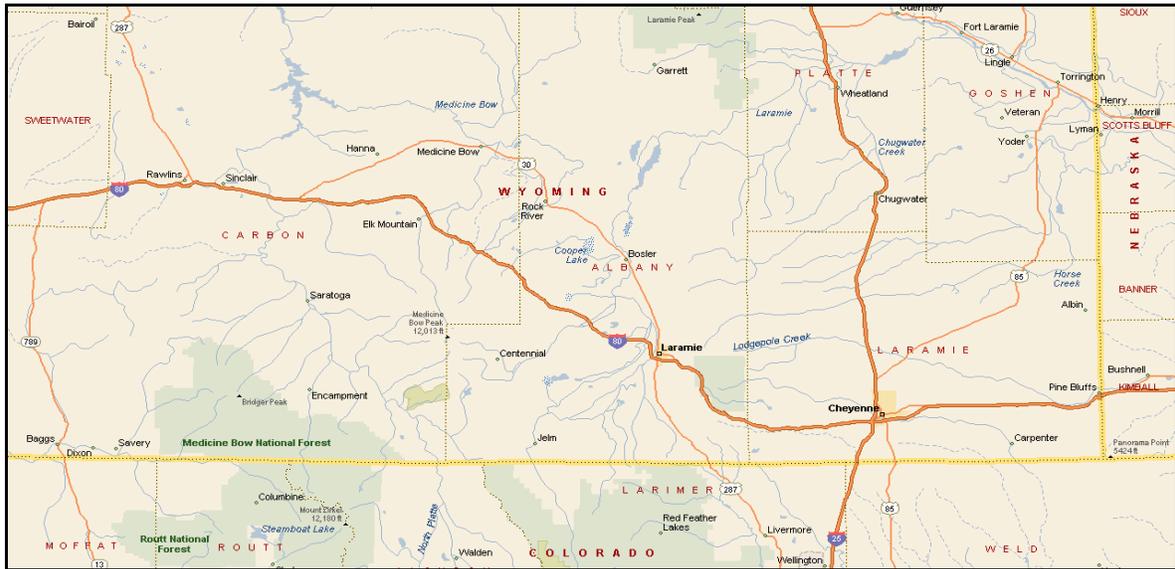
Section 7 explains the cash flow and financing assumptions, outlines the study findings, and recommends next steps for WYDOT to consider in the implementation of tolling on I-80.

## 1.3 Corridor Description

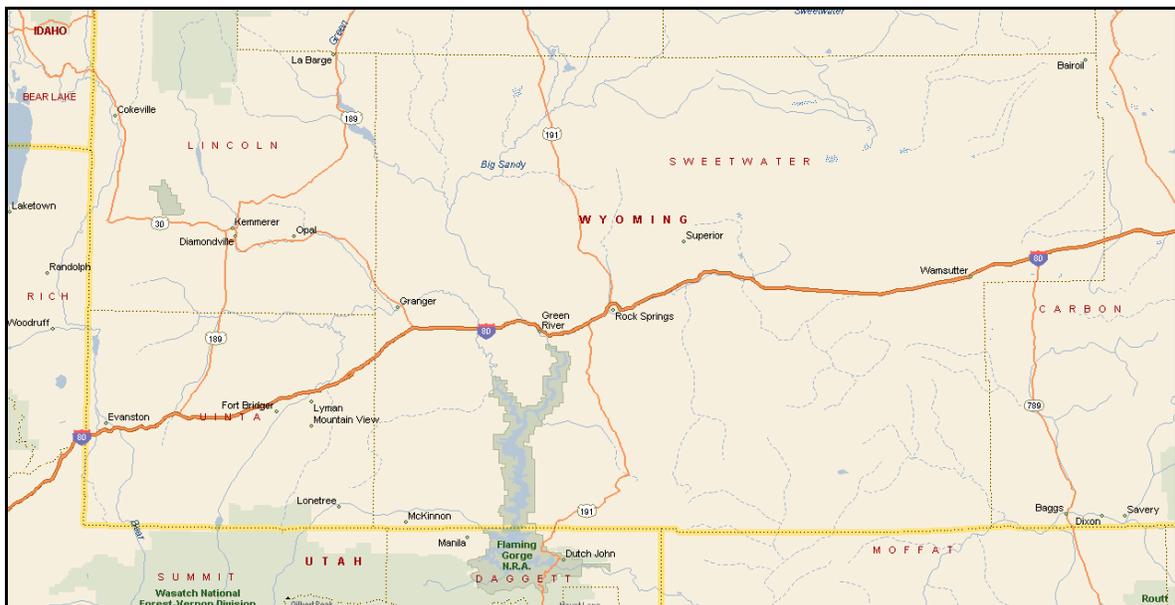
### Description of Study Corridor

The I-80 corridor in Wyoming is approximately 400 miles long, and spans the entire length of the State from its eastern border with Nebraska to its western border with Utah. The Interstate passes through some of the State's largest cities including Cheyenne, Laramie and Rock Springs and crosses the North Platte and the Green rivers. Exhibits 1a and 1b present I-80 eastern and western section maps, together accounting for the entire 400-mile corridor.

**Exhibit 1a: Interstate 80 Corridor Map (Eastern Section)**



**Exhibit 1b: Interstate 80 Corridor Map (Western Section)**



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I-80 is a key component of Wyoming's principal arterial system. The terrain of the I-80 corridor varies from rolling to mountainous. The typical lane configuration is a rural four lane divided highway, with an occasional third lane on steeper grades serving as a climbing lane to otherwise accommodate the speed differential between truck and car traffic.

The posted speed for the I-80 corridor is generally 75 miles per hour. The posted speed is reduced to 65 miles per hour through urbanized areas and is also reduced at locations along the corridor where the roadway geometry dictates a lower speed. The corridor is a full access controlled facility. Access is controlled with interchanges located at collector roads, minor arterials and principal arterials such as US and state highways and Interstate 25 (I-25).

### **Environmental Considerations**

Any of the three configurations would have an impact on a federal facility (Interstate 80) and future funding and maintenance of that facility, therefore a National Environmental Policy Act (NEPA) process and approval will be required. NEPA requires documentation of impacts of any action authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken by a federal agency.<sup>7</sup> It requires federal agencies to consider the impacts of the proposed action and its alternatives to the following environmental resources:

- Air Quality
- Biological Resources
- Archaeological and Historic Sites
- Geology
- Noise and Vibration
- Parklands, Recreational Areas
- Land Acquisitions, Displacements, and Relocation of Existing Uses
- Water Resources
- Transportation
- Hazardous Materials
- Aesthetic and Visual Resources
- Utilities
- Socio-Economic Conditions
- Construction Impacts

Depending on the environmental significance of the actions and alternatives, there are three levels of analysis: categorical exclusion determination (CatEx); preparation of an environmental assessment (EA); or preparation of an environmental impact statement (EIS).

Configuration 1 would require the construction of tolling infrastructure including a small amount of additional pavement and right of way acquisition for the new toll lanes, gantries, open road toll readers, computer systems and software, and support buildings. Because this configuration has a relatively small physical impact, it may be able to receive approval with a CatEx. For this streamlined NEPA approval to be possible, the candidate location(s) for toll facilities will need to be limited to areas free of environmental concerns.

Configurations 2 and 3, involving the minor impact of adding tolling infrastructure and the significant impact of adding new lanes across the State, would require an EIS. Based on preliminary analysis, it is believed that neither configuration presents environmental fatal flaws to this project. If Configuration 2 or 3 were to move forward, one of the next steps would be a complete Environmental Impact Statement

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<sup>7</sup> 50 CFR 600.810 and 16 U.S.C. 1855(b)(2)

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process to define a purpose and need, scoping, alternatives development and screening, selection of a preferred alternative, and determination of impacts and mitigations.

Some of the most critical issues that would be considered in an EIS are the preliminary approaches to right-of-way, biological resources, historic sites, air quality, rivers, and recreational areas. Right-of-Way acquisition would likely be the most significant impact for a widening of this scale. Impacts would be most significant in urban areas, especially around interchanges that would need to be reconstructed. The National Register of Historic places would be consulted to provide a database of properties on the national register list. The Fish and Wildlife Service (FWS), the Bureau of Land Management (BLM), and the Wyoming Game and Fish Department would help determine if any threatened, endangered, and/or species of concern reside in the counties listed above. Exhibit 2 shows a FWS list of all potential threatened and endangered species within the five counties. While there is potential for these species to occur in or near the potential study area, detailed field investigations and consultation with the FWS and the Wyoming Game and Fish Department would need to be conducted under any future NEPA analysis.

**Exhibit 2: Threatened and Endangered Species for Affected Wyoming Counties**

Scientific Name	Common Name	Status	Uinta	Sweetwater	Carbon	Albany	Laramie
Black-footed Ferret	Mustela nigripes	E	✓	✓	✓	✓	✓
Blowout Penstemon	Penstemon haydenii	E	✓	✓	✓	✓	✓
Canada Lynx	Lynx canadensis	T			✓	✓	
Interior Least Tern	Sternula antillarum	E			✓	✓	✓
Pallid Sturgeon	Scaphirhynchus albus	E			✓	✓	✓
Piping Plover	Charadrius melodus	T			✓	✓	✓
Preble's Meadow Jumping Mouse	Zapus hudsonius preblei	T				✓	✓
Ute Ladies'-tresses	Spiranthes diluvialis	T	✓	✓	✓	✓	✓
Western Prairie Fringed Orchid	Platanthera praeclara	T			✓	✓	✓
Whooping Crane	Grus americana	E			✓	✓	✓
Wyoming Toad	Bufo baxteri	E				✓	
Bonytail	Gila elegans	E	✓	✓	✓		
Colorado Pikeminnow	Ptychocheilus lucius	E	✓	✓	✓		
Humpback Chub	Gila cypha	E	✓	✓	✓		
Razorback Sucker	Xyrauchen texanus	E	✓	✓	✓		
Yellow-billed Cuckoo (Western)	Coccyzus americanus	C	✓	✓	✓		
Colorado Butterfly Plant	Gaura neomexicana coloradensis	T					✓

<http://www.fws.gov/mountain-prairie/endspp/countylists/wyoming.pdf>

February 2008

E – Endangered      T – Threatened      C - Candidate

The major surface water resources near the proposed project are the Bear River, Green River, North Platte River, and Laramie River. Other surface water resources in the potential study area include several named and unnamed intermittent, ephemeral, and perennial streams, and canals. For any project in or

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affecting the waters of the United States, the U.S. Army Corps of Engineers would have jurisdiction and require that a federal permit would be obtained prior to construction of any new crossings of those rivers, streams, and associated riparian wetlands.

The Wyoming Department of Environmental Quality would be consulted to provide air quality information. Currently, the town of Wamsutter which is situated along I-80 has an air quality monitoring station located 2 miles west of Wamsutter. Monitoring equipment includes an ozone analyzer, oxides of nitrogen analyzer, sulfur dioxide analyzer, PM10 monitor and meteorology sensors. The other nearby monitoring stations are located in Murphy Ridge and the Green River Basin.

Given the breadth of the potential environmental impacts, configurations 2 and 3 will require significant future research for these and other environmental resources.

**Corridor Performance and Traffic**

WYDOT provided actual traffic data by segment for the entire span of I-80 in Wyoming. Traffic levels vary by segment, ranging in average daily traffic (ADT) from approximately 21,000 vehicles to 8,000 vehicles per day (both directions). The facility averaged 6,460 vehicles per day among all 216 eastbound and westbound segments in 2007, for an annual average bi-directional total of 12,920 vehicles per day.

Exhibits 3a and 3b present historical and projected traffic data for I-80. Traffic in the I-80 corridor (on an average per segment basis) has increased from approximately 3,680 total vehicles per day in 1970 to 12,920 vehicles per day in 2007, an average annual growth rate of 3.5%. During the same time period, heavy trucks' representation in this total increased from 20% to 50%, growing annually at a rate of 6.0%. This trend data is portrayed graphically in Exhibit 3b showing overall traffic growth and the increasing proportion of trucks represented in total traffic.

Automobile traffic is expected to grow by 1.2% annually between 2007 and 2037 while heavy truck traffic is expected to grow at 3.0% annually, further increasing its share of total traffic to 63% by 2037.

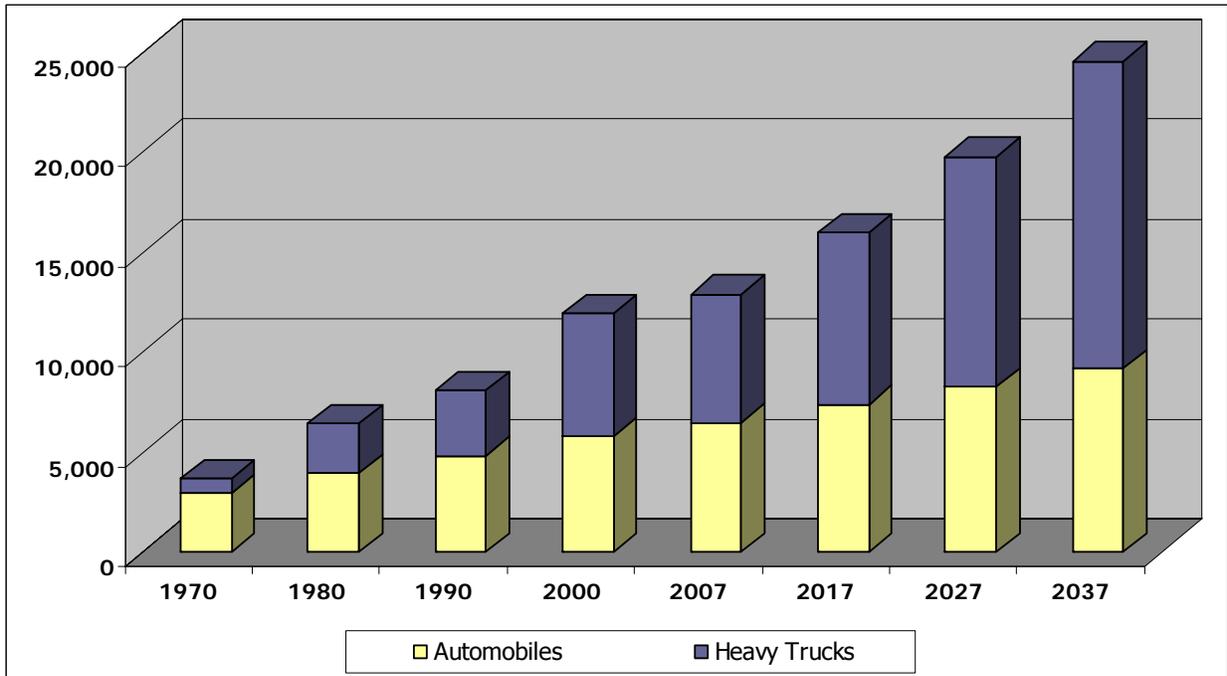
**Exhibit 3a: Historical and Forecast Traffic Data for I-80**  
**(average per segment data shown)**

Traffic	1970	1980	1990	2000	2007	2017	2027	2037
Cars	2,935	3,962	4,842	5,764	6,734	8,073	9,699	11,675
Trucks /1	747	2,482	3,257	6,170	6,506	8,722	11,695	15,682
<b>Total</b>	<b>3,682</b>	<b>6,444</b>	<b>8,098</b>	<b>11,934</b>	<b>13,240</b>	<b>16,795</b>	<b>21,394</b>	<b>27,357</b>
<b>Percent of Total</b>								
Cars	80%	61%	60%	48%	51%	48%	45%	43%
Trucks	20%	39%	40%	52%	49%	52%	55%	57%
<b>Total</b>	<b>100%</b>	<b>100%</b>						
<b>Growth</b>								
<b>10-Year Increment</b>	<b>1970-1980</b>	<b>1980-1990</b>	<b>1990-2000</b>	<b>2000-2007</b>	<b>2007-2017</b>	<b>2017-2027</b>	<b>2027-2037</b>	
Cars	1,027	880	922	721	1,339	1,626	1,976	
Trucks	1,735	774	2,914	267	2,216	2,973	3,987	
<b>Total</b>	<b>2,762</b>	<b>1,654</b>	<b>3,836</b>	<b>988</b>	<b>3,555</b>	<b>4,599</b>	<b>5,963</b>	
<b>Percent Growth</b>								
Cars	3%	2%	2%	1%	2%	2%	2%	
Trucks	13%	3%	7%	0%	3%	3%	3%	
<b>Total</b>	<b>6%</b>	<b>2%</b>	<b>4%</b>	<b>1%</b>	<b>2%</b>	<b>2%</b>	<b>2%</b>	

/1 Historical data from WYDOT traffic database. Forecast for 2007 to 2037 reflects FHWA Freight Analysis Framework forecast.

Source: WYDOT, FHWA, PB Analysis.

Exhibit 3b: Historical and Forecast Traffic Data for I-80



Heavy truck traffic makes up a disproportionately large percentage of I-80 traffic in Wyoming compared to other Interstates nationwide. Exhibit 4 compares statistics from the six Interstate corridors that are part of the USDOT Corridors of the Future Program, a new initiative that provides funding to develop innovative approaches to reducing congestion and improving the efficiency of freight delivery. The right-hand column of the exhibit shows that the percentage of total traffic representing trucks in these six corridors ranges from 14% to 24%. The percentage of heavy trucks on I-80 in Wyoming (at 50%) is two times the next highest corridor listed.

Exhibit 4: Comparison of Heavy Truck Traffic as Percent of Total

Interstate Corridor	State	Average Daily Traffic (corridor)	Average Daily Truck Traffic (corridor)	Heavy Truck %
I-5	California to Washington	71,000	10,000	14%
I-10	California to Florida	41,000	8,000	20%
I-15	California to Utah	56,000	9,000	16%
I-69	Texas to Michigan	31,000	6,500	21%
I-70	Missouri to Ohio	45,000	11,000	24%
I-95	Florida to Virginia	72,000	10,000	14%
<b>I-80</b>	<b>Wyoming /1</b>	<b>12,992</b>	<b>6,438</b>	<b>50%</b>

/1 Average Daily Traffic by segment as opposed to the entire corridor. Not comparable in absolute terms but applicable for comparing the percent of heavy truck statistics.

Source: WYDOT, FHWA, PB Analysis.

It has been well documented that heavy trucks contribute far more damage to a roadway than passenger cars. Using AASHTO design guide data, WYDOT staff calculated that one fully loaded 80,000 pound truck

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inflicts the same amount of damage to a roadway as 4,000 passenger vehicles. Restated, the roadway damage caused by the above noted 6,440 heavy trucks on I-80 equates to that of another 26 million passenger vehicles on the roadway per day. Clearly, due to the high level of truck traffic, I-80 has a disproportionately large maintenance cost burden to shoulder. Given that the vast majority of trucks on I-80 represent through trips with origins and destinations outside of the State, it is reasonable that Wyoming would evaluate means to collect additional revenue from these Interstate users to account for their share of roadway damage and related maintenance costs.

Average congestion levels on I-80 are low compared to many Interstates due to the relatively small population centers served within Wyoming. Despite the fact that the proportion of trucks is much higher on I-80 in Wyoming than most other Interstates, time delays due to congestion, even in the most populated areas near Laramie and Cheyenne, are not common. The Transportation Research Board (TRB) outlines standards for congestion on all types of roadways and ranks the roadways "level of service" (LOS) based on performance measures such as density of traffic, flow rate and speed, ranging from LOS A (best: free-flow) to LOS E (worst: traffic flow breakdown).

LOS A for a basic two-lane freeway is generally achieved at a flow rate of 820 vehicles (passenger cars / hour / lane) or less for a 75 mph speed limit segment. The corresponding LOS E flow rate would be 2,400 vehicles or more. The PB Team calculated the average flow rate on the I-80 freeway for 2007 using traffic data provided by WYDOT and applying the TRB methodology. Using a truck-to-passenger car equivalency factor of 2.5, an average flow rate of 570 vehicles was calculated, putting I-80 within the LOS A category, indicating that free-flow traffic at posted speeds is normal<sup>8</sup>. On a per segment basis, the flow rate ranged from a high of 930 vehicles to a low of 385 vehicles with the highest congestion levels being witnessed in the Green River area.

The LOS on I-80 in 2037 was calculated as LOS C, with an average flow rate of 1,206 vehicles. While this level of traffic is substantially higher than today, it does not present a dire need for capacity expansion. The lack of congestion on I-80 will, as outlined in the following section, make several tolling approaches that include capacity expansion practically infeasible.

**Definition of the "Base Case"**

To execute this level of feasibility analysis, a Base Case tolling approach was used as a "control case" to help build the analysis and test assumptions. The Base Case will be referred to throughout the study and is outlined in the following bullets.

- No roadway capacity expansion is performed. Existing roadway capacity is deemed sufficient for tolling purposes over the entire duration of the financing (Assumes WYDOT receives special permission from FHWA to toll existing interstate under these conditions, either through a pilot program or other arrangement)
- One tolling point is assumed near the center of the State, between WY 789 and Rock Springs. Tolls will be collected in both directions within a special toll enforcement zone (described in Section 5.3) created to reduce diversion of trucks around the tolling point using local roads.
- All traffic is tolled. Cars are tolled at 10% of the truck rate. The diversion analysis is based on a \$50 truck toll (\$5 passenger car toll) though other toll rates are applied against the Base Case configuration.
- Passenger car diversion is assumed to be 1.25 times that of trucks at a given toll rate due to their ability to use local roads to divert around the tolling point if they are willing to do so. The tolling enforcement zone would be considerably less effective in reducing passenger car diversion and as such would not be enforced.

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<sup>8</sup> The LOS calculation was not refined to a time-of-day level of detail. WYDOT indicated that traffic congestion was very infrequent, even in the peak direction during the peak hour in the most populated areas of Laramie and Cheyenne.

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- Trucks are assumed to divert from I-80 to alternative non-tolled routes if the alternative cost (consisting of time and fuel cost) is less expensive than the toll rate on I-80.<sup>9</sup>

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<sup>9</sup> It is conceivable, due to variations in payment structures and expense reimbursement policies, that some truck drivers may not make route choice decisions based on economic costs. This behavior is not expected to be common or prevail in the long-term.

## 2 Tolling Approaches

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At the project kickoff meeting, the following five tolling approaches were established for the PB Team to evaluate for application on the I-80 facility.

1. Managed Lanes
2. Managed Facilities
3. New Toll Roads
4. Truck Toll Lanes
5. Tolled Bridges/Tunnels

Upon initial review of the I-80 Corridor, review of federal rules for tolling Interstates, and discussions with WYDOT, the PB Team added an additional approach that focused on tolling existing capacity despite general provisions of SAFETEA-LU that disallow such applications of tolling. The six approaches are defined in the sections that follow and evaluated in an initial screening discussion.

### 2.1 Managed Lanes

For purposes of this report, Managed Lanes, as opposed to a “Managed Facility,” discussed below, refer to the conversion of an existing lane or lanes to High Occupancy Vehicle (HOV) or High Occupancy Tolerated (HOT) lanes or Express Toll Lanes. HOV refers to a traffic lane restricted to vehicles with more than one person (HOV 2+), or in some cases, more than two people (HOV 3+). Such an approach is best suited for highways that have traffic congestion issues, whether during peak periods or throughout the day. In some areas HOV lanes are only restricted to high occupancy vehicles during peak congestion periods by using signs and generally unrestrictive access devices (lines as opposed to concrete barriers). Express Toll Lanes are toll lanes connected to a general purpose facility that require all vehicles to pay a toll regardless of occupancy. Frequently truck traffic is prohibited from using Managed Lane facilities.

In order to effectively create Managed Lanes, it is generally required that the roadway have greater than two total lanes such that at least two lanes can remain open for general purpose traffic. Limiting general purpose traffic to one lane is generally considered overly restrictive and results in a poor service.

Under a HOT scenario, vehicles with fewer than the required number of passengers for HOV lane use can use the restricted access lanes by paying a toll. As such, motorists are provided with more choices and the DOT is provided with additional mechanisms to manage traffic on the roadway. HOT lanes can be managed based on occupancy, type of vehicle, collection procedures, access points, and time of day. In a HOV 3+ scenario it would be theoretically possible to charge lower tolls for HOV2+ vehicles (although difficult to implement). On the Katy Freeway lanes in Houston, the HOV2+ vehicles pay a toll during peak periods while HOV3+ remain un-tolled; no Single Occupancy Vehicles (SOV) are allowed. Express Toll Lanes use the same approaches but eliminate the occupancy component. Managed Lanes are a useful tool for providing free flow options to motorists but are only valuable from a traffic management or revenue generation perspective if heavy congestion is present on the general purpose lanes, enticing people to pay the toll.

### 2.2 Managed Facilities

Managed facility approaches range widely from reversible to dedicated lanes within varying types of separation methods. For discussion in this report, “Managed Facilities” are different from “Managed Lanes” in that they constitute construction of additional capacity as opposed to conversion of existing lanes.

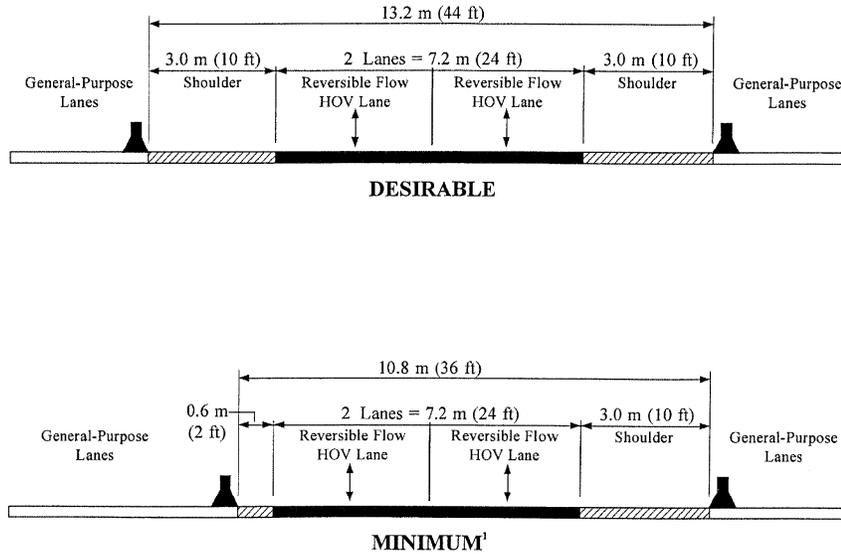
The following three approaches are currently in use in the US to separate HOV or tolled traffic from general purpose lanes:

1. **Reversible Flow** – One or more lanes, often in the median of a highway, switches between inbound and outbound availability depending on the peak period direction. Generally the facility is barrier separated from all general purpose lanes and limited access is provided. Reversible

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flow is mainly used in congested urban areas with high levels of commutation. Exhibit 5a shows a typical cross section for a two-lane reversible flow managed facility and Exhibit 5b shows an example of a reversible lane in use.

Exhibit 5a: Two Lane Reversible Lane Cross Section



¹ Operational treatments should be incorporated if the minimum design cross sections are used

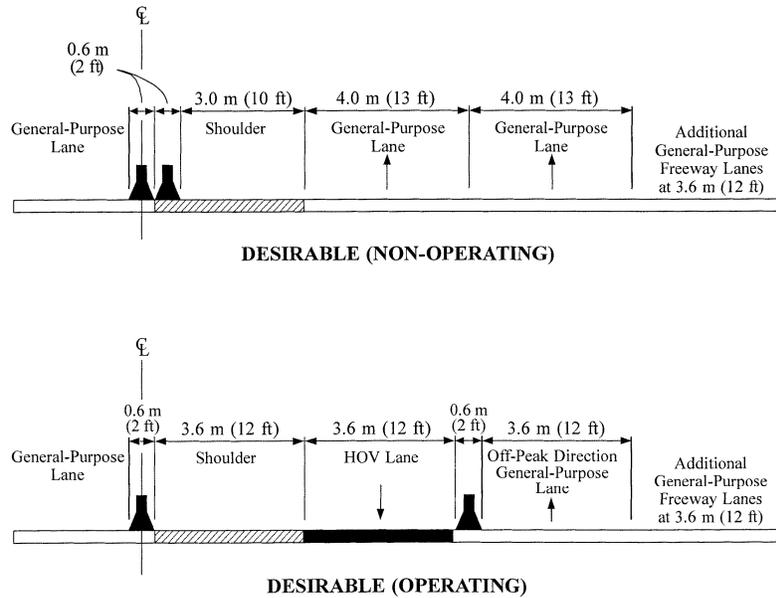
Exhibit 5b: Reversible Lane in Use, US 67 outside Dallas, Texas



2. **Contra-Flow** – Similar to reversible flow, contra-flow dedicates one or more lanes for inbound or outbound traffic during peak hours. The difference between reversible and contra-flow is that the contra-flow approach borrows general purpose lanes during the peak hours and returns them

to general purpose use in the off peak. Traffic is separated by pylons or movable concrete barrier to improve safety. Exhibit 6a shows a typical cross section for a one-lane contra-flow flow managed facility and Exhibit 6b shows an example of a movable barrier system in use.

**Exhibit 6a: Contra-Flow Lane Cross Section**

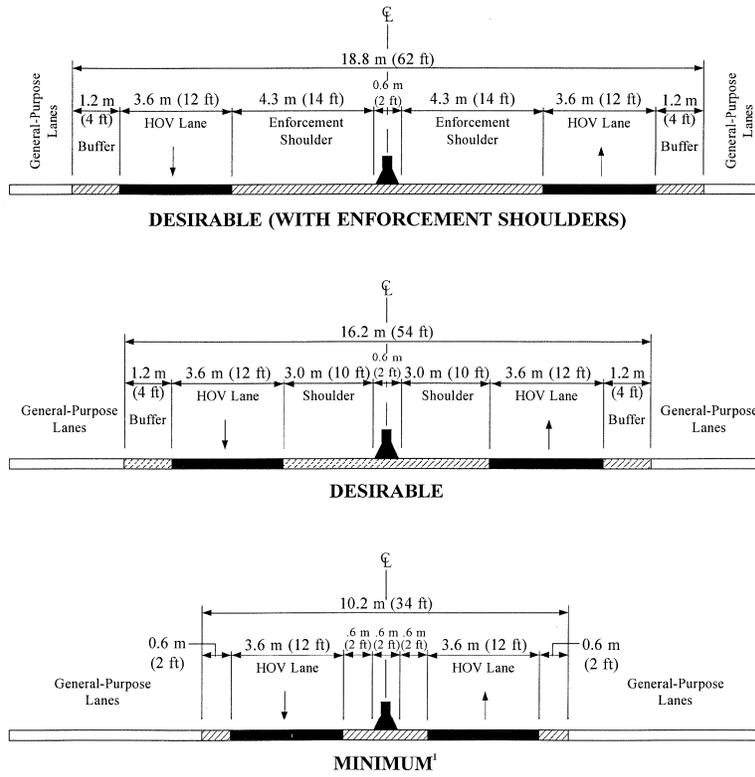


**Exhibit 6b: Movable Barrier System in Use, I-30 Dallas, Texas**



3. **Concurrent-Flow** – One or more lanes are added in each direction that can be managed at all times or switch between managed and general purpose during peak periods. The lanes can be separated or non-separated as they operate in the same direction as general purpose lanes at all times. Exhibit 7a shows a typical cross section for a one-lane in each direction Concurrent-flow flow managed facility and Exhibit 6b shows an example of a concurrent-flow system in use. Exhibit 7b shows a buffer separated system, though a range of separation techniques can be used including lines, plastic pylons, buffers and concrete separation.

**Exhibit 7a: Concurrent-Flow Lane Cross Section**



<sup>1</sup> Operational treatments should be incorporated if the minimum design cross sections are used

**Exhibit 7b: Reversible Lane in Use (Buffer Separated), I-405 Orange County, CA**



Managed Facility options such as these are commonly and effectively used in high congestion areas to provide more reliable commute times for people willing to pay or carpool. Just like Managed Lanes, high congestion levels on the general purpose lanes are necessary to entice drivers to pay a toll, and even then, rarely is the toll revenue sufficient to pay for the capital costs of the facility. Managed Facilities are normally deployed primarily for traffic management purposes.

## **2.3 New Toll Roads**

New toll roads, like any additional highway capacity, are very expensive to build and without the right conditions, will not generate the traffic necessary to support the debt service repayment for the capital costs or maintenance and operations costs.

The formation of the Interstate system largely replaced the purpose of many of the older turnpikes (toll) systems whose function was to move traffic between major cities such as the New Jersey Turnpike and Oklahoma Turnpike.

Our experience has shown that the following items are important to both the performance of the toll road as well as its financial feasibility as reflected in the issuer's credit rating, which would be awarded by one of the major credit rating agencies, such as Fitch Ratings or Standard & Poors. Many start-up toll roads (greenfields) have difficulty obtaining an "investment grade" rating on their own, without a revenue back-stop from another revenue generating entity, such as the State or Department of Transportation, because they have no track record of performance. The following items are key toll road characteristics that a rating agency would examine, for both new toll roads and existing facilities.

- 1) **Economic Growth:** From a macro-perspective, toll roads should be located near or within metropolitan areas having a healthy growing economy, a track record of weathering economic cycles, and prospects of long-term job and population growth.
- 2) **Location:** From a micro-perspective, the toll road should connect large residential clusters (origins) with major job centers (destinations) and provide enough value (measured in time savings) to capture a large share of the commuting traffic. If a free, generally uncongested parallel route exists, motorists will not consistently be diverted to the tolled alternative.
- 3) **User Profile:** The major origin clusters will, ideally, contain high income households who have high paying jobs in the employment clusters served by the toll road. Higher income toll road users create a situation of lower toll elasticity, meaning that if toll rates are increased, traffic levels will not decrease to the point where collections are lower than they were before the rate change. Additionally, the higher proportion of toll road trips that are commercially oriented, including commuters, business related trips, deliveries, airport trips, etc., the less traffic will change as a result of toll increases.
- 4) **Operations Management:** Successful toll roads need experienced toll road managers that understand how to achieve the toll road's goals, whether they be maximizing toll revenues or maintaining a high level of service. The managers / oversight committee must have the ability and willingness to adjust tolls as needed to achieve these goals, including instituting regularly scheduled toll increases.
- 5) **Operations Streamlining:** The toll operation should employ best practices and technology to streamline operations, including dual responsibility in customer service and other back office functions such as accounting, providing incentives to drivers who use electronic toll collection transponders as opposed to manual toll collection, and outsourcing of as many functions as possible to private professional toll services companies.
- 6) **Enforcement:** The toll operation should employ technology to minimize uncollectable accounts. The use of video enforcement and linkages to Department of Motor Vehicles databases to track down customers with collectables in an automated fashion is one method gaining popularity in the US and widely used internationally.

Some of the recently successful new toll roads include the E-470 eastern beltway in the Denver, Colorado metropolitan area, several facilities by the Transportation Corridor Agencies in Orange County, California and the SH130, Loop 1 facilities by the Texas Department of Transportation around the Austin, Texas area. All of these facilities are serving new communities and/or relieving existing congestion in a busy metropolitan area.

## 2.4 Truck Toll Lanes

Truck only toll lanes (TOT) are dedicated lanes for use by commercial vehicles, primarily trucks and buses, intended to decrease shipping times and improve reliability and overall highway safety. The lanes can be dedicated stand alone facilities or simply buffer or barrier separated lanes next to general purpose lanes such as is common with HOV / HOT approaches. TOT lanes are, like new toll roads and managed facilities, expensive to build and due to the intense pressure the trucks put on the roadway, expensive to maintain.

The trucking industry generally does not support tolling of highways because it directly impacts profitability. Unless the tollway provides substantial time savings over the free alternative, truckers will not use a tolled route. Mandatory use of TOT lanes has been discussed in some states but not implemented. Truckers and their associations have staunchly opposed such facilities and threatened to take legal action against any agencies implementing mandatory use of the TOT lanes. The trucking industry opposition to tolls as contrasted to their support for gasoline tax increases rests primarily with how their shipping contracts are structured – allowing them to pass along increases in fuel costs but normally not addressing tolls. The trucking industry has indicated some level of support for TOT lanes that provide them the ability to increase their hauling capacity either through heavier loads or longer vehicle lengths.

Preliminary discussions with Federal Highway Administration (FHWA) staff, while not indicative of how FHWA would actually rule on an application for mandatory TOT lanes in an Interstate corridor, indicated that such a tolling approach would be difficult for FHWA to support. An approach where all traffic was tolled under a variable pricing scheme that provided deep discounts to cars would be better received, though by no means would this be an easy approach to implement.

There is recognition at a national level that the needs for freight transportation have climbed substantially over the period of SAFETEA-LU and that the escalation will continue. The American Road and Transportation Builders Association has put forth a plan for Critical Commerce Corridors (3C) to provide new capacity and operational improvements to address the expected doubling of freight traffic over the next 25 years. The 3C initiative calls for the imposition and use of dedicated and protected user fees on freight shipments. While not a “toll” this approach is a “user fee” concept that has seen significant support and could be applied on a state level as well.

## 2.5 Tolled Bridges/Tunnels

Bridge and tunnel tolling is fairly straight forward and has been commonly implemented across the US for many types of facilities. Under federal law, a bridge or tunnel facility can be tolled in one or both directions and the revenue collected can be used for the expansion, operations and maintenance of the facility. As explained in more detail later, FHWA generally limits the use of revenue from such a facility to the facility itself, therefore excess revenues collected for crossing a bridge would not be permitted for use on other parts of the Interstate.

## 2.6 Tolling Existing Capacity

Because there are no current congestion issues on I-80, there is little need to engage in roadway expansion or managed lane projects simply for the ability to institute tolling. Instead, pursuing tolling alternatives that will require little to no additional capital investment may be the best option to generate

the level of revenues needed to adequately maintain the highway in the future while providing a satisfactory level of service for all vehicles.

An equitable tolling policy that puts the highest burden on the vehicles that do the most damage would involve a classification-based rate structure that assesses the highest rates on trucks and other heavy commercial vehicles. Typically existing toll roads charge higher tolls for vehicles based on the number of axles, vehicle type or weight. If the toll structure was predicated directly on the corresponding “wear and tear” to the facility, cars and other passenger vehicles could be charged toll rates that are steeply discounted compared to trucks in order to minimize the economic impacts of the toll on Wyoming residents. In fact, vehicle registration in Wyoming could be combined with low cost sticker tags. The tolls could even be flat yearly rates for Wyoming residents.

As will be discussed in the next section, current federal law allows tolling projects on existing Interstate highways solely for the purpose of funding reconstruction and rehabilitation, but WYDOT could no longer use Interstate Maintenance funding if a tolling project was instituted under this program.

## 2.7 Approach Screening

**Managed Lanes – (No Further Evaluation Recommended)** - Managed lanes are not recommended for I-80. The primary reason is that because I-80 does not face congestion problems, it would be inefficient to use HOT or Express Toll lanes, since there would be little value gained for the cost of the toll. Second, FHWA would most likely not approve conversion of general purpose lanes to HOT lanes if only one general purpose lane remained in either direction. If the lanes were barrier separated, major congestion problems could occur in either lane if an accident occurred. If they were not barrier separated, enforcement of violations would be extremely difficult.

**Managed Facilities – (No Further Evaluation Recommended)**- Managed Facilities are not recommended for I-80 for the same reasons as Managed Lanes. Congestion issues do not exist in the I-80 corridor. Peak period traffic, even near more urbanized areas such as Cheyenne and Laramie, is well below levels that would substantiate use of Managed Facilities, especially given the capital costs necessary to construct the facility.

**New Toll Roads – (No Further Evaluation Recommended)** - New toll roads are not recommended for I-80 due to the extremely high cost of construction and expected low use by both trucks and passenger cars given the presence of a LOS A, free alternative.

**Toll Bridges / Tunnels – (No Further Evaluation Recommended)** - There are two sizable bridges in the I-80 Corridor that are, arguably, large enough to consider as candidates for tolling; the Green River Bridge in Sweetwater County and the North Platt River Bridge in Carbon County. If tolling agreements with FHWA were put in place to toll these bridges, it could reduce the total burden WYDOT must bear to maintain I-80 by the amount spent on the bridges themselves but would not solve the roadway maintenance funding shortfall problem WYDOT expects to face in the future. As this approach would not meet the needs of WYDOT for this project, we do not recommend further evaluation of this approach.

**Truck Only Toll Lanes** - Significant barriers to TOT lanes exist from both legislative and cost standpoints. First, it is possible that TOT lanes could be financially self sustaining if made mandatory, but would almost certainly not pay for themselves if made optional. This said, mandatory TOT lanes would meet stiff opposition from the trucking community who would probably not realize material improvements to highway safety or performance. Despite these potential pitfalls, the PB Team recommends further evaluation of the financial feasibility of TOT lanes and related innovative strategies.

**Toll Existing Capacity** – The most cost effective way to toll I-80 is to minimize the capital expansion aspects of the implementation. While barriers to tolling existing Interstate capacity exist, the next federal authorization is expected to provide states with more flexibility in raising funds to pay for infrastructure, including Interstate tolling. Additionally, needed improvements to freight mobility are expected to be addressed. Despite the unknowns related to the upcoming federal reauthorization, the PB Team recommends further evaluation of a simplified tolling scheme where all vehicles on the existing lanes are

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tolled under a variable pricing scheme where heavy trucks pay tolls more proportionate to their share of roadway damage.

## 3 Statutory Limitations

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As the State of Wyoming examines the feasibility of tolling and prepares to adopt legislation necessary for the tolling of public roadways, there are organizational and legal issues that Legislators and WYDOT will need to work through to establish a tolling program that serves the needs of the State. This section outlines issues pertaining to WYDOT's ability to toll and provides background information and best practices from other states that Wyoming can consider as it moves towards implementation of tolling.

This section is divided into the following three sub-sections which are all critical to molding a framework for successful tolling.

- 1. Federal Tolling Regulations:** Current federal legislation allows limited tolling on Interstates. While WYDOT does not expect to implement any tolling projects within the timeframe of the current federal funding authorization, some, all or variations of the tolling programs contained therein could be part of the next federal funding authorization and are therefore worth mention.  
  
Now could also be a good opportunity for Wyoming's representation in US Congress to sponsor changes to be part of the next federal transportation reauthorization that addresses tolling to pay for maintenance as opposed to congestion relief. Other states may have problems similar to Wyoming, and such an idea would likely be supported as a means of approving toll projects.
- 2. Organizational Structures:** The organizational structure of a tolling enterprise or authority should complement the goals of the toll facility. This sub-section will set forth descriptions of the most common organizational structures used elsewhere in the US. While no one model is considered superior for all tolling applications, some may be more applicable to certain types of projects, such as statewide tolling of an Interstate corridor vs. localized bridge or tunnel tolling.
- 3. Tolling Legislation:** This section discusses specific aspects of tolling operations that should be included in legislation to allow efficient use of the most current tolling approaches and technology, such as video enforcement and electronic tolling.

### 3.1 Federal Programs

This section describes the federal programs that are currently available for states to implement toll facilities. Some these programs were new when SAFETEA-LU was signed into law, while others were created as part of previous federal authorizations and reinstated. Some of these programs have a predetermined number of spots that limit participation, but in all cases, a thorough review of the project and application process must be undertaken and a tolling agreement established with FHWA to avoid potential negative outcomes.

Current federal law clearly prohibits the new institution of tolling on Interstates not engaged in the six programs established under the Transportation Equity Act for the 21<sup>st</sup> Century (TEA-21), the Intermodal Surface Transportation Efficiency Act (ISTEA), or SAFETEA-LU. Section 129 of Title 23 of the US Legal Code states, "Except as provided in section 129 of this title with respect to certain toll bridges and toll tunnels, all highways constructed under the provisions of this title shall be free from tolls of all kinds." Though it is clearly illegal for states to institute tolling on federally funded facilities outside of the current federal programs, there are no explicitly stated consequences under current law for such a violation. Certain sections of the Legal Code suggest that repayment of federal funds to the Treasury could be necessary, but the level of funding and the circumstances under which funding would need to be repaid are not expressed. Regardless, PB does not recommend WYDOT undertake any activities which are not permissible by FHWA.

#### Interstate System Reconstruction and Rehabilitation Pilot Program

Originally authorized under TEA-21, the Interstate System Reconstruction and Rehabilitation Program (ISSRRP) was continued without alteration after the passage of SAFETEA-LU. Under section 1216(b) of TEA-21, the ISSRRP was established to permit a State to collect tolls on a highway, bridge, or tunnel on

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the Interstate system for the purpose of reconstruction and rehabilitation. The law states that the Interstate highway corridors would need to be in a condition that could not otherwise be adequately maintained or functionally improved without the collection of tolls.

The law allows three ISSRRP projects to be approved, and each of the three projects must take place in a different state. There is currently only one open slot available. The other two slots were filled by Interstate 81 in Virginia in 2003 and Interstate 70 through Missouri in 2005. Pennsylvania submitted an application under this program to toll I-80, but was rejected in September of 2008 due to FHWA's disapproval of the Pennsylvania Department of Transportation's plan to spend some of the forecast toll revenue on items that were not viewed as legitimate operating costs of the facility. One advantage that I-80 in Wyoming would have over the recent Pennsylvania DOT application is that the revenues would be dedicated to I-80.

Applications to participate in the ISSRRP need to contain an assessment of the current use and condition of the facility, an analysis that shows the facility could not be adequately maintained under all available funding, and a facility management plan that details a tolling plan, schedule and budget, with a discussion surrounding potential private involvement in the operations and maintenance of the facility. Priority is to be given to proposals that intend a public agency to operate the tolling facility. Toll revenues may only be used for debt service, a reasonable rate of return on investment, and any necessary Interstate operations and maintenance costs.

There is no federal funding specially authorized for this program. Interstate Maintenance funds are prohibited from being used in conjunction with this program.

### Express Lanes Demonstration Program

Section 1604 of SAFETEA-LU created the Express Lanes Demonstration Program, which authorized 15 projects under which toll facilities could be implemented to manage high levels of congestion, reduce emissions, or to finance the expansion of a highway, bridge or tunnel on the Interstate system in order to reduce congestion.

Tolls are required to vary by time of day in all HOV lanes in order to reduce congestion, with variable pricing left optional for non-HOV lanes. Motor vehicles with less than two occupants may use HOV lanes. All fees collected from express lanes must use automated non-cash collection systems.

The federal government may fund up to 80% of the total project cost. To be eligible, states must describe the current congestion or air quality issues requiring participation in the program, the goals sought to be achieved, and all performance measures that will be used to measure the success of the project in achieving the stated goals.

At the time of writing, all of the 15 authorized projects were still available for funding, which expires in 2009.

### Section 129 Toll Agreements

Under section 129 of title 23 of the United States Code, federal funding is authorized for any of the five following toll projects:

- Initial construction of a bridge, highway, or tunnel, excluding those on the Interstate system.
- Reconstruction or replacement of an existing toll highway, bridge or tunnel.
- Reconstruction or replacement of an existing bridge or tunnel and conversion to a toll facility.
- Reconstruction of a toll free federal aid highway and conversion to a toll facility, excluding those on the Interstate system.
- Feasibility studies for a toll facility implemented using any of the four options described above.

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The federal government may fund up to 80% of the project cost for these agreements. All revenues must be used for debt service, operations and maintenance, or a reasonable return on investment. There is no limit to the number of agreements supported by the federal government.

### Interstate System Construction Toll Pilot Program

Section 1604 of SAFETEA-LU also authorized the Interstate System Construction Toll Pilot Program, which allows a state or an "Interstate compact of States" to collect tolls on a highway, bridge, or tunnel on the Interstate system in order to construct new Interstate highways.

The law allows three such projects to be approved. One of the three slots was approved for I-73 in South Carolina in 2007, with other states wishing to toll I-73 permitted to apply in this slot. The two other slots remained open at the time of writing.

Applications must contain an analysis that shows that tolling is the most efficient and economical way to advance the project, along with a facility management plan that details a tolling plan, schedule and budget, with a discussion surrounding potential private involvement in the operations and maintenance of the facility. Priority is to be given to proposals that intend a public agency to operate the tolling facility. Toll revenues must be automatically collected, and may only be used for debt service, a reasonable rate of return on investment, and any necessary Interstate operations and maintenance costs.

There is no federal funding specially authorized for this program. Interstate maintenance funds are prohibited from being used in conjunction with this program.

### HOV Facilities

Section 1121 of SAFETEA-LU replaced Section 102(a) of Title 23 of the United States Code (23 U.S.C.) with a new Section 166 that clarifies some of law surrounding the operation of HOV facilities. First, under the new amendment, States are permitted to charge tolls to vehicles using HOV lanes that do not meet the occupancy requirements, so long as the state manages demand by varying the toll amount and enforces facility violations. The amendment also authorizes States to create HOT lanes.

### Value Pricing Pilot Program

The Value Pricing Pilot (VPP) program was created in the ISTEA to fund studies of innovative toll pricing projects to mitigate highway congestion. The program allowed 15 states to participate, and only one open slot remained at the time of writing. However, funding is no longer available, as funds were reallocated to the USDOT's Urban Partnership Agreement in 2006.

## 3.2 Tolling Organizational Structures

A broad set of questions requiring consideration by WYDOT in connection with tolling I-80 pertain to (1) the intent of the tolling application and (2) the level of control WYDOT would prefer to maintain over the operation. The State should also consider whether the rules and organizational structures being established for tolling on I-80 are sufficiently flexible to enable tolling to address future, now unforeseen, funding challenges. For instance, the current issue faced by WYDOT is statewide in nature, spanning across five counties and though several local jurisdictions. It is focused on the need to supplement Interstate Maintenance funding and to keep up with growing maintenance costs caused by though freight trucking operations impacting the entire corridor. While a WYDOT administered program with statewide emphasis and perspective may be best suited for this challenge, future issues such as managing congestion issues related to local traffic growth could potentially be better addressed by a different type of organization with representation from cities or counties.

The following three organizational structure characteristics are presented to outline the variations that should be considered by WYDOT.

**Statewide Tolling Organization (DOT-sponsored or independent)** – Tolling organizations that are statewide in scope should focus on large scale projects or highway systems. Statewide organizations may be administered by the DOT (with or without a special purpose entity) or by a separate state entity,

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directed by a Governor-appointed executive and generally subject to the approval of the State Legislature with a Board that most likely includes WYDOT representation.

Examples of a DOT sponsored tolling organizations are the Texas Turnpike Authority Division (TTA) of the Texas Department of Transportation, the Colorado Tolling Enterprise (CTE), a division of the Colorado Department of Transportation and the Florida Turnpike Enterprise (FTE) of the Florida Department of Transportation. The CTE enabling legislation is attached as an example in Appendix A.

TTA and FTE are particularly interesting case studies as they have evolved over time – the TTA to be more integrated into the DOT and the FTE to have more autonomy. While these DOT divisions were established to develop efficient, cost-effective statewide toll road systems, they are not the only tolling organizations in their respective states. Texas, Florida and Colorado allow for other tolling organizations to be established outside the DOT's purview to address local needs. Texas is particularly interesting as it allows Regional Mobility Authorities which can only be formed if authorized by the Transportation Commission as well as tolling agencies that have independent statutes and authority – the North Texas Turnpike Authority (Dallas metropolitan area) and the Harris County Toll Road Authority (Houston Metropolitan area). Alternatively, the Pennsylvania Turnpike Commission and Oklahoma Turnpike Authority (OTA) are examples of tolling entities with a statewide service area that are separate from the Department of Transportation. (See sidebar for further information on OTA.)

**Regional (local or county level)** – Tolling organizations with authority over a designated local jurisdiction(s) are often best able to address local needs without diverting the resources of the state. If state legislation allows, these organizations can be formed with leadership from the county commissioners' office or other local jurisdictions to both build new capacity, or institute tolling on existing highways, bridges or tunnels.

While congestion is currently not an issue in Wyoming, creating legislation now that allows the creation of regional authorities to address localized congestion problems in the future is advisable. If there are localized corridors where congestion can be mitigated by tolling, simple stand alone state empowered public entities are a reasonable means of structuring the organization to administer the tolling project.

Examples of regional or local tolling organizations are the North Texas Turnpike Authority in Dallas, Texas, the various Regional Mobility Authorities (RMA) in Texas (there are eight, including Central Texas RMA in Austin and the Alamo RMA in San Antonio) and the Orlando – Orange County Expressway Authority in Florida. The E-470 and Northwest Parkway Public Highway Authorities in the Denver, Colorado metropolitan area are a similar form of local tolling authority, established under the State of Colorado's Public Highways Authority Act and controlled by a board made up of elected officials from each of the member jurisdictions appointed to serve by their council or county commission.

**Public Private Partnerships** – Commonly, states have elected to establish specific rules for involving the private sector in infrastructure development and management. While many DOTs and other state entities have successfully procured public-private partnerships through various means, some states have gone an extra step to establish organizations within the DOT that are dedicated to developing projects with private sector involvement. The Oregon Innovative Partnerships Program, for example, is a DOT

### *Statewide Authority Example:* **Oklahoma Turnpike Authority**

The governing board of the OTA consists of the Governor (ex-officio) and six members serving without pay for eight-year terms from districts established in the State Statute. The Governor may remove any member of the Authority, at any time, with or without cause. The members are appointed to represent geographical districts. Authority members have full control over all turnpike operations.

The Oklahoma Turnpike Authority is an instrumentality of the State of Oklahoma created by statute in 1947. The Authority is authorized to construct, maintain, repair and operate turnpike projects at locations authorized by the Legislature of the State of Oklahoma and approved by the State Department of Transportation.

The Authority receives revenues from turnpike tolls and a percentage of the turnpike concession sales. The Authority may issue Turnpike Revenue Bonds for the purpose of paying the costs of turnpike projects. Turnpike Revenue Bonds are payable solely from the tolls and other revenues of the Authority and do not constitute indebtedness of the State.

administered program specifically created to develop transportation projects for solicitation of private sector proposals for partnership and to respond to proposals initiated by private firms and units of government.

The FHWA has developed draft legislation for states to use as a starting point for developing PPP projects. This draft legislation has been included as Appendix B to this report.

### **3.3 State Legislative Needs**

Generally, new laws allowing tolling in the State of Wyoming should promote safe, efficient, reliable automobile travel and freight movements and allow the authorized State entity to finance, construct, operate, regulate and maintain the toll facility and collect tolls and enforce the payment of tolls if uncollectable at the time of facility use.

While these provisions may seem somewhat generic or obvious, omissions in law, especially pertaining to the use of new technology could constrain the States ability to properly and efficiently address highway congestion or funding issues in the future. The following provides an overview of the major categories of tolling laws that should be part of any new legislation passed in Wyoming.

**Creation** – Establishes the primary characteristics of the tolling entity, including:

- Organizational structure – Where will the tolling entity be positioned in the hierarchy of state and local agencies or within the DOT? In particular, will any other agency have direct or indirect authority over the tolling entity?
- What will the powers of the tolling entity be regarding:
  - o Selling bonds and otherwise financing the operation, including the use of derivatives and other financial tools to minimize costs
  - o Building or acquiring and operating and maintaining the facility
  - o Its ability to enter into contracts with public and private organizations
  - o Its ability to establish intergovernmental agreements
  - o Its ability to set toll rates, collect tolls and regulate the facility
  - o Its ability to obtain and dispose of real property by purchase or other means
  - o Its ability to charge fees for the use of owned or leased property
  - o Its ability to transfer to or receive money from the State or the DOT
- Will the entity be able to impose tolls on both new construction and existing facilities?
- What types of operations will it oversee (open road tolling, managed lanes, truck only toll facilities, etc)?

**Procurement** – Will the tolling entity be subject to state procurement code? (If so, the tolling organization will not be able to use design-build procurement.)

**Planning Compliance** – What entities will have jurisdiction or approval over the projects that can be undertaken?

**Flow of Funds** – Where will toll revenue collections, citations and other revenues be deposited and how will they be made available for debt services payment, operations and maintenance?

**Safety** – Will enforcement be provided by State and/or local law enforcement? Will the entity be required to make separate contractual arrangements?

**Toll Evasion** – Will the tolling entity be able to use electronic enforcement and or video tolling? How will toll evasion penalties be set? Will local courts have jurisdiction to try cases?

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**Interoperability** – Will transponder interoperability with other toll facilities in the State or neighboring states be required?

**Concessions** – Does the tolling entity have the right to lease the facility to a private entity and enter into an appropriate concession agreement?

The statewide nature of the issues faced by WYDOT regarding I-80 suggests the need for an organizational structure that is statewide in scope, such as a turnpike authority. This enterprise would most likely exist within the DOT and could be the basis for a system of toll roads, where certain portions of the system could supplement other portions having weaker revenue generating capacity.

Under current federal legislation, WYDOT would not be able to use toll revenue collected from I-80 on other Interstates without jeopardizing Interstate Maintenance funding for those roads, though it may be able to use it for non-Interstate highways or Interstate expansions. As discussed above, these are issues that will not be resolved until the next federal authorization is enacted and could be negotiated as part of a tolling agreement with FHWA.

Again, the following two sample legislative exhibits are contained in as Appendices for reference to the above sections:

Appendix A: Example Statewide Tolling Legislation: Colorado Tolling Enterprise

Appendix B: FHWA PPP Draft Legislation for States

## 4 Public Private Partnerships

Many public agencies who have faced financial or operational difficulties managing highways or other infrastructure assets have found Public-Private Partnerships (PPPs) to be an attractive means to achieve a desired level of service over the long-term while transferring certain risks to the private sector. The definition of a PPP covers a multitude of possibilities. In its simplest form a PPP is an agreement between public and private sector parties that transfers some or all infrastructure functions to the private sector. Candidates for transfer include project development, design, construction, financing, operations and maintenance. Exhibit 8 presents an array of public vs. private controlled structures and the balance between risk and control for each option.

**Exhibit 8: PPP Structures and Risk/Control Matrix**

	Development	Delivery	Operations	Maintenance	Finance	
Public	Public	D-B-B	Public	Public	Public	<b>Design-Bid-Build</b>
Public	Public	D-B-B	Private	Public	Public	<b>Private Contract Fee Services</b>
Public	Public	D-B-B	Private	Private	Public	<b>Design-Build</b>
Public	Public	D-B	Public	Public	Public	<b>Build-Operate-Transfer (DBOM)</b>
Public	Public	D-B	Private	Private	Public	<b>Long-Term Lease Agreement / DBFO</b>
Public/Private	Public/Private	D-B	Private	Private	Public/Private	<b>Build-Own-Operate</b>
Private	Private	D-B	Private	Private	Private	

As it relates to highways in the US, most PPP projects involve tolling. As of September 2006, at least 26 of the 168 Interstate toll road projects completed since the passage of ISTEA in 1992 have been developed through some form of PPP arrangement, which has enabled tolling on over 600 centerline road miles<sup>10</sup>.

Depending on the needs of the public agency, various degrees of private sector involvement are available, from design-build contracts for new construction projects to long-term operations concession agreements. WYDOT is interested in securing the additional revenue streams needed for future highway maintenance on I-80, which, as discussed above, may best be achieved using the following options:

- Constructing a new truck-only toll lane in each direction of I-80
- Instituting tolling on the existing Interstate without additional highway expansion

In light of these two possible alternatives, the following three sections provide an overview of design-build and related contracts such as design-build, operate, maintain, and concession/design-build, finance, operate, will be presented, along with a discussion of the potential relevance, benefits and drawbacks of each option to WYDOT in instituting tolling facilities on I-80.

<sup>10</sup> Source: "Current Toll Road Activity in the US: A Survey and Analysis", PB Consult Inc., September 2006.

## 4.1 Design-Build

A design-build (DB) contract would involve a fixed fee contract with a single firm, joint venture or consortium for roadway and/or toll facility design and construction services, with the public sector obtaining funding for the project and retaining responsibility for toll and roadway operations and maintenance services. Under DB contracts, the private sector assumes the primary design and construction risk for completing the project for a fixed price on a date certain schedule. Liquidated damages are normally set so that a failure to deliver on time provides the public authority funds to make debt payments or offset other damages if tolls cannot be collected. The level of risk transfer is determined by the agreement and the assessment as to the most appropriate party to bear the risk. Generally, the use of the design-build approach enables projects to be completed faster and potentially with less cost growth due to change orders because timing and coordination of design and construction are all under the control of a single entity.

A DB approach would allow WYDOT to capture the technical expertise of the private sector in building toll facilities and/or the creation of truck only toll facilities. Under this strategy WYDOT would be responsible for obtaining the funds necessary to pay the DB contractor. If for instance revenue bonds were issued and backed by tolls, WYDOT would be exposed to revenue risk (the possibility that toll revenue would not cover debt obligations and operations and maintenance (O&M) costs). This presupposes that revenue forecasts would be sufficient to pay the entirety of those costs. This approach would also require WYDOT to develop detailed procurement documents, obtain specialized advice for traffic and revenue forecasts and other financing elements as well as undertaking toll operations. The latter could still be outsourced to the private sector through a separate procurement process.

In addition to a standard DB, there have been some PPPs where the DB contractor was willing to take more of a “developer at-risk” position to be involved in up front work in return for a success fee in addition to the DB contract – this was the case for both the E-470 and Northwest Parkway projects in Colorado. In light of expected rising future construction and maintenance costs on I-80, this PPP option may not be as desirable for Wyoming DOT as other alternatives that transfer additional risk to the private sector, but potentially may generate the most private sector interest due to its lower risk profile.

## 4.2 Design-Build, Operate, Maintain

Design-build, operate, maintain (DBOM) contracts, also known as Built Operate Transfer (BOT) or “turnkey” contracts, would combine the design-build responsibilities described above with private operation and maintenance of the assets for a fixed period of time, with the public sector retaining all financial responsibility for highway and toll facility construction and maintenance costs throughout the life of the contract. Under this PPP arrangement, the private entity would submit a fixed price contract that would cover not only design and construction, but also operations and maintenance costs for a period of time, usually long-term in nature. A variation of this would be to include only the operations portion or to include the maintenance portion for a period that would effectively provide an extended warranty (say 3-5 years).

This PPP option may be more desirable for WYDOT because it transfers future operations and maintenance risks to the private sector. Because the private entity maintaining the toll facilities or new highway mileage would also design and select the construction materials for the project, the entity would have a strong understanding of the O&M needs of the roadway and be additionally motivated to assure initial quality construction. Combining these responsibilities could allow WYDOT to capture more value per dollar spent, because the private entity would need to efficiently develop both a strong design concept and a long-term, cost-effective maintenance strategy. This could ensure that the roadway level of service remains high, since the private entity would likely utilize life-cycle costing principles to ensure the assets remain in good condition throughout the life of the contract. On the operations side, as WYDOT is not currently a toll road operator, this would readily provide that skill set without a separate procurement.

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There are also negative aspects to DBOM arrangements. First, as with a design-build contract, WYDOT would need to finance the construction of the new highway and/or toll facility. If revenue bonds were issued, WYDOT would assume revenue risk in the collecting the tolls needed to retire the debt, maintain the existing highway and pay the private firm operating the new assets. Second, the DOT would relinquish control of the operations and maintenance of toll facilities over a long period of time, meaning any preferences realized after the contract was signed but not specified in the contract may not be met. Third, because construction cost escalation has risen dramatically in recent years and may continue in the future, the private sector may be less willing to assume O&M risks in return for a fixed fee. If this is the case, there may be less private interest in a DBOM arrangement for I-80 vis-à-vis a design-build or other contract options. Exhibit 9 provides a matrix of private sector responsibilities in typical design-build contracts.

**Exhibit 9: Public Private Partnership Options and Private Sector Responsibilities**

	Design	Build	O & M	Finance	Collect Tolls
Design-Build	✓	✓			
Design-Build, Operate, Maintain	✓	✓	✓		
Design-Build, Finance, Operate/Concession (Greenfield)	✓	✓	✓	✓	✓
Concession (Brownfield)			✓	✓	✓

### 4.3 Concessions/Design-Build, Finance, Operate (Maintain)

A concession agreement involves the long-term lease of an infrastructure asset to a private entity, who agrees to operate, maintain, and in most cases improve the asset in exchange for the right to collect revenues. Concessions transactions have been structured around all types of revenue generating infrastructure, from airports and parking garages, but one of the most common transportation infrastructure asset classes sought after by concessionaires is toll roads.

For transportation infrastructure assets, a concession is most often structured as a design-build, finance, operate contract (DBFO) that combines the responsibilities of a DBOM contract with the project financing requirements otherwise assumed by the DOT. In most cases, the private entity would either issue debt themselves or utilize methods to obtain tax-exempt debt such as Private Activity Bonds with the private entity covering all debt payments. Under such a scenario, the private entity would assume revenue risks in addition to O&M and construction risks, in exchange for the right to collect tolls (assuming the toll levels were sufficient to pay all costs).

This arrangement would involve a significant level of private sector involvement in I-80, and would only be relevant if WYDOT is willing to allow the private sector to control and collect the tolls charged on I-80 in exchange for the services otherwise provided under a DBOM contract. Although the risks of generating enough toll revenue to cover costs would be transferred to the private sector, the potential rewards of tolling, which could cover future expansion projects elsewhere in the system or other WYDOT needs, would not be available. Some of the reasons that WYDOT might choose to take a concession approach would be (1) transferring revenue risk to the private sector (2) Inability to either “pay as you go” for capital costs or issue the necessary debt financing for the project or (3) potentially being able to enhance feasibility of the project by a more highly leverage concession structure with a longer debt period (say 75 years vs. 30 years).

While much more common internationally, concessions have grown in popularity in the US over the past five years as multi-billion dollar transactions for the Chicago Skyway and Indiana Toll Roads closed. These were unique because they were “asset monetization” or “brownfield” transactions where an existing facility was used to obtain a large up-front payment in return for turning over the toll revenue stream and the asset for a lengthy period (75-99 years.) They have become popular because the public

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agency retains ownership of the infrastructure asset over the term of the lease and the up front payment from the concessionaire can be used to retire debt or, as in the case of Indiana, used to fund needed transportation infrastructure. Of particular debate on these transactions is the use of such funds for non-transportation purposes. In addition to the up-front payment, some transactions provide for "revenue-sharing" if profits for the concessionaire exceed a pre-determined rate of return cap.

There are also "greenfield" concessions where new facility or capacity is financed through a concession structure. Two examples of completed greenfield concessions in the US are in California: the SR125/Southbay Expressway in the San Diego area that recently opened and is being run by Macquarie, an Australian infrastructure investment firm and the SR91 HOT lanes in Orange County that were originally developed, constructed and operated as a concession but were "sold back" to the public sector in 2003.

Another variation on concessions is the use of availability payments. In the instance of I-80 the availability payment model would have the private entity deliver on a DBFO model but instead of taking revenue risk they would receive an annual payment that covers all capital, operations and maintenance expenses. This is most often used in instances where the money derived from the project is not sufficient to repay all costs. It also has the value of retaining the control of toll rates by the public agency. The Florida Department of Transportation is using this approach for adding tolled lanes to I-595. They will collect the revenue and charge the concessionaire with the responsibility of maintaining and managing traffic on ALL of the lanes – tolled and non-tolled. The availability payment approach can also result in lower costs as the private sector is not taking on revenue risk but does require the public sector to have the funds available to make the annual payments.

Most aspects of a concession agreement can usually be negotiated between the asset's owner and potential concessionaires who must provide binding bids for the concession in light of operations, maintenance and capital program specifications laid out by the owner as part of the transaction. Unless a pre-development agreement approach is used (discussed below), typically the owner specifies desired terms of the concession up front and the bidders submit a letter of credit and agree to sign the concession agreement along with their bid. Concession terms often last greater than 50 years and, for toll roads, normally have a pre-agreed toll increase structure such as allowing tolls to increase based on the Consumer Price Index

If WYDOT were to build a tolled facility of some type and pursue a concessionaire to operate the facility, a higher value might be obtained after the facility has had an operating history of strong toll collection. The value of the facility to a concessionaire is completely reliant on cash flows from operations, so newer facilities in good operating condition are desirable, but only if their customer base is strong, diverse and willing to pay high toll rates to use the facility. Additionally, federal restrictions on concessions involving Interstates may be an issue that could limit WYDOT's use of this mechanism, subject to laws of the next federal funding authorization.

## 5 Traffic and Revenue Analysis

The FHWA’s Freight Analysis Framework (FAF) databases were used to obtain a solid understanding of the composition of current and future trucking flows on I-80 within Wyoming<sup>11</sup>. Section 5.1 provides an overview of the truck traffic currently flowing on I-80 and segues into Section 5.2 which discusses detailed origin / destination (O/D) flows and our methodology for estimating diversion from I-80 were it to become tolled. Section 5.3 discusses traffic forecasts and Section 5.4 provides a detailed forecast of potential revenues resulting from tolling.

### 5.1 Profile of Current I-80 Traffic

I-80 in Wyoming is mainly used as an inter-regional gateway, with over 80% of traffic at each highway sub-section originating and terminating outside of Wyoming (through truck traffic). The potential diversion of this traffic was handled using a more macro perspective, examining other alternative routes that often took traffic round Wyoming all together.

To better estimate traffic levels and potential toll diversion on traffic originating or terminating within Wyoming (Wyoming-specific traffic), the Wyoming span of I-80 was divided into the following five sub-sections, largely based on possible diversion routes.

- ❖ Sub-Section 1 (Labeled Evanston): Utah Border to US-189 (past Evanston)
- ❖ Sub-Section 2 (Labeled Rock Springs): US-189 to US-191 (Rock Springs)
- ❖ Sub-Section 3 (Labeled Rawlins): US-191 (Rock Springs) to US-287 (Rawlins)
- ❖ Sub-Section 4 (Labeled Cheyenne): US-287 (Rawlins) to I-25 (Cheyenne)
- ❖ Sub-Section 5 (Labeled NE Border): I-25 (Cheyenne) to the Nebraska Border

Exhibit 10 below lists the percentage of traffic on each sub-section of I-80 representing trucks originating, ending, or traveling exclusively within Wyoming. The stretch of I-80 between Rock Springs and Rawlins contains the largest percentage of Wyoming-specific traffic on the highway (19.4%). This is not surprising, since it is the most central span of the roadway. The highway segment between Cheyenne and the Nebraska border has the smallest percentage of local traffic (5.3%).

**Exhibit 10: Percentage of Total Wyoming-Specific Traffic on Each Section of I-80**

Year	Evanston	Rock Springs	Rawlins	Cheyenne	NE Border
2002	12.1%	13.3%	19.4%	16.7%	5.3%

*Source: FHWA Freight Analysis Framework, PB Analysis*

About 22% of all Wyoming-specific traffic, or roughly 5% of total I-80 traffic, is comprised of local trucks originating and ending in Wyoming (Local traffic). Following the general distribution of Wyoming-specific traffic, the percentage of Local traffic on the stretch between Rock Springs and Cheyenne is much higher than the extreme eastern and western portions of the roadway.

As shown in the Exhibit 11, approximately one out of every four Local trucks are moving coal. The majority of other Local trucking movements are shipping refined fuels, chemical products, or other raw materials such as gravel, minerals, logs and grains.

<sup>11</sup> The FAF database contains truck flow data from 2002. While six years dated, this source had the most comprehensive origin/destination pair coverage and is considered reasonable for this level of analysis.

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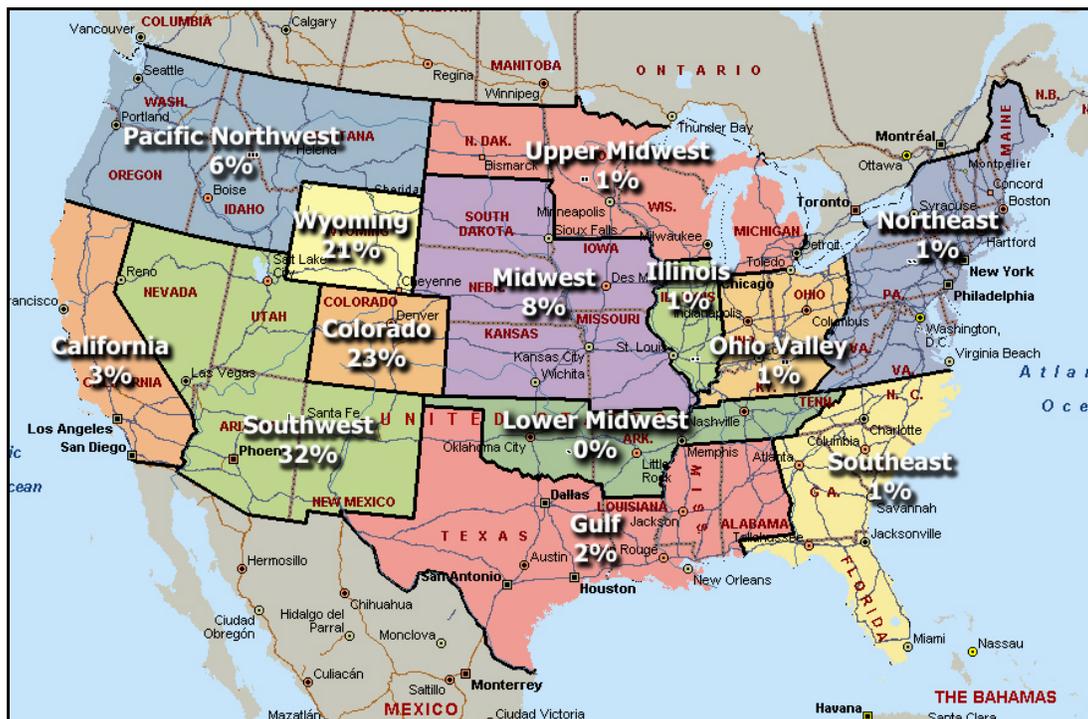
**Exhibit 11: Local Wyoming Shipments on I-80 by Product, 2002**

Trade Type	Product Type	% of Total WY-Specific Flows
Imports	All Products	35%
Exports	All Products	44%
Local	All Products	21%
	<i>of which:</i>	
	Coal	5%
	Gasoline / Fuel oil	4%
	Chemical Products	2%
	Gravel	2%
	Nonmetallic Min. Products	1%
	Cereal Grains	1%
	Logs / Wood Products	1%
	Other Products	5%
<b>Total</b>	<b>All Products</b>	<b>100%</b>

Source: FHWA Freight Analysis Framework, PB Analysis

The remaining 79% of Wyoming-specific flows account for imports (35% of total) and exports (44% of total) from the state. Imports from and exports to neighboring states such as Colorado, Utah, and Nebraska account for the majority of this traffic, comprising 63% of all Wyoming exports and 79% of imports. The rest of the non-Local traffic generally involved trades with various locations across the Western half of the country, including California, Idaho, northern Nevada, South Dakota, Texas, and Chicago. Exhibit 12 shows a map of the US labeled with percentages of import and export traffic of major Wyoming trade states.

**Exhibit 12: Percent of Wyoming-Specific Traffic by Major US Region, 2002**



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The most common product exported from Wyoming is coal, as shown in Exhibit 13. The rest of Wyoming’s exports comprise raw materials such as minerals, gravel, wood and fertilizers, which likely are sourced from various parts of the state, as well as refined chemical and fuel products.

The products exported from Wyoming, while lower in value than consumer products such as electronics, apparel, and pharmaceuticals, have been rising in value as energy prices have rapidly increased in recent years. Since higher value shipments are more likely to prefer the fastest route from origin to destination, even if such routes are more expensive, a sustained price increase for coal, gasoline and other Wyoming-specific commodities would likely reduce the likelihood of shippers to divert from I-80 if tolling were implemented.

**Exhibit 13: Wyoming Exports to Utah, Colorado and Nebraska by Product**

Product	Colorado	Utah	Nebraska
Coal	31%	21%	6%
Gasoline / Fuel Oil	5%	21%	0%
Nonmetallic Min. Prods.	10%	10%	37%
Gravel	12%	2%	10%
Logs / Wood Prods.	2%	10%	5%
Chemical Prods.	9%	2%	5%
Fertilizers	7%	3%	17%
<b>Total</b>	<b>75%</b>	<b>69%</b>	<b>81%</b>

*Source: FHWA Freight Analysis Framework, PB Analysis*

Wyoming imports different goods from each of its main three trading partners. From Colorado, most imports consist of coal, likely moving from North Fork Valley in western Colorado. Most of these shipments would likely only use a small stretch of I-80 as many of these trucks’ destinations are probably in areas north of I-80. Gasoline is the major import from Utah, moving from refineries around Salt Lake City to each of the major cities in Wyoming. From Nebraska, the largest import is grains and other agricultural commodities.

**Exhibit 14: Wyoming Imports from Utah, Colorado and Nebraska by Product**

Product	Colorado	Utah	Nebraska
Gasoline / Fuel Oil	5%	76%	0%
Coal	71%	1%	1%
Cereal Grains / Ag Prods.	0%	1%	47%
Misc. Man. Prods.	2%	1%	15%
Nonmetallic Min. prods.	3%	7%	2%
<b>Total</b>	<b>81%</b>	<b>86%</b>	<b>65%</b>

*Source: FHWA Freight Analysis Framework, PB Analysis*

The majority of traffic moving on I-80, however, is not beginning its journey nor ending in Wyoming. Depending on the segment of I-80, between 80% and 95% of all truck traffic flows consist of goods moving completely through the state. As shown in Exhibit 15, the major Western regions utilizing I-80 are California and the Pacific Northwest (Washington, Oregon, and Idaho), with over 80% of total I-80 truck traffic either originating or terminating in these regions. The distribution of I-80 traffic among the regions east of Wyoming is more evenly distributed, with the largest flows moving to or from the Ohio Valley, Upper Midwest, and Northeast regions, and the smallest flows originating or ending in the Lower Midwest or the Gulf regions.

Exhibit 15: Origins and Destinations of non-Wyoming I-80 Traffic by Major US Region

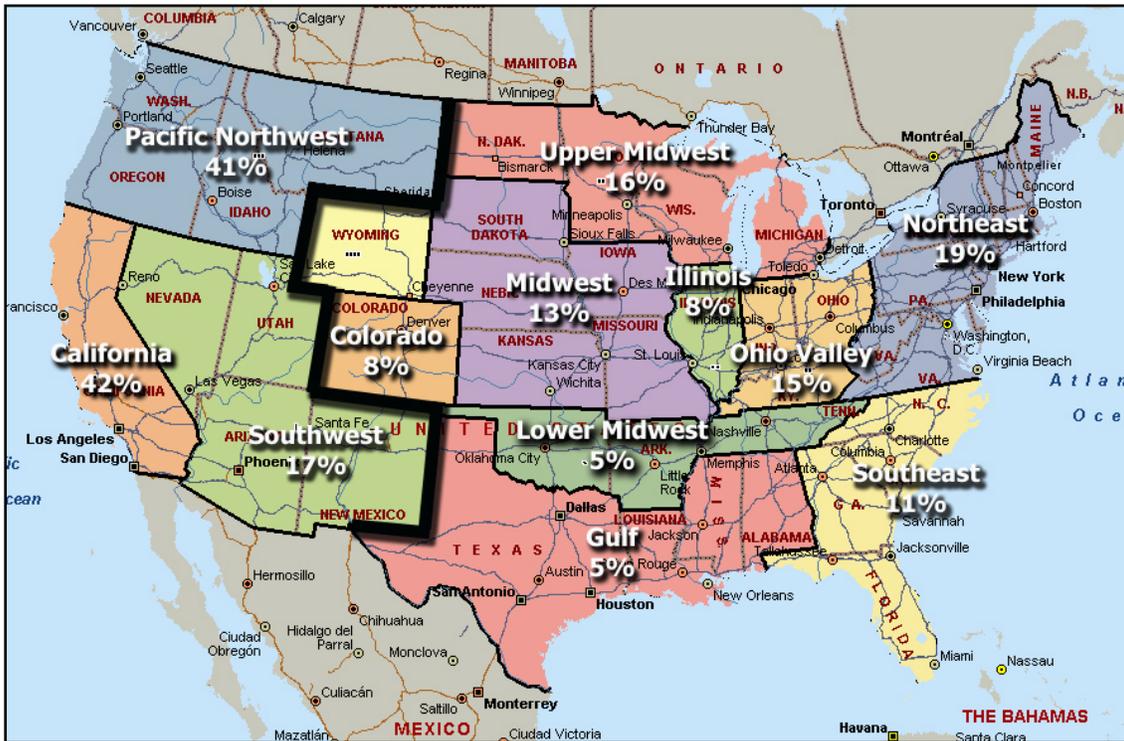


Exhibit 16 reiterates the information described in Exhibit 15 in tabular form. The top twenty regional origin/destination pairs passing through Wyoming on I-80 are listed. California and the Pacific Northwest regions are clearly dominant in both origin and destination lists. These twenty O/D pairs account for 70% of all thru truck trips on I-80 in Wyoming.

An examination of bi-regional flows at the city/state and commodity level shows that the top five individual flows of goods – from Northern California to Detroit, Kansas to Oregon, Northern California to Buffalo (then also shipped to Canada), Northern California to Kentucky, and Boise to Atlanta– all involved the shipment of agricultural products and fresh meats. This product category featured the highest shipping volumes on I-80, accounting for 37% of total thru-Wyoming flows. Agricultural products are usually lower in value and therefore more sensitive to the shipping price, which means shippers and consignees transporting these products may search for

Exhibit 16: Top 20 Major Bi-Regional Non-Wyoming Trucking Flows Over WY I-80

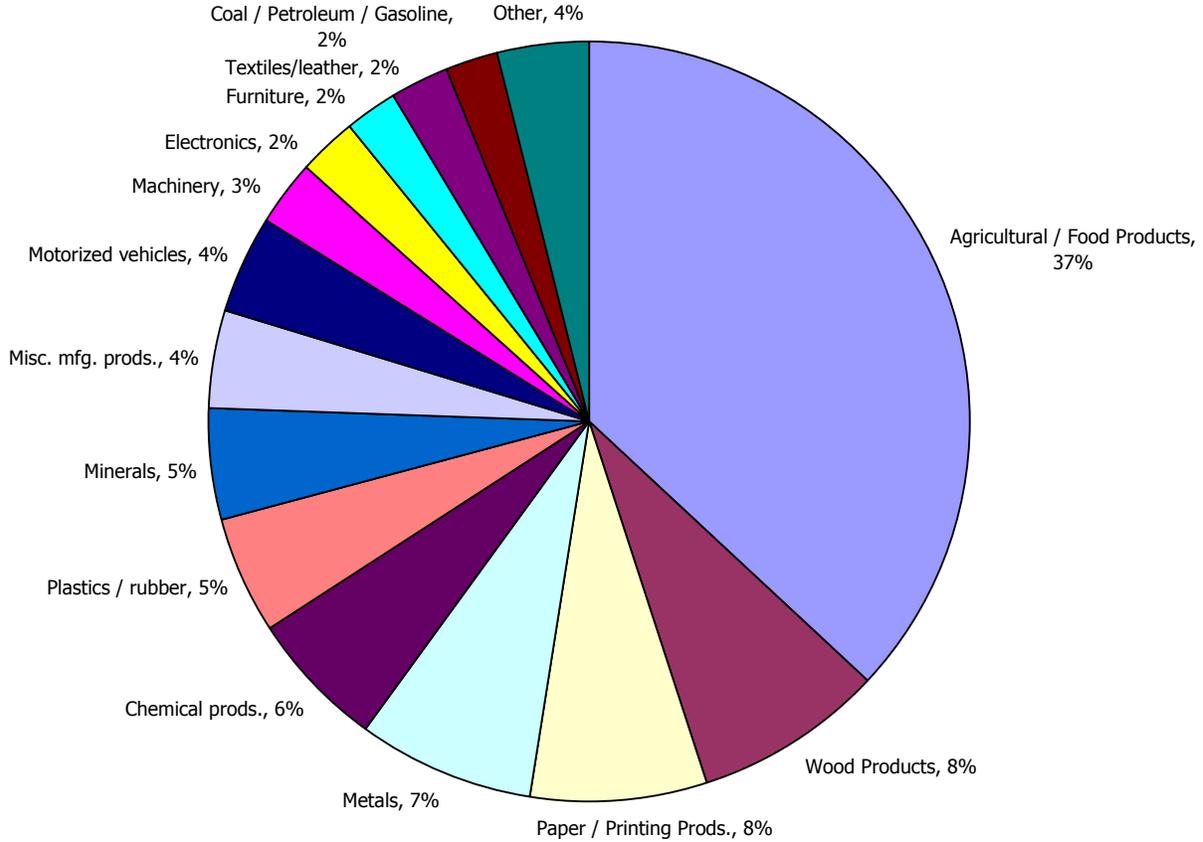
	Origin Region	Destination Region	% of total non-WY AADTT
1	California	Upper Midwest	7%
2	California	Northeast	6%
3	Ohio Valley	California	6%
4	Midwest	Pacific Northwest	5%
5	Northeast	California	4%
6	Upper Midwest	California	4%
7	Pacific Northwest	Southeast	4%
8	Pacific Northwest	Northeast	4%
9	Midwest	California	3%
10	Southeast	Pacific Northwest	3%
11	Gulf	Pacific Northwest	3%
12	Northeast	Pacific Northwest	2%
13	Ohio Valley	Pacific Northwest	2%
14	California	Ohio Valley	2%
15	Pacific Northwest	Gulf	2%
16	Colorado	Pacific Northwest	2%
17	Southeast	Southwest	2%
18	Illinois	California	2%
19	Illinois	Pacific Northwest	2%
20	Lower Midwest	Pacific Northwest	2%
	Total		69%

Source: FHWA Freight Analysis Framework, PB Analysis

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feasible alternate routes if I-80 were tolled. The next most common commodities shipped through Wyoming on I-80 were wood products (8%), paper and printing products (8%), and metals (7%) as noted in Exhibit 17.

**Exhibit 17: Breakdown of Non-Wyoming I-80 Flows by Product**



*Source: FHWA Freight Analysis Framework, PB Analysis*

Aside from agricultural and food products, there is a fairly wide and even distribution of products shipped over I-80 to origins and destinations outside of the state. High value products such as pharmaceutical products, motor vehicles, miscellaneous manufacturing products, machinery, furniture, textiles and electronics, comprised around 30% of all shipments. Low value products, such as wood products, paper and printing products, metals, minerals, petroleum, coal, and gravel, comprised around 33% of total shipments.

## 5.2 Future I-80 Truck and Passenger Traffic

### Forecast Approach

While the FHWA FAF Commodity O/D database proved useful for the trucking profile and diversion analyses, the separate FAF Highway Link database proved more suitable for forecasting individual truck and passenger counts on very specific segments of I-80. As mentioned before, the FAF Highway Link database uses a sophisticated travel demand model to place estimated current and future trucking and passenger flows on individual highway facilities throughout the country. The forecasted trucking flows themselves, which come from the Commodity O/D database, are based on a diverse set of driver variables that determine future US regional demand for individual product categories, as well as the

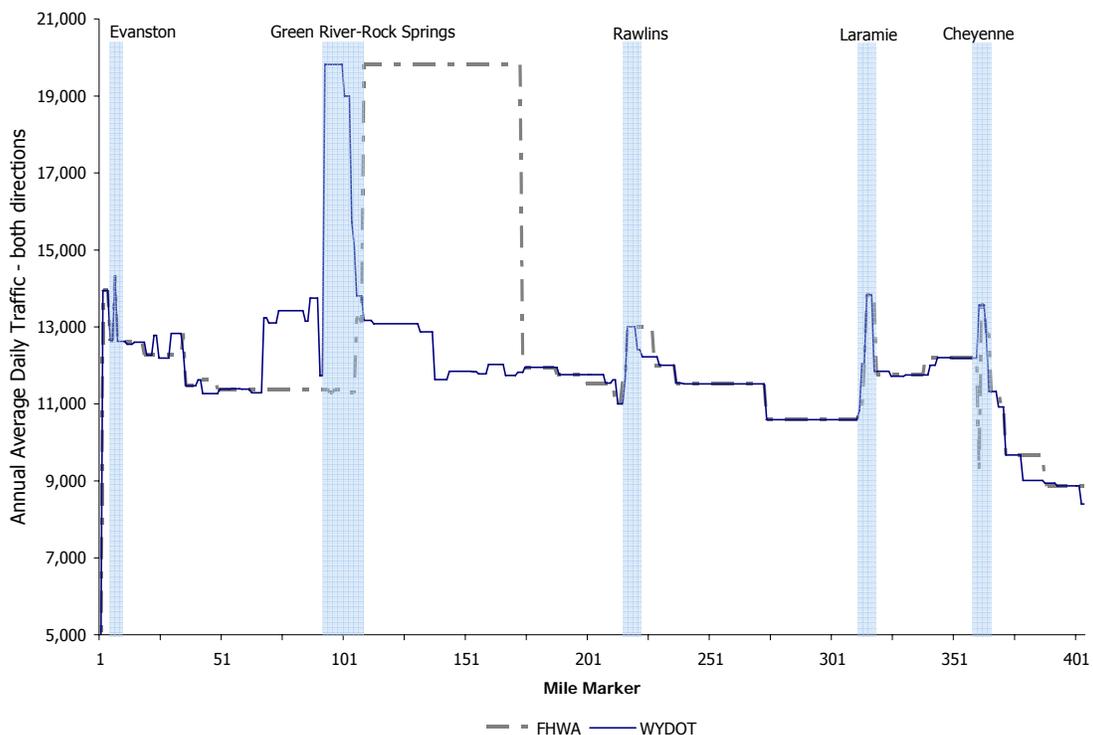
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major future national and international suppliers of each product and modal breakdown (i.e. air, rail or truck) for each O/D product shipment.

The FAF Highway Link data was parsed into truck traffic estimates for each I-80 highway mile, and the data was then compared with WYDOT traffic counts by mile. The results of the comparison are shown graphically in Exhibit 18. While the FAF and WYDOT counts are very similar on most sections of I-80, there is large discrepancy between the data sets on several highway stretches. PB determined that the best approach for forecasting I-80 truck traffic would be to derive the annual traffic growth rates by vehicle type and road mile from the FAF Highway Link database, and apply them to the 2007 actual data from WYDOT. This combination of resources helped ensure that the local precision achieved by WYDOT in estimating actual counts on I-80 would be preserved, and the driver variables used to forecast traffic flows in the FAF database could also be captured.

The FAF database incorporates annual truck traffic growth of 3% through 2035. This growth rate was adopted for use in this study in lieu of the WYDOT database-generated growth rate of approximately 2% which was based simply on long term historical data.

**Exhibit 18: Comparison of WYDOT and FHWA FAF Bi-Directional I-80 Traffic Counts**



Source: FHWA FAF Highway Link Database, WYDOT Vehicle Miles Book, PB Analysis

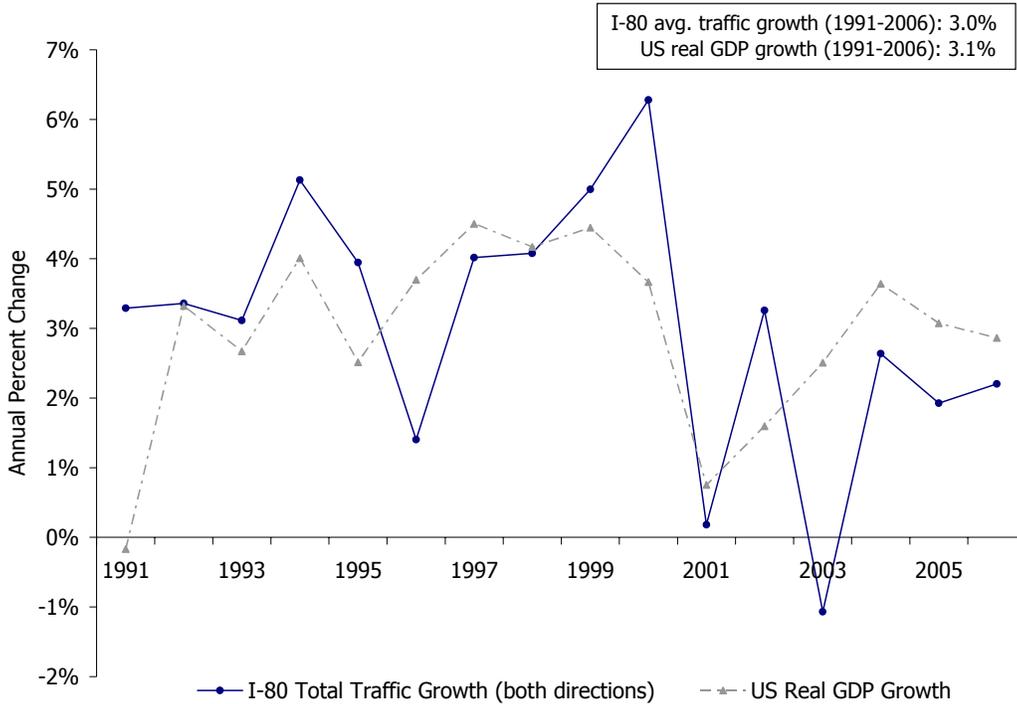
### Future Truck and Passenger Traffic on I-80

Truck and passenger volumes on I-80 are largely determined by the overall health of the US economy. In general, when GDP growth is strong, imports and domestic trade increase, which increases demand for trucking services. Similarly, when consumers feel more upbeat about their economic situation, they spend more on vehicles and travel. The relationship between historical GDP growth and I-80 traffic flows is shown in Exhibit 19. Since 1990, both US Real GDP and I-80 traffic growth have been strongly correlated, both growing at roughly 3% per year.

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It is interesting to note the sharp decline in traffic during the recessionary period of 2001 to 2003. This recession was largely tech industry-based and as many of the truck flows on I-80 are from the tech industry-heavy areas of Northern California, substantial traffic growth declines were witnessed. While the mix of commodities crossing I-80 is diverse, as noted above, it is likely that I-80 was more heavily impacted by this recession than other major routes in the US.

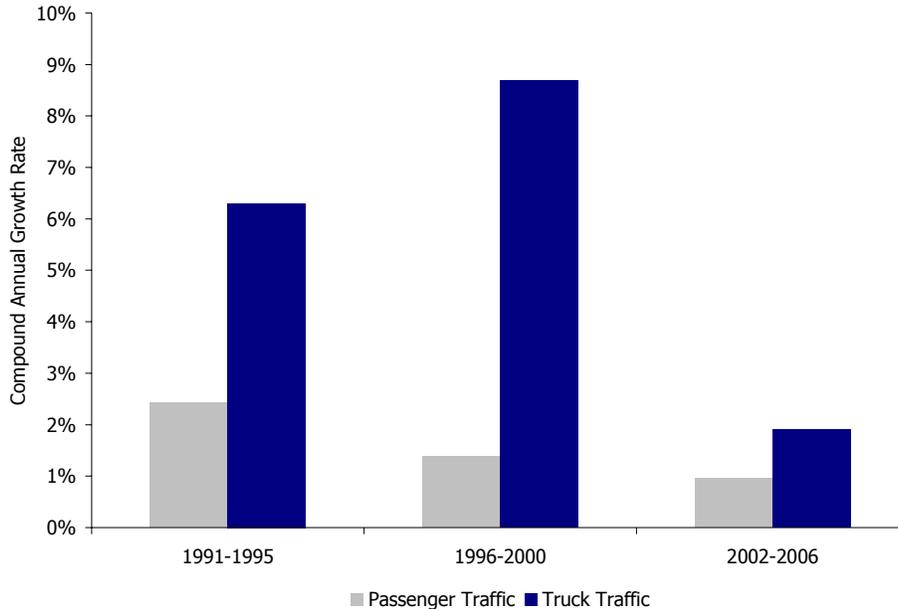
**Exhibit 19: Annual US Real GDP and I-80 Truck Traffic Growth, 1991 to 2006**



Source: WYDOT Vehicle Miles Book, US Bureau of Economic Analysis

Trucks have grown much faster than passenger vehicles on I-80, as shown in the Exhibit below. In the 1990s, truck traffic on I-80 featured average annual growth rates at 6% from 1991 to 1995 and 9% from 1996 to 2000, mostly reflecting the surge in US imports due to robust US economic growth and a strong dollar. In contrast, passenger car traffic growth only grew 1.0% and 2.4% on average during the same time periods. Since the 2001 recession, which is not shown in the Exhibit below, annual truck growth was 1.9% over period - much lower than its historical rates (due mostly to slower GDP growth), though still nearly twice as fast as passenger traffic growth.

Exhibit 20: Comparison of Annual Truck and Passenger Vehicle growth, 1991 to 2006



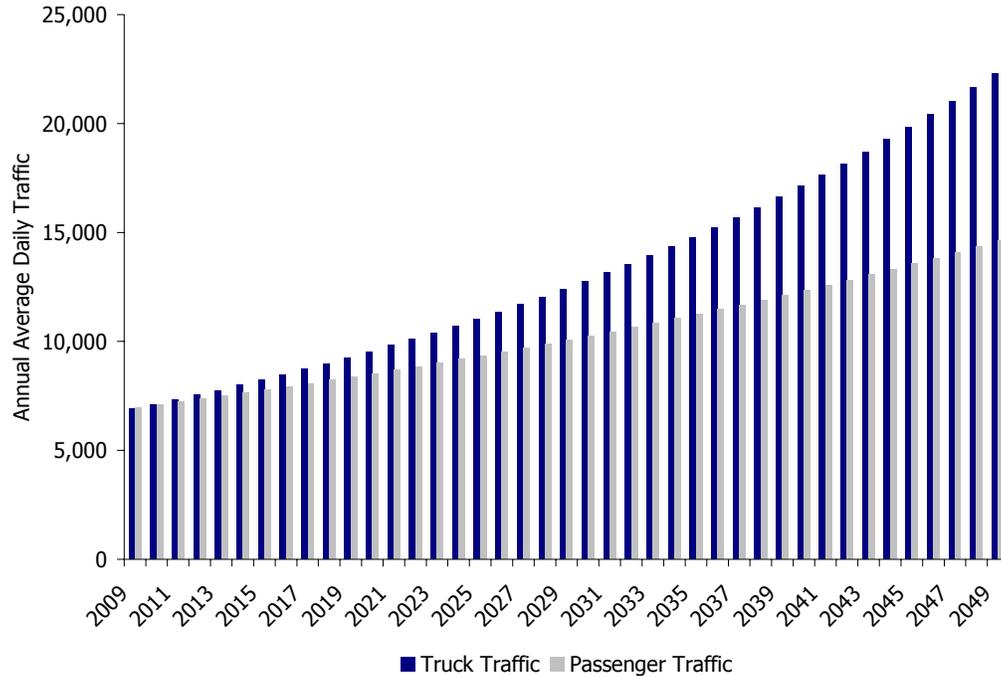
Source: WYDOT, PB Analysis

Forecasts of I-80 truck traffic were derived from the FHWA FAF Highway Link database, which project future truck growth in line with the recent trends described above. The FHWA projects annual growth on the I-80 corridor to average 3% for trucks, roughly the same growth rates seen over the 2002 to 2006 period. Based on these average growth rates, the truck share of total I-80 traffic would increase steadily to 57% in 2035, slightly slower than the rate of increase in truck share seen since 1990. These growth rates for truck traffic are in line with US economic growth forecasts from a number of institutions, who expect that future US GDP growth – and therefore likely truck traffic growth as well - will be lower than that seen over the 1990s<sup>12</sup>.

Exhibit 21 shows annual average daily traffic counts for trucks and passenger vehicles over an extended forecast horizon through 2049. The forecast horizon was extended past the 2035 FAF forecast end year to provide 40 years of data for use in the project financing. Average daily truck flows are projected to increase from 6,899 in 2009 to 22,300 in 2049, and passenger vehicles are expected to increase from 6,982 to 14,623 over the same period. The truck share of total average daily traffic is forecast to increase from 50% in 2009 to over 60% in 2049, with an average annual increase in truck share of approximately 0.3%.

<sup>12</sup> Source: March 2008 Edition of the PB Economic Forecasting Review. Available at: [http://www.pbworld.com/news\\_events/publications/efr/pdf.spring\\_08.pdf](http://www.pbworld.com/news_events/publications/efr/pdf.spring_08.pdf).

**Exhibit 21: Forecast I-80 Annual Average Daily Traffic by Vehicle Type, 2009 to 2049**



Source: WYDOT Vehicle Miles Book, FHWA FAF Highway Link Database, PB Analysis

Forecasts of traffic by vehicle type were disaggregated into the five sub-sections of the I-80 corridor mentioned above in order to study diversion rates at various points on I-80. Exhibit 22 presents forecast total annual average daily traffic counts by highway sub-section. Consistent with historical data, the greatest traffic volumes are expected between Rock Springs and Cheyenne, with less traffic at the Utah and Nebraska borders.

**Exhibit 22: Forecast I-80 Total Traffic by Sub-Section of I-80, Selected Years**

Sub-Section of I-80	Vehicle Type	Annual Average Traffic - Selected Forecast Years				
		2010	2020	2030	2040	2049
Evanston	Trucks	6,844	9,169	12,284	16,457	21,412
	Passenger Cars	7,965	9,934	12,409	15,529	19,030
	<b>Total</b>	<b>14,810</b>	<b>19,103</b>	<b>24,693</b>	<b>31,986</b>	<b>40,441</b>
Rock Springs	Trucks	7,295	9,803	13,174	17,703	23,097
	Passenger Cars	8,948	10,549	12,454	14,722	17,133
	<b>Total</b>	<b>16,243</b>	<b>20,353</b>	<b>25,628</b>	<b>32,426</b>	<b>40,230</b>
Rawlins	Trucks	7,546	10,160	13,680	18,420	24,075
	Passenger Cars	6,242	7,487	8,985	10,788	12,723
	<b>Total</b>	<b>13,788</b>	<b>17,647</b>	<b>22,665</b>	<b>29,208</b>	<b>36,798</b>
Cheyenne	Trucks	7,067	9,464	12,676	16,978	22,088
	Passenger Cars	6,300	7,582	9,157	11,096	13,227
	<b>Total</b>	<b>13,367</b>	<b>17,046</b>	<b>21,832</b>	<b>28,074</b>	<b>35,315</b>
Nebraska Border	Trucks	5,372	7,032	9,205	12,049	15,352
	Passenger Cars	5,946	7,274	8,903	10,903	13,090
	<b>Total</b>	<b>11,318</b>	<b>14,306</b>	<b>18,108</b>	<b>22,952</b>	<b>28,443</b>

Source: WYDOT Vehicle Miles Book, FHWA FAF Highway Link Database, PB Analysis

## 5.3 Summary Diversion Findings

### Toll Diversion Overview

Three physical highway configurations were examined as part of the project, though two of the configurations (2 & 3) were grouped into one category (capacity expansion) for traffic and tolling portion of the analysis<sup>13</sup>. Potential tolling strategies discussed herein focus primarily on trucks and their diversion, as they are expected to comprise the majority of the revenue stream.

The FHWA's Freight Analysis Framework (FAF) databases were used to establish the trucking O/D pairs traveling on I-80. The O/D pairs analyzed in this study consisted of flows that travel to/from areas west of Wyoming to areas east of Wyoming, and flows originating and/or terminating in Wyoming. Roughly 400 individual flows were analyzed, representing 75% of total I-80 traffic. The next best route compared to I-80 was identified for each O/D pair using mapping software and the corresponding time and mileage differentials between I-80 and the alternate route were recorded.

Each of these individual analyses were converted into a dynamic revenue model to determine the amount of diversion that could be expected under each tolling alternative, given the time and cost differentials for each alternative route to I-80, as illustrated in the following equation. If the cost of diverting to the next best alternate route is greater than the toll amount being imposed on I-80, then no trucks will be modeled to divert from I-80. Alternatively, if the toll cost is higher than the diversion cost, all trucks on a given O/D route will choose the alternative.

$$\text{Diversion Cost} = \boxed{\begin{array}{c} \text{Distance Differential} \\ \text{(additional miles * fuel cost)} \end{array}} + \boxed{\begin{array}{c} \text{Time Differential} \\ \text{(additional hours * value of time)} \end{array}}$$

As discussed in the description of the Base Case, one tolling point located in the middle of the state has been modeled to minimize tolling impacts to local traffic (corridor wide) and minimize capital and operating costs associated with the tolling operation. In the span of I-80 between Rawlins and Rock Springs there is a roughly 100 mile stretch where very few towns are located. It is envisioned that somewhere in this stretch of Interstate, between where WY 789 heads south and the Rock Springs City Limits, WYDOT would locate the single tolling point and impose a tolling enforcement zone to reduce or eliminate diversion around the tolling point using local roads.

Within this zone, denoted by the orange shaded area in Exhibit 23, trucks would be restricted to Interstates, US Highways or Wyoming State Routes. These limitations could be imposed by weight restrictions on local roads and/or a WYDOT administered program where trucks used for local business in the restricted areas would be required to apply for and post (in a visible area on the truck) a special permit to drive on local roads within the tolling enforcement zone.

Such a program would allow trucks to divert around the tolling point using either US 191 if coming from the west or either US 287 or WY 789 if coming from the east (red arrows). These diversion options are not likely to be considered cost effective by truckers unless the toll rate on I-80 was in excess of about \$170, especially in winter months when these roads could be much more treacherous than I-80. However, this option for truck drivers who preferred not to pay the toll would be available, and this approach would keep truckers from diverting around the tolling point by using local roads. As detailed in

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<sup>13</sup> The two capacity expansion scenarios, from a tolling perspective, are assumed to operate in the same fashion and are considered interchangeable for diversion analysis purposes.

Section 6.4 (Toll Facility Operating Costs) additional enforcement costs have been factored into the analysis to account for the management of the tolling enforcement zone by Wyoming Highway Patrol.

**Exhibit 23: Conceptual Tolling Enforcement Zone**



The tolling enforcement zone approach is not expected to be as effective in keeping passenger cars from diverting around the tolling point by using local roads. However, in keeping with the spirit of the goal of the tolling approach (capturing tolls from truck and other out of state traffic), passenger cars traveling long distances or from out of state would not likely know an efficient route by which to divert around the tolling point. Further, if a large percentage of cars were to divert around the tolling point, there would be a relatively small impact on the combined truck and passenger car revenue stream because the passenger car toll rate has been intentionally set low.

#### **Trucks: Non-Wyoming Flows**

Detailed findings from the truck diversion analysis are provided in Appendix D to this report. There, flows to and from six Major Regions west of Wyoming are analyzed at a toll rate of \$50. Probable diversion routes are outlined and diversion percentages that dynamically impact the revenue forecast are discussed. For the vast majority of non-Wyoming flows, diversion would involve an alternative route completely outside of Wyoming.

At the \$50 toll rate assumed for the diversion comparison, the truck diversion rate for non-Wyoming flows over the forecast horizon averaged roughly 15% when tolling the existing facility (Base Case) and 10% under the capacity expansion scenarios, though diversion increases substantially as the toll rate is increased as detailed further in Section 5.4. Much of the diversion can be summed from the following major origins/destinations as detailed in Appendix D:

- From Northern California and the Bay Area to/from:
  - Denver area: Diversion to I-5/I-15/I-70
  - Minneapolis area: Diversion to I-15/I-94
  - North Carolina and points further east: Diversion to I-5/I-40
- From the Pacific Northwest to/from:
  - Chicago: Diversion I-90/I-94

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- Areas south of I-40: Diversion to I-5/I-10.

### Trucks: Wyoming-Specific Flows

As previously noted, Wyoming-specific truck flows consist of 34% imports to the State, 45% exports from the state, and 21% Local trips originating and terminating inside the State. Diversion rates for truck flows specific to Wyoming could differ substantially on each of the five sub-sections of the I-80 corridor depending on how many toll facilities were constructed, and where they were located.

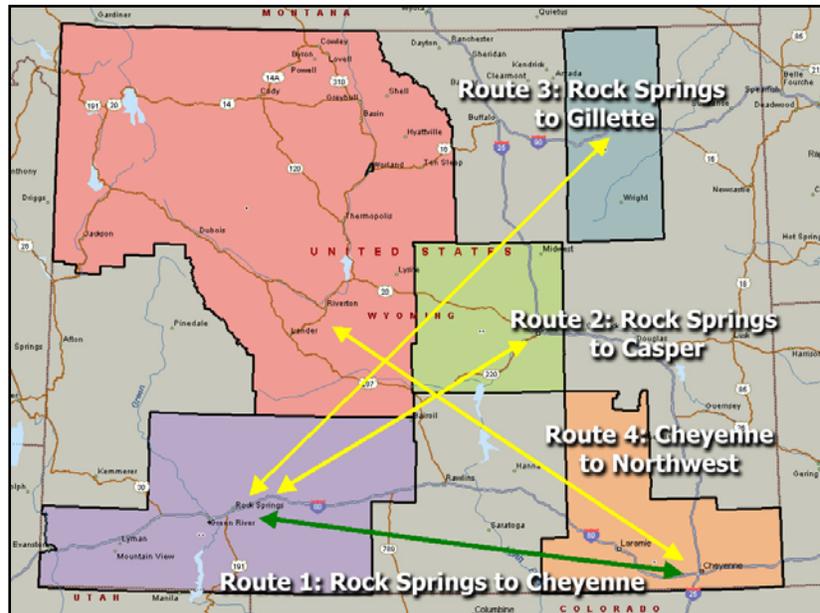
In the FAF database, Wyoming-specific flows are not disaggregated into origin and destination regions within the State; rather, only a measurement of total truck flows within Wyoming is included. Therefore, an assumption was made that 20% of all truck movements in the state of Wyoming involve trips on I-80, while the other 80% transport their goods using other facilities<sup>14</sup>. Furthermore, I-80 relevant trucking flows within Wyoming were assumed to be concentrated between the following four major O/D pairs:

1. Evanston / Green River / Rock Springs (Rock Springs herein) to Cheyenne / Laramie
2. Rock Springs to Casper
3. Rock Springs to Gillette
4. Cheyenne / Laramie to other Central / Northwestern counties

Local truck traffic relevant to I-80 was assumed to split equally between these four major O/D pairs. Traffic moving between Rock Springs and Cheyenne (designated by the green arrow in Exhibit 24) was assumed to be captive to I-80 for the entire trip, while trucks traveling between Rock Springs and Casper or Gillette were assumed to be discretionary. Trucks moving between Rock Springs and Casper or Gillette could use US 220/US 287/US 189, while movements from Rock Springs to Gillette could use US 16/US 20/US 789 as alternative routes. On average, these alternate routes are 20 miles shorter but 80 minutes longer than I-80.

Roughly 50% of Local discretionary flows are estimated to divert if a \$50 toll were implemented on the existing highway facility between Rock Springs and Rawlins. Under the new lane miles / TOT facility scenario, the diversion rate is expected to be approximately 41%. This analysis does not take into consideration the fact that these routes are slightly more congested than I-80 on average, nor does it include the effects of inclement winter weather conditions on these highways, which are not

**Exhibit 24: I-80 Relevant Intra-Wyoming Routes**



*Source: FAF Commodity Origin/Destination Database, PB Analysis*

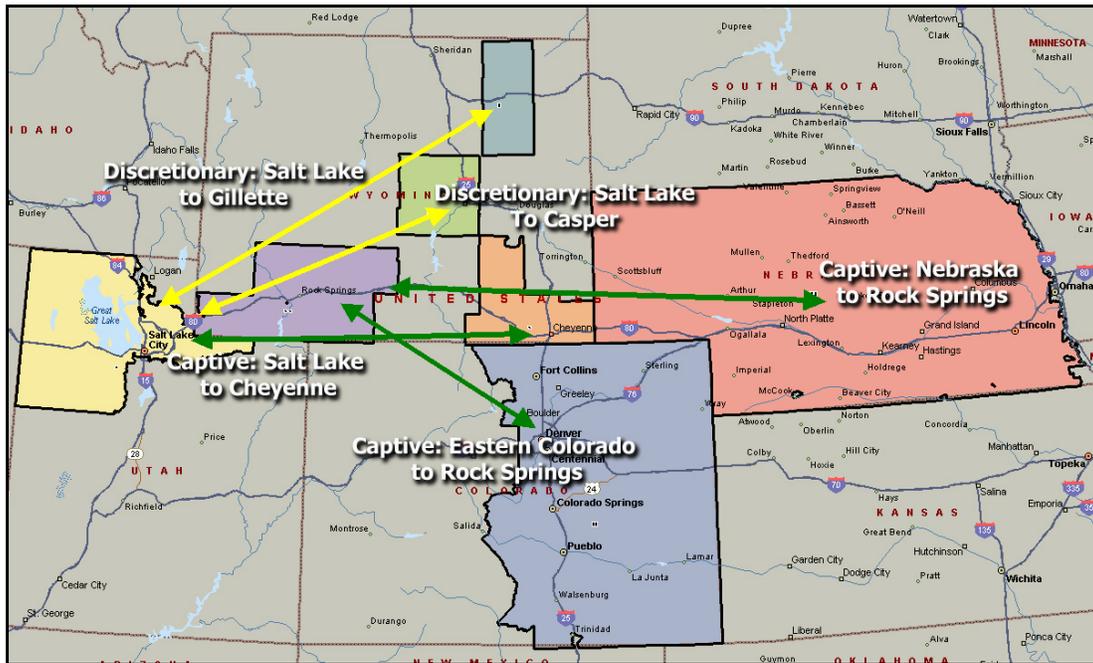
<sup>14</sup> This assumption resulted in local truck flows comprising 5% of total average daily truck flows on I-80, which closely matches the 6.3% local share of total traffic for the entire state of Wyoming, according to historical FHWA estimates. For more information, see [http://www.ops.fhwa.dot.gov/freight/freight\\_analysis/faf/tons\\_truck\\_state.htm](http://www.ops.fhwa.dot.gov/freight/freight_analysis/faf/tons_truck_state.htm).

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maintained to the standard of I-80. Additionally, truckers not familiar with these roads may simply be averse to the non-interstate route.

Most non-Local Wyoming-specific trading occurs with its neighbors, with the roughly two thirds of all Wyoming exports and 80% of all imports moving to/from Colorado, Utah and Nebraska. Smaller trades occur with Iowa, Kansas, Idaho, and Nevada.

**Exhibit 25: Toll-Relevant Flows from Major Wyoming Trading Partners**



*Source: FAF Commodity Origin/Destination Database, PB Analysis*

Discretionary and captive flows are represented in Exhibit 25 above with yellow and green lines, respectively. From Colorado, only goods moving from Denver, Fort Collins or Colorado Springs to Rock Springs were relevant to the tolled corridor of I-80. The next best alternate route to I-80 from eastern Colorado to Rock Springs is US-40/US-191, which is 80 miles longer and about 3 hours slower than I-80. Accordingly, this traffic is essentially captive to I-80, and no diversion is expected to/from eastern Colorado.

Flows between Utah and Cheyenne are similarly captive, while Casper and Gillette feature the same diversion alternatives as those available to Local trucks moving from Rock Springs, as described above. Like local Wyoming flows, as much as 50% of all I-80 relevant traffic moving to/from Utah could divert to alternate routes if an initial toll of \$50 was charged on I-80. Diversion would be slightly lower at 41% if new lane miles or TOT facilities were constructed.

Goods moving from Nebraska, Iowa or Kansas would likely route most of their goods on I-80, though only shipments moving to/from Rock Springs would be relevant to the toll corridor. Like goods moving between Cheyenne and Rock Springs, no competitive alternate routes exist from Midwestern states, so no diversion is assumed from the Midwest under either tolling scenario<sup>15</sup>.

In total, the estimated diversion rate for Wyoming-specific flows is 26% under the Base Case. If new toll lanes or a TOT facility were constructed, the diversion rate is projected to fall to 21%.

<sup>15</sup> The exception in this case involves flows from South Dakota to Rock Springs, which could divert to I-90, following US 16, US 20, US 789 and US 191 to Rock Springs.

**Passenger Cars: All Flows**

As described above, the Base Case passenger car toll rate is assumed to be 10% of the truck toll rate. Further, passenger car diversion rates are estimated to be 25% higher than the diversion expected by trucks at the associated rate. This relationship is illustrated in Exhibit 26, showing that at a \$5.30 toll, 20% of passenger cars are expected to divert, representing mostly local traffic. As the toll rises to \$11.60 (10% of the calculated revenue maximizing toll for trucks) about 60% of passenger cars should be expected to divert. Passenger car diversion is capped at 75%, equating to a toll rate just under \$15. This cap is imposed in the model as out of state traffic and most business travelers are not expected to divert regardless of the toll level.

**Exhibit 26: Passenger Car Diversion for Selected Toll Rates (2010)**

<b>Truck</b>	Toll Rate		\$53	\$116	\$147
	Diversion		16%	46%	59%
<b>Car</b>	Toll Rate	(10% of truck)	\$5.30	\$11.60	\$14.70
	Diversion	(1.25 times truck)	19%	58%	74%

## 5.4 I-80 Toll Revenue Forecast

The toll analysis was structured to yield preliminary toll revenue forecasts annually based on the assumed toll rate multiplied by the expected tolled traffic on I-80 in a given year. As the toll rate assumption is increased, the amount of traffic diverted from the road also increases and revenue is subsequently impacted. The impact to revenue could be positive or negative depending on the additional diversion which is somewhat sporadic due to threshold costs of diversion being based on the cost (time and fuel) of the next best route, as explained above.

Generally, toll revenue (within a reasonable range of toll rates) is expected to increase until the “optimum” toll rate is reached after which revenue will begin to decrease as a higher proportion of vehicles are diverted from the roadway per dollar increase in toll rate. If revenue levels at varying toll rates are plotted on a chart, the highest point on the revenue curve should show the maximum revenue and the corresponding rate at which this revenue level can be obtained.

The table in Exhibit 27 shows year 2010 data for diversion expected to occur at different toll levels under the Base Case scenario along with the associated traffic counts and annual revenues. The exhibit shows that truck revenue increases as rates are increased until about \$171 million (at a toll rate of \$116) and then begins to decline. Similarly, passenger car revenue increases until revenues of \$11.8 million are reached at a toll rate of \$9.50. The decline from these points is not as smooth as the ascent, due to some variability inherent in the thresholds for diversion as described above. Regardless, the revenues curves and diversion rates output from the model are reasonable given assumed values of time for passenger cars and trucks.

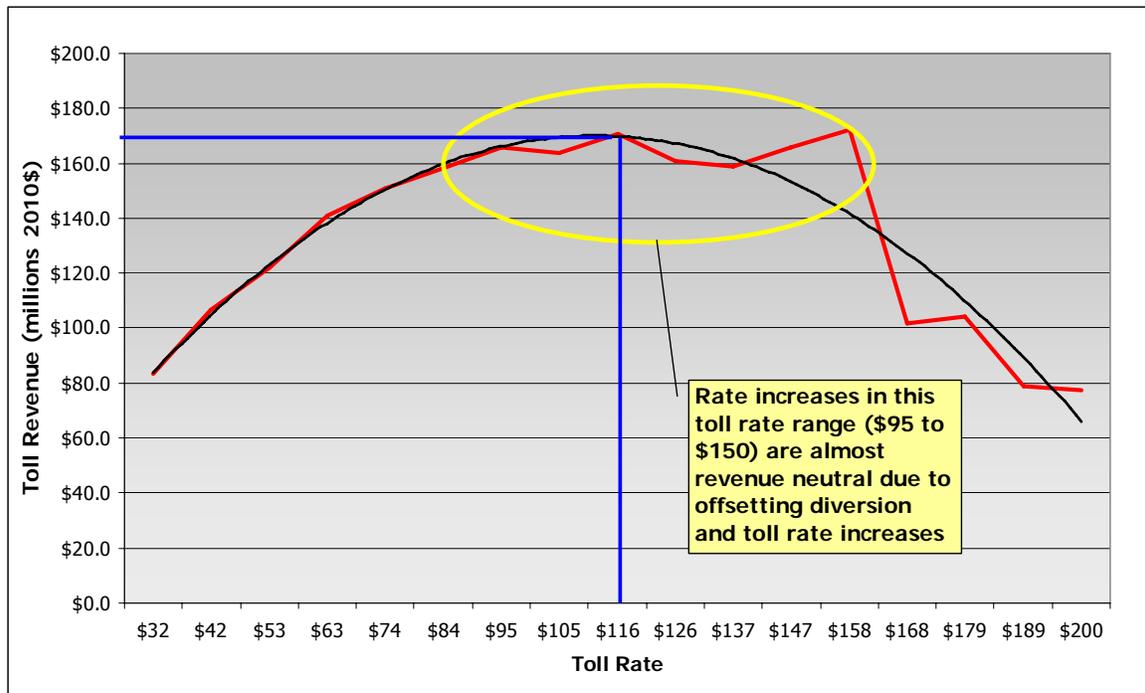
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**Exhibit 27: Projected Truck Diversion and Revenue, 2010 (millions)<sup>16</sup>**

Truck				Passenger Car				Total Traffic	Total Revenue
Toll Rate	Diversion	AADTT	Revenue	Toll Rate	Diversion	AADT	Revenue		
\$32	4%	7,228	\$83.1	\$3.15	5%	5,912	\$6.8	13,140	\$90.0
\$42	8%	6,960	\$106.8	\$4.20	10%	5,636	\$8.6	12,597	\$115.4
\$53	16%	6,375	\$122.2	\$5.25	19%	5,031	\$9.6	11,406	\$131.9
\$63	19%	6,121	\$140.8	\$6.30	24%	4,768	\$11.0	10,889	\$151.8
\$74	26%	5,615	\$150.7	\$7.35	32%	4,245	\$11.4	9,859	\$162.1
\$84	32%	5,163	\$158.4	\$8.41	39%	3,778	\$11.6	8,942	\$170.0
\$95	36%	4,803	\$165.8	\$9.46	45%	3,405	\$11.8	8,208	\$177.5
\$105	43%	4,267	\$163.6	\$10.51	54%	2,851	\$10.9	7,118	\$174.6
\$116	46%	4,051	\$170.9	\$11.56	58%	2,628	\$11.1	6,679	\$182.0
\$126	54%	3,499	\$161.0	\$12.61	67%	2,057	\$9.5	5,556	\$170.5
\$137	58%	3,188	\$158.9	\$13.66	72%	1,736	\$8.7	4,924	\$167.6
\$147	59%	3,090	\$165.9	\$14.71	74%	1,635	\$8.8	4,725	\$174.7
\$158	60%	2,996	\$172.3	\$15.76	75%	1,560	\$9.0	4,557	\$181.3
\$168	78%	1,658	\$101.7	\$16.81	75%	1,560	\$9.6	3,219	\$111.3
\$179	79%	1,602	\$104.4	\$17.86	75%	1,560	\$10.2	3,162	\$114.6
\$189	85%	1,145	\$79.0	\$18.91	75%	1,560	\$10.8	2,706	\$89.8
\$200	86%	1,062	\$77.4	\$19.96	75%	1,560	\$11.4	2,622	\$88.7

The truck revenue curve in Exhibit 27 is displayed graphically in Exhibit 28 (red line). It shows that revenues fluctuate in a narrow band near the top of the curve between toll rates of approximately \$95 and \$150. In this range, the rate of diversion increase is roughly the same as the rate of toll increase. As the toll rate increases above \$160, a sharp increase in diversion causes revenues to drop off more drastically. This sharp increase in diversion is due in part to the toll cost finally exceeding the cost of the internal Wyoming alternative route from Rock Springs to Rawlins via US 191/US 287. A trend line (black line) has been fitted to the raw revenue curve to help estimate the location of the optimal toll rate at \$116.

**Exhibit 28: Projected Toll Revenue at Varying Rates, 2010**

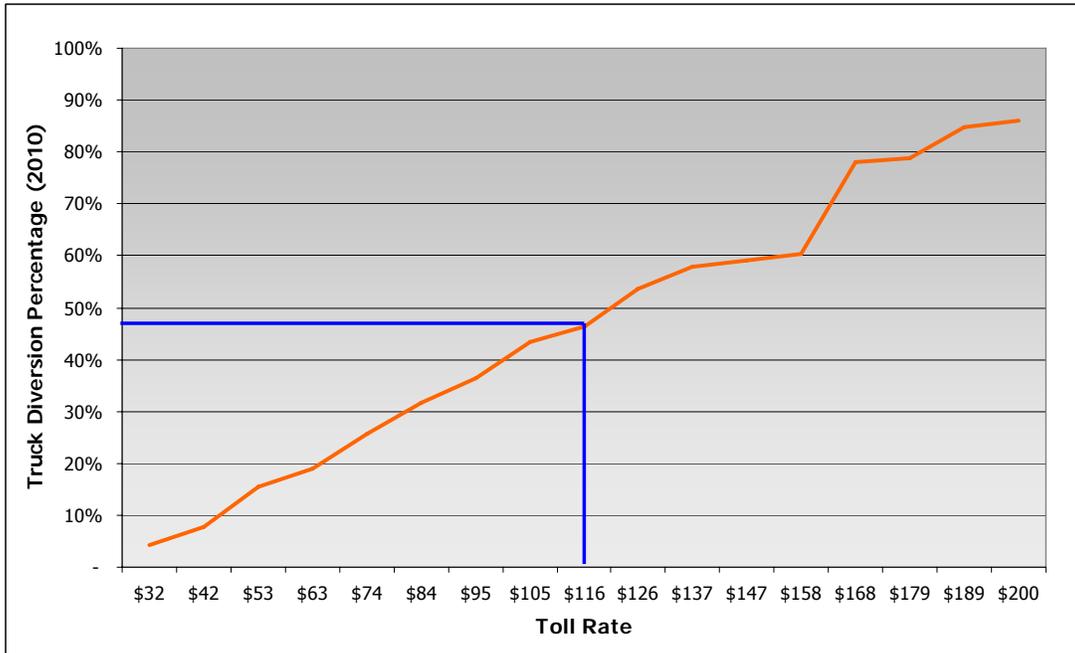


<sup>16</sup> Toll rates used in this analysis are escalated unrounded 2010 rates, based on 2.5% annual increases.

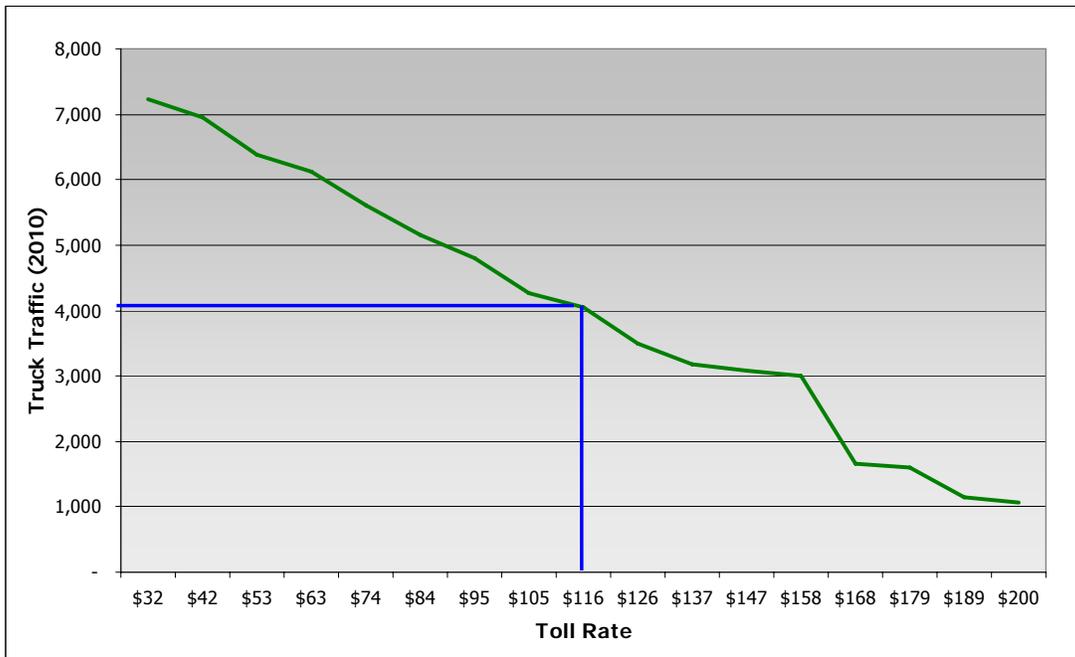
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Associated graphs of the traffic diversion percentage growing and the traffic level declining as the toll rate is increased are shown in Exhibits 29 and 30 respectively.

**Exhibit 29: Projected Truck Diversion at Varying Toll Rates, 2010**



**Exhibit 30: Projected Truck Traffic at Varying Toll Rates, 2010**



If revenue maximizing toll rates of \$116 for trucks and \$9.50 for passenger cars were applied to the Base Case scenario, roughly 45% of the forecast traffic would divert to alternate routes, leaving approximately

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4,000 trucks and 3,400 cars traveling through the toll plaza each day. Toll revenues would grow in nominal terms from \$171 million in 2010, to \$560 million in 2030.

Configurations 2 and 3 are expected to have diversion rates of about 38%, at these toll levels and yield revenues in 2010 of \$198 million for trucks and \$13.3 million for cars, growing to \$655 million and \$33 million in 2030 respectively.

As stated above, operating the I-80 toll facility with one tolling point was found to be the most cost effective approach due to the additional operating and capital costs associated with additional tolling points.

## 6 Corridor Development Estimates

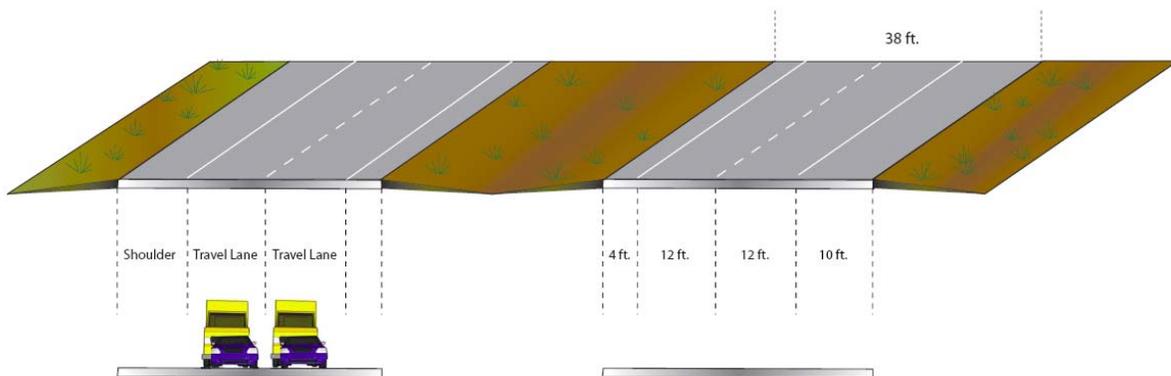
### 6.1 Roadway Facility Capital Costs

Roadway costs for expansion scenarios were developed using unit costs from similar construction projects in Wyoming and were vetted with WYDOT staff. While these estimates are considered reasonable for this level of analysis, they were developed without preliminary design or physical inspection of the corridor. As such, a 15% of construction cost contingency was added to the estimates to account for fluctuations in unit costs and all unforeseen challenges that might result in designing the various facility configurations. Construction is assumed to take 10 years.

Three roadway configurations were considered for the project as listed below:

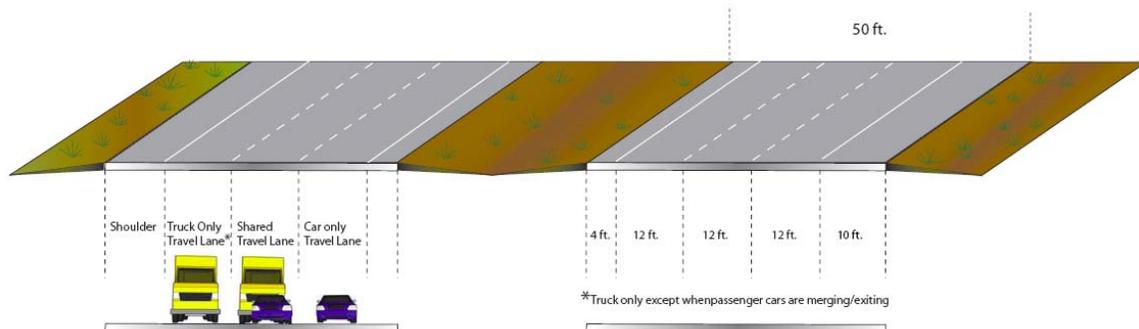
1. **Configuration 1:** No capacity expansion would be undertaken – existing lanes are shared by passenger vehicles and trucks. All lanes are tolled.

**Exhibit 31: Configuration 1- Existing Capacity**



2. **Configuration 2:** One additional lane is added in each direction such that the current four lane Interstate is expanded to six lanes. The inside (left) lane is for passenger cars only. The center lane is shared by trucks and passenger cars but used by trucks only when passing. The outside (right) lane should be used by trucks if not passing, and should only be used by cars when exiting or entering the interstate. All lanes are tolled.

**Exhibit 32: Configuration 2 – Third (Truck) Lane**

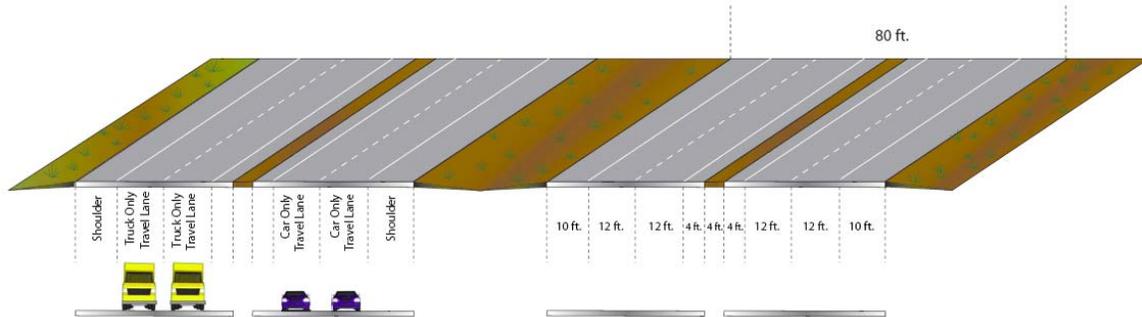


3. **Configuration 3:** A new independent truck only facility is constructed next to the existing highway. Passenger cars would continue to use the existing roadway while trucks would be

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required to use the truck only facility. The independent truck only facility would have two lanes operating in each direction, thereby increasing the capacity from four to eight total lanes. All lanes would be tolled.

**Exhibit 33: Configuration 3 – Independent Truck Only Facility**



Roadway capital costs for each configuration include the incremental additional roadway width required to accommodate the additional (third) lane under Configuration 2, the full independent facility under Configuration 3, and all structures costs in each of the two expansion cases. It was assumed that in Configuration 2, existing structures would be widened to accommodate the additional roadway width, but that new structures would need to be built for the independent facilities in Configuration 3. The cost of the pavement expansion associated with the tolling plaza is included in the tolling capital cost estimate detailed later. Note that costs for new right of way, utility relocation and reconstruction of fence and snow fence and the potential for increased construction costs through environmentally and historically sensitive areas are not included in these costs. It is anticipated that these costs would be relatively low to moderate for Configuration 2 as some of the third lane expansion could be accommodated within the current ROW. ROW and associated non-construction costs are expected to be substantially higher under Configuration 3.

Exhibit 34 presents the total roadway capital cost estimate for each scenario. The cost estimates include an additional 15% contingency for design, program and construction management costs. No capacity expansion costs are assumed for Configuration 1, but both expansion cases have multi-billion dollar un-escalated costs in current year 2009 dollar terms. Assuming a 10 year build, 5% annual cost escalation, and straight line drawdown of construction funds, the total year of expenditure cost of the expansion projects grow to \$2.8 billion for Configuration 2 and \$7.0 billion for Configuration 3.

**Exhibit 34: Roadway Expansion Capital Costs**

Millions	Configuration 1 Existing Capacity	Configuration 2 New Truck Lane	Configuration 3 New Truck Facility
<b>Roadway Unit Cost per Lane-mile</b>	N/A	\$ 1.88	\$ 2.36
<b>New Lane Miles</b>	N/A	864	1,728
Construction Cost (Roadway & Structures)		\$ 1,627	\$ 4,078
Construction Contingency (15%)		\$ 244	\$ 612
Design & Program / Construction Management (15%)		\$ 244	\$ 612
<b>Total (2009\$)</b>	N/A	\$ 2,115	\$ 5,302
<b>Total Escalated Over 10-Year Build</b>	N/A	\$ 2,793	\$ 7,001

## 6.2 Tolling Facility Capital Costs

Toll facility capital costs include several major outlays including a toll operations building and all hardware and software need to operate and maintain a toll facility. The gantries and toll readers that are the interface with users, the network that connects all these components of the system and the actual pavement under the toll facility are also included. Some of these costs are fixed no matter how many tolling points are installed though some, including utility buildings, Open Road Tolling (ORT) readers, toll booths and gantries are variable.

Exhibit 35 shows a sketch diagram of the typical tolling point layout assumed for this analysis. The two primary travel lanes have ORT readers, therefore vehicles with transponders can continue driving along the Interstate without slowing down or stopping to pay tolls. Two toll booths will be provided for cash collections from those vehicles without transponders. This layout would be replicated on the opposite side of the Interstate to allow toll collection in both directions.

Exhibit 35: Proposed Tolling Point Layout

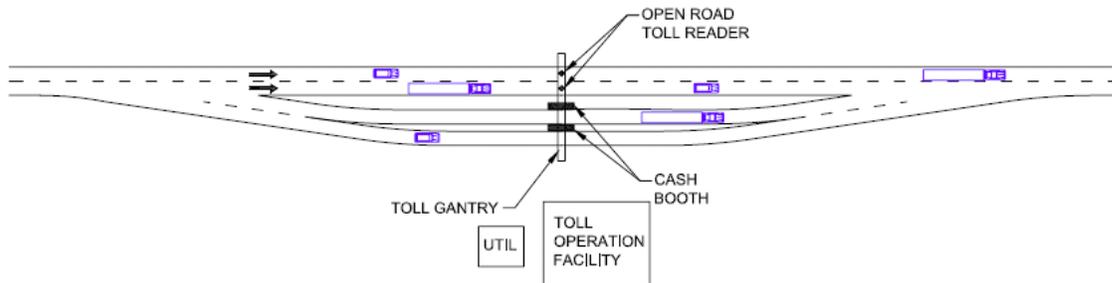


Exhibit 36 shows the capital costs for one tolling point. We assume that Configurations 1 and 3 have the same tolling capital costs since only the truck lanes would be tolled under the Independent Truck Lanes Case. Configuration 2, the Third Lane Case, would have a slightly higher toll facility cost because three through (ORT) lanes would be needed instead of two.

Exhibit 36: Tolling Infrastructure Capital Costs

Tolling Infrastructure (thousands, 2009\$)	
<b>Systemwide Needs</b>	
Host Computer	2,630
Software & Other	2,630
Wide Area Network	530
<b>Total Systemwide Needs</b>	<b>5,790</b>
<b>Toll Collection Point Needs</b>	
ORT Lane Equipment	630
Utility Building	390
ORT Structure	530
Installation	2,100
Pavement Costs	2,000
Toll Booths	630
<b>Total Toll Collection Point Needs</b>	<b>6,280</b>
<b>Sub Total Tolling Infrastructure Cost</b>	<b>12,070</b>
Tolling Infrastructure Contingency	15.0%
<b>Total Tolling Infrastructure Capital Cost</b>	<b>12,939</b>

## 6.3 Roadway Facility Operations and Maintenance Costs

Roadway O&M costs include the costs of minor pavement maintenance such as pothole repair, crack sealing and chip seals, as well as non-pavement maintenance activities such as sweeping, trash collection, mowing, weed control, snow removal, guardrail repair, fence and snow fence repair, paint striping and other annually recurring costs associated with preserving the roadway surface investment and the functionality and safety of Interstate 80.

WYDOT provided actual costs of roadway maintenance, excluding pavement rehabilitation and reconstruction efforts, on I-80 for fiscal year 2007 that amounted to approximately \$8.3 million, though staff noted that had funding been available it would have spent significantly more. WYDOT maintenance

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personnel expressed that due to lack of funding, the budget for pavement crack sealing was eliminated in 2008 and that this year there is no budget for chip seals and that patching was reduced significantly. WYDOT maintenance personnel and others at WYDOT are concerned that the lack of funding for these critical maintenance activities will significantly decrease the life of the pavement and require more extensive and costly pavement rehabilitation and in some cases full depth reconstruction.

It was also noted that if significantly more O&M funding were made available, as is proposed in this analysis, WYDOT may have difficulty staffing its maintenance force under current compensation packages, considered by some to be noncompetitive.

Given this potential hurdle, the PB team reviewed historical O&M cost data spent to maintain the I-80 corridor with WYDOT staff. With WYDOT staff assistance, PB estimated the required annual outlays to maintain the road at acceptable levels and organized the annual roadway O&M outlays into three general categories; Pavement Maintenance, Snow Removal and Other Costs. The top half of Exhibit 37 shows the estimated annual (2009) O&M cost of comprehensive maintenance required to preserve the capital investment, functionality and safety of I-80 based on this breakdown. The bottom half of the exhibit shows the Tolling O&M summary, detailed further below.

**Exhibit 37: Total Annual Facility O&M Costs, 2009**

Roadway Configuration	Configuration 1 Existing Capacity	Configuration 2 Third Lane	Configuration 3 New Truck Facility
<b>Cost Category</b>			
<b>Roadway Maintenance</b>			
<b>Unit Costs (Per Lane Mile)</b>			
Pavement Maintenance	4,000	4,000	4,000
Snow Removal	2,300	2,300	2,300
Other Roadway Maintenance	1,200	1,200	1,200
<b>Total Unit Roadway Maintenance Cost</b>	<b>7,500</b>	<b>7,500</b>	<b>7,500</b>
Lane Miles	1,728	2,592	3,456
<b>Annual Roadway O&amp;M Cost (2009\$)</b>	<b>\$12,960,000</b>	<b>\$19,440,000</b>	<b>\$25,920,000</b>
<b>Toll Operations &amp; Maintenance</b>			
General & Administrative	810,400	810,400	810,400
Toll System Maintenance	591,600	591,600	591,600
Enforcement and Courtesy Patrol	4,124,400	4,124,400	4,124,400
Staffing	1,624,000	1,624,000	1,624,000
Transaction & Violation Processing	5,059,500	5,059,500	5,059,500
<b>Annual Tolling O&amp;M Cost (2009\$)</b>	<b>\$12,209,900</b>	<b>\$12,209,900</b>	<b>\$12,209,900</b>
<b>Total Annual Operations &amp; Maintenance</b>	<b>\$25,169,900</b>	<b>\$31,649,900</b>	<b>\$38,129,900</b>

## 6.4 Tolling Operations and Maintenance Costs

The Tolling O&M cost includes five major cost categories as listed above in Exhibit 37. Fixed costs such as the cost of office space for staff, policing, courtesy patrol, and costs associated with the regular maintenance of the tolling system and software are shown in Exhibit 38. These account for approximately 55% of total Tolling O&M costs.

The Policing / Enforcement cost estimate accounts for ten Wyoming Highway Patrol officers and is based on similar contracts with State Patrols where costs equate to about \$220,000 per officer-year in current dollars. Our assumption is that the tolling authority would not have to begin paying for services already provided by the Highway Patrol (and Commercial Carrier Division). The ten additional officers would be required to maintain a higher level of service on the tollway, as is generally expected by toll paying customers, and to assist with toll payment enforcement, as outlined above in Section 5.3, regarding the restricted access truck zone.

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**Exhibit 38: Fixed Non-Labor Tolling O&M Costs**

The Courtesy Patrol estimate includes 20 vehicles, fuel, maintenance, and labor associated with a patrol that would provide assistance to disabled motorists and coordinate with state patrol and other emergency services. As the roadway is roughly 400 miles long, 20 vehicles would provide coverage of roughly one vehicle for every 20 miles of roadway.

Non-Courtesy Patrol staffing costs for an operation with a single tolling point are shown in Exhibit 39. Roughly 24 new positions (or time shared with other WYDOT functions representing full time equivalents (FTEs)) are assumed to be needed to operate the toll facility. Twenty staff positions will be filled with a combination of customer service, accounting, IT, and other back office staff. Two systems technicians will be needed as well as managerial staff.

Some positions, such as the Operations Manager and many of the general staff positions, can serve multiple tolling locations, while redundancy will be necessary other positions, particularly system technicians. Staffing costs account for approximately 15% of Tolling O&M costs.

Non-Labor Fixed Costs	Annual Cost 2009 \$
Travel	5,160
Office Supplies	1,030
Dues & Membership	2,060
Training & Conferences	2,060
Telephone Service	3,090
800 Number	3,090
Legal	5,160
Marketing	20,620
Banking	5,160
Utilities	20,620
Office Equipment Rental	20,620
Back Office Space Lease	515,550
Consulting Support	206,220
<b>Subtotal</b>	<b>810,440</b>
<b>Toll System Maintenance</b>	<b>591,590</b>
<b>Total Back Office</b>	<b>1,402,030</b>
Policing / Enforcement	2,268,000
Courtesy Patrol	1,856,000
<b>Total Roadway Support</b>	<b>4,124,000</b>
<b>Total Non-Labor Toll O&amp;M Costs</b>	<b>5,526,030</b>

**Exhibit 39: Toll Facility Staffing Costs**

Staff Costs	Headcount	Fully Loaded Annual Salary 2009 \$	Total Cost 2009 \$
Operating Manager	1	180,400	180,400
Toll Services Manager	1	115,500	115,500
Toll Services Staff	20	57,740	1,154,800
Toll Systems Technician	2	86,600	173,200
<b>Total</b>	<b>24</b>		<b>1,623,900</b>

*Fully loaded salary includes a 40% for benefits, bonuses, and overtime.*

Variable tolling O&M costs generally refer to those costs that increase with traffic such as transaction and violation processing, and account maintenance costs. Our assumption is that approximately 85% of revenues will be from credit card based transactions, mostly by renewal of transponder accounts but also by credit card payment at toll booths. Credit card transaction fees are expected to amount to 2% of revenues.

Toll transaction processing costs have been studied widely in the industry and are incurred both for regular transaction processing and costs of collection in the case of violations. Our assumptions for these costs are based on calculated costs for other toll roads and are reasonable for this level of analysis. The cost of each transactions is assumed to be \$0.25, representing the average processing cost between cash and electronic collections.

When a toll violation occurs (generally a vehicle drives through an OTR facility without a transponder) a photo of their license plate is taken to attempt collection through a secondary process. This process involves retrieving the vehicle registrant from various DMV or other databases and mailing them a citation. While fines associated with toll violations are assumed to cover the majority of additional costs

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WYDOT is assumed to incur an additional cost of \$1.00 for each violation for extra processing that must be performed. Two percent of transactions are assumed to be violators, as illustrated in Exhibit 40 along with the other two categories of variable operating costs. These three categories of costs account for about 30% of total annual Tolling O&M costs.

**Exhibit 40: Variable Toll Operating Costs**

<b>Variable Costs</b>	<b>Rate</b>	<b>Annual Cost 2009 \$</b>
Transaction Cost	\$0.25 per trans.	325,300
Violation Cost	\$1.00 per trans.	26,000
Credit Card Fees	3.0% of trans. revenue	<u>2,820,100</u>
<b>Total</b>		<b>3,171,400</b>

## 6.5 Major Rehabilitation and Repair Reserve

In addition to annual operations and maintenance outlays, funds are set aside each year in a major rehabilitation reserve account to pay for major roadway and toll system rehabilitation projects that will be necessary in the future to maintain a high level of service on the roadway. These rehabilitation projects include:

- Surface resealing / mill and overlay
- Bridge repairs and painting
- Upgrade and replace tolling equipment

Major roadway and structures maintenance is expected to occur every 15 years, on average, costing approximately \$300,000 per lane mile in current dollar terms. If the first cycle of major roadway rehabilitation were to begin in 2024, 15 years from our assumed opening date of 2009, approximately \$1.1 billion will be needed in the reserve account to complete the rehabilitation.<sup>17</sup> Obviously the rehabilitation will not be conducted in a single year, but rather it will take place over time in phases. But for financial modeling purposes, the \$1.1 billion target in 2024 is maintained to be sure the rehabilitation account is properly funded annually.

Annual deposits to the rehabilitation reserve account are expected to grow with revenues and range from about \$15 to \$55 million annually in the first 15 years of operation. These deposits will be paid from excess cash (resulting from debt service coverage) after all debt service is paid. If the project debt is structured using a 2.0 times debt service coverage ratio (explained below) ample excess cash will be available to pay for necessary reserve deposits.

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<sup>17</sup> The unit cost of major maintenance assumes a lower level of roadway deterioration than currently experienced due to the diversion of trucks under a tolled scenario. The diversion rate and subsequent roadway deterioration rate will vary based on the toll rate.

## 7 Financial Feasibility Analysis

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Using the revenue and cost projections discussed above, the PB Team analyzed the potential financial capacity of the facility under a traditional tax-exempt structure. The goal was to determine the amount of up-front funding that tolling could make available from a bond issue to pay for capacity expansion under the expansion scenarios and the tolling infrastructure costs under all scenarios. The following sections discuss the underlying financing assumptions used, the estimated funding gaps, possible other funding sources that could supplement toll revenues, and additional steps that could be taken to refine the analysis if one of the tolling approaches is carried forward.

### 7.1 Financing Assumptions

Typical of a high level, conceptual financial analysis such as this, standard assumptions were built into a financial model to estimate the construction funds that could be made available from issuing bonds repayable with toll revenues. These assumptions are based on similar type transactions that have occurred in recent years. Due to the current financial market upheavals, it is not clear how soon a transaction could be completed based on these assumptions. The following major assumptions were incorporated:

- **A combination of Senior Current Interest Bonds (CIBs), Capital Appreciation Bonds (CABs), and subordinate (junior) CIB bonds.** CIBs have a similar structure to a standard home mortgage in that interest and principal payments are due at regular intervals, usually each year or every six months. CABs are different than CIBs in that payments are not due until the bonds mature. CABs are more 'expensive' than CIBs because more interest accrues on the outstanding principal amount over the life of the bond and because of the additional risk inherent in the delayed repayment of principal and accrued interest. Junior bonds are paid from cash available after senior bonds are paid, and carry higher interest rates due to the additional risk that funds may not be available to pay junior debt service if projections are not met.
- **Interest rates based on current minimum investment grade municipal debt yields.** Credit rating agencies rate bond issues based on the risk inherent in the operation. Investment grade debt carries a rating from AAA (best) to BBB (minimum investment grade) and the interest rate of the debt is based on this rating.<sup>18</sup> While in the past, lower rated investment grade projects could obtain bond insurance, that is not currently an available option. The bonds modeled for I-80 have a range of maturities, despite all being part of the same issue. Having a range of maturities is very important, especially in large bond issues, and helps improve the marketability of the debt. As such, an interest rate curve is used to model the debt. The yield curve is currently upward sloping, meaning that the interest rates increase as the maturity lengthens (i.e. 40 year maturities carry a higher rate than 5 year maturities). A 100 basis point (1%) contingency factor was added to the current minimum investment grade interest rate curve for modeling purposes to account for possible market fluctuations between now and time of issuance.
- **Senior debt coverage ratio of 2.0 times with overall project coverage (including junior debt) of 1.5 times.** This ratio, generally set by rating agencies, dictates the proportion of annual operating cash flow that can be dedicated for debt service repayment, generally stated in terms of the annual net revenue divided by the annual debt payment due. Riskier operating cash flow streams require higher debt service coverage due to inherent characteristics making them less likely to reach their forecast annual revenue amounts. If a debt service payment in a given year is \$1 million and the debt service coverage ratio is 2.0 times, operating cash flow for that year should be expected to total \$2.0 million in order avoid breach of the debt service covenant. The senior debt coverage ratio is set higher than the junior debt service to reduce the senior

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<sup>18</sup> Rating scales vary slightly from agency to agency. Standard and Poor's and Fitch Ratings use a similar scale with all capital letters. Moody's Investor Services uses lower case letters and numbers but is roughly the same.

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bonds' risk. For a revenue bond, the necessary operating and maintenance costs are usually deducted from the revenue prior to the calculation as further discussed under Project Cash Flow.

- **40-year maximum debt maturity.** Some portions of the bond issue will mature each year, though no portion of the debt will be outstanding longer than 40 years from issuance, 2048. Although 40-year maturities have been available for similar transactions in the past, this could be more challenging in the near future.
- **Closing costs of approximately 4% of bond proceeds.** There are several parties involved in the issuance of debt including consultants, financial advisors, lawyers, and underwriters. Most of the expenses of these parties are paid from the bond proceeds after the transaction closes. In total, these costs are estimated to be 4% of the par amount of the bond issue.

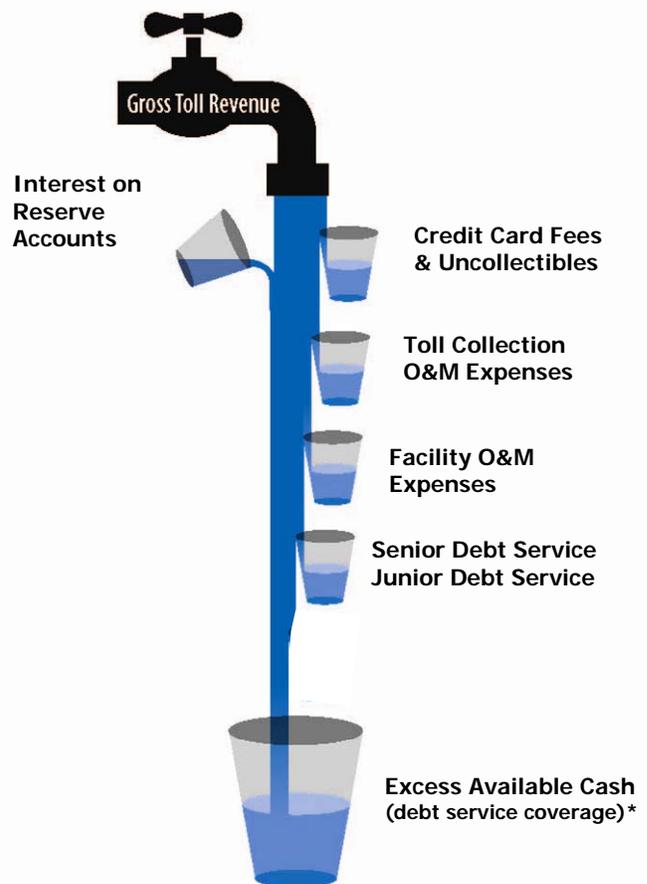
## 7.2 Project Cash Flow

Gross toll revenues from trucks and passenger cars (if applicable) are the starting point for the calculation of cash flow available for debt service. Gross revenue is reduced by uncollectable accounts and annual tolling and roadway O&M costs to arrive at net operating revenues available to structure the financing. The cash flow calculation is typically referred to and described as a waterfall. Exhibit 41 depicts the flow of funds as modeled for the I-80 toll facility.

Once senior and junior debt service is paid, the remaining cash available can be used at the discretion of the issuer. As described above, these funds are generally deposited in rehabilitation reserve accounts to pay for major renovations to the roadway and tolling infrastructure.

Exhibit 42 shows the cash flow calculation for the first three years of operation, assumed to begin in 2009. Gross toll revenues amount to \$116 million and total revenue, including interest earnings are \$121 million. Subtracting O&M costs of \$26 million leaves \$95 million available for debt service payment. Overall project debt service of 1.5 times reduces the allowable debt service payment to \$67 million, leaving \$29 million in additional cash available to fund the major rehabilitation account. It is important to note that if revenue falls short of projections or if O&M costs are higher than expected, the remaining cash available after debt service would be lower than the \$29 million expressed here in 2009. Similarly, more robust traffic and prudent management of costs could increase excess cash above projections.

Exhibit 41: Flow of Funds



\* Excess cash from debt service coverage will depend on the coverage ratio for senior and junior debt. Including junior debt in the bond structure lowers the overall debt service coverage ratio, thereby lowering the excess cash remaining after debt service is paid which is used to fund rehabilitation reserve accounts.

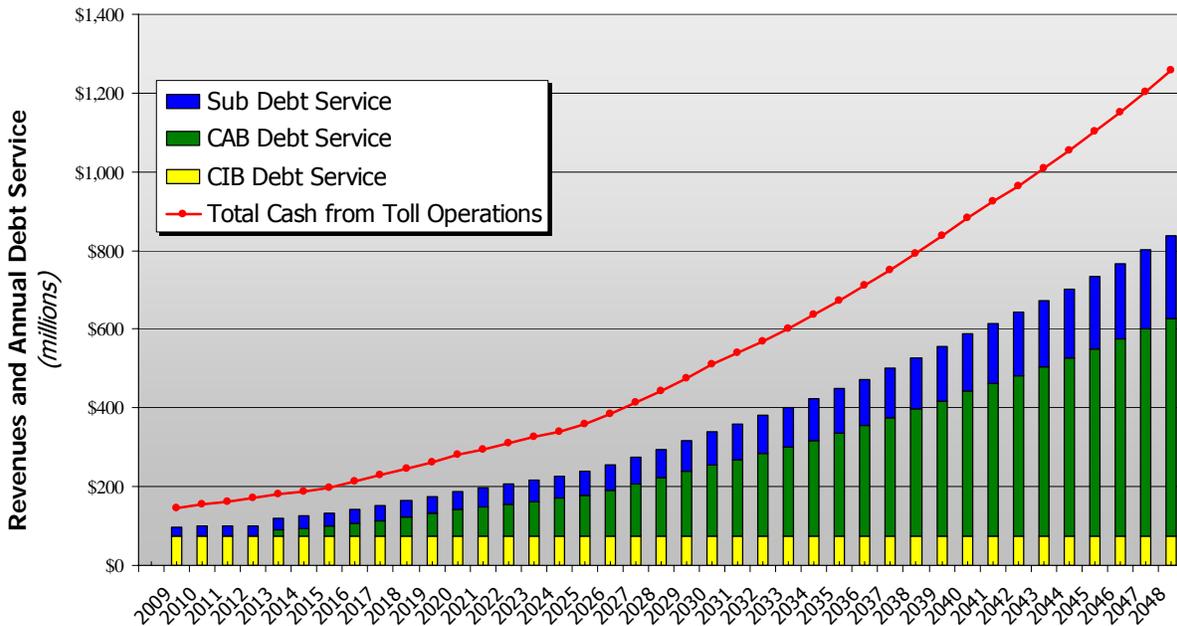
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**Exhibit 42: I-80 Project Cash Flow (millions)**

	2009	2010	2011
<b>Gross Revenue</b>			
Annual Nominal Truck Toll Revenue	161.8	170.9	184.8
Total Annual Nominal Passenger Toll Revenue	10.6	11.1	12.0
<b>Total Revenue</b>	<b>172.5</b>	<b>182.0</b>	<b>196.8</b>
<b>Toll Operating and Maintenance Costs</b>			
Total Transaction & Violations Cost	5.1	5.3	5.8
Total Enforcement and Courtesy Patrol	4.1	4.3	4.4
Total G&A Overhead Costs	1.4	1.4	1.5
Total Staffing Costs	1.6	1.7	1.7
<b>Total Toll O&amp;M Costs</b>	<b>12.2</b>	<b>12.7</b>	<b>13.4</b>
<b>Roadway Operating and Maintenance Costs</b>			
Pavement Maintenance Costs	7.0	7.3	7.7
Snow Removal	3.9	4.0	4.2
Sign, Gaurdrail, Etc Replacement	2.1	2.2	2.3
<b>Total Roadway O&amp;M Costs</b>	<b>13.0</b>	<b>13.6</b>	<b>14.2</b>
<b>Total O&amp;M Costs (Toll &amp; Roadway)</b>	<b>25.2</b>	<b>26.3</b>	<b>27.5</b>
<b>Net Revenue Available for Debt Service</b>	<b>147.3</b>	<b>155.7</b>	<b>169.3</b>

Cash flow is projected from 2009 to 2048 for use in calculating debt service. Base Case total debt service payments will increase each year by 5.3% on average, based on revenue and cost growth. Exhibit 43 visually depicts projected cash available for debt service relative to the three components of debt. The red cash flow line 'floats' above the annual debt service payments, representing the 1.5 times coverage required for all debt (2.0 times coverage for senior debt).

**Exhibit 43: I-80 Debt Service Schedule**



### 7.3 Financial Feasibility

The goal of the financial feasibility assessment is to compare the amount of funds that can be raised through a bond issue with the cost of the project. Capital costs for the roadway expansion concepts are substantial at over \$2.8 billion and \$7 billion respectively for the third lane and independent facility configurations (2 & 3). The bonding capacity of I-80, while robust at over \$3 billion, is not sufficient to cover the roadway expansion costs of Configuration 3 but would cover Configuration 2 at the calculated revenue maximizing toll rate of \$116 for trucks and \$11.50 for cars in 2010 dollars. Exhibit 44 shows a comparison of each configuration’s bonding capacity relative to the roadway capital expansion cost.

**Exhibit 44: Bonding Capacity and Configuration Costs (billions)**

	Bonding Capacity	Escalated Roadway Costs
Configuration 1 (Base Case)	\$3.01	N/A
Configuration 2 (expand to 6 lanes)	\$3.21	\$2.8
Configuration 3 (expand to 8 lanes)	\$3.13	\$7.0

Exhibit 45 shows a complete Sources and Uses table for the Base Case bond issuance assuming revenue maximizing toll rates, which includes totals for the three types of bonds and interest earnings on the construction fund during construction. Uses include capital account funding, issuance costs and payments to a debt service reserve fund, which is a typical requirement of toll road financings to increase the creditworthiness of the issue.

**Exhibit 45: Base Case Sources and Uses (millions)**

<b>SOURCES</b>	
Current Interest Bonds	\$ 1,105.1
Capital Appreciation Bonds	\$ 1,396.2
Subordinate Debt	\$ 586.5
Construction Fund Interest Earnings	\$ 330.8
<b>Total Sources</b>	<b>\$ 3,418.6</b>
<b>USES</b>	
Capital Account Deposit	\$ 3,013.2
Issuance Costs	\$ 123.5
Debt Service Reserve Fund	\$ 250.1
Project Surplus or (Shortfall)	\$ 31.8
<b>Total Uses</b>	<b>\$ 3,418.6</b>

### 7.4 Other Potential Revenue Sources

The following other potential local or State revenue sources were evaluated for paring with toll revenues to enhance the bonding capacity of the I-80 toll road financing.

- Port of Entry Fees
- Indexed Gas Taxes
- Sales Taxes (Local Option Taxes)
- Severance Taxes

As noted above, only Configuration 3 has been found to be financially infeasible at this point and it’s not likely that any of the following revenue sources would have the strength to raise the additional funding necessary to fill the roughly \$4.0 billion funding gap associated with the independent roadway facility.

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The first four sources listed could provide ongoing annual revenues and would be suitable for dedicating towards debt service in a structured financing. Severance Taxes, on the other hand, are difficult to project into the future and may lack the credit worthiness of population-based government imposed fees or taxes. Severance taxes, however, could play a part in the project's funding plan through one time or infrequently recurring injections of funds. Similarly, other State General Fund appropriations could be helpful filling gaps in project funding in certain years.

**Fuel Taxes:** Wyoming has one of the lowest motor fuel tax rates in the United States, roughly 20 cents lower than the national average. Moreover, as shown in Exhibit 46, Wyoming's fuel tax rates are considerably lower than those of its neighbors, including Nebraska, Montana, Colorado, and Utah. Unlike most states in recent years, Wyoming has not increased their fuel tax rates from the 14 cents per gallon tax signed into law in 1998.

**Exhibit 46: Current Gasoline and Diesel Tax Rates**

Rank	State	Total State Gasoline Taxes (cents/gallon)*	Total State Diesel Taxes (cents/gallon)*	Rank	State	Total State Gasoline Taxes (cents/gallon)*	Total State Diesel Taxes (cents/gallon)*
1	California 1/	56.5	59.9	27	Maryland	23.5	24.3
2	Connecticut 1/	52.4	43.4	28	Massachusetts	23.5	23.5
3	Illinois 1/	48.2	54.8	29	Delaware 3/	23	22
4	New York	43.9	44	30	North Dakota	23	23
5	Michigan 1/	42.3	43.8	31	Kentucky 1/	22.5	19.5
6	Indiana 1/	38.5	53	32	Colorado	22	20.5
7	Washington	37.5	37.5	33	Iowa	22	23.5
8	Florida 2/	33.2	29	34	Arkansas	21.8	22.8
9	Wisconsin 2/	32.9	32.9	35	Tennessee	21.4	18.4
10	Hawaii 1/	32.6	51.9	36	Alabama	21.2	22.2
11	Nevada	32.6	28.6	37	District of Columbia	20	20
12	Pennsylvania	32.3	39.2	38	Louisiana	20	20
13	West Virginia 1/	32.2	32.2	39	Texas	20	20
14	Rhode Island	31	31	40	Vermont	20	26
15	North Carolina 1/	30.2	30.2	41	New Hampshire	19.6	19.6
16	Maine 2/	29.9	30.3	42	Virginia	19.6	19.6
17	Ohio	28	28	43	Arizona	19	28
18	Georgia 1/	28	31.1	44	Mississippi	18.8	18.8
19	Montana	27.8	28.6	45	New Mexico	18	19
20	Nebraska 1/	26.9	26.3	46	Missouri	17.6	17.6
21	Idaho	25	25	47	Oklahoma	17	14
22	Kansas	25	27	48	South Carolina	16.8	16.8
23	Oregon	25	24.3	49	New Jersey	14.5	17.5
24	Utah	24.5	24.5	50	Wyoming	14	14
25	South Dakota	24	24	51	Alaska	8	8
26	Minnesota	24	24		National Average	33.2	34.8

\*Sum of state excise taxes and any additional state or local taxes and fees. Source: American Petroleum Institute, 7/08.

1 / All or some of the fuel tax indexed to the current price for gasoline or diesel fuel.

2 / Tax adjusted annually based on the consumer price index.

3 / The fuel tax is adjusted annually based on the average retail price of fuel from the previous year.

In 2007, fuel tax revenues accounted for slightly less than \$90 million, or roughly 12% of total annual WYDOT receipts. Assuming that households and out-of-state motor vehicles continue to consume the same quantity of fuel per year, expected traffic increases will likely cause fuel tax revenues to increase above \$100 million in nominal terms by the year 2013.

Currently, eleven states index their motor fuel taxes to either the sales price of gasoline and diesel, and three states index to local consumer price indexes (CPI). These states are noted in the table above. Both forms of indexation are politically unpopular. The rapid increases in fuel prices have caused additional financial pain to constituents in states pegging their tax rates to fuel prices. The overall CPI is generally more stable than fuel prices, and thus can provide the most reliable annual increases in tax revenues.

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According to the Bureau of Labor Statistics (BLS), the average annual increase in the CPI for the Western region of the US has averaged 3% over the last ten years, excluding the atypical disinflationary period in 2002-03. If this rate were used to inflate the state motor fuel taxes beginning in 2009, compared with the current rate of 14 cents, an additional \$44 million in nominal tax revenue could be generated over five years, or \$184 million over ten years. Under such a scenario, Wyoming fuel tax rates would not converge with Colorado, the neighboring state with the next-lowest fuel taxes, until 2022, assuming that the state does not increase their own tax rates over the same period.

**Registration and Vehicle Fees:** Registration and vehicle fees consist mainly of truck International Registration Plan (IRP) fees, single trip permits, as well as fees for oversized trucks.

The International Registration Plan is a simplified truck registration system shared by 56 states and providences in the US and Canada. The basic tenet of the plan is that all trucks are responsible for paying registration fees in each state under which the vehicles operate, regardless of the base jurisdiction in which the vehicles are registered. Registration fees are paid to each state based on the number of miles a commercial truck travels in that state each quarter, with each state applying their own registration fees based on vehicle weight and mileage traveled. This fee collection method is similar to the International Fuel Tax Agreement, which is the procedure in place for apportioning fuel taxes among the different states.

Trucks that are not approved through the IRP to operate in a given state are required to obtain single trip permits, which allow a truck to travel within or through the state for a certain amount of time for a single fee. Additional fees are charged at Wyoming's ports of entry if a vehicle exceeds the state's truck weight or size requirements.

Port of entry fees represented approximately 10% of total WYDOT revenues in 2007. These revenues are projected to remain flat over the next five years<sup>19</sup>. If all registration and vehicle fees increased by 1% starting in 2009, annual revenues would likely only increase by roughly \$600 thousand per year, making this set of fees a poor target through which the revenue shortfall could be effectively eliminated.

**Sales Taxes:** The Wyoming State sales and use tax rate was 4% in FY 2007, yielding about \$611 million in collections<sup>20</sup>. Wyoming counties are permitted to levy an additional (local option) 3% sales and use tax. Using special sales tax collections to pay for infrastructure is not uncommon, especially for major expansion projects. A special referendum would be required to raise tax rates.

Due to the nature of the funding issue with I-80 (thru truck traffic damaging the roadway) it is unlikely that the residents of Wyoming would enthusiastically pass a bill to remedy the funding shortfall through increased sales taxes. This political hurdle aside, an additional 0.5% statewide sales tax could raise about \$75 million per year in revenue. An additional 0.5% sales tax in the five counties that I-80 passes through (Laramie, Albany, Carbon, Sweetwater, and Uinta) could raise an additional \$28 million per year in revenue.<sup>21</sup> Other local option taxes allowable in Wyoming counties include economic development and lodging taxes, though these are not expected to be substantial enough to address funding needs for I-80.

**Severance Taxes:** The State of Wyoming has collected severance taxes on oil, natural gas, coal and other minerals since the late 1960s. Laws guiding the distribution of the tax collections were adjusted during the 2000 and 2001 legislative sessions to add flexibility how the funds can be spent, including local governments in the collection of entities receiving direct appropriations.

About \$864 million in mineral severance taxes were collected in FY 2007, the majority of which resulted from natural gas production<sup>22</sup>. Roughly 25% of the total collections are deposited in the State General

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<sup>19</sup> Source: [http://eadiv.state.wy.us/creg/GreenCREG\\_Jan08.pdf](http://eadiv.state.wy.us/creg/GreenCREG_Jan08.pdf)

<sup>20</sup> State of Wyoming 2007 Comprehensive Annual Financial Report, Statistical Section, [http://sao.state.wy.us/CAFR/2007\\_Report/07Statistical.pdf](http://sao.state.wy.us/CAFR/2007_Report/07Statistical.pdf).

<sup>21</sup> County level estimates based on population distribution within the State.

<sup>22</sup> State of Wyoming 2007 Comprehensive Annual Financial Report, Statistical Section, [http://sao.state.wy.us/CAFR/2007\\_Report/07Statistical.pdf](http://sao.state.wy.us/CAFR/2007_Report/07Statistical.pdf).

fund each year as dictated in the distribution statutes. This amount, roughly \$215 million in FY 2007, is expected to grow by approximately 6% annually through 2012<sup>23</sup>.

At current rates, Severance Taxes could cover a one-time appropriation of funds from the General Fund to pay for the total cost of a single tolling point, at approximately \$13 million. If Severance Tax rates were increased by 1% (from levels currently between 2% and 7% to levels between roughly 3% and 8%) collections would increase by about 20%, representing \$172 million if applied to FY 2007 total collections. This additional funding could, in part, be dedicated to a tolling fund to pay for system development or general highway improvements.

## **7.5 Feasibility Conclusions**

The bonding capacities of all three configurations are similar at just over \$3.0 billion. This is not surprising since the relatively uncongested existing roadway should not cause diversion levels to differ much between existing and capacity expansion scenarios, especially in the short and medium term.

The Base Case has a relatively strong bonding capacity, due in part to its lower roadway O&M costs. With additional capacity relative to competing routes, Configurations 2 and 3 have slightly lower diversion rates which result in higher revenues. The higher revenue associated with these configurations is to some degree offset by the additional roadway O&M costs that would be borne due to the expansion lanes. Configuration 3's additional four lanes of roadway (and associated O&M costs) negatively impact net revenues and is expressed in the slightly lower bonding capacity than Configuration 2, \$3.1 vs. \$3.2 billion.

While the bonding capacity of Configuration 3 falls far short of the cost at \$7 billion, Configuration 2 has a strong net revenue stream and resulting bonding capacity in excess of the estimated \$2.8 billion capital cost of the project. Under Configuration 2, the toll revenue maximizing truck rate could be reduced from \$116 in 2010 dollar terms to about \$90 and still cover the roadway expansion cost. Similarly, the passenger car rate could fall to about \$9.00.

Given that congestion is not an issue, especially under a tolled scenario when some traffic would be diverted to other routes, the Base Case approach is also a viable solution to WYDOT's funding dilemma.

Referring to Exhibit 42 above, total operating costs begin at about \$25 million annually in 2009 and grow thereafter. If an additional amount equal to the annual O&M cost were set aside in a facility major rehabilitation and replacement fund, (together, \$50 million in the first year) ample funds would be available each year to properly operate and maintain the roadway at a significantly reduced toll schedule of about \$20 per truck and \$2.00 per car assuming toll rate and traffic growth predicted in this study.

An approach where no bonds are issued would require the State to raise approximately \$13 million through other sources that would be required to build the single tolling facility. This approach would meet relatively little opposition from the trucking community since the toll would be small. Still, FHWA approval would be required within the provisions of the next federal transportation authorization.

### **Next Steps**

This feasibility study was performed using insights and assumptions gleaned from other similar work on toll roads across the United States and adjusted for Wyoming's situation. The assumptions used are reasonable given the level of detail requested for this study, though additional analysis would be recommended if the tolling concept was carried forward, especially under a roadway capacity expansion approach where debt would need to be issued. The following bullets outline critical next steps in the analysis.

- Refine tollway concept: This study provided analysis of three roadway configurations that bookmarked a reasonable range of alternatives, though a set of more optimal roadway configurations should be established given the results of this analysis. Additionally, design work

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<sup>23</sup> Wyoming State Government Revenue Forecast, FY 2007 to FY 2012, Consensus Revenue Estimating Group, January 2007.

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is needed to better evaluate what level of roadway expansion is possible, especially regarding the replacement of overpasses and ROW needs. A preliminary project phasing plan is needed to estimate how a project of this size could efficiently be built.

- Refine tolling concept: Assumptions for the number and location of tolling points should be revisited to appropriately balance operations costs, capital outlays, and the equity of placing tolling points at different locations in the corridor. Approaches for tolling during construction should also be evaluated.
- If Configuration 2 or 3 were to move forward, a complete Environmental Impact Statement process to define a purpose and need, scoping, alternatives development and screening, selection of a preferred alternative, and determination of impacts and mitigations would be needed.
- Refine traffic analysis: Traffic forecasts to support toll revenue bond issues are usually performed using a standard approach that incorporates state preference surveys, travel demand modeling and forward looking assumptions network improvements to competing routes. The scale of this project may not lend itself to the standard tolling analysis approach, but at a minimum, further testing of diversion assumptions with survey work would be necessary.
- State statute development: Tolling and PPP legislation must be established at the State level and organizational modifications to WYDOT necessary to manage a tolling operation should be outlined.
- Federal approval: As stated above, FHWA enforces the rules governing tolling on Interstates, which are established in the federal transportation funding authorization. While these rules change periodically and have exceptions, tolling on I-80 in Wyoming has not been permitted and negotiations with FHWA will be necessary to allow any of the tolling concepts discussed in this study to be implemented by WYDOT.
- Capitalization assumptions: The debt model used in this study assumed that 40-year bonds could be issued, and that no state backstop or other credit enhancement would be used to increase the creditworthiness of the debt. These and other assumptions regarding funding and financing should be revisited as the project and tolling concepts are further developed.
- Fiscal analysis: An examination of the impact of tolling I-80 on State and local tax revenues was not performed as part of this analysis. State fuel tax revenue will be lost due to diversion of trucks around the State and some sales tax revenue could also be lost. These impacts should be evaluated prior to instituting any tolling scheme.

Appendix A: Example Statewide Tolling Legislation: Colorado Tolling Enterprise

1 The department of transportation shall submit a prioritized list of such  
2 projects as part of the report.

3 **SECTION 14.** Article 4 of title 43, Colorado Revised Statutes,  
4 is amended BY THE ADDITION OF THE FOLLOWING NEW PARTS  
5 to read:

6 PART 8

7 STATEWIDE TOLLING ENTERPRISE

8 **43-4-801. Legislative declaration.** THE GENERAL ASSEMBLY  
9 HEREBY FINDS AND DECLARES THAT, IN ORDER TO FINANCE, CONSTRUCT,  
10 OPERATE, AND MAINTAIN ADDITIONAL HIGHWAY CAPACITY AND  
11 ACCOMMODATE THE NEEDS OF THE TRAVELING PUBLIC THROUGH AND  
12 WITHIN THE STATE OF COLORADO THROUGH SAFE, EFFICIENT, CONVENIENT,  
13 AND MODERN VEHICULAR TRAFFIC, IT IS NECESSARY AND IN THE PUBLIC  
14 INTEREST TO PROVIDE FOR THE FINANCING, CONSTRUCTION, OPERATION,  
15 REGULATION, AND MAINTENANCE OF A STATEWIDE SYSTEM OF TOLL  
16 HIGHWAYS THAT ARE INTEROPERABLE, THAT INCORPORATE THE BENEFITS  
17 OF ADVANCED ENGINEERING DESIGN, EXPERIENCE, AND SAFETY, AND THAT  
18 WILL REDUCE TRAFFIC CONGESTION, DELAYS, HAZARDS, INJURIES, AND  
19 FATALITIES. THE GENERAL ASSEMBLY FURTHER FINDS AND DECLARES  
20 THAT IT IS NECESSARY TO AUTHORIZE THE TRANSPORTATION  
21 COMMISSION TO CREATE, UNDER THE SUPERVISION OF THE  
22 TRANSPORTATION COMMISSION, A STATEWIDE TOLLING ENTERPRISE THAT  
23 HAS THE POWER TO IMPOSE TOLLS, ISSUE REVENUE BONDS AND EXERCISE  
24 OTHER POWERS NECESSARY AND APPROPRIATE TO CARRY OUT THESE  
25 PURPOSES.

26 **43-4-802. Definitions.** AS USED IN THIS PART 8, UNLESS THE  
27 CONTEXT OTHERWISE REQUIRES:

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(1) "BOND" MEANS ANY BOND, NOTE, INTERIM CERTIFICATE, CONTRACT, OR OTHER EVIDENCE OF INDEBTEDNESS OF THE ENTERPRISE, INCLUDING, BUT NOT LIMITED TO, ANY OBLIGATION TO THE UNITED STATES IN CONNECTION WITH A LOAN FROM OR GUARANTEED BY THE UNITED STATES.

(2) "COMMISSION" MEANS THE TRANSPORTATION COMMISSION CREATED BY SECTION 43-1-106.

(3) "CONSTRUCT" OR "CONSTRUCTION" MEANS THE PLANNING, DESIGNING, ENGINEERING, ACQUISITION, INSTALLATION, CONSTRUCTION, OR RECONSTRUCTION OF TOLL HIGHWAYS.

(4) "DEPARTMENT" MEANS THE DEPARTMENT OF TRANSPORTATION CREATED IN SECTION 24-1-128.7, C.R.S.

(5) "DIRECTOR" MEANS THE DIRECTOR OF THE ENTERPRISE.

(6) "ENTERPRISE" MEANS ANY STATEWIDE TOLLING ENTERPRISE CREATED BY THE COMMISSION PURSUANT TO SECTION 43-4-803.

(7) "EXECUTIVE DIRECTOR" MEANS THE EXECUTIVE DIRECTOR OF THE DEPARTMENT.

(8) "SPECIAL FUND" MEANS THE STATEWIDE TOLLING ENTERPRISE SPECIAL REVENUE FUND CREATED IN SECTION 43-4-804.

(9) "TOLL" MEANS THE COMPENSATION TO BE PAID TO THE ENTERPRISE FOR THE PRIVILEGE OF USING ANY TOLL HIGHWAY, OR ANY PART THEREOF, BY VEHICULAR OR OTHER TRAFFIC.

(10) "TOLL HIGHWAY" MEANS A NEW HIGHWAY OR ADDITIONAL LANE CAPACITY OR TRANSIT CAPACITY, INCLUDING BUT NOT LIMITED TO RAIL LINES AND OTHER TRANSIT FACILITIES AND VEHICLES TO BE USED TO INCREASE TRANSIT CAPACITY WITHIN A HIGHWAY CORRIDOR, ADDED TO AN

1 EXISTING HIGHWAY OR HIGHWAY CORRIDOR THAT IS FINANCED,  
2 CONSTRUCTED, OPERATED, OR MAINTAINED PURSUANT TO THIS PART 8.

3 (11) "TOLL REVENUES" MEANS THE REVENUES GENERATED BY  
4 TOLL HIGHWAYS CONSTRUCTED, OPERATED, OR MAINTAINED PURSUANT TO  
5 THIS PART 8.

6 **43-4-803. Statewide tolling enterprise - creation by commission**  
7 **- enterprise status - transfer.** (1) THE COMMISSION MAY CREATE AND  
8 OPERATE A STATEWIDE TOLLING ENTERPRISE, WHICH SHALL OPERATE AS  
9 A GOVERNMENT-OWNED BUSINESS WITHIN THE DEPARTMENT AND SHALL  
10 BE A DIVISION OF THE DEPARTMENT. THE COMMISSION SHALL SERVE AS  
11 THE BOARD OF THE ENTERPRISE, BUT SHALL, WITH THE CONSENT OF THE  
12 EXECUTIVE DIRECTOR, APPOINT A DIRECTOR OF THE ENTERPRISE WHO  
13 SHALL POSSESS QUALIFICATIONS AS MAY BE ESTABLISHED BY THE  
14 COMMISSION AND THE STATE PERSONNEL BOARD. THE DIRECTOR SHALL  
15 OVERSEE THE DISCHARGE OF ALL RESPONSIBILITIES OF THE ENTERPRISE  
16 AND SHALL SERVE AT THE PLEASURE OF THE COMMISSION.

17 (2) (a) THE ENTERPRISE, AND THE COMMISSION WHEN ACTING IN  
18 ITS CAPACITY AS THE BOARD OF THE ENTERPRISE, SHALL CONSTITUTE AN  
19 ENTERPRISE FOR PURPOSES OF SECTION 20 OF ARTICLE X OF THE STATE  
20 CONSTITUTION SO LONG AS THE ENTERPRISE RETAINS THE AUTHORITY TO  
21 ISSUE REVENUE BONDS AND RECEIVES LESS THAN TEN PERCENT OF ITS  
22 TOTAL ANNUAL REVENUES IN GRANTS, AS DEFINED IN SECTION 24-77-102  
23 (7), C.R.S., FROM ALL COLORADO STATE AND LOCAL GOVERNMENTS  
24 COMBINED. SO LONG AS IT CONSTITUTES AN ENTERPRISE PURSUANT TO  
25 THIS SUBSECTION (2), THE ENTERPRISE, AND THE COMMISSION WHEN  
26 ACTING AS THE BOARD OF THE ENTERPRISE, SHALL NOT BE SUBJECT TO ANY  
27 PROVISIONS OF SECTION 20 OF ARTICLE X OF THE STATE CONSTITUTION.

1           (b) FOR PURPOSES OF PART 2 OF ARTICLE 72 OF TITLE 24, C.R.S.,  
2           THE RECORDS OF THE ENTERPRISE SHALL BE PUBLIC RECORDS, AS DEFINED  
3           IN SECTION 24-72-202 (6), C.R.S., REGARDLESS OF WHETHER THE  
4           ENTERPRISE RECEIVES LESS THAN TEN PERCENT OF ITS TOTAL ANNUAL  
5           REVENUES IN GRANTS, AS DEFINED IN SECTION 24-77-102 (7), C.R.S.,  
6           FROM ALL COLORADO STATE AND LOCAL GOVERNMENTS COMBINED.

7           (3) THE ENTERPRISE, THE COMMISSION WHEN ACTING AS THE  
8           BOARD OF THE ENTERPRISE, AND THE DIRECTOR SHALL EXERCISE THEIR  
9           POWERS AND PERFORM THE DUTIES SPECIFIED IN THIS PART 8 UNDER THE  
10          DEPARTMENT AS IF THE SAME WERE TRANSFERRED TO THE DEPARTMENT BY  
11          A TYPE 1 TRANSFER, AS SUCH TRANSFER IS DEFINED IN THE  
12          "ADMINISTRATIVE ORGANIZATION ACT OF 1968", ARTICLE 1 OF TITLE 24,  
13          C.R.S.

14          (4) THE ENTERPRISE SHALL CONSTITUTE A PUBLIC ENTITY FOR  
15          PURPOSES OF PART 2 OF ARTICLE 57 OF TITLE 11, C.R.S.

16          **43-4-804. Statewide tolling enterprise special revenue fund -**  
17          **creation - separate highway accounts.** (1) A FUND TO BE KNOWN AS  
18          THE STATEWIDE TOLLING ENTERPRISE SPECIAL REVENUE FUND IS HEREBY  
19          CREATED IN THE STATE TREASURY. ALL TOLL REVENUES RECEIVED BY THE  
20          ENTERPRISE SHALL BE DEPOSITED INTO THE SPECIAL FUND. THE  
21          ENTERPRISE ALSO MAY DEPOSIT OR PERMIT OTHERS TO DEPOSIT OTHER  
22          MONEYS INTO THE SPECIAL FUND, BUT IN NO EVENT MAY REVENUES FROM  
23          ANY TAX OTHERWISE AVAILABLE FOR GENERAL PURPOSES BE DEPOSITED  
24          INTO THE SPECIAL FUND. THE COMMISSION MAY TRANSFER MONEYS FROM  
25          THE STATE HIGHWAY FUND CREATED BY SECTION 43-1-219 TO THE SPECIAL  
26          FUND FOR THE PURPOSE OF DEFRAYING EXPENSES INCURRED BY THE  
27          ENTERPRISE PRIOR TO THE RECEIPT OF BOND PROCEEDS OR TOLL REVENUES

1 BY THE ENTERPRISE. WHEN THE ENTERPRISE RECEIVES SUFFICIENT BOND  
2 PROCEEDS OR TOLL REVENUES, THE ENTERPRISE SHALL REIMBURSE THE  
3 STATE HIGHWAY FUND FOR THE FULL AMOUNT OF ANY TRANSFER MADE BY  
4 THE COMMISSION PLUS INTEREST AT A RATE SET BY THE COMMISSION. THE  
5 STATE TREASURER, AFTER CONSULTING WITH THE COMMISSION IN ITS  
6 CAPACITY AS THE BOARD OF THE ENTERPRISE, SHALL INVEST ANY MONEYS  
7 IN THE SPECIAL FUND, INCLUDING ANY SURPLUS OR RESERVES, BUT  
8 EXCLUDING ANY PROCEEDS FROM THE SALE OF BONDS OR EARNINGS ON  
9 SUCH PROCEEDS INVESTED PURSUANT TO SECTION 43-4-808, THAT ARE NOT  
10 NEEDED FOR IMMEDIATE USE. SUCH MONEYS MAY BE INVESTED IN THE  
11 TYPES OF INVESTMENTS AUTHORIZED IN SECTIONS 24-36-109, 24-36-112,  
12 AND 24-36-113, C.R.S.

13 (2) ALL INTEREST AND INCOME DERIVED FROM THE DEPOSIT AND  
14 INVESTMENT OF MONEYS IN THE SPECIAL FUND SHALL BE CREDITED TO THE  
15 SPECIAL FUND. MONEYS IN THE SPECIAL FUND SHALL BE CONTINUOUSLY  
16 APPROPRIATED TO THE ENTERPRISE FOR THE PURPOSES SET FORTH IN THIS  
17 PART 8. ALL MONEYS DEPOSITED IN THE SPECIAL FUND SHALL REMAIN IN  
18 THE SPECIAL FUND FOR THE PURPOSES SET FORTH IN THIS PART 8 AND NO  
19 PART OF THE SPECIAL FUND SHALL BE USED FOR ANY OTHER PURPOSES.

20 (3) THE ENTERPRISE MAY EXPEND MONEYS IN THE SPECIAL FUND  
21 TO PAY BONDS OF THE ENTERPRISE, TO FUND THE ADMINISTRATION,  
22 PLANNING, FINANCING, CONSTRUCTION, OPERATION, MAINTENANCE, OR  
23 REPAIR OF TOLL HIGHWAYS. THE ENTERPRISE MAY ALSO EXPEND MONEYS  
24 IN THE SPECIAL FUND TO PAY THE COSTS AND EXPENSES OF OPERATING THE  
25 ENTERPRISE. THE COMMISSION SHALL HAVE EXCLUSIVE AUTHORITY TO  
26 BUDGET AND APPROVE THE EXPENDITURE OF MONEYS IN THE SPECIAL  
27 FUND.

1 (4) NOTWITHSTANDING ANY OTHER PROVISION OF THIS SECTION,  
2 THE TRANSPORTATION COMMISSION SHALL DESIGNATE A STATE TOLL  
3 HIGHWAY AND MONEYS IN THE SPECIAL FUND THAT ARE DERIVED FROM  
4 TOLLS SHALL ONLY BE EXPENDED TO FUND THE ADMINISTRATION,  
5 PLANNING, DESIGN, DEVELOPMENT, FINANCING, CONSTRUCTION,  
6 OPERATION, MAINTENANCE, OR REPAIR OF THE TOLL HIGHWAY OR TO PAY  
7 BONDS OF THE ENTERPRISE THAT WERE ISSUED TO FINANCE THE TOLL  
8 HIGHWAY. ONCE THE ENTERPRISE HAS PAID THE COSTS OF CONSTRUCTING  
9 THE TOLL HIGHWAY, INCLUDING SUFFICIENT CONTINGENCIES, PAID ALL  
10 DEBT SERVICE ON ALL BONDS ISSUED TO FINANCE THE TOLL HIGHWAY, AND  
11 REIMBURSED THE STATE HIGHWAY FUND FOR THE AMOUNT OF ANY STATE  
12 HIGHWAY FUND MONEYS TRANSFERRED TO THE SPECIAL FUND PLUS  
13 INTEREST IN ACCORDANCE WITH SECTION 43-4-804, THE COMMISSION  
14 SHALL ADJUST TOLL RATES SO THAT THE AMOUNT OF TOLL REVENUES TO  
15 BE GENERATED IS AS CLOSE AS POSSIBLE TO THE AMOUNT REQUIRED FOR  
16 THE ONGOING OPERATION, MAINTENANCE, RENEWAL, AND REPLACEMENT  
17 OF THE TOLL HIGHWAY.

18 \_\_\_\_\_  
19 **43-4-805. Powers and duties of the commission when acting as**  
20 **the board of the enterprise - annual report. (1) THE COMMISSION, IN**  
21 **ITS CAPACITY AS THE BOARD OF THE ENTERPRISE, HAS THE FOLLOWING**  
22 **POWERS AND DUTIES:**

- 23 (a) TO ADVISE THE DIRECTOR;
- 24 (b) TO ADOPT BYLAWS FOR THE REGULATION OF ITS AFFAIRS AND  
25 CONDUCT OF ITS BUSINESS;
- 26 (c) TO ISSUE REVENUE BONDS, PAYABLE SOLELY FROM THE SPECIAL  
27 FUND, FOR THE PURPOSES OF PAYING THE COST OF FINANCING,

1 CONSTRUCTING, OPERATING, OR MAINTAINING ANY ONE OR MORE TOLL  
2 HIGHWAYS;

3 (d) TO ESTABLISH AND, FROM TIME TO TIME, INCREASE OR  
4 DECREASE FEES, TOLLS, RATES, AND CHARGES FOR THE PRIVILEGE OF  
5 TRAVELING ON OR THE USE OF THE PROPERTY OF A TOLL HIGHWAY; EXCEPT  
6 THAT NO TOLL SHALL BE CHARGED FOR THE PRIVILEGE OF USING ANY TOLL  
7 HIGHWAY AFTER ALL OF THE CONSTRUCTION OF THE TOLL HIGHWAY HAS  
8 BEEN COMPLETED AND ANY DEBT INCURRED TO FINANCE THE TOLL  
9 HIGHWAY HAS BEEN PAID IN FULL;

10 (e) TO CHARGE AND COLLECT FEES AND CHARGES FOR THE USE OF  
11 OTHER PROPERTY OF THE ENTERPRISE;

12 (f) TO ACQUIRE, HOLD TITLE TO, AND DISPOSE OF REAL AND  
13 PERSONAL PROPERTY AS NECESSARY IN THE EXERCISE OF ITS POWERS AND  
14 PERFORMANCE OF ITS DUTIES;

15 (g) TO ACQUIRE BY PURCHASE, GIFT, GRANT, OR BY  
16 CONDEMNATION, AS PROVIDED IN ARTICLE 1 OF TITLE 38, C.R.S., ANY AND  
17 ALL RIGHTS-OF-WAY, LANDS, BUILDINGS, MONEYS, OR GROUNDS  
18 NECESSARY OR CONVENIENT FOR ITS AUTHORIZED PURPOSES;

19 (h) TO MAKE AND ENTER INTO CONTRACTS OR AGREEMENTS WITH  
20 A PRIVATE ENTITY TO FACILITATE A PUBLIC-PRIVATE INITIATIVE PURSUANT  
21 TO SECTIONS 43-1-1203 AND 43-1-1204, INCLUDING, BUT NOT LIMITED TO:

22 (I) AN AGREEMENT PURSUANT TO WHICH THE PRIVATE ENTITY IS  
23 AUTHORIZED TO ESTABLISH, INCREASE, OR DECREASE AND TO CHARGE AND  
24 COLLECT TOLLS, RATES, AND CHARGES FOR THE PRIVILEGE OF TRAVELING  
25 ON ANY TOLL HIGHWAY, SUBJECT TO THE SUPERVISION AND APPROVAL OF  
26 THE ENTERPRISE UNDER THE TERMS OF ANY SUCH AGREEMENT, BUT  
27 OTHERWISE WITHOUT ANY SUPERVISION OR APPROVAL BY ANY OTHER

1 BOARD, AGENCY, BUREAU, COMMISSION, OR OFFICIAL OF THE STATE;

2 (II) AN AGREEMENT PURSUANT TO WHICH THE ENTERPRISE OR THE

3 ENTERPRISE ON BEHALF OF THE DEPARTMENT OPERATES, MAINTAINS, OR

4 PROVIDES TOLL ENFORCEMENT SERVICES OR OTHER SERVICES OR

5 PROPERTY IN CONNECTION WITH A TOLL HIGHWAY;

6 (III) AN AGREEMENT PURSUANT TO WHICH A PRIVATE ENTITY

7 OPERATES ALL OR ANY PORTION OF A TOLL HIGHWAY ON BEHALF OF THE

8 ENTERPRISE; AND

9 (IV) AN AGREEMENT PURSUANT TO WHICH THE ENTERPRISE OR THE

10 ENTERPRISE ON BEHALF OF THE DEPARTMENT OPERATES, MAINTAINS, OR

11 PROVIDES LAW ENFORCEMENT SERVICES, TOLL ENFORCEMENT SERVICES,

12 OR OTHER SERVICES OR PROPERTY IN CONNECTION WITH A TOLL HIGHWAY;

13 (i) TO MAKE AND TO ENTER INTO ALL OTHER CONTRACTS OR

14 AGREEMENTS, INCLUDING INTERGOVERNMENTAL AGREEMENTS PURSUANT

15 TO SECTION 29-1-203, C.R.S., THAT ARE NECESSARY OR INCIDENTAL TO

16 THE EXERCISE OF ITS POWERS AND PERFORMANCE OF ITS DUTIES;

17 (j) TO EMPLOY OR CONTRACT FOR THE SERVICES OF CONSULTING

18 ENGINEERS OR OTHER EXPERTS AS ARE NECESSARY IN ITS JUDGMENT TO

19 CARRY OUT ITS POWERS AND DUTIES;

20 (k) TO PREPARE, OR CAUSE TO BE PREPARED, DETAILED PLANS,

21 SPECIFICATIONS, OR ESTIMATES FOR THE FINANCING, CONSTRUCTION,

22 RELOCATION, REPAIR, MAINTENANCE, OR OPERATION OF TOLL HIGHWAYS

23 WITHIN THE STATE; EXCEPT THAT THE COMMISSION SHALL NOT HAVE THE

24 POWER TO TOLL PREVIOUSLY EXISTING HIGHWAY LANES;

25 (l) TO ACQUIRE, CONSTRUCT, RELOCATE, OPERATE, REGULATE, AND

26 MAINTAIN A SYSTEM OF TOLL HIGHWAYS THROUGH AND WITHIN THE

27 STATE;

1 (m) TO CONSTRUCT, MAINTAIN, AND OPERATE STATIONS FOR THE  
2 COLLECTION OF TOLLS ALONG ANY TOLL HIGHWAY;

3 (n) TO SET AND ADOPT, ON AN ANNUAL BASIS, A BUDGET FOR THE  
4 ENTERPRISE;

5 (o) TO PURCHASE, TRADE, EXCHANGE, ACQUIRE, BUY, SELL, LEASE,  
6 LEASE WITH AN OPTION TO PURCHASE, DISPOSE OF, OR ENCUMBER REAL OR  
7 PERSONAL PROPERTY OR ANY INTEREST THEREIN, INCLUDING EASEMENTS  
8 AND RIGHTS-OF-WAY, WITHOUT RESTRICTION OR LIMITATION;

9 (p) TO ENTER INTO INTEREST RATE EXCHANGE AGREEMENTS FOR  
10 BONDS THAT HAVE BEEN ISSUED IN ACCORDANCE WITH ARTICLE 59.3 OF  
11 TITLE 11, C.R.S.;

12 (q) PURSUANT TO SECTION 24-1-107.5, C.R.S., TO ESTABLISH,  
13 CREATE, AND APPROVE NONPROFIT ENTITIES AND BONDS ISSUED BY OR ON  
14 BEHALF OF SUCH NONPROFIT ENTITIES FOR THE PURPOSE OF FINANCING,  
15 CONSTRUCTING, OPERATING, OR MAINTAINING TOLL HIGHWAYS, TO ACCEPT  
16 THE ASSETS OF ANY SUCH NONPROFIT ENTITY, TO OBTAIN AN OPTION TO  
17 ACQUIRE THE ASSETS OF ANY SUCH NONPROFIT ENTITY BY PAYING SUCH  
18 BONDS, TO APPOINT OR APPROVE THE APPOINTMENT OF MEMBERS OF THE  
19 GOVERNING BOARD OF ANY SUCH NONPROFIT ENTITY, AND TO REMOVE THE  
20 MEMBERS OF THE GOVERNING BOARD OF ANY SUCH NONPROFIT ENTITY FOR  
21 CAUSE;

22 (r) TO TRANSFER MONEY, PROPERTY, OR OTHER ASSETS OF THE  
23 ENTERPRISE TO THE DEPARTMENT; AND

24 (s) TO HAVE AND EXERCISE ALL RIGHTS AND POWERS NECESSARY  
25 OR INCIDENTAL TO OR IMPLIED FROM THE SPECIFIC POWERS AND DUTIES  
26 GRANTED IN THIS SECTION.

27 (2) THE ENTERPRISE SHALL ENSURE UNRESTRICTED ACCESS BY ALL

1 VEHICLES TO ANY TOLL HIGHWAY AND SHALL NOT REQUIRE THAT A  
2 PARTICULAR CLASS OF VEHICLES TRAVEL UPON ANY TOLL HIGHWAY,  
3 INCLUDING A TOLL HIGHWAY THAT PROVIDES ADDITIONAL CAPACITY ON  
4 AN EXISTING HIGHWAY.

5 (3) NO LATER THAN FEBRUARY 15, 2003, AND NO LATER THAN  
6 FEBRUARY 15 OF EACH YEAR THEREAFTER, THE COMMISSION SHALL  
7 PRESENT A REPORT TO THE TRANSPORTATION AND ENERGY COMMITTEE OF  
8 THE HOUSE OF REPRESENTATIVES AND THE GOVERNMENT, VETERANS AND  
9 MILITARY RELATIONS, AND TRANSPORTATION COMMITTEE OF THE SENATE  
10 THAT SHALL INCLUDE A SUMMARY OF THE ENTERPRISE'S ACTIVITIES FOR  
11 THE PREVIOUS YEAR, A STATEMENT OF CURRENT TOLL RATES AND ANY  
12 EXPECTED CHANGES, A SUMMARY OF THE STATUS OF ANY CURRENT TOLL  
13 PROJECTS, A STATEMENT OF THE ENTERPRISE'S REVENUES, EXPENSES OF  
14 THE ENTERPRISE, AND ANY RECOMMENDATIONS FOR STATUTORY CHANGES  
15 THAT THE COMMISSION DEEMS NECESSARY OR DESIRABLE. THE  
16 COMMITTEES SHALL REVIEW THE REPORT AND MAY RECOMMEND  
17 LEGISLATION. THE REPORT SHALL BE PUBLIC AND SHALL BE AVAILABLE ON  
18 THE WEBSITE OF THE DEPARTMENT ON OR BEFORE JANUARY 15 OF THE  
19 YEAR IN WHICH THE REPORT IS PRESENTED.

20 \_\_\_\_\_  
21 \_\_\_\_\_

22 **43-4-806. Bonds.** (1) THE ENTERPRISE MAY, FROM TIME TO TIME,  
23 ISSUE BONDS FOR ANY OF ITS CORPORATE PURPOSES. THE BONDS SHALL BE  
24 ISSUED PURSUANT TO RESOLUTION OF THE COMMISSION ACTING IN ITS  
25 CAPACITY AS THE BOARD OF THE ENTERPRISE AND SHALL BE PAYABLE  
26 SOLELY OUT OF ALL OR A SPECIFIED PORTION OF THE MONEYS IN THE  
27 SPECIAL FUND.

1           (2) BONDS MAY BE EXECUTED AND DELIVERED BY THE ENTERPRISE  
2           AT SUCH TIMES, MAY BE IN SUCH FORM AND DENOMINATIONS AND INCLUDE  
3           SUCH TERMS AND MATURITIES, MAY BE SUBJECT TO OPTIONAL OR  
4           MANDATORY REDEMPTION PRIOR TO MATURITY WITH OR WITHOUT A  
5           PREMIUM, MAY BE IN FULLY REGISTERED FORM OR BEARER FORM  
6           REGISTRABLE AS TO PRINCIPAL OR INTEREST OR BOTH, MAY BEAR SUCH  
7           CONVERSION PRIVILEGES, MAY BE PAYABLE IN SUCH INSTALLMENTS AND  
8           AT SUCH TIMES NOT EXCEEDING FORTY-FIVE YEARS FROM THE DATE  
9           THEREOF, MAY BE PAYABLE AT SUCH PLACE OR PLACES WHETHER WITHIN  
10          OR WITHOUT THE STATE, MAY BEAR INTEREST AT SUCH RATE OR RATES PER  
11          ANNUM, WHICH MAY BE FIXED OR VARY ACCORDING TO INDEX,  
12          PROCEDURE, OR FORMULA OR AS DETERMINED BY THE ENTERPRISE OR ITS  
13          AGENTS, WITHOUT REGARD TO ANY INTEREST RATE LIMITATION APPEARING  
14          IN ANY OTHER LAW OF THE STATE, MAY BE SUBJECT TO PURCHASE AT THE  
15          OPTION OF THE HOLDER OR THE ENTERPRISE, MAY BE EVIDENCED IN SUCH  
16          MANNER, MAY BE EXECUTED BY SUCH OFFICERS OF THE ENTERPRISE,  
17          INCLUDING THE USE OF ONE OR MORE FACSIMILE SIGNATURES SO LONG AS  
18          AT LEAST ONE MANUAL SIGNATURE APPEARS ON THE BONDS, WHICH MAY  
19          BE EITHER OF AN OFFICER OF THE ENTERPRISE OR OF AN AGENT  
20          AUTHENTICATING THE SAME, MAY BE IN THE FORM OF COUPON BONDS THAT  
21          HAVE ATTACHED INTEREST COUPONS BEARING A MANUAL OR FACSIMILE  
22          SIGNATURE OF AN OFFICER OF THE ENTERPRISE, AND MAY CONTAIN SUCH  
23          PROVISIONS NOT INCONSISTENT WITH THIS PART 8 ALL AS PROVIDED IN THE  
24          RESOLUTION OF THE ENTERPRISE UNDER WHICH THE BONDS ARE  
25          AUTHORIZED TO BE ISSUED OR AS PROVIDED IN A TRUST INDENTURE  
26          BETWEEN THE ENTERPRISE AND ANY COMMERCIAL BANK OR TRUST  
27          COMPANY HAVING FULL TRUST POWERS.

1           (3) BONDS OF THE ENTERPRISE MAY BE SOLD AT PUBLIC OR  
2 PRIVATE SALE AT SUCH PRICE OR PRICES, IN SUCH MANNER, AND AT SUCH  
3 TIMES AS DETERMINED BY THE COMMISSION, AND THE COMMISSION MAY  
4 PAY ALL FEES, EXPENSES, AND COMMISSIONS THAT IT DEEMS NECESSARY  
5 OR ADVANTAGEOUS IN CONNECTION WITH THE SALE OF THE BONDS. THE  
6 POWER TO FIX THE DATE OF SALE OF THE BONDS, TO RECEIVE BIDS OR  
7 PROPOSALS, TO AWARD AND SELL BONDS, TO FIX INTEREST RATES, AND TO  
8 TAKE ALL OTHER ACTION NECESSARY TO SELL AND DELIVER THE BONDS  
9 MAY BE DELEGATED TO AN OFFICER OR AGENT OF THE ENTERPRISE. ANY  
10 OUTSTANDING BONDS MAY BE REFUNDED BY THE ENTERPRISE PURSUANT  
11 TO ARTICLE 56 OF TITLE 11, C.R.S. ALL BONDS AND ANY INTEREST  
12 COUPONS APPLICABLE THERETO ARE DECLARED TO BE NEGOTIABLE  
13 INSTRUMENTS.

14           (4) THE RESOLUTION OR TRUST INDENTURE AUTHORIZING THE  
15 ISSUANCE OF THE BONDS MAY PLEDGE ALL OR A PORTION OF THE SPECIAL  
16 FUND, MAY CONTAIN SUCH PROVISIONS FOR PROTECTING AND ENFORCING  
17 THE RIGHTS AND REMEDIES OF HOLDERS OF ANY OF THE BONDS AS THE  
18 ENTERPRISE DEEMS APPROPRIATE, MAY SET FORTH THE RIGHTS AND  
19 REMEDIES OF THE HOLDERS OF ANY OF THE BONDS, AND MAY CONTAIN  
20 PROVISIONS THAT THE ENTERPRISE DEEMS APPROPRIATE FOR THE SECURITY  
21 OF THE HOLDERS OF THE BONDS, INCLUDING, BUT NOT LIMITED TO,  
22 PROVISIONS FOR LETTERS OF CREDIT, INSURANCE, STANDBY CREDIT  
23 AGREEMENTS, OR OTHER FORMS OF CREDIT ENSURING TIMELY PAYMENT OF  
24 THE BONDS, INCLUDING THE REDEMPTION PRICE OR THE PURCHASE PRICE.

25           (5) ANY PLEDGE OF THE SPECIAL FUND OR OTHER PROPERTY MADE  
26 BY THE ENTERPRISE OR BY ANY PERSON OR GOVERNMENTAL UNIT WITH  
27 WHICH THE ENTERPRISE CONTRACTS SHALL BE VALID AND BINDING FROM

1 THE TIME THE PLEDGE IS MADE. THE SPECIAL FUND OR OTHER PROPERTY  
2 SO PLEDGED SHALL IMMEDIATELY BE SUBJECT TO THE LIEN OF SUCH  
3 PLEDGE WITHOUT ANY PHYSICAL DELIVERY OR FURTHER ACT, AND THE  
4 LIEN OF SUCH PLEDGE SHALL BE VALID AND BINDING AGAINST ALL PARTIES  
5 HAVING CLAIMS OF ANY KIND IN TORT, CONTRACT, OR OTHERWISE AGAINST  
6 THE PLEDGING PARTY REGARDLESS OF WHETHER SUCH CLAIMING PARTY  
7 HAS NOTICE OF SUCH LIEN. THE INSTRUMENT BY WHICH THE PLEDGE IS  
8 CREATED NEED NOT BE RECORDED OR FILED.

9 (6) NEITHER THE MEMBERS OF THE COMMISSION, EMPLOYEES OF  
10 THE ENTERPRISE, NOR ANY PERSON EXECUTING THE BONDS SHALL BE  
11 LIABLE PERSONALLY ON THE BONDS OR SUBJECT TO ANY PERSONAL  
12 LIABILITY OR ACCOUNTABILITY BY REASON OF THE ISSUANCE THEREOF.

13 (7) THE ENTERPRISE MAY PURCHASE ITS BONDS OUT OF ANY  
14 AVAILABLE MONEYS AND MAY HOLD, PLEDGE, CANCEL, OR RESELL SUCH  
15 BONDS SUBJECT TO AND IN ACCORDANCE WITH AGREEMENTS WITH THE  
16 HOLDERS THEREOF.

17 **43-4-807. Investments.** THE ENTERPRISE MAY INVEST OR DEPOSIT  
18 ANY PROCEEDS AND ANY INTEREST FROM THE SALE OF BONDS IN THE  
19 MANNER PROVIDED BY PART 6 OF ARTICLE 75 OF TITLE 24, C.R.S. IN  
20 ADDITION, THE ENTERPRISE MAY DIRECT A CORPORATE TRUSTEE THAT  
21 HOLDS SUCH PROCEEDS AND ANY INTEREST TO INVEST OR DEPOSIT SUCH  
22 PROCEEDS AND ANY INTEREST IN INVESTMENTS OR DEPOSITS OTHER THAN  
23 THOSE SPECIFIED BY SAID PART 6 IF THE COMMISSION DETERMINES, BY  
24 RESOLUTION, THAT SUCH INVESTMENT OR DEPOSIT MEETS THE STANDARD  
25 ESTABLISHED IN SECTION 15-1-304, C.R.S., THE INCOME IS AT LEAST  
26 COMPARABLE TO INCOME AVAILABLE ON INVESTMENTS OR DEPOSITS  
27 SPECIFIED BY SAID PART 6, AND SUCH INVESTMENT WILL ASSIST THE

1 ENTERPRISE IN THE FINANCING, CONSTRUCTION, MAINTENANCE, OR  
2 OPERATION OF TOLL HIGHWAYS.

3 **43-4-808. Bonds eligible for investment.** ALL BANKS, TRUST  
4 COMPANIES, SAVINGS AND LOAN ASSOCIATIONS, INSURANCE COMPANIES,  
5 EXECUTORS, ADMINISTRATORS, GUARDIANS, TRUSTEES, AND OTHER  
6 FIDUCIARIES MAY LEGALLY INVEST ANY MONEYS WITHIN THEIR CONTROL  
7 IN ANY BONDS ISSUED UNDER THIS PART 8. PUBLIC ENTITIES, AS DEFINED  
8 IN SECTION 24-75-601 (1), C.R.S., MAY INVEST PUBLIC MONEYS IN SUCH  
9 BONDS ONLY IF SUCH BONDS SATISFY THE INVESTMENT REQUIREMENTS  
10 ESTABLISHED IN PART 6 OF ARTICLE 75 OF TITLE 24, C.R.S.

11 **43-4-809. Exemption from taxation - securities laws.** THE  
12 INCOME OR OTHER REVENUES OF THE ENTERPRISE, ALL PROPERTIES AT ANY  
13 TIME OWNED BY THE ENTERPRISE, AND BONDS ISSUED BY THE ENTERPRISE,  
14 AND THE TRANSFER OF AND THE INCOME FROM ANY BONDS ISSUED BY THE  
15 ENTERPRISE SHALL BE EXEMPT FROM ALL TAXATION AND ASSESSMENTS IN  
16 THE STATE. IN THE RESOLUTION OR INDENTURE AUTHORIZING THE BONDS,  
17 THE ENTERPRISE MAY WAIVE THE EXEMPTION FROM FEDERAL INCOME  
18 TAXATION FOR INTEREST ON THE BONDS. BONDS ISSUED BY THE  
19 ENTERPRISE SHALL BE EXEMPT FROM THE PROVISIONS OF ARTICLE 51 OF  
20 TITLE 11, C.R.S.

21 **43-4-810. Traffic laws - toll collection.** (1) THE TRAFFIC LAWS  
22 OF THIS STATE, AND THOSE OF ANY MUNICIPALITY THROUGH WHICH A TOLL  
23 HIGHWAY PASSES, AND THE ENTERPRISE'S REGULATIONS REGARDING TOLL  
24 COLLECTION AND ENFORCEMENT SHALL PERTAIN TO AND GOVERN THE USE  
25 OF ANY SUCH TOLL HIGHWAY. STATE AND LOCAL LAW ENFORCEMENT  
26 AUTHORITIES ARE AUTHORIZED TO ENTER INTO TRAFFIC AND TOLL  
27 ENFORCEMENT AGREEMENTS WITH THE ENTERPRISE. ANY MONEYS

1 RECEIVED BY A STATE LAW ENFORCEMENT AUTHORITY PURSUANT TO SUCH  
2 TOLL ENFORCEMENT AGREEMENT SHALL BE SUBJECT TO ANNUAL  
3 APPROPRIATIONS BY THE GENERAL ASSEMBLY TO SUCH LAW ENFORCEMENT  
4 AUTHORITY FOR THE PURPOSE OF PERFORMING ITS DUTIES PURSUANT TO  
5 SUCH AGREEMENT.

6 (2) THE ENTERPRISE MAY ADOPT, BY RESOLUTION OF THE  
7 COMMISSION, REGULATIONS PERTAINING TO THE ENFORCEMENT OF TOLL  
8 COLLECTION AND PROVIDING A CIVIL PENALTY FOR TOLL EVASION. THE  
9 CIVIL PENALTY ESTABLISHED BY THE ENTERPRISE FOR ANY TOLL EVASION  
10 SHALL BE NOT LESS THAN TEN DOLLARS NOR MORE THAN ONE HUNDRED  
11 DOLLARS IN ADDITION TO ANY COSTS IMPOSED BY A COURT. THE  
12 ENTERPRISE MAY USE STATE OF THE ART TECHNOLOGY, INCLUDING, BUT  
13 NOT LIMITED TO, AUTOMATIC VEHICLE IDENTIFICATION PHOTOGRAPHY, TO  
14 AID IN THE COLLECTION OF TOLLS AND ENFORCEMENT OF TOLL  
15 VIOLATIONS.

16 (3) (a) ANY PERSON WHO EVADES A TOLL ESTABLISHED BY THE  
17 ENTERPRISE SHALL BE SUBJECT TO THE CIVIL PENALTY ESTABLISHED BY  
18 THE ENTERPRISE FOR TOLL EVASION. ANY PEACE OFFICER, LEVEL I, AS  
19 DEFINED IN SECTION 18-1-901 (3) (1) (I), C.R.S., SHALL HAVE THE  
20 AUTHORITY TO ISSUE CIVIL PENALTY ASSESSMENTS, OR MUNICIPAL  
21 SUMMONS AND COMPLAINTS IF AUTHORIZED PURSUANT TO A MUNICIPAL  
22 ORDINANCE, FOR SUCH TOLL EVASION.

23 (b) AT ANY TIME THAT A PERSON IS CITED FOR TOLL EVASION, THE  
24 PERSON OPERATING THE MOTOR VEHICLE INVOLVED SHALL BE GIVEN  
25 EITHER A NOTICE IN THE FORM OF A CIVIL PENALTY ASSESSMENT NOTICE OR  
26 A MUNICIPAL SUMMONS AND COMPLAINT.

27 (c) IF A CIVIL PENALTY ASSESSMENT NOTICE IS ISSUED, SUCH

1 NOTICE SHALL BE TENDERED BY A PEACE OFFICER, LEVEL I, AND SHALL  
2 CONTAIN THE NAME AND ADDRESS OF THE PERSON OPERATING THE MOTOR  
3 VEHICLE INVOLVED, THE LICENSE NUMBER OF THE MOTOR VEHICLE, SUCH  
4 PERSON'S DRIVER'S LICENSE NUMBER, THE NATURE OF THE VIOLATION, THE  
5 AMOUNT OF THE PENALTY PRESCRIBED FOR THE VIOLATION, THE DATE OF  
6 THE NOTICE, A PLACE FOR SUCH PERSON TO EXECUTE A SIGNED  
7 ACKNOWLEDGMENT OF SUCH PERSON'S RECEIPT OF THE CIVIL PENALTY  
8 ASSESSMENT NOTICE, A PLACE FOR SUCH PERSON TO EXECUTE A SIGNED  
9 ACKNOWLEDGMENT OF LIABILITY FOR THE CITED VIOLATION, AND SUCH  
10 OTHER INFORMATION AS MAY BE REQUIRED BY LAW TO CONSTITUTE THE  
11 NOTICE AS A COMPLAINT TO APPEAR IN COURT SHOULD THE PRESCRIBED  
12 PENALTY NOT BE PAID WITHIN TWENTY DAYS. EVERY CITED PERSON SHALL  
13 EXECUTE THE SIGNED ACKNOWLEDGMENT OF THE PERSON'S RECEIPT OF  
14 THE CIVIL PENALTY ASSESSMENT NOTICE.

15 (d) THE ACKNOWLEDGMENT OF LIABILITY SHALL BE EXECUTED AT  
16 THE TIME THE CITED PERSON PAYS THE PRESCRIBED PENALTY. THE PERSON  
17 CITED SHALL PAY THE CIVIL PENALTY AUTHORIZED BY THE ENTERPRISE AT  
18 THE OFFICE OF THE ENTERPRISE EITHER IN PERSON OR BY POSTMARKING  
19 SUCH PAYMENT WITHIN TWENTY DAYS OF THE NOTICE. IF THE PERSON  
20 CITED DOES NOT PAY THE PRESCRIBED PENALTY WITHIN TWENTY DAYS OF  
21 THE NOTICE, THE CIVIL PENALTY ASSESSMENT NOTICE SHALL CONSTITUTE  
22 A COMPLAINT TO APPEAR IN COURT, AND THE PERSON CITED SHALL, WITHIN  
23 THE TIME SPECIFIED IN THE CIVIL PENALTY ASSESSMENT NOTICE, FILE AN  
24 ANSWER TO THIS COMPLAINT WITH THE COUNTY COURT FOR THE COUNTY  
25 IN WHICH THE CIVIL PENALTY ASSESSMENT WAS ISSUED.

26 (e) IF A MUNICIPAL SUMMONS AND COMPLAINT IS ISSUED, THE  
27 ADJUDICATION OF THE VIOLATION SHALL BE CONDUCTED AND THE FORMAT

1 OF THE SUMMONS AND COMPLAINT SHALL BE DETERMINED PURSUANT TO  
2 THE TERMS OF THE MUNICIPAL ORDINANCE AUTHORIZING ISSUANCE OF THE  
3 SUMMONS AND COMPLAINT. IN NO CASE SHALL THE PENALTY UPON  
4 CONVICTION FOR VIOLATION OF A MUNICIPAL ORDINANCE FOR TOLL  
5 EVASION EXCEED THE LIMIT ESTABLISHED IN SUBSECTION (2) OF THIS  
6 SECTION.

7 (4) THE RESPECTIVE COURTS OF THE MUNICIPALITIES, COUNTIES,  
8 THE CITY AND COUNTY OF DENVER, AND THE CITY AND COUNTY OF  
9 BROOMFIELD HAVE JURISDICTION TO TRY ALL CASES ARISING UNDER  
10 MUNICIPAL ORDINANCES AND STATE LAWS GOVERNING THE USE OF A TOLL  
11 HIGHWAY AND ARISING UNDER THE TOLL EVASION CIVIL PENALTY  
12 REGULATIONS ENACTED BY THE ENTERPRISE. VENUE FOR SUCH CASES  
13 SHALL BE IN THE MUNICIPALITY, COUNTY, OR CITY AND COUNTY WHERE  
14 THE ALLEGED VIOLATION OF MUNICIPAL ORDINANCE, STATE LAW, OR  
15 REGULATION OF THE ENTERPRISE OCCURRED.

16 (5) THE AGGREGATE AMOUNT OF PENALTIES, EXCLUSIVE OF COURT  
17 COSTS, COLLECTED AS A RESULT OF CIVIL PENALTIES IMPOSED PURSUANT  
18 TO RESOLUTIONS ADOPTED AS AUTHORIZED IN SUBSECTION (2) OF THIS  
19 SECTION SHALL BE REMITTED TO THE ENTERPRISE, AND SHALL BE APPLIED  
20 BY THE ENTERPRISE TO DEFRAY THE COSTS AND EXPENSES OF ENFORCING  
21 THE LAWS OF THE STATE AND THE REGULATIONS OF THE ENTERPRISE. IF A  
22 MUNICIPAL SUMMONS OR COMPLAINT IS ISSUED, THE AGGREGATE PENALTY  
23 SHALL BE APPORTIONED PURSUANT TO THE TERMS OF ANY ENFORCEMENT  
24 AGREEMENT.

25 (6) (a) IN ADDITION TO THE PENALTY ASSESSMENT PROCEDURE  
26 PROVIDED FOR IN SUBSECTION (3) OF THIS SECTION, WHERE AN INSTANCE  
27 OF TOLL EVASION IS EVIDENCED BY AUTOMATIC VEHICLE IDENTIFICATION

1 PHOTOGRAPHY OR OTHER TECHNOLOGY NOT INVOLVING A PEACE OFFICER,  
2 A CIVIL PENALTY ASSESSMENT NOTICE MAY BE ISSUED AND SENT BY FIRST  
3 CLASS MAIL BY THE ENTERPRISE TO THE REGISTERED OWNER OF THE  
4 MOTOR VEHICLE INVOLVED. SUCH NOTICE SHALL CONTAIN THE NAME AND  
5 ADDRESS OF THE REGISTERED OWNER OF THE VEHICLE INVOLVED, THE  
6 LICENSE NUMBER OF THE VEHICLE INVOLVED, THE DATE OF THE NOTICE,  
7 THE TIME AND LOCATION OF THE VIOLATION, THE AMOUNT OF THE PENALTY  
8 PRESCRIBED FOR THE VIOLATION, A PLACE FOR SUCH PERSON TO EXECUTE  
9 A SIGNED ACKNOWLEDGMENT OF LIABILITY FOR THE CITED VIOLATION,  
10 AND SUCH OTHER INFORMATION AS MAY BE REQUIRED BY LAW TO  
11 CONSTITUTE THE NOTICE AS A COMPLAINT TO APPEAR IN COURT.

12 (b) SHOULD THE PRESCRIBED PENALTY NOT BE PAID WITHIN  
13 TWENTY DAYS OF THE NOTICE, IN ORDER TO ENSURE THAT ADEQUATE  
14 NOTICE HAS BEEN GIVEN, THE ENTERPRISE SHALL SEND A SECOND PENALTY  
15 ASSESSMENT NOTICE BY CERTIFIED MAIL, RETURN RECEIPT REQUESTED,  
16 CONTAINING THE SAME INFORMATION AS SET FORTH IN PARAGRAPH (a) OF  
17 THIS SUBSECTION (6). SUCH NOTICE SHALL SPECIFY THAT THE ALLEGED  
18 VIOLATOR MAY PAY THE SAME PENALTY ASSESSMENT AT ANY TIME PRIOR  
19 TO THE SCHEDULED HEARING.

20 (c) THE PROVISIONS OF PARAGRAPH (d) OF SUBSECTION (3) OF THIS  
21 SECTION CONCERNING PAYMENT OF THE PRESCRIBED PENALTY, AND  
22 FAILURE TO PAY, SHALL APPLY TO PENALTY ASSESSMENT NOTICES MAILED  
23 BY THE ENTERPRISE PURSUANT TO THIS SUBSECTION (6).

24 **43-4-811. Applicability of other laws.** (1) NOTWITHSTANDING  
25 ANY LAW TO THE CONTRARY, THE ENTERPRISE SHALL NOT BE SUBJECT TO  
26 THE PROVISIONS OF THE "PROCUREMENT CODE", ARTICLES 101 TO 112 OF  
27 TITLE 24, C.R.S.

1 (2) THE ENTERPRISE SHALL BE SUBJECT TO THE OPEN MEETINGS  
2 PROVISIONS OF THE COLORADO SUNSHINE LAW CONTAINED IN PART 4 OF  
3 ARTICLE 6 OF TITLE 24, C.R.S., AND THE OPEN RECORDS PROVISIONS OF  
4 ARTICLE 72 OF TITLE 24, C.R.S.

5 (3) NOTWITHSTANDING ANY OTHER LAW TO THE CONTRARY, THE  
6 PROVISIONS OF PART 3 OF ARTICLE 3 OF THIS TITLE AND ARTICLE 45 OF  
7 TITLE 7, C.R.S., SHALL NOT APPLY TO ANY TOLL HIGHWAY THAT IS  
8 FINANCED, CONSTRUCTED, OPERATED, OR MAINTAINED PURSUANT TO THIS  
9 PART 8 OR TO ANY PUBLIC-PRIVATE INITIATIVE PURSUANT TO SECTION  
10 43-1-1203 OR 43-1-1204.

11 (4) REVENUES OF THE ENTERPRISE SHALL NOT BE SUBJECT TO THE  
12 PROVISIONS OF SECTION 43-1-1205.

13 (5) ANY TOLL HIGHWAYS FINANCED, CONSTRUCTED, OPERATED, OR  
14 MAINTAINED PURSUANT TO THIS PART 8 SHALL CONFORM TO AND BE AN  
15 APPROVED PART OF THE APPLICABLE REGIONAL TRANSPORTATION PLAN  
16 AND THE STATEWIDE TRANSPORTATION PLAN DEVELOPED PURSUANT TO  
17 SECTION 43-1-1103.

18 PART 9

19 USE OF EXCESS STATE REVENUES TO FUND

20 TRANSPORTATION PROJECTS

21 **43-4-901. Submission of ballot question regarding retention of**  
22 **excess state revenues for the purpose of funding transportation**  
23 **projects.** (1) THE SECRETARY OF STATE SHALL SUBMIT A BALLOT  
24 QUESTION TO A VOTE OF THE REGISTERED ELECTORS OF THE STATE OF  
25 COLORADO AT THE STATEWIDE ELECTION TO BE HELD IN NOVEMBER 2002  
26 FOR THEIR APPROVAL OR REJECTION. EACH ELECTOR VOTING AT SAID  
27 NOVEMBER ELECTION SHALL CAST A VOTE AS PROVIDED BY LAW EITHER

Appendix B: FHWA PPP Draft Legislation for States

## **WORKING DRAFT**

*This model legislation has been prepared solely for informational purposes and should be not construed as a statement of United States Department of Transportation or Federal Highway Administration policy.*

This model legislation is based on a survey of existing State statutes that authorize public-private initiatives. The purpose of this model PPP legislation is to provide States with an example of what basic elements to consider and address in PPP authorizing legislation. It is meant to serve as a representation of the core provisions dealing with issues that a State should consider when pursuing greater private sector involvement in the delivery of transportation services. Users are advised that the model legislation cannot anticipate the relationship of State laws with the model provisions contained herein. This model legislation has been prepared solely for informational purposes and should be not construed as a statement of United States Department of Transportation or Federal Highway Administration policy.

### **AN ACT**

concerning Public-Private Transportation Initiatives

*Be it enacted by the [State Legislature] that:*

**SECTION 1.** [State Code Citation] is amended to read:

#### **§1-101. Definitions.**

(a) “Affected jurisdiction” means any county [, city, or town / or municipal corporation], or other unit of government within the State in which all or part of a transportation facility is located or any other public entity directly affected by the transportation facility.

(b) “Department” means the State Department of Transportation.

(c) “Force majeure” means an uncontrollable force or natural disaster not within the power of the operator or the State.

(d) “Maintenance” includes ordinary maintenance, repair, rehabilitation, capital maintenance, maintenance replacement, and any other categories of maintenance that may be designated by the Department.

(e) “Material default” means any failure of an operator to perform any duties under a public-private agreement, which jeopardizes delivery of adequate service to the public and remains unsatisfied after a reasonable period of time and after the operator has received written notice from the Department of the failure.

## **WORKING DRAFT**

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(f) “Operate” means any action to maintain, rehabilitate, improve, equip, or modify a transportation facility.

(g) “Operator” means a private entity that has entered into a public-private agreement under this [title/chapter/article].

(h) “Private entity” means any natural person, corporation, general partnership, limited liability company, limited partnership, joint venture, business trust, public benefit corporation, non-profit entity, or other business entity.

(i) “Public-private agreement” means the agreement between a private entity and the Department that relates to the development, financing, maintenance, or operation of a transportation facility subject to this [title/chapter/article].

(j) “Public-private initiative” means an arrangement between the Department and one or more private entities, the terms of which are stated in a public-private agreement, that provides for:

(1) acceptance of a private contribution, including a money payment, for a project or service for a transportation facility;

(2) sharing of resources and the means of providing a project or service for a transportation facility;

(3) cooperation in researching, developing, and implementing projects or services for a transportation facility.

(k) “Transportation facility” means any, including new and existing, highway, road, bridge, tunnel, overpass, ferry, airport, public transportation facility, vehicle parking facility, seaport facility, rail facility, intermodal facility, or similar facility open to the public and used for the transportation of persons or goods, and any building, structure, parking area, appurtenances, or other property needed to operate such facility that is subject to a public-private agreement.

(l) “User fees” means the rate, toll, fee, or other charges imposed by an operator for use of all or part of a transportation facility.

(m) “Utility” means a privately, publicly, or cooperatively owned line, facility, or system for producing, transmitting, or distributing communications, cable television, power, electricity, light, heat, gas, oil, crude products, water, steam, waste, storm water not connected with highway drainage, or any other similar commodity, including fire or police signal system or street lighting system, which directly or indirectly serves the public.

## **WORKING DRAFT**

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### **§1-102. Solicited Proposals.**

(a) The [INSERT STATE'S PROCUREMENT ACT] shall not apply to solicited proposals under this [title/chapter/article].

(b) The Department may solicit, receive, consider, evaluate, and accept a proposal for a public-private initiative.

(c) In soliciting and selecting a private entity with which to enter into a public-private initiative, the Department may utilize one or more of the following procurement approaches:

(1) sealed bidding;

(2) selection of proposals, with or without negotiations, based on qualifications, best value, or both; or

(3) any competitive selection process that the Department determines to be appropriate or reasonable.

(d) The Department may consider the following factors in evaluating and selecting a bid or proposal to enter into a public-private initiative:

(1) the ability of the transportation facility to improve safety, reduce congestion, increase capacity, and promote economic growth;

(2) the proposed cost of and financial plan for the transportation facility;

(3) the general reputation, qualifications, industry experience, and financial capacity of the private entity;

(4) the proposed design, operation, and feasibility of the transportation facility;

(5) comments from local citizens and affected jurisdictions;

(6) benefits to the public;

(7) the safety record of the private entity; and

(8) other criteria that the Department deems appropriate.

## **WORKING DRAFT**

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(e) The Department may select multiple private entities with which to enter a public-private agreement for a transportation facility if it is in the public interest to do so.

(f) The Department shall select a private entity or entities for a public-private initiative on a competitive basis to the maximum extent practicable.

### **Version #1**

(g) (1) A private entity may request a review, prior to submission of a solicited proposal, by the Department of information that the private entity has identified as confidential or proprietary to determine whether such information would be subject to disclosure under [INSERT CITATION TO STATE FREEDOM OF INFORMATION ACT OR OPEN RECORDS ACT].

(2) A private entity may identify confidential or proprietary information submitted as part of a solicited proposal. A private entity shall have an opportunity to object to the release of any information it identifies as confidential or proprietary.

(3) The Department shall review any information identified as confidential or proprietary by a private entity as part of a solicited proposal and shall determine if such information is exempt from disclosure under [INSERT CITATION TO STATE FREEDOM OF INFORMATION ACT OR OPEN RECORDS ACT].

(4) The Department shall inform the private entity that submitted the information of its determination of whether information identified by the private entity as confidential or proprietary is subject to disclosure under [INSERT CITATION TO STATE FREEDOM OF INFORMATION ACT OR OPEN RECORDS ACT].

(5) The private entity shall have the opportunity to object to the determination that the information is subject to disclosure under [INSERT CITATION TO STATE FREEDOM OF INFORMATION ACT OR OPEN RECORDS ACT] or to withdraw its proposal.

(6) Any information determined by the State to be confidential or proprietary shall be exempt from disclosure under [INSERT CITATION TO STATE FREEDOM OF INFORMATION ACT OR OPEN RECORDS ACT].

(7) Any information not determined to be confidential or proprietary may be subject to disclosure under [INSERT CITATION TO STATE FREEDOM OF INFORMATION ACT OR OPEN RECORDS ACT].

### **Version #2**

(g) (1) A private entity may request a review, prior to submission of a solicited proposal, by the Department of information that the private entity has identified a

## **WORKING DRAFT**

*This model legislation has been prepared solely for informational purposes and should be not construed as a statement of United States Department of Transportation or Federal Highway Administration policy.*

confidential or proprietary to determine whether such information will be subject to disclosure under [INSERT CITATION TO STATE FREEDOM OF INFORMATION ACT OR OPEN RECORDS ACT].

(2) The Department shall take appropriate action to protect confidential or proprietary information that a private entity provides as part of a solicited proposal and that is exempt from disclosure under [INSERT CITATION TO STATE FREEDOM OF INFORMATION ACT OR OPEN RECORDS ACT].

### **§1-103. Unsolicited Proposals.**

(a) The [INSERT STATE'S PROCUREMENT ACT] shall not apply to this section.

(b) (1) The Department may receive, consider, evaluate, and accept an unsolicited proposal for a public-private initiative if the proposal:

(A) is independently originated and developed by the proposer;

(B) benefits the public;

(C) is prepared without Department supervision; and

(D) includes sufficient detail and information for the Department to evaluate the proposal in an objective and timely manner.

(2) Within [INSERT NUMBER] days after receiving an unsolicited proposal, the Department shall undertake a preliminary evaluation of the unsolicited proposal to determine if the proposal complies with the requirements under paragraph (1) of this subsection.

### **Version #1**

(c) (1) A private entity may request a review, prior to submission of an unsolicited proposal, by the Department of information that the private entity has identified as confidential or proprietary to determine whether such information would be subject to disclosure under [INSERT CITATION TO STATE FREEDOM OF INFORMATION ACT OR OPEN RECORDS ACT].

(2) A private entity may identify confidential or proprietary information submitted as part of an unsolicited proposal. A private entity shall have an opportunity to object to the release of any information it identifies as confidential or proprietary.

## **WORKING DRAFT**

*This model legislation has been prepared solely for informational purposes and should be not construed as a statement of United States Department of Transportation or Federal Highway Administration policy.*

(3) The Department shall review any information identified as confidential or proprietary by a private entity as part of an unsolicited proposal and shall determine if such information is exempt from disclosure under [INSERT CITATION TO STATE FREEDOM OF INFORMATION ACT OR OPEN RECORDS ACT].

(4) The Department shall inform the private entity that submitted the information of its determination of whether information identified by the private entity as confidential or proprietary is subject to disclosure under [INSERT CITATION TO STATE FREEDOM OF INFORMATION ACT OR OPEN RECORDS ACT].

(5) The private entity shall have the opportunity to object to the determination that the information is subject to disclosure under [INSERT CITATION TO STATE FREEDOM OF INFORMATION ACT OR OPEN RECORDS ACT] or to withdraw its proposal.

(6) Any information determined by the State to be confidential or proprietary shall be exempt from disclosure under [INSERT CITATION TO STATE FREEDOM OF INFORMATION ACT OR OPEN RECORDS ACT].

(7) Any information not determined to be confidential or proprietary may be subject to disclosure under [INSERT CITATION TO STATE FREEDOM OF INFORMATION ACT OR OPEN RECORDS ACT].

### **Version #2**

(c) (1) A private entity may request a review, prior to submission of an unsolicited proposal, by the Department of information that the private entity has identified a confidential or proprietary to determine whether such information will be subject to disclosure under [INSERT CITATION TO STATE FREEDOM OF INFORMATION ACT OR OPEN RECORDS ACT].

(2) The Department shall take appropriate action to protect confidential or proprietary information that a private entity provides as part of an unsolicited proposal and that is exempt from disclosure under [INSERT CITATION TO STATE FREEDOM OF INFORMATION ACT OR OPEN RECORDS ACT].

(d) (1) If the unsolicited proposal does not comply with the subsection (b)(1) of this section, the Department shall return the proposal without further action.

(2) If the unsolicited proposal complies with the subsection (b)(1) of this section, the Department may continue to evaluate the proposal in accordance with this section.

## **WORKING DRAFT**

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(e) (1) If the unsolicited proposal complies with the subsection (b)(1) of this section, the Department shall advertise the unsolicited proposal for the purpose of receiving competitive proposals for the same proposed transportation facility.

(2) The advertisement shall outline the general nature and scope of the unsolicited proposal, including the location of the transportation facility and the work to be performed on or in connection with the transportation facility and shall specify an address to which a competing proposal may be submitted.

(3) The advertisement shall specify a reasonable time period by which competitors must submit a competing proposal to the Department.

(f) The Department may charge a reasonable fee to cover its costs to process, review, and evaluate an unsolicited proposal and any competing proposals.

(g) The Department shall:

(1) determine if any competing proposal is comparable in nature and scope to the original unsolicited proposal;

(2) evaluate the original unsolicited proposal and any comparable competing proposal; and

(3) conduct any good faith discussions and, if necessary, any negotiations concerning each qualified proposal.

(h) The Department shall evaluate an unsolicited proposal and any comparable competing proposal using the following factors:

(1) novel methods, approaches, or concepts demonstrated by the proposal;

(2) scientific, technical, or socioeconomic merits of the proposal;

(3) potential contribution of the proposal to the Department's mission;

(4) capabilities, related experience, facilities, or techniques of the private entity or unique combinations of these qualities that are integral factors for achieving the proposal objectives;

(5) qualifications, capabilities, and experience of the proposed principal investigator, team leader, or key personnel, who are critical to achieving the proposal objectives;

## **WORKING DRAFT**

*This model legislation has been prepared solely for informational purposes and should be not construed as a statement of United States Department of Transportation or Federal Highway Administration policy.*

(6) how the proposal benefits the public; and

(7) any other factors appropriate to a particular proposal.

(i) After evaluating the unsolicited proposal and any competing proposals, the Department may:

(1) accept the unsolicited proposal and reject any competing proposals;

(2) reject the unsolicited proposal and accept a comparable competing proposal if the Department determines that the comparable competing proposal is the most advantageous to the State;

(3) accept both an unsolicited proposal and a competing proposal if accepting both proposals is advantageous to the State; or

(4) reject the unsolicited proposal and any competing proposals.

(j) Subsection (c) of this section shall apply to any unsolicited proposal or competing proposal that is rejected.

### **§1-104. Public-Private Agreement. Version #1**

(a) (1) After selecting a solicited or unsolicited proposal for a public-private initiative, the Department shall enter into a public-private agreement for a transportation facility with the selected private entity or any configuration of private entities.

(2) An affected jurisdiction may be a party to a public-private agreement entered into by the Department and a selected private entity or combination of private entities.

(b) The public-private agreement shall provide for the planning, acquisition, financing, development, design, construction, reconstruction, replacement, improvement, maintenance, management, repair, leasing, or operation of a transportation facility.

(c) The financing mechanism included in a public-private agreement may include the imposition and collection of user fees and the development or use of other revenue sources.

(d) A public-private agreement between the Department and a private entity shall specify at least the following:

## WORKING DRAFT

*This model legislation has been prepared solely for informational purposes and should be not construed as a statement of United States Department of Transportation or Federal Highway Administration policy.*

- (1) which party will assume responsibility for which specific project elements and the timing of the assumption of responsibility;
- (2) the type of property interest, if any, the private entity will have in the transportation facility;
- (3) if and how the parties will share costs of development of the project;
- (4) if and how the parties will allocate financial responsibility for cost overruns;
- (5) liability for nonperformance;
- (6) any incentives for performance;
- (7) any accounting and auditing standards to be used to evaluate progress on the project; and
- (8) other terms and conditions.

### **§1-104. Public-Private Agreement. Version #2**

(a) (1) After selecting a solicited or unsolicited proposal for a public-private initiative, the Department shall enter into a public-private agreement for a transportation facility with the selected private entity or any configuration of private entities.

(2) An affected jurisdiction may be a party to a public-private agreement entered into by the Department and a selected private entity or combination of private entities.

(b) A public-private agreement under this [title/chapter/article] shall provide for the following:

(1) the planning, acquisition, financing, development, design, construction, reconstruction, replacement, improvement, maintenance, management, repair, leasing, or operation of a transportation facility;

(2) the term of the public-private agreement;

(3) the type of property interest, if any, the private entity will have in the transportation facility;

## **WORKING DRAFT**

*This model legislation has been prepared solely for informational purposes and should be not construed as a statement of United States Department of Transportation or Federal Highway Administration policy.*

(4) a description of the actions the Department may take to ensure proper maintenance of the transportation facility;

(5) whether user fees will be collected on the transportation facility and the basis by which such user fees shall be determined and modified;

(6) compliance with applicable Federal, State, and local laws;

(7) grounds for termination of the public-private agreement by the Department or operator; and

(8) procedures for amendment of the agreement.

(c) A public-private agreement under this [title/chapter/article] may provide for the following:

(1) review and approval by the Department of the operator's plans for the development and operation of the transportation facility;

(2) inspection by the Department of construction of or improvements to the transportation facility;

(3) maintenance by the operator of a policy of liability insurance or self-insurance;

(4) filing by the operator, on a periodic basis, of appropriate financial statements in a form acceptable to the Department;

(5) filing by the operator, on a periodic basis, of traffic reports in a form acceptable to the Department;

(6) financing obligations of the operator and the Department;

(7) apportionment of expenses between the operator and the Department;

(8) the rights and duties of the operator, the Department, and other State and local governmental entities with respect to use of the transportation facility;

(9) the rights and remedies available in the event of default or delay;

(10) the terms and conditions of indemnification of the operator by the Department;

## **WORKING DRAFT**

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(11) assignment, subcontracting, or other delegation of responsibilities of the operator or the Department under the agreement to third parties, including other private entities and other State agencies;

(12) sale or lease to the operator of private property related to the transportation facility;

(13) traffic enforcement and other policing issues, subject to section 1-111, including any reimbursement by the private entity for such services; or

(14) other terms and conditions.

### **§1-105. Reversion of Transportation Facility to the Department.**

In the event of termination of the public-private agreement, the authority and duties of the operator cease, except for any duties and obligations that extend beyond the termination as provided in the public-private agreement, and the transportation facility reverts to the Department and shall be dedicated to the Department for public use.

### **§1-106. Material Default; Remedies.**

(a) Upon the occurrence and during the continuation of material default by an operator, not related to an event of force majeure, the Department may:

(1) elect to take over the transportation facility, including the succession of all right, title, and interest in the transportation facility, subject to any liens on revenues previously granted by the private entity; and

(2) terminate the public-private agreement and exercise any other rights and remedies that may be available.

(b) In the event that the Department elects to take over a transportation facility under subsection (a), the Department:

(1) shall collect and pay any revenues that are subject to lien to satisfy any obligation;

(2) may develop and operate the transportation facility, impose user fees for the use of the transportation facility, and comply with any service contracts; and

(3) may solicit proposals for the maintenance and operation of the transportation facility under section 1-102 of this [title/chapter/article].

## **WORKING DRAFT**

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### **§1-107. Bonds.**

(a) (1) The Department may issue and sell bonds or notes of the Department for the purpose of providing funds to carry out the provisions of this [title/chapter/article] with respect to the development, financing, or operation of a transportation facility or the refunding of any bonds or notes, together with any costs associated with the transaction.

(2) Any bond or note issued under this section:

(A) constitutes the corporate obligation of the Department;

(B) does not constitute the indebtedness of the State within the meaning or application of any constitutional provision or limitation; and

(C) is payable solely as to both principal and interest from:

(i) the revenues from a lease to the Department, if any;

(ii) proceeds of bonds or notes, if any;

(iii) investment earnings on proceeds of bonds or notes; or

(iv) other funds available to the Department for such purpose.

(b) (1) For the purpose of financing a transportation facility, the Department and operator may apply for, obtain, issue, and use private activity bonds available under any Federal law or program.

(2) Any bonds debt, other securities, or other financing issued for the purpose of this [title/chapter/article] shall not be considered to be a debt of the State or any political subdivision of the State or a pledge of the faith and credit of the State or any political subdivision of the State.

(c) Nothing in this section shall limit a local government or any authority of the State to issue bonds for transportation projects.

### **§1-108. Funding from Federal Government or Other Sources.**

(a) (1) The Department may accept from the United States or any of its agencies funds that are available to the State for carrying out this [title/chapter/article], whether the funds are made available by grant, loan, or other financial assistance.

## **WORKING DRAFT**

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(2) The State assents to any Federal requirements, conditions, or terms of any Federal funding accepted by the Department under this section.

(3) The Department may enter into agreements or other arrangements with the United States or any of its agencies as may be necessary for carrying out the purposes of this [title/chapter/article].

(b) The Department may accept from any source any grant, donation, gift, or other form of conveyance of land, money, other real or personal property, or other item of value made to the State or the Department for carrying out the purpose of this [title/chapter/article].

(c) Any transportation facility may be financed in whole or in part by contribution of any funds or property made by any private entity or affected jurisdiction that is party to a public-private agreement under this [title/chapter/article].

(d) The Department may combine Federal, State, local, and private funds to finance a transportation facility under this [title/chapter/article].

### **§1-109. Property Tax Exemption.**

(a) This section applies to:

(1) a transportation facility; and

(2) tangible personal property used exclusively with a transportation facility that are:

(A) owned by the Department and leased, licensed, financed, or otherwise conveyed to an operator; or

(B) acquired, constructed, or otherwise provided by an operator on behalf of the Department.

(b) Property listed under subsection (a) of this section are exempt from all ad valorem property taxes and special assessments levied against property by the State or any political subdivision of the State.

### **§1-110. Eminent Domain.**

The Department may exercise the power of eminent domain to acquire property, rights of way or other rights in property for transportation projects that are part of a public-private initiative.

## **WORKING DRAFT**

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### **§ 1-111. Police Powers; Violations of Law.**

(a) All law enforcement officers of the State and of an affected local jurisdiction shall have the same powers and jurisdiction within the limits of the transportation facility as they have in their respective areas of jurisdiction and access to the transportation facility at any time for the purpose of exercising such powers and jurisdiction.

(b) The traffic and motor vehicle laws of the State or, if applicable, any affected local jurisdiction shall be the same on the transportation facility as those laws applied to conduct on similar transportation facilities in the State or local jurisdiction.

(c) Punishment for violations of traffic and motor vehicle laws of the State or, if applicable, any affected local jurisdiction on the transportation facility shall be as prescribed by law for conduct occurring on similar transportation facilities in the State or local jurisdiction.

### **§1-112. Utility Crossings.**

An operator under this [title/chapter/article] and any utility whose facility is to be crossed or relocated shall cooperate fully in planning and arranging the manner of the crossing or relocation of the utility facility.

### **§1-113. Sovereign Immunity.**

Nothing in this [title/chapter/article] shall be construed or deemed to limit any waiver of the sovereign immunity of the State or any officer or employee of the State with respect to the participation in or approval of all or any part of the transportation facility or its operation.

### **§1-114. Regulations.**

The Department may adopt rules and regulations to carry out the provisions of this [title/chapter/article].

**SECTION 2.** This Act shall take effect on [DATE].

Appendix C: Diversion Approach and Method

## Wyoming Department of Transportation I-80 Tolling Feasibility Study

### Introduction

Three physical highway configurations were examined as part of the project, though two of the configurations (2 & 3) can be grouped into one category (capacity expansion) for traffic and tolling portion of the analysis<sup>24</sup>. The three configurations are:

1. **Configuration 1:** No capacity expansion would be undertaken – existing lanes are shared by passenger vehicles and trucks. All lanes are tolled.
2. **Configuration 2:** One additional lane is added in each direction such that the current four-lane Interstate is expanded to six lanes. All lanes are tolled.
3. **Configuration 3:** A new independent truck only facility is constructed along side of the existing highway, thereby increasing the capacity from four to eight total lanes. All lanes would be tolled.

All three of these configurations are considered reasonable because congestion is not expected to become a major issue on I-80 within the study forecast period. The fact that heavy trucks passing through Wyoming on I-80 are causing costly damage to the highway in excess of Interstate Maintenance funding, while providing little economic benefit to the state is the reason tolling options are being evaluated. Therefore potential tolling strategies discussed herein focus primarily on tolling trucks, while offering steep toll discounts to passenger vehicles.

### Trucking Route Analysis

Before a forecast of truck volumes and toll revenues could be estimated, a detailed examination of the O/D flows and commodity shipments traveling on I-80 through Wyoming today, as well as over the next 30 years, was necessary. The FHWA's Freight Analysis Framework (FAF) databases were used to obtain a solid understanding of the composition of specific (city to city) trucking flows on WY I-80.

The FAF Commodity Origin-Destination database contains detailed estimates of 2002 freight flows by mode of transportation and commodity type for all US-relevant O/D regions<sup>25</sup>. Commodity-specific freight movements between US origins and destinations are also forecasted in five-year increments from 2010 to 2035.

A separate FAF Highway Link database contains 2002 annual average daily traffic (AADT) and annual average daily truck traffic (AADTT) counts on individual US highway facilities, including I-80 through Wyoming, as well as a 2035 traffic forecast. Unlike the Commodity Origin-Destination database, the FAF Highway Link traffic counts do not contain any corresponding O/D or commodity information<sup>26</sup>.

For this analysis, the FAF Commodity O/D data was decomposed into a set of O/D truck flows that, given their geographical locations, are likely to utilize I-80. The database was separated into flows that travel from origins west of Wyoming to destinations east of Wyoming, and vice versa, as well as all flows originating or terminating in Wyoming. All other O/D flows were deemed to be irrelevant to I-80. Next, the over 1,700 remaining bi-regional flows were individually analyzed to determine their specific relevance to I-80. The set of analyzed origin and destination regions, grouped by their location relative to Wyoming, is listed in Exhibit C1.

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<sup>24</sup> The two capacity expansion scenarios, from a tolling perspective, are assumed to operate in the same fashion and are considered interchangeable for diversion analysis purposes.

<sup>25</sup> The FAF Commodity O / D database is available at [http://www.ops.fhwa.dot.gov/freight/freight\\_analysis/faf/index.htm#faf235](http://www.ops.fhwa.dot.gov/freight/freight_analysis/faf/index.htm#faf235).

<sup>26</sup> The FAF Highway Link database is available at [http://www.ops.fhwa.dot.gov/freight/freight\\_analysis/faf/index.htm#faf2trk](http://www.ops.fhwa.dot.gov/freight/freight_analysis/faf/index.htm#faf2trk).

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**Exhibit C1: Potentially Relevant O / D Regions in the FHWA FAF Database**

Western Regions					
	State	City		State	City
1	Arizona	Phoenix	10	Nevada	Las Vegas
2	Arizona	Other	11	Nevada	Other
3	Arizona	Tucson	12	Oregon	Portland
4	California	Sacramento	13	Oregon	Other
5	California	San Diego	14	Utah	Salt Lake City
6	California	San Jose	15	Utah	Other
7	California	Los Angeles	16	Washington	Seattle
8	California	Other	17	Washington	Other
9	Idaho	All	18	Wyoming	All

Eastern Regions					
	State	City		State	City
1	Alabama	Birmingham	48	North Carolina	Raleigh
2	Alabama	Other	49	North Carolina	Other
3	Arkansas	All	50	North Dakota	All
4	Colorado	Denver	51	Nebraska	All
5	Colorado	Other	52	New Hampshire	All
6	Connecticut	New York Metro	53	New Jersey	New York Metro
7	Connecticut	Other	54	New Jersey	Philadelphia Metro
8	DC	Washington	55	New Jersey	Other
9	Delaware	All	56	New Mexico	All
10	Europe	All	57	New York	Albany
11	Florida	Jacksonville	58	New York	Buffalo
12	Florida	Miami	59	New York	New York City
13	Florida	Orlando	60	New York	Other
14	Florida	Other	61	New York	Rochester
15	Florida	Tampa	62	Ohio	Cincinnati
16	Georgia	Atlanta	63	Ohio	Cleveland
17	Georgia	Other	64	Ohio	Columbus
18	Iowa	All	65	Ohio	Dayton
19	Illinois	Chicago	66	Ohio	Other
20	Illinois	Other	67	Oklahoma	Oklahoma City
21	Illinois	St Louis	68	Oklahoma	Other
22	Indiana	Chicago	69	Oklahoma	Tulsa
23	Indiana	Indianapolis	70	Pennsylvania	Philadelphia
24	Indiana	Other	71	Pennsylvania	Pittsburgh
25	Kansas	Kansas City	72	Pennsylvania	Other

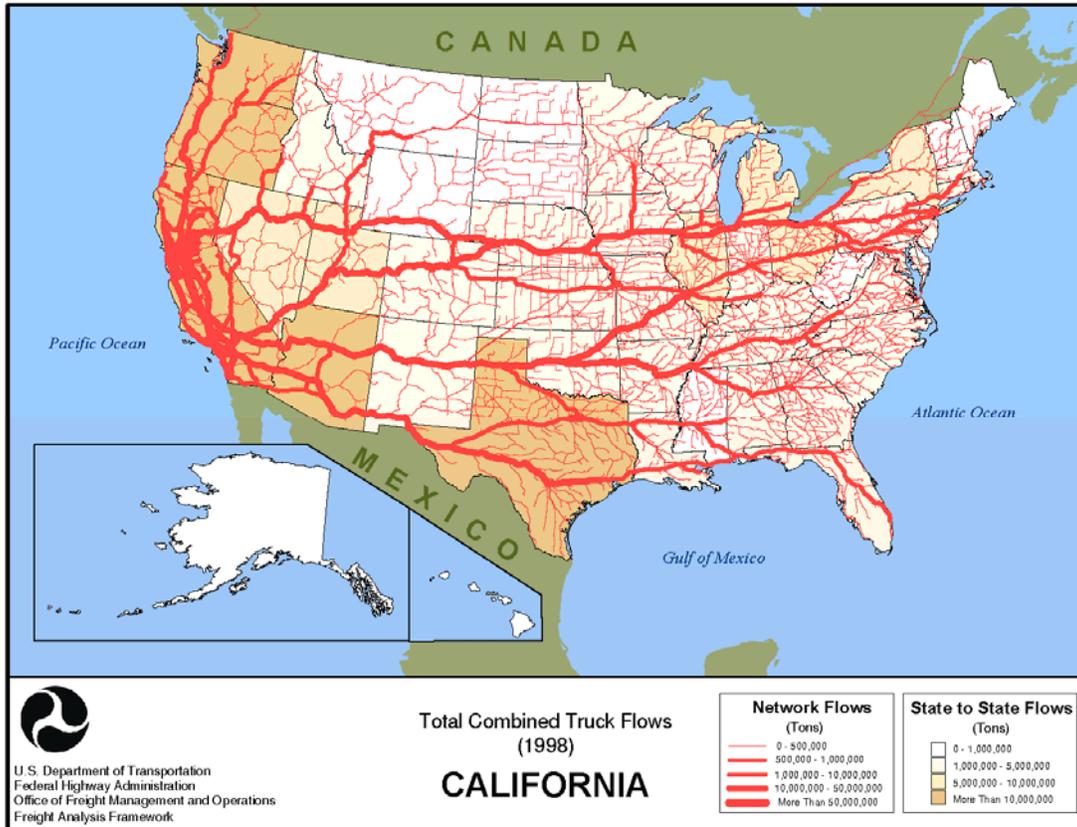
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26	Kansas	Other	73	Rhode Island	All
27	Kentucky	Louisville	74	South Carolina	Greenville
28	Kentucky	Other	75	South Carolina	Other
29	Louisiana	New Orleans	76	South Carolina	Spartan
30	Louisiana	Other	77	South Dakota	All
31	Massachusetts	Boston	78	Tennessee	Memphis
32	Massachusetts	Other	79	Tennessee	Nashville
33	Maryland	Baltimore	80	Tennessee	Other
34	Maryland	Other	81	Texas	Austin
35	Maryland	Washington Metro	82	Texas	Dallas
36	Maine	All	83	Texas	Houston
37	Michigan	Detroit	84	Texas	Other
38	Michigan	Grand Rapids	85	Texas	San Antonio
39	Michigan	Other	86	Virginia	Other
40	Minnesota	Minneapolis	87	Virginia	Richmond
41	Minnesota	Other	88	Virginia	Virginia Beach
42	Missouri	Kansas City	89	Virginia	Washington Metro
43	Missouri	Other	90	Vermont	All
44	Missouri	St Louis	91	Wisconsin	Milwaukee
45	Mississippi	All	92	Wisconsin	Other
46	North Carolina	Charleston	93	West Virginia	All
47	North Carolina	Greenville	94	Wyoming	All

*Source: FHWA Freight Analysis Framework, PB Analysis*

To determine the relevance of each bi-regional flow to I-80, historical state freight flow maps from the FHWA, which show volume movements to and from each state over individual highway facilities, were analyzed. A copy of one such map for the state of California is shown in the Exhibit C2.

Exhibit C2: FHWA Combined Truck Flows Map for the State of California



Source: FHWA Freight Analysis Framework

These maps allowed the following simplifying assumptions to be made for each bi-regional flow:

- ❖ If the clear majority of traffic traveling to (from) Western region  $x$  from (to) Eastern region  $y$  moves over I-80 through Wyoming (represented by the thickness of the red lines in the map), 100% of the flows are relevant to I-80.
- ❖ If there appears to be two routes sharing the flows from to (from) Western region  $x$  from (to) Eastern region  $y$ , and one of the routes is I-80 through Wyoming, 50% of the flows are relevant to I-80.
- ❖ If the clear majority of traffic traveling to (from) Western region  $x$  from (to) Eastern region  $y$  does not move over I-80 through Wyoming (represented by the thickness of the red lines in the map), 0% of the flows are relevant to I-80.

Additional analysis of each bi-regional flow was performed to ensure that the assumptions made based on the FHWA flow maps were reasonable. For each flow marked as 50% or 100% relevant, mileage and travel time information from origin to destination for I-80 and other alternate routes was analyzed to ensure that I-80 was indeed competitive on these routes. This analysis would also assist in the calculation of I-80 diversion rates, described in more detail below.

To determine the revenue-maximizing number and location of tolling facilities on the I-80 corridor, the highway was segmented into five distinct sub-sections, with a separate diversion analysis performed for each:

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- ❖ Sub-Section 1 (Labeled Evanston): Utah Border to US-189 (past Evanston)
- ❖ Sub-Section 2 (Labeled Rock Springs): US-189 to US-191 (Rock Springs)
- ❖ Sub-Section 3 (Labeled Rawlins): US-191 (Rock Springs) to US-287 (Rawlins)
- ❖ Sub-Section 4 (Labeled Cheyenne): US-287 (Rawlins) to I-25 (Cheyenne)
- ❖ Sub-Section 5 (Labeled NE Border): I-25 (Cheyenne) to the Nebraska Border

Each I-80 relevant bi-regional flow was studied to determine which segments of I-80 were relevant to the particular freight movement. For most bi-regional flows, all five sub-sections of I-80 would be used to move the shipment from origin to destination; however, flows originating, terminating, or traveling within Wyoming often use only certain subsections of the highway. For example, goods traveling from Denver to Rock Springs would likely travel only over sub-sections 3 and 4.

Labeling each O/D flow according to its relevance on certain sub-sections of I-80 enabled a reasonable estimate of the traffic counts over the highway to be obtained. As shown in the Exhibit below, the estimated 2002 traffic flows were closely approximated using the aforementioned analysis. The traffic analysis presented in Section 5.3 utilizes the FAF / PB diversion model database.

**Exhibit C3: Model Accuracy of I-80 Traffic Using FAF Analysis**

<b>Model Accuracy in Estimating I-80 Truck Traffic</b>					
	Evanston	Rock Springs	Rawlins	Cheyenne	NE Border
FAF / PB 2002 Estimate	6,084	6,173	6,637	6,422	5,197
WYDOT 2002 Actuals	5,640	5,895	6,303	5,890	4,951
% differential	7.9%	4.7%	5.3%	9.0%	5.0%

*Source: FHWA Freight Analysis Framework, PB Analysis*

**Toll Diversion Approach**

To determine the amount of traffic expected to flow through Wyoming on I-80 if it were tolled, the FAF Commodity O/D database was again employed.

First, an analysis of potential routing alternatives to I-80 was conducted for roughly 400 individual O/D flows on I-80, representing 75% of the total I-80 relevant traffic flows. The next best route compared to I-80 was identified for each O/D pair using mapping software and the corresponding time and mileage differentials between I-80 and the alternate route were recorded.

Next, each of the O/D flows analyzed was also determined to be captive, discretionary, or not relevant to the five individual sub-sections of I-80. If an O/D shipment was given a "captive" label for a certain sub-section of I-80, it meant no viable routing alternatives at reasonable toll levels existed to that highway sub-section. A "discretionary" label meant that the given O/D shipment had viable routing alternatives to the particular stretch of I-80, and a "not relevant" label meant that the O/D movement would never travel over the particular sub-section of highway, even if tolling were not implemented.

Almost all non-Wyoming-specific movements were given a "discretionary" label for every sub-section of I-80, since these movements would most likely divert around the I-80 corridor entirely if a viable alternate route existed. However, many flows originating, terminating, or traveling completely within the state were labeled captive or irrelevant for certain sub-sections of I-80.

This analysis allowed for separate estimates of diversion to be computed for each sub-section of highway, based on the amount of discretionary traffic and the viability of routing alternatives to each sub-section of I-80. Sub-sections that featured more "captive" traffic flows might witness a

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lower percentage of diverted traffic than other sub-sections of highway featuring more discretionary flows.

The base time differentials between the I-80 routing and the next best alternative were increased for certain routes that are expected to become increasingly congested over the forecast horizon. One such route is Interstate 15 and US-6 from Salt Lake City east bound to I-70, the next best alternative to I-80 for many O/D trucking flows. The FAF Highway Link database expectation of average travel time and speeds to worsen on I-15 and US-6 in Utah in the future by 2.6% annually was incorporated into the diversion model.

Each of these separate analyses were converted into a dynamic revenue model to determine the amount of diversion that could be expected under each tolling alternative, given the time and cost differentials for each alternate route to I-80. The model disaggregates the truck traffic forecasts on I-80 into the five sub-sections previously mentioned, and calculates separate diversion rates for each sub-section. The formula used to determine the cost of the next best alternative route for a given sub-section of highway follows.

$$\sum_{t=2009}^{2037} GC = MD_{od} * (D_t / MPG) + (TD_{od} / 60) * (1.25 * (W_t + B_t))$$

**Distance Differential**  
(additional miles \* fuel cost)

+

**Time Differential**  
(additional hours \* value of time)

Where  $MD_{od}$  is the mileage differential between I-80 and the next best alternative route, for each Origin / Destination combination  $od$ ;  $D$  is the average price of diesel fuel at time  $t$ ; MPG is the average truck mileage per gallon;  $TD_{od}$  is the time differential (in minutes) between I-80 and the next best alternative route, for each O/D combination  $od$ ;  $W_t$  is the average hourly wage for long-distance freight truck drivers at time  $t$ ; and  $B_t$  represents the average hourly benefits paid to long-distance freight truck drivers at time  $t$ <sup>27</sup>.

This formula represents the fuel costs and marginal truck operating costs of choosing a route that is longer than I-80 in terms of mileage, time, or both. If the cost of diverting to the next best alternate route, computed using the formula above, is greater than the toll amount being imposed on the given sub-section of I-80, then no trucks will divert from I-80 in the model. Alternatively, if the toll cost is higher than the cost of diverting to another route, all trucks on a given O/D route will choose the alternate.

The diversion rates for each sub-section were set up to vary depending on the toll amount and the number and location of tolling facilities. It was assumed that up to one tolling facility could be set up in each sub-section of I-80, and that the total toll amount would be divided evenly among each toll facility. The model also allows tolling to be limited to as few as one tolling location. The model could be used to test different toll facility locations and toll rates to determine the toll amount and toll facility scheme that would generate the most amount of net revenues.

The model also contains the built in flexibility to determine how potential toll revenues would differ between a Truck-Only Toll (TOT) facility and a toll implementation strategy for the existing

<sup>27</sup> A rule of thumb used in this analysis is that a truck's value of time is equal to 1.25 times the hourly cost of the driver, equaling average wage plus benefits.

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I-80 highway. It is reasonable to expect that if a new TOT facility were built, slightly fewer trucks might divert to an alternate route, because of safety and efficiency gains associated with increased capacity.

Thus, in the model, an assumption was made that for the TOT facility scenario, trucks would be able to travel five miles per hour faster than on I-80, which translates into roughly 20 minutes of travel time savings over the entire 400-mile corridor. Other flows that only travel on a section of I-80 received a smaller increase in the travel time differential.

Passenger car diversion was not analyzed at the same level of detail as truck diversion, because cars were assumed to pay a steeply discounted toll and not represent a significant part of the overall toll revenue stream. Because a much higher proportion of passenger cars are expected to be Local trips, passenger car diversion is expected to be much higher than truck diversion, as cars are likely to have better knowledge of local roads and the ability to divert around tolling points. Passenger car diversion is assumed to be 1.25 times that of truck diversion at any given toll rate. This assumption results in a high proportion of auto traffic diverting from I-80 at toll rates that exceed the value of time assumed for passenger cars of approximately \$9.20 in 2010<sup>28</sup>.

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<sup>28</sup> Passenger car value of time calculated as 1/2 the average hourly wage rate, reported as \$17.40 in 2007 by the Bureau of Labor Statistics.

Appendix D: Tolling Impacts on Non-Wyoming Trucking Routes

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This appendix details diversion findings for non-Wyoming flows summarized in Section 5.3 of the report. Particular emphasis was given to non-Wyoming trucking route diversion because the majority of trucks on I-80 are from out of state and pass completely through Wyoming. There are five major east – west Interstates competing for traffic with I-80 in Wyoming:

- I-94 from Montana to Detroit,
- I-90 from Seattle to Boston,
- I-70 from Utah to Philadelphia,
- I-40 from Southern California to North Carolina, and
- I-10 from Los Angeles to Florida

Based on PB’s analysis of I-80 relevant FAF data, each of these five highways serve as a next best route to I-80 for O/D flows using I-80 today. However, because most flows utilizing I-80 move to or from Northern California or the Pacific Northwest, the highways available to connect them to their eastern trading partners – I-40 and I-70 for California; I-90 and I -94 for Oregon and Washington – are the most competitive routes for I-80 traffic. Only at very high toll rates would traffic divert to the south to use I-10.

The table in Exhibit D1 below shows the Sub-Regions west of Wyoming that utilize I-80 in the shipment of their imports to (and exports from) various cities east of Wyoming (the six Sub-Regions are both origins and destinations of goods). In total, these six Sub-Regions are represented in 95% of non-Wyoming-specific truck flows, or roughly 85% of all trucking flows (if Wyoming-specific flows are included).<sup>29</sup>

Each of these six Sub-Regions were analyzed individually in terms of both east-bound and west-bound traffic to determine which truck routes are captive to I-80, which are discretionary, and which are not relevant. For the discretionary regions, a discussion of the relative competitiveness of the alternate routes to I-80 follow, along with the estimates of diversion that could be expected under an assumed toll of \$50<sup>30</sup>. Wyoming-specific flows, which constitute roughly 11% of total I-80 truck movements, will be discussed following the analysis for each Western Sub-Region.

**Exhibit D1: Major Non-Wyoming Flows by Western Sub-Region**

Major US Region	Sub-Region	AADTT	% of total non-WY AADTT
California	Northern California (Excludes SF Bay Area)	1,242	23%
Pacific Northwest	State of Oregon	1,101	21%
California	San Jose, CA (Includes SF Bay Area)	1,013	19%
Southwest	Salt Lake City, UT	700	13%
Pacific Northwest	State of Idaho	637	12%
Pacific Northwest	State of Washington	391	7%
	TOTAL	5,083	95%

*Source: FAF Commodity Origin/Destination Database, PB Analysis*

<sup>29</sup> The western region-oriented presentation is used because there are far fewer Sub-Regions west of Wyoming compared to east of Wyoming. As such, it is clearer to present total Wyoming flows in terms of the Western Sub-Regions than in terms of Eastern Sub-Regions.

<sup>30</sup> The \$50 toll was selected for the comparison of toll diversion from various Sub-Regions as it an approximate midpoint on the scale of toll rates. If a higher toll was charged, the ‘captive’ and ‘not relevant’ areas would shrink and be replaced by larger discretionary areas.

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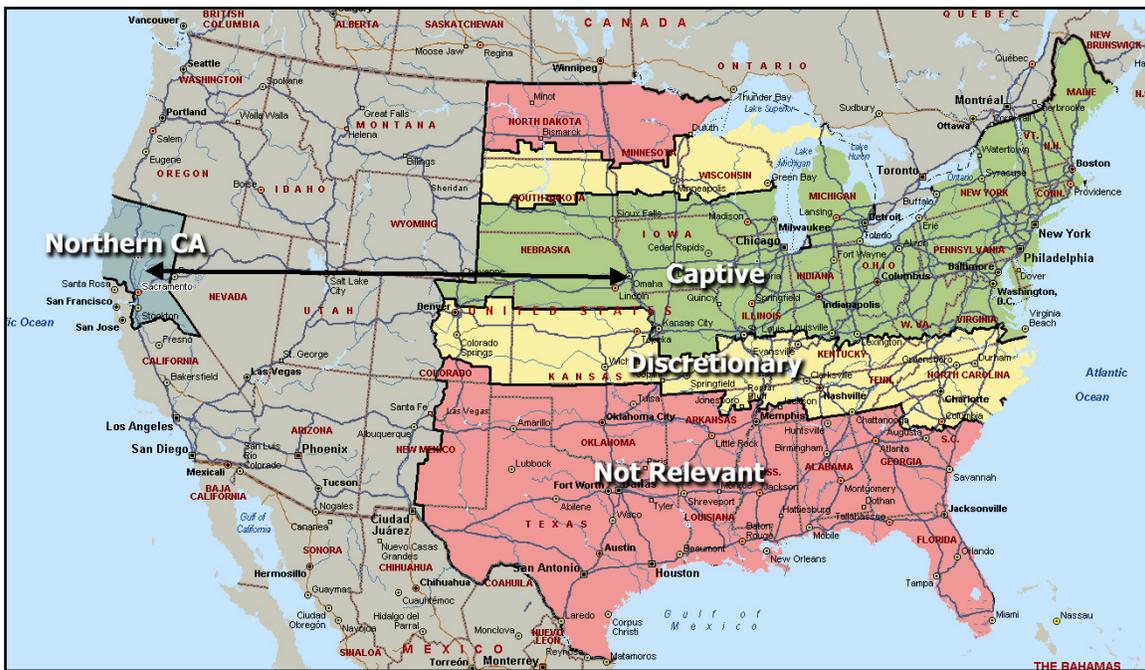
## Northern California

Northern California is a large region comprising the cities of Sacramento, Stockton, Modesto, and the smaller rural counties to the north. Unlike the San Jose region, Northern California does not have direct access to a container port, but many of the goods shipped from this region are likely produced using foreign imports as inputs to production. In 2002, roughly 1,250 trucks, or 23% of all non-Wyoming truck flows, transited I-80 each day between Northern California and various cities east of Wyoming.

Exhibit D2 breaks down the areas east of Wyoming that trade with Northern California into three groups: I-80 captive (in green), discretionary (in yellow), and not relevant (in red). Most cities throughout the Midwest and Northeast are captive to I-80, which means trucks would likely not divert from I-80 unless a toll starting at \$80 or more were charged on the highway. The only alternative to I-80 for most of these flows is I-15 to US-6 to I-70 from Salt Lake City, which is not only longer and slower than I-80, but is expected to experience significant congestion in the future.

Unlike the Northern regions of the US, most of the Southeast and lower Midwest, shaded in red, is not I-80 relevant from Northern California, as these flows would likely use I-40 or I-10 to reach their destinations. Only a relatively small number of Eastern regions trading with Northern California are discretionary, meaning some traffic would likely divert from I-80 to other routes if a toll of \$50 were implemented.

**Exhibit D2: I-80 Captive, Discretionary, and Not-Relevant Regions Trading with Northern California**



Source: FAF Commodity Origin/Destination Database, PB Analysis

Exhibit D3 presents the breakdown of I-80 relevant trucking flows to or from Northern California into captive and discretionary flows, with the major trading partners listed under each category. Discretionary flows only accounted for roughly 14% of all I-80 relevant traffic from/to Northern California. This analysis shows that even if all discretionary flows diverted to their next best alternative routes, the vast majority of relevant California-based flows would continue to use I-

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80. Throughout the forecast, discretionary flows are assumed to remain stable at roughly 14% of total traffic from 2009 to 2049.

Based on PB’s analysis, the average diversion rate for all Northern California flows is expected to be roughly 11% if truck traffic on the existing facility is tolled at \$50, with diversion occurring on all discretionary routes except US-6 to I-70 from Denver in the early years of the forecast. If a new TOT facility is built or new lane miles are added to I-80, the average forecasted diversion rate is estimated to fall to 7%.

**Exhibit D3: Captive and Discretionary Flows to/from Northern California, CA**

I-80 Status	AADTT 2002	% of 2002 total	Avg. % of total, 2010 to 2035	Major Trading Partners
Captive	1,066	86%	86%	Detroit, Chicago, Kentucky, Iowa, Milwaukee, Nebraska, New York
Discretionary	176	14%	14%	Minneapolis, Denver, North Carolina, Kansas

*Source: FAF Commodity Origin/Destination Database, PB Analysis*

**San Jose, CA**

The second largest Western region utilizing I-80 for its truck-related goods movements with Eastern cities is San Jose, which in 2002 accounted for more than 1,000 trucks passing through Wyoming on I-80. Most of these goods are likely coming directly from the port of Oakland. Movements to and from the San Jose metropolitan region comprise 19% of total non-Wyoming flows.

Similar to Northern California, most of the Eastern US regions located south of I-70/I-64 are not relevant to I-80. However, because San Jose slightly south of Northern California, the I-5 to I-40/I-44 alternative route, is a feasible choice to and from the east from San Jose. As a result, cities like Nashville and Charlotte, which were discretionary from Northern California, are not relevant to I-80 from San Jose. In addition, cities considered to be I-80 captive from Northern California, such as Kansas City, Cincinnati, and Northern Virginia, are discretionary from San Jose.

From San Jose, most discretionary regions, including St. Louis, Indianapolis, Cincinnati, and Columbus, would likely use the I-5 to I-40 to I-44 route as a competitive alternative to I-80. The best alternative route to/from Denver, Topeka and St. Louis remains I-5 to I-15 to I-70, and to Minneapolis, US-83 to I-86 to I-15 to I-94 remains competitive to I-80 as well. On average, these alternate routes are 30 to 60 minutes longer and roughly the same distance as I-80.

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**Exhibit D4: I-80 Captive, Discretionary, and Not-Relevant Regions Trading with San Jose, CA**



Source: FAF Commodity Origin/Destination Database, PB Analysis

As shown in the Exhibit below, discretionary flows only accounted for roughly 15% of all I-80 relevant traffic to/from San Jose in 2002, roughly the same as the 14% from Northern California. Throughout the forecast, the discretionary flows are expected to grow faster than captive flows, reaching on average of nearly 20% throughout the 2010 to 2035 period. If the existing facility were tolled, roughly 15% of the total San Jose traffic would divert, on average, over the same period. If new lane miles or a TOT facility were constructed, the forecasted diversion rate is estimated to fall slightly to 14%.

**Exhibit D5: Captive and Discretionary Flows to/from San Jose, CA**

I-80 Status	AADTT 2002	% of 2002 total	Avg. % of total, 2010 to 2035	Major Trading Partners
Captive	862	85%	80%	Detroit, N. Ohio, S. Minnesota, N. Indiana, Boston, New York, Chicago, Pennsylvania
Discretionary	150	15%	20%	Minneapolis, Louisville, Denver, Topeka, St. Louis, Indianapolis

Source: FAF Commodity Origin/Destination Database, PB Analysis

**State of Oregon**

Next to California, Oregon is the second most important state for truck flows utilizing I-80. Many of these flows constitute movements of either agricultural products from the Grain Belt to the port of Portland, or imports of various consumer products from the port of Portland to the central and eastern portions of the US. Movements to and from the State of Oregon comprise 20% of total non-Wyoming flows.

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Unlike flows from California, many of Oregon’s trading partners in the Northeast are not captive to I-80. Goods moving from Boston, New York and Chicago to Portland or other cities in Oregon could either move their goods on I-80 or I-94 / I-90, with the latter route only being 30 miles longer and 60 minutes slower on average than I-80, assuming no differences in congestion. The major downside truckers would face in diverting to I-94 / I-90 is that they would have to pass through the Minneapolis and Chicago metropolitan areas, where delays are very common and expected by the FHWA to become worse in the future<sup>31</sup>. The increased travel time risk on the I-94/I-90 will likely prevent most truckers from diverting to this alternative route on trips between cities east of Chicago and Oregon.

### Exhibit D6: I-80 Captive, Discretionary, and Not-Relevant Regions Trading with Oregon



Source: FAF Commodity Origin/Destination Database, PB Analysis

There is one other discretionary region to Oregon trades in the southern portion of the US, which would be reached by traveling on I-5 to I-10. Shipments from southern cities like Houston, New Orleans and Mobile could use this route, but the impact of these shipments on total truck I-80 diversion would be negligible since they represent a very small number of trips on I-80.

The rest of the country, except for the Upper Midwest, is captive to I-80, with the only other routing alternative being to use US-6 to I-70 between Nebraska and Salt Lake City. As stated above, congestion issues on US-6 prevent Denver and Kansas from being feasibly serviced on this alternate route, and regions east of Kansas City are not competitive to US-6/I-70 regardless of congestion.

Because so many Eastern cities could be served using I-90/I-94 as well as I-80, the discretionary share of total traffic moving to/from Oregon is roughly 50%, much higher than California.

<sup>31</sup> The FHWA FAF Highway Link database estimates that in 2002, average truck speeds through Minnesota and Illinois on I-94/I-90 average 30 and 10 miles per hour, respectively. These speeds are expected to worsen to less than 5 miles per hour by 2035 if no major additional lane miles are added.

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However, because most trucks servicing the East Coast would not likely sacrifice the reliability of I-80 for the toll savings associated with its northern competitor, only 12% of total Oregon truck traffic is forecasted to divert if the existing highway were tolled. If new lane miles or a TOT facility were constructed, providing an additional reliability premium to truckers, the forecasted diversion rate could fall as low as 3%.

**Exhibit D7: Captive and Discretionary Flows to/from Oregon**

I-80 Status	AADTT 2002	% of 2002 total	Avg. % of total, 2010 to 2035	Major Trading Partners
Captive	623	57%	49%	Kansas, Colorado, Iowa, S. Florida, Kentucky, Missouri, S. Illinois, Georgia
Discretionary	479	43%	51%	Chicago, N. Indiana, S. Alabama, Maine, Boston, N. Ohio, Buffalo

*Source: FAF Commodity Origin/Destination Database, PB Analysis*

**Salt Lake City, UT**

Salt Lake City is a region that demands far fewer trucks for its imports and exports than San Jose, Sacramento or Portland. However, it is one of the largest and most important Western regions utilizing I-80 for its goods movements, largely because almost all of its eastern US trading partners are captive to I-80. In 2002, roughly 700 trucks, or 13% of total truck traffic, traveled to or from Salt Lake City on I-80 through Wyoming each day.

From Salt Lake City to the Midwest, Southeast or Northeast of the US, there is no feasible alternate route to I-80. The only other possible routes to or from the East Coast are US-6 to I-70, which is slower and more congested than I-80, or a series of US state highways to I-40 to reach the Southeast, which is a longer, slower and more congested option for cities east of Oklahoma City. The latter route, which involves taking US-6 / US-191 / US-491 before reaching I-40, is assumed to be the route of choice for truckers serving Texas, Southwestern Oklahoma, Louisiana and Southern Mississippi, based on historical trucking flow maps from the FHWA<sup>32</sup>.

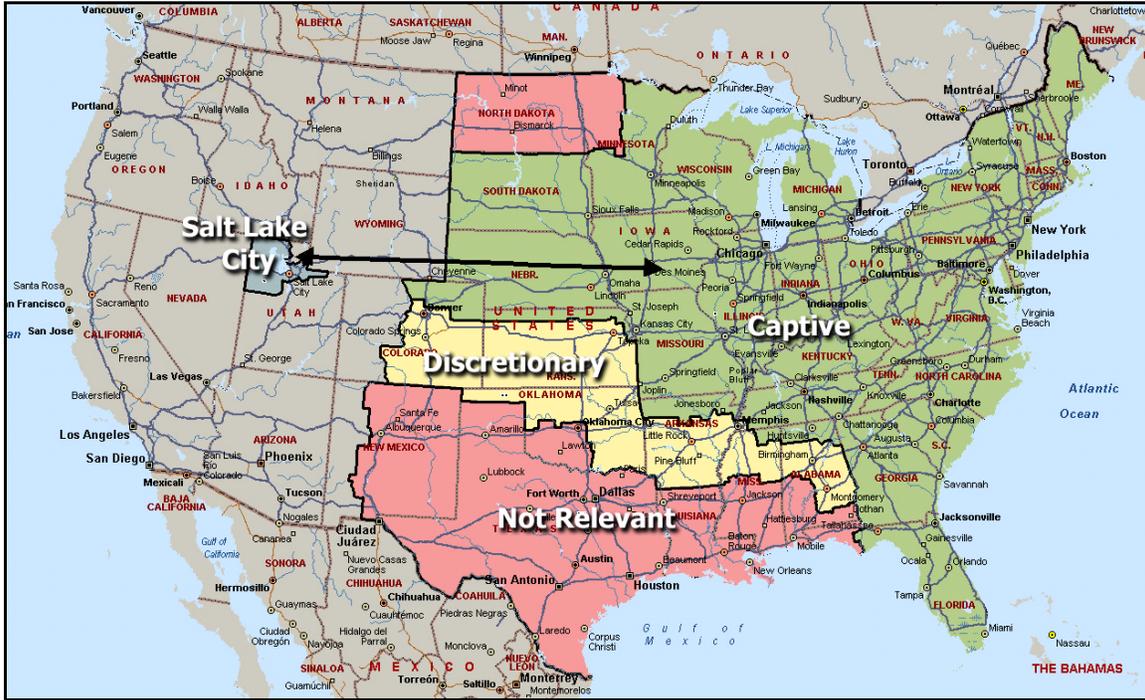
The only discretionary trading partners for Salt Lake City are Denver, Southeastern Colorado, and Kansas, as these regions could be served from US-6 to I-70. Without any congestion, this alternate route is roughly equivalent in distance and 60 minutes slower, on average, in travel time compared with I-80. However, with the high probability of congestion on the 165 mile stretch of I-15 and US-6 from Salt Lake City to I-70 and the steep grades through the mountains of Colorado, most truckers would likely not divert from I-80 when moving goods between Salt Lake City and Denver or Kansas.

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<sup>32</sup> Source: [http://ops.fhwa.dot.gov/freight/freight\\_analysis/state\\_info/utah/ut\\_combtrks.pdf](http://ops.fhwa.dot.gov/freight/freight_analysis/state_info/utah/ut_combtrks.pdf).

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**Exhibit D8: I-80 Captive, Discretionary, and Not-Relevant Regions Trading with Salt Lake City**



Source: FAF Commodity Origin/Destination Database, PB Analysis

For Salt Lake City goods movements, the discretionary share of total truck traffic averages 30% over the forecast period, with almost all discretionary flows comprising movements to Denver or Southern Colorado. Very little of this discretionary traffic is expected to divert to the US-6/I-70 route. If the existing highway facility is tolled without additional lane mileage construction, 3% of all trucks moving to/from Salt Lake City are estimated to divert on average over the forecast period. If new lane miles or a TOT facility were constructed, providing an additional reliability premium to truckers over US-6/I-70, all trucks would likely continue to use I-80 for shipments to/from Salt Lake City, with no diversion to other routes.

**Exhibit D9: Captive and Discretionary Flows to/from Salt Lake City**

I-80 Status	AADTT 2002	% of 2002 total	Avg. % of total, 2010 to 2035	Major Trading Partners
Captive	550	79%	70%	Georgia, Kentucky, Chicago, Detroit, Iowa, Missouri, South Dakota
Discretionary	149	21%	30%	Colorado, Kansas

Source: FAF Commodity Origin/Destination Database, PB Analysis

**State of Idaho**

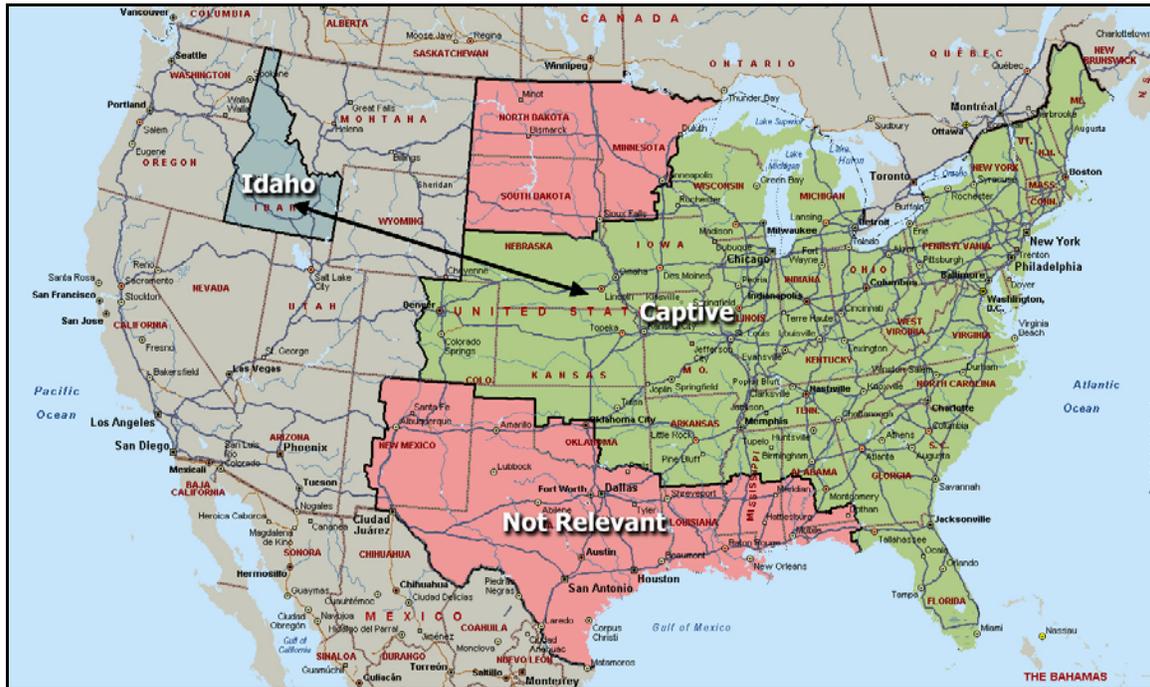
The state of Idaho is similar to Salt Lake City in that the quantity of trucks required to handle its imports and exports is small compared with San Jose or Portland, but nearly all of its trading partners are captive to I-80, making it an important western region to the Wyoming span of I-80. Idaho features nearly the same set of captive and non-relevant regions east of Wyoming, with

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the important exception that Colorado and Kansas, unlike for Salt Lake City, are also captive to I-80. Traveling to Denver or Topeka from Boise on US-6 to I-70 is 30 miles longer than I-80 and 90 minutes slower, excluding the potential delays on this route mentioned earlier. Thus, unless the I-80 toll were well above \$100, it is unlikely that any trucks will divert to this alternate route.

The only regions that would not route their goods on I-80 to/from Idaho are North and South Dakota, Minnesota, Texas and the Gulf Coast region. Flows between Idaho and the Dakotas or Minnesota would use either I-90 to I-94 instead of I-80, and Texas and Gulf trades would likely use US-6/US-191/US-491 to I-40. All of the other truck flows between the Eastern half of the country and Idaho are considered captive at a \$50 toll and expected to continue to utilize I-80 over the forecast period.

### Exhibit D10: I-80 Captive, Discretionary, and Not-Relevant Regions Trading with Idaho



Source: FAF Commodity Origin/Destination Database, PB Analysis

### State of Washington

The state of Washington mainly comprises movements to and from Seattle, with smaller flows from other metropolitan areas such as Spokane, Vancouver, and Yakima. Most goods flowing from the Seattle-Tacoma metropolitan area to the Upper Midwest or the Northeast do not travel on I-80; rather, they mostly utilize I-90 or I-94, depending on eastern city. Seattle is the only region for which flows to Chicago or the Northeast are not relevant to I-80. Additionally, almost the entire rest of the country east of Wyoming is discretionary from Seattle. Trucks moving to/from many eastern locations can choose from several good alternate routes, such as I-90 / I-94, I-90 / I-25, or US-6 / US-191 / US-491 / I-40 for movements to Texas or New Orleans. As such, the diversion rate for Seattle-based goods movements is much higher than those of Oregon or California.

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**Exhibit D11: I-80 Captive, Discretionary, and Not-Relevant Regions Trading with Washington**



Source: FAF Commodity Origin/Destination Database, PB Analysis

As shown in the Exhibit below, roughly 90% of all relevant I-80 flows from Seattle are discretionary, with the only exceptions being flows from Southern Washington to Colorado, Nebraska or the Northeast. The estimated diversion rate from Washington state is 86% if I-80 were tolled with no additional lane miles. If new lane miles or a TOT facility were constructed, the forecasted diversion rate is estimated to fall to 77%.

**Exhibit D12: Captive and Discretionary Flows to/from Washington**

I-80 Status	AADTT 2002	% of 2002 total	Avg. % of total, 2010 to 2035	Major Trading Partners
Captive	50	13%	10%	Southern Washington to Colorado, Northeast Arkansas, Denver, Georgia, Florida, Kansas, Texas, Tennessee
Discretionary	340	87%	90%	

Source: FAF Commodity Origin/Destination Database, PB Analysis

**Summary of Findings – Trucks**

The estimated truck diversion rate over the forecast horizon averaged roughly 17% under the toll existing facility scenario, and fell to 13% under the new lane miles/TOT facility scenario. The largest amount of diversion will likely occur on shipments to or from Seattle. Truckers moving goods between Seattle and cities in the Southeast or Gulf regions would likely divert to I-90/I-94 or I-90/I-25, while flows to/from Texas could divert to either I-25/I-90 or I-40/US-491/US-191/US-6.

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A much smaller amount of diversion is estimated to occur on trades moving to/from Northern California. Under the toll existing facility scenario, the diversion rate from Northern California averaged 11%, and under the new lane miles/TOT scenario, the diversion rate averaged 7%. From Northern California, most of the diversion occurs on shipments to/from Denver, which could divert to I-5/I-15/I-70, Minneapolis on I-15/I-94, and North Carolina on I-5/I-40 from cities like Stockton and Modesto in the southern half of Northern California.

**Exhibit D13: Estimated Diversion Routes by Major Western Region and Scenario**

Major US Western Region	Sub-Region	Avg. Forecasted Diversion, Base Scenario	Avg. Forecasted Diversion, Alternative Scenario
California	Northern California (Excluding SF Bay Area)	11%	7%
Pacific Northwest	State of Oregon	14%	5%
California	San Jose, CA (Includes SF Bay Area)	15%	14%
Southwest	Salt Lake City, UT	3%	0%
Pacific Northwest	State of Idaho	0%	0%
Pacific Northwest	State of Washington	86%	77%
Wyoming	Wyoming-Specific Flows	26%	21%
	TOTAL	17%	13%

*Source: FAF Commodity Origin/Destination Database, PB Analysis*

Roughly 15% of San Jose shipments are estimated to divert under the toll existing facility scenario, and 14% under the new lane miles/TOT facility scenario. Like Northern California, much of the diversion occurs on flows to/from Minneapolis and Denver, and some other flows to the Lower Midwest could divert to I-15/I-40.

From Oregon, 14% of the forecasted traffic flows are estimated to divert under the no build scenario, and 5% are estimated to divert if new lane miles or a new TOT facility is constructed. Most of the diversion is projected to occur on shipments from Portland to Chicago, which would divert to I-90/I-94, as well as flows from southern Oregon to cities in the South, which could use I-5/I-10.

Almost 100% of shipments moving to/from Idaho and Salt Lake are expected to continue to use I-80 unless a very high toll rate is charged.