DEDICATED TRUCK LANES
FEASIBILITY STUDY

Phase 2 Report
Funding and Financing
2011

Prepared for

Illinois Department of Transportation

Indiana Department of Transportation

Missouri Department of Transportation

Ohio Department of Transportation

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DEDICATED TRUCK LANES
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Technical Appendix 10
Funding and Financing

A: Funding and Financing Options

Introduction

Funding the I-70 Dedicated Truck Lanes (DTLs) project will be challenging given the size of the project and the level of funding commitment that will be required to cover the total project costs, including initial construction costs, operations and maintenance costs, future reconstruction costs during the project term and anticipated financing costs. Complicating the funding issue even further are the multiple jurisdictional authorities that exist along the corridor. Project funding from each jurisdictional authority will need to be consolidated, and each jurisdictional authority will have its own set of projects competing for available funding.

The funding needs for this project are examined against a backdrop of current shortfalls in federal and state transportation funding, growing demands for reductions in deficit spending, a lagging reauthorization of even a six-year federal transportation bill, and calls for a complete overhaul of the nation's current federal transportation funding program. Given the evolving nature of transportation financing, it is quite likely that some of the potential financing mechanisms referenced in this paper will change or even disappear within the design, construction and implementation term of this project. New programs and revenue sources that are being evaluated at the federal level are likely to supplement or completely replace portions of existing transportation revenues. Potential sources are as diverse as dedicated cap and trade transportation fees and/or vehicle miles travelled (VMT) fees in lieu of fuel taxes and tolls. Developing technologies, and new energy sources, transportation modes, and changing societal priorities could also lead to financing mechanisms that have yet to be considered. Ultimately, the plan of finance for a project such as the I-70 DTLs will have to accommodate such change.

As potentially applicable to I-70, this section of Technical Appendix 10 examines the larger components of the traditional state and Federal-Aid transportation programs and select potential new revenue sources. There are many smaller programs that are not discussed in this paper simply because their revenue-generating potential is not of a magnitude to contribute significantly to the project.

Historically, each of the four I-70 Coalition member states has allocated Federal-Aid funding to the I-70 corridor. However, these funds alone will

not be sufficient to fund the proposed project. It is also presumed that debt financing will be required and that some manner of user fee over an extended period of time will be required to generate a new source of revenue that is sufficient to cover a sizeable portion of the total project costs. The traffic and revenue estimates and financing capacity analysis included in the Phase 2 I-70 Dedicated Truck Lanes Feasibility Study (TA 10 B) each considers a 75-year concession of the project with a user fee, in the form of tolling all vehicles in all lanes, as a source of revenue. The results of the financing capacity analysis indicate that even a dedicated toll-type user fee will not generate sufficient revenue to secure the required project financing and that additional sources of funding will be required. The tolls analyzed in the analysis could just as well be an equivalent VMT or other user fee or fees developed in a manner to generate an equivalent amount of revenue. Funding of this project, short of major congressionally dedicated funds is likely to require a dedicated user fee combined with traditional federal and state funding appropriations. If the states are not able to reallocate substantial portions of their traditional Federal-Aid Program funds for the project, one or more additional new revenue sources will be necessary to supplement dedicated user fees in order to fund the project.

It is important to recognize that, even if the proposed I-70 DTLs project is not constructed, the four I-70 Coalition member states will have to expend an estimated $32.2 billion (in 2011 dollars) over 75 years on maintenance and reconstruction of the existing I-70 corridor. It is anticipated that state and federal transportation programs, as they exist today, will not be able to fully cover these costs. Therefore, even to maintain the existing I-70 corridor, new revenue sources will be needed, or else other sizeable transportation needs will have to go un-met for some time. In short, while the budgetary requirement of the I-70 DTLs project is significant, a large component of this need and the need for new revenue sources will exist regardless of whether or not the proposed I-70 DTLs project is implemented.

Even if the proposed I-70 DTLs project is not constructed, the four I-70 Coalition member states will have to expend an estimated $32.2 billion (in 2011 dollars) over 75 years on maintenance and reconstruction of the corridor.

This section of Technical Appendix 10 does not attempt to identify the many intricacies of financing a project of this nature. Instead, it identifies a variety of funding mechanisms that exist today and that could be utilized in conjunction with tolling or an equivalent user fee to support financing for the I-70 DTLs. The appropriateness, as well as the potential for implementing and dedicating to this project, any given funding source will be very much a political decision of each individual state, and potentially the federal government.

Federal-Aid Program funding sources

Before examining the various non-traditional financing options that could potentially be used for the I-70 DTLs project, it is prudent to first consider current Federal-Aid Program funding sources that could be used in combination with local, state, and private equity funds to achieve a feasible plan of finance. Historically, the I-70 Coalition member states have dedicated to improvements along the I-70 corridor portions of the funds that they received from the various components of the Federal-Aid Program. It is presumed that these states could continue such allocations to help fund the I-70 DTLs project. Authorizations from federal core funding categories under the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) could be combined to contribute to the public investment required to finance the project. This could take the form of limited owner (governmental entity) participation in the financing of construction and maintenance on a reimbursement basis to the project, through available proceeds from the issuance of Grant Anticipation Revenue Vehicles (GARVEE) Bonds backed by these federal funds or through similar instruments as may be provided under future federal legislation. Each of these finance instruments is described below.

A review of Federal-Aid Program receipts shows that sizeable dollars have historically been available to each of the four I-70 Coalition member states. If these states were to collectively make the financing of the I-70 DTLs project a priority through the dedication of significant percentages of their Federal-Aid funding, just as was required with the initial construction of the various segments of the Interstate system, a large component of the project could be funded through these traditional sources or their likely successors. This would, of course, require substantive delay of many other construction and maintenance projects within the four states and would surely result in major public and political debate.

Table 1 shows that, between 2005 and 2009, SAFETEA-LU's combined National Highway System, Surface Transportation Program, Interstate Maintenance, Highway Bridge Program, Highway Safety Improvement Program, and Congestion Mitigation and Air Quality Improvement funds for the four I-70 Coalition member states averaged approximately $8.5 billion per year. For illustrative purposes, assuming federal funding continues at the same levels and based on the results of the financing capacity analysis presented in Technical Appendix 10 B, approximately six percent of the four states' cumulative annual receipts from these six Federal Program funds would need to be dedicated to the I-70 DTLs project over a 25-year period to fully cover the project costs that cannot be supported by tolls or similar user fees. It is presumed that toll receipts would account for the state match to these federal program funds. Without tolls or an equivalent user fee, the required percentage would increase to approximately 43 percent. If the I-70 DTLs project is not constructed, the states would need to dedicate

approximately 25 percent of their cumulative annual receipts from these six Federal Program funds to the corridor over the same 25-year period to cover the maintenance and rehabilitation costs of the existing corridor.

Table 1 – Total apportionments by program under SAFETEA-LU for fiscal years 2005 – 2009

SAFETEA-LU Program	Apportionments for Fiscal Years 2005 - 2009 ($)					
	Illinois	Indiana	Missouri	Ohio	Total	Annual Average
National Highway System (NHS)	1,066,197,835	958,401,221	864,239,734	1,134,125,557	4,022,964,347	804,592,869
Surface Transportation Program (STP)	1,382,725,435	1,101,105,949	956,735,464	1,414,810,366	4,855,377,214	971,075,443
Interstate Maintenance (IM)	1,243,396,547	929,942,749	774,214,328	1,265,055,184	4,212,608,808	842,521,762
Highway Bridge Program	740,826,771	370,228,744	761,211,014	885,486,238	2,757,752,767	551,550,553
Highway Safety Improvement Program (HSIP)*	175,969,641	115,682,547	140,926,947	160,717,350	593,296,485	148,324,121
Congestion Mitigation & Air Quality (CMAQ)	448,338,030	220,017,992	100,662,388	452,040,886	1,221,059,296	244,211,859
Total	$14,275,686,717	$10,646,101,622	$10,592,644,849	$15,032,624,971	$42,121,840,543	$8,454,032,933

*HSIP, a new core program under SAFETEA-LU, did not begin until Fiscal Year 2006. Therefore, the values shown are based on FY 2006 -2009.

Source: http://www.fhwa.dot.gov/safetealu/fundtables.htm

The I-70 Coalition member states have historically relied on SAFETEA-LU Programs to fund improvements along the I-70 corridor. As with previous improvements along the corridor, the I-70 DTLs project will have to compete against other in-state projects for available funding from these programs. In addition, it is anticipated that extensive multistate coordination will be required for funding the portions of the project that extend beyond individual state lines. This will be required in the initial phases of implementation and will most likely continue after construction into the operations and maintenance phase.

Technical Appendix 10 C presents an analysis of the impact of an increase in motor fuel tax as another option for raising funding for I-70. There is considerable debate on this topic from many stakeholders. TA 10 C is not intended to advocate for this, merely to provide a quantitative analysis of what could be generated through an increase.

National Highway System (NHS) funds

National Highway System (NHS) Funds can be used on roadways that are determined to be important to the nation's economy, defense and mobility. These funds can be used on Interstates and are made available to individual states by formula based on lane-miles of principal arterials (excluding Interstate), vehicle-miles traveled on those arterials, diesel fuel used on the State's highways and per capita principal arterial lane-miles.

In terms of magnitude, SAFETEA-LU provided the NHS program $30.5 billion in funding through 2009. For the I-70 Coalition member states, NHS funding under SAFETEA-LU is shown in **Table 2** for fiscal years 2005 to 2009. During this period, the combined average annual award of NHS funds to the four states exceeded $804 million, indicating significant opportunity for the potential utilization of these funds to help fund the I-70 DTLs project.

Table 2 - Annual National Highway System (NHS) apportionments under SAFETEA-LU for fiscal years 2005 – 2009

	NHS Apportionments for Fiscal Yeas 2006-2009 ($)					
Fiscal Year	Illinois	Indiana	Missouri	Ohio	Total	Annual Average
2009	230,150,512	205,407,795	188,442,964	232,085,626	856,086,897	171,217,379
2008	224,399,333	202,581,373	181,871,164	236,256,187	845,108,057	169,021,611
2007	221,226,758	203,066,566	179,518,711	242,401,992	846,214,027	169,242,805
2006	198,044,872	171,802,040	159,414,722	212,570,019	741,831,653	148,366,331
2005	192,376,360	175,543,447	154,992,173	210,811,733	733,723,713	146,744,743
Total	$1,066,197,835	$958,401,221	$864,239,734	$1,134,125,557	$4,022,964,347	$804,592,869

Source: http://www.fhwa.dot.gov/safetealu/fundtables.htm

Surface Transportation Program (STP) funds

Surface Transportation Program (STP) funding has greater flexibility than NHS funding and can be used on any Federal-Aid bridge or highway, including NHS facilities. Under SAFETEA-LU, a total of $32.5 billion in STP funding was distributed to states based on lane-miles of Federal-Aid highway; total vehicle-miles traveled on those Federal-Aid highways and estimated contributions to the Highway Trust Fund Highway Account. **Table 3** shows STP funding under SAFETEA-LU for each of the I-70

Coalition member states for fiscal years 2005 to 2009. The combined average annual award for the four states from 2005 to 2009 exceeded $971 million. STP funds could serve as a source of flexible financing for the I-70 DTLs project.

Table 3 – Annual Surface Transportation Program (STP) apportionments under SAFTEA-LU for fiscal years 2005 – 2009

Fiscal Year	STP Apportionments for Fiscal Years 2006-2009 ($)					
	Illinois	Indiana	Missouri	Ohio	Total	Annual Average
2009	297,995,649	232,919,197	203,144,537	290,360,488	1,024,419,871	204,883,974
2008	290,498,762	229,462,797	198,955,744	291,754,298	1,010,671,601	202,134,320
2007	280,864,942	228,227,032	191,860,958	295,449,293	996,402,225	199,280,445
2006	252,627,297	195,077,340	170,772,771	257,049,184	875,526,592	175,105,318
2005	260,738,785	215,419,583	192,001,454	280,197,103	948,356,925	189,671,385
Total	$1,382,725,435	$1,101,105,949	$956,735,464	$1,414,810,366	$4,855,377,214	$971,075,443

Source: http://www.fhwa.dot.gov/safetealu/fundtables.htm

Interstate Maintenance (IM) funds

Use of Interstate Maintenance (IM) funds is restricted to resurfacing, rehabilitating and reconstruction of the Interstate System. A total of $25.2 billion of IM funding was provided under SAFETEA-LU by formula based on each State's lane-miles of Interstate open to traffic, vehicle-miles traveled on those Interstate highways and contributions to the Highway Account of the Highway Trust Fund that could be attributed to commercial vehicles. Even though these funds cannot be used for new capacity or specifically for freight projects, the I-70 DTLs project includes reconstruction of the existing I-70 general purpose lanes, which may be eligible for IM funds. These funds may also serve as a potential long-term source of funding for ongoing maintenance of both the general purpose lanes and the DTLs once they are constructed.

Table 4 reflects the annual IM apportionments to the I-70 Coalition member states for the five-year period covered by SAFETEA-LU. The total combined average annual receipts exceeded $842 million, which is representative of the potential for future IM funding for the I-70 DTLS project.

Table 4 – Interstate Maintenance (IM) annual apportionments under SAFETEA-LU for fiscal years 2005 – 2009

Fiscal Year	IM Apportionments for Fiscal Years 2005-2009 ($)					
	Illinois	Indiana	Missouri	Ohio	Total	Annual Average
2009	269,918,068	203,093,910	168,155,763	264,800,196	905,967,937	181,193,587
2008	263,865,828	198,030,651	163,230,249	266,308,133	891,434,861	178,286,972
2007	257,913,705	197,066,930	159,011,682	269,144,509	883,136,826	176,627,365
2006	230,948,918	165,308,892	139,358,955	231,887,433	767,504,198	153,500,840
2005	220,750,028	166,442,366	144,457,679	232,914,913	764,564,986	152,912,997
Total	$1,243,396,547	$929,942,749	$774,214,328	$1,265,055,184	$4,212,608,808	$842,521,762

Source: http://www.fhwa.dot.gov/safetealu/fundtables.htm

Highway Bridge Program funds

Highway Bridge Program funds provided under SAFETEA-LU can be used for bridge rehabilitation and replacement projects with freight-related components, or projects that serve high truck volumes. A total of $21.6 billion was authorized for eligible bridges under this program in SAFETEA-LU. Generally, with the exception of CMAQ funds, Highway Bridge Program funds are very much like the other Federal-Aid Program category funds. They have historically been widely used to fund improvements on the Interstate system and should be considered as a source of funding for the I-70 DTLs project.

Highway Bridge Program funding that has been provided to the I-70 Coalition member states for the five years of SAFETEA-LU are shown in **Table 5**. When combined with other core programs for Interstate improvements and maintenance, Highway Bridge Program funds become an important funding component for the I-70 DTLs project.

Table 5 – Annual Highway Bridge Program apportionments under SAFETEA-LU for fiscal years 2005 – 2009

Fiscal Year	Highway Bridge Program Apportionments for Fiscal Years 2005-2009 ($)					
	Illinois	Indiana	Missouri	Ohio	Total	Annual Average
2009	148,912,345	87,768,228	144,366,808	196,690,695	577,738,076	115,547,615
2008	151,937,941	80,937,378	143,395,901	183,685,230	559,956,450	111,991,290
2007	155,561,521	75,905,265	157,994,991	179,986,759	569,448,536	113,889,707
2006	140,237,987	64,122,163	151,165,137	168,904,117	524,429,404	104,885,881
2005	144,176,977	61,495,710	164,288,177	156,219,437	526,180,301	105,236,060
Total	$740,826,771	$370,228,744	$761,211,014	$885,486,238	$2,757,752,767	$551,550,553

Source: http://www.fhwa.dot.gov/safetealu/fundtables.htm

Highway Safety Improvement Program (HSIP)

The Highway Safety Improvement Program (HSIP) was authorized as a new core Federal-Aid funding program under SAFETEA-LU in 2006 to achieve a significant reduction in traffic fatalities and serious injuries on all public roads through the implementation of infrastructure-related highway safety improvements. To meet the eligible use of funds for this program, a highway safety improvement project must correct or improve a hazardous road location or address a highway safety problem.

Table 6 indicates the average annual available HSIP funding provided to each of the I-70 Coalition member states by SAFETEA-LU for the years 2005 – 2009. Although funding through this program has historically been less than other SAFTEA-LU programs, it could be used to fund safety improvements that are part of the I-70 DTLs project.

Table 6 – Annual Highway Safety Improvement Program (HSIP) apportionments under SAFETEA-LU for fiscal years 2005 – 2009

	Highway Safety Improvement Program Apportionments for Fiscal Years 2005-2009 ($)					
Fiscal Year	Illinois	Indiana	Missouri	Ohio	Total	Annual Average
2009	46,386,692	31,751,556	36,323,211	42,907,267	157,368,726	39,342,182
2008	46,196,970	31,127,036	36,302,131	43,374,107	157,000,244	39,250,061
2007	43,558,209	27,199,995	35,144,637	39,575,475	145,478,316	36,369,579
2006	39,827,779	25,603,960	33,156,968	34,860,501	133,449,199	33,362,300
2005	*	*	*	*	0	0
Total	$175,969,641	$115,682,547	$140,926,947	$160,717,350	$593,296,485	6$148,324,121

Source: http://www.fhwa.dot.gov/safetealu/fundtables.htm

Congestion Mitigation and Air Quality Improvement (CMAQ) funds

Congestion Mitigation and Air Quality Improvement (CMAQ) Funds can only be used for freight-related projects that demonstrate air quality improvement through reduction in highway-based vehicle emissions. SAFETEA-LU provided a total of $8.6 billion in CMAQ funding for distribution to states based on population by county and the severity of an area's ozone and carbon monoxide problems within an air quality non-attainment or maintenance area as classified by the United States Environmental Protection Agency (USEPA). Non-attainment or maintenance areas are typically found in major urbanized settings, and CMAQ funds are generally administered by a Metropolitan Planning Organization (MPO) and not the state Department of Transportation (DOT).

Congestion Mitigation and Air Quality Improvement funds allocated to the MPO can be used for construction of intermodal freight facilities and

"cost-effective mitigation activities" and should be evaluated to determine the extent to which they could contribute to funding the I-70 DTLs project. This is not simply a matter of identifying what funds are available. Instead, it must be determined if the project's improvements that are located in the designated non-attainment or maintenance areas represent "cost-effective mitigation activities" to the MPOs and to the citizens within the urbanized areas, and it must be determined if these improvements are more important and of greater value than other eligible CMAQ projects to both the affected MPOs and the state.

Table 7 shows the CMAQ funding that SAFETEA-LU provided to the I-70 Coalition member states during fiscal years 2005 – 2009. As indicated, the combined average annual apportionment exceeded $244 million.

Table 7 – Annual Congestion Mitigation and Air Quality (CMAQ) apportionments under SAFETEA-LU for fiscal year 2005 – 2009

	CMAQ Apportionments for Fiscal Years 2005-2009 ($)					
Fiscal Year	Illinois	Indiana	Missouri	Ohio	Total	Annual Average
2009	97,763,787	47,776,628	21,814,939	94,044,591	261,399,945	52,279,989
2008	96,036,869	46,865,029	21,370,622	95,021,249	259,293,769	51,858,754
2007	92,419,632	46,184,132	20,588,862	95,750,131	254,942,757	50,988,551
2006	82,707,112	39,442,226	18,092,675	83,630,076	223,872,089	44,774,418
2005	79,410,630	39,749,977	18,795,290	83,594,839	221,550,736	44,310,147
Total	$448,338,030	$220,017,992	$100,662,388	$452,040,886	$1,221,059,296	$244,211,859

Source: http://www.fhwa.dot.gov/safetealu/fundtables.htm

Each of the I-70 Coalition member states have counties along the I-70 corridor that are currently listed by the USEPA as being air quality non-attainment (16 counties) or maintenance (7 counties) areas eligible for CMAQ funding. While more traditionally utilized for congestion mitigation purposes on arterial roadway projects, CMAQ funds could be utilized for eligible improvements as a source of funding for the I-70 DTLs project. Concurrence from the applicable MPOs would be required.

Debt Supported Federal Programs

Development of freight corridors and other projects of national and regional significance can benefit from the utilization of several of the federal financing tools that are currently available for transportation infrastructure. Such financing mechanisms are especially important for mega-projects that have tolls, or some other user-backed form of revenue providing a level of uncertainty. Revenue uncertainty increases the cost of capital, making it more difficult to secure financing. The rates offered by federal financing vehicles tend to be more favorable than rates offered by similar instruments in the private capital markets. Federal financing programs also tend to offer more flexible payment options than similar instruments in the private capital

markets. Such programs can help advance qualified, large-scale projects that might otherwise be delayed, or even postponed indefinitely, due to a lack of available funding and/or revenue uncertainties.

Transportation Infrastructure Finance and Innovation (TIFIA) Act credit assistance

The Transportation Infrastructure Finance and Innovation Act (TIFIA) is a source of capital that requires repayment. It provides loans or credit support; in the form of direct loans, loan guarantees and standby lines of credit; to a project's public sponsor or private partner for up to 33 percent of the project's total cost. It is intended to fill market gaps while leveraging substantial private co-investment by providing subordinate and supplemental capital. To receive TIFIA credit, a project must be supported in whole or in part from user charges or other non-federal, dedicated funding sources and be included in the state's transportation plan.

It is anticipated that the I-70 DTLs project would be an ideal candidate for TIFIA, and the financing capacity analysis included in Technical Appendix 10- B assumes that TIFIA credit will be utilized. However, until a new transportation authorization act is approved by Congress, funding for TIFIA in the near-term is uncertain. Many large infrastructure projects have been made possible with TIFIA credit, and the popularity of the program has caused it to become oversubscribed. The program's limited capacity has been exacerbated by the limited availability of federal funds overall.

Proposed National Infrastructure Bank (NIB)

Possibly adding to the uncertainty of TIFIA's future is the proposal for a National Infrastructure Bank (NIB) that could issue bonds for financing transportation projects. On Labor Day 2010, the President proposed a NIB with a $50 billion initial investment to attract much larger co-investment from state and local governments, as well as from the private sector. A NIB with a $50 billion initial investment was included in the President's 2012 budget proposal. However, because TIFIA already provides credit assistance for infrastructure projects, there are members of Congress who do not support a NIB.

Even though many experts in the infrastructure market feel that a NIB could co-exist with TIFIA, there is growing concern over the time it would take to implement an efficiently-operating NIB. Some experts have stated that TIFIA would move money to infrastructure projects more quickly than the proposed NIB, which would require a lengthy legislative process. Another concern surrounding the proposed NIB is the availability and source of funding going into the future. For example, Jack Basso, Director

of Program Finance and Management for AASHTO, has questioned how the Administration plans to leverage the program without raising taxes. If implemented, a NIB could potentially be utilized as a source of financing for the I-70 DTLs project.

Private Activity Bonds (PABs)

Private Activity Bonds (PABs) support private investment in transportation infrastructure projects. They are tax-exempt bonds issued by a public sponsor on behalf of a private partner, with the private partner as the obligator of the PABs. The bonds were first made available for highway and freight transfer facilities under SAFETEA-LU, and, by law, have a limit of $15 billion.

Because PABs are tax-exempt, they offer a private partner a significantly lower cost of capital than could be obtained in private capital markets, thereby encouraging private investment. When combined with state and federal funding and TIFIA, PABs become an indispensible instrument of finance for major transportation infrastructure development that involves private participation. If the I-70 DTLs project is implemented using a PPP, PABs will provide significant incentives for private equity investment in the project.

Federal-Aid fund management tools

Federal-Aid fund management tools provide a means of leveraging funds from other credit assistance programs. Two fund management tools that could be applicable to the I-70 DTLs project include Flexible Match and Toll Credits since it is likely that the project will be partly reliant on tolls or other user fee revenues to support PABs, TIFIA and/or other future federal financing tools.

Flexible Match permits various contributions from the public and private sector to be used toward the required state or local funding match on a current Federal-Aid project through “third party donations” and federal funds. For example, proceeds of a TIFIA loan in which debt repayment is from non-federal funds, such as toll revenues, could be used as the required match for the Federal-Aid funds.

Toll Credits, another fund management tool, allows states to substitute certain previous toll-financed investments, or toll credits, for state matching funds on a current Federal-Aid project. Toll credits are provided when a state, toll authority, or private entity funds a capital transportation investment with toll revenues from existing toll facilities. The amount of credits earned equals the amount of excess toll revenues that were spent on certain highway and transit projects, less reductions for federal funds that were used on the project.

Federal-Aid fund management tools, the I-70 Corridor states are afforded the opportunity to implement non-traditional Federal-Aid Matching Strategies. Essentially, flexible match As an example of the latter, the This would likely to be reflected in the final financing scheme for the development of the I-70 Corridor

Grant Anticipation Revenue Vehicles (GARVEE Bonds)

Grant Anticipation Revenue Vehicles (GARVEE Bonds) are tax-exempt anticipation notes that can be used to finance a single, large-scale, eligible Federal-Aid highway project or multiple eligible Federal-Aid highway projects. They allow debt to be retired through the payment of future Federal-Aid highway funds, or funds in future Federal-Aid authorizations. The amount of GARVEE Bonds that a state can issue is limited. Therefore, as with currently authorized Federal-Aid funds, projects seeking to use GARVEE Bonds must compete for future Federal-Aid funding with other eligible in-state projects. It should be noted that a state's use of GARVEE Bonds to fund a project reduces the amount of Federal-Aid funding that will be available for other eligible projects in that state in the future.

If the I-70 Coalition member states make a commitment to allocate portions of their future Federal-Aid funding to the I-70 DTLs project, then GARVEE Bonds could prove to be very useful in providing a public subsidy to the project. GARVEE Bonds would allow debt repayment (the state's contribution to the project) to be made over time instead of making an up-front, lump-sum contribution to the project. However, as previously noted, the use of GARVEE Bonds to fund the I-70 DTLs project would reduce the amount of Federal-Aid funding that will be available to the I-70 Coalition member states for other eligible projects in the future.

State bonding and loan programs

State General Obligation (GO) Bonds and General Fund Appropriations

There are several state funding mechanisms, which primarily rely upon state gasoline tax revenues that can be used to help fund or finance transportation projects. State Funds made available to the DOT can be, and continually are, used for financing transportation infrastructure, most notably in the form of providing the state match to the Federal-Aid Program and support for state-aid programs. Many states supplement their state-aid transportation infrastructure program with General Obligation (GO) Bonds or, less frequently, with General Fund appropriations, which very often directly specify funding for certain projects or programs. However, since most state-aid programs fund projects that are ineligible for federal funding, including providing assistance to cities and counties for local transportation needs,

diversion of this funding to an eligible federal interstate corridor project, such as the I-70 DTLs project, might prove to be politically difficult.

Some phases of the I-70 DTLs project may be located within one state, but some phases may extend across state lines. The underlying question of whether state funds can be used, or even ought to be used, to finance a project that extends into another state or that is located outside of a given state's boundaries should be resolved before considering these funds for the I-70 DTLs project. It is possible that the issue of using funds levied in one state for use in another can be mitigated, either by legislative action or deployment of an accounting system to separate and track each of the I-70 Coalition member states' expenditures by geographical area and use. However, the fact remains that there simply are not enough state funds available for transportation infrastructure, and there will likely be an absence of political will supporting the application of state funds to the I-70 DTLs project.

State Infrastructure Bank (SIB) loans

A State Infrastructure Bank (SIB) utilizes loans and credit enhancements to help finance a wide variety of highway and transit projects. They are designed to complement traditional Federal-Aid highway and transit funding.

Of the I-70 Coalition member states, Indiana, Missouri and Ohio have SIBs, which could possibly provide loans to help finance the I-70 DTLs project. However, as with the use of other state funds, it is unclear if a loan from a SIB in one state can be used to finance a multistate project like the I-70 DTLs project. Multistate coordination will be essential and will likely require a highly complex project accounting system to separate and track each of the I-70 Coalition member states' funds to ensure that funds are spent in the correct geographical area and for the intended purpose. A multi-state authority could be viewed as a more acceptable alternative to provide funding for the development of this multistate corridor through SIB loans.

Potential new revenue sources

The Federal-Aid programs previously identified have historically been utilized by the I-70 Coalition member states to fund eligible transportation projects and, in some cases, have been utilized to fund construction and maintenance on the existing I-70 corridor. The preceding debt-supported federal programs and the state bonding and loan programs do not provide additional revenue. Instead, they are financing mechanisms that must be repaid through some source of dedicated revenue, potentially including Federal-Aid funds.

The I-70 DTLs project is of a size that it will require one or more substantive sources of new revenue and/or the reallocation of major components of existing funding sources utilized by each of the four I-70 Coalition member states. The sources described below are potential sources of revenue that, if dedicated, could provide new funding to the corridor.

Truck Parking Facilities Funds

Truck Parking Facilities Funds are provided under SAFETEA-LU. They have limited utility for the development of an interstate freight corridor. However, they could be used on the I-70 DTLs project to incentivize and enhance the overall benefits to the trucking industry by funding the construction of commercial vehicle parking facilities adjacent to truck stops, "turnouts" for commercial vehicles, geometrical design improvements at interchanges to improve truck access to parking systems and "advanced truck electrification systems". SAFETEA-LU provided $25 million in funding for this pilot program to address the shortage of long-term parking on the National Highway System. Even though these funds have not traditionally been used for Interstate System enhancement projects, these funds should be considered for use on the I-70 DTLs project to help fund the development of a "trucker Friendly" I-70 freight corridor.

General discretionary programs or ear-mark funds

General discretionary programs, or earmark funds, are currently provided under SAFETEA-LU. They could be used to provide new funding for the I-70 DTLs project if allocations for the project are specifically included in future transportation authorizations.

There are several discretionary programs that provide funding for projects that are specifically identified by Congress (also known as earmarks). High-Priority Projects, Transportation Improvement Projects, Projects of National and Regional Significance (PNRS), and the National Corridor Infrastructure Improvement Program are all programs under SAFTEA-LU that can be used to provide funding for specific projects or corridors.

Under SAFTEA-LU, High-Priority Projects provides a total authorization of approximately $14.8 billion for 5,091 identified projects and Transportation Improvement Projects provides a total authorization of approximately $2.6 billion for 466 identified projects. Projects of National and Regional Significance provides a total authorization of approximately $1.8 billion from the General Fund for high-cost projects that are expected to have national and regional benefits through improving economic productivity by facilitating international trade, relieving congestion and improving transportation safety and security by facilitating passenger and freight movement. The National Corridor Infrastructure Improvement Program provides approximately $1.9 billion of funding, also from the General Fund,

for highway projects that are located in corridors of national significance and that promote economic growth and international or interregional trade.

It is somewhat unique that funds for these earmark programs will remain available until expended, which in recent years has drawn criticism by the General Accountability Office (GAO) and Congress. More recently, US Representative John Mica, the senior Republican who is scheduled to lead the House Transportation and Infrastructure Committee, indicated that a new long-term authorization act could be offered utilizing these unspent federal dollars, combined with Public-Private Partnerships and accelerated release of aid to states.

With the expiration of SAFTEA-LU, new earmarks are no longer available unless they are specifically included in continuing resolutions. The lack of a current transportation authorization is somewhat problematic to the discussion on funding the proposed I-70 DTLs project. However, this is precisely the time to garner support for including projects, like the I-70 DTLs project, into the anticipated, but still undefined, reauthorization bill. Such efforts would allow Congress to become more familiar with the I-70 DTLs and could encourage them to include the project in the next reauthorization. It would also help to establish the need, which is due to the cost and magnitude of the project and its precedent-setting approach to freight movement and interstate collaboration, to include the project in subsequent authorizations. The I-70 DTLs project would undoubtedly benefit from such earmarks in future transportation authorizations.

However, some in Congress have proposed to do away with earmarks all together. Any determination on future earmarks or the release of previously unspent project specific funds will have to await Congressional action, most likely in the form of a reauthorization bill. In his 2011 State of the Union Address, President Barack Obama promised that he would veto any bill that includes earmarks, thereby endorsing the commitment made by House Republicans in November 2010 to impose a two-year moratorium on earmarks.

NHS High Priority Corridors

There are several other federal programs that merit mentioning. Beginning as far back as the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) and continuing though SAFETEA-LU, certain corridors have been designated as high priority corridors on the National Highway System (NHS). These corridors have been designated by Congress. An advantage of a Congressional High Priority Corridor designation is that funding can be provided directly or indirectly for these corridors, as it was in the previous three multiyear surface transportation authorizations. Also, under provisions of SAFETEA-LU, formula funds, including Interstate Maintenance funds, could be used to fund improvements to High Priority Corridors. Ongoing

funding will be determined by future authorizations for NHS High Priority Corridors.

Currently, the only portion of the I-70 corridor that travels through the I-70 coalition member states and is designated as a High Priority Corridor is the section between Interstate Route 29/35 and U.S. Route 61/Avenue of the Saints. This segment would be eligible for funding under the High Priority Corridors program if it is included in future transportation authorizations. It may also be possible to get the High Priority Corridor designation expanded to cover a larger portion of the proposed I-70 DTLs project, which would make larger portions of the project eligible for funding under this program if it is included in future transportation authorizations.

Corridors of the Future

The Corridors of the Future program does not have federally allocated funding. However, it is identified as a program specific to unique corridors warranting special attention in federal consultation and approval processes. In 2007, six corridors were designated as Corridors of the Future for the purposes of developing innovative national and regional approaches to reduce congestion and to improve the efficiency of freight delivery. The I-70 corridor within the within the I-70 Coalition member states was one of the corridors that received this designation.

The I-70 Coalition member states signed a development agreement with the FHWA in early 2009, and, since then, have received $3 million in Transportation, Community, and System Preservation (TCSP) funds for a study to evaluate the feasibility of constructing truck-only lanes along I-70 (this current study) and $2 million in Interstate Maintenance Discretionary (IMD) funds for supplemental environmental work in Missouri to evaluate the impacts of dedicated truck lanes.

The Corridor of the Future designation given to the I-70 corridor provides the I-70 Coalition member states with a strengthened basis for requesting special funding appropriations in future transportation authorizations through both a potential continuation of the Corridors of the Future program and/or potential earmark funding.

Highways for LIFE Pilot Program

Another such program worthy of mention is the Highways for LIFE Pilot Program, which was introduced as a discretionary program in SAFETEA-LU. It provides funding to demonstrate and promote state-of-the-art technologies, heightened performance standards and new business practices in highway construction. The stated goals are improved safety, faster construction, reduced construction congestion and improved quality and user satisfaction. In addition to performance standards for quality, safety and speed of construction, projects that deliver and deploy innovative

technologies, manufacturing processes and financing and unique contracting and performance measures are given priority.

If the Highways for LIFE Pilot Program is included in future transportation authorizations, it could potentially serve as a source of discretionary funding for the I-70 DTLs project. However, this program, as well as its potential usefulness for the I-70 DTLs project, will depend on a favorable resolution to the current anti-earmarking sentiment in Congress.

New State Fund Revenues

Increase in State Motor Fuel Tax (Gas Tax)

A state motor fuel tax or gas tax is the primary revenue source for nearly every state-aid transportation infrastructure program and is as universally used as a state match to the Federal-Aid Program. However, declining state and federal motor fuel tax revenues have resulted in budget shortfalls, causing many states to delay and even eliminate projects, while constantly deferring much needed maintenance. An increase in the state motor fuel tax in the I-70 Coalition member states would provide additional revenue to these states, and this revenue could be used to help fund the I-70 DTLs project. The increase could be imposed statewide or limited to the corridor, and either the entire increase or portions of the increase could be dedicated to the project.

As discussed in the Potential Gas Tax Alternatives discussion in this section of Technical Appendix 10, the federal government has been examining other alternatives to the motor fuel tax that are potentially more dependable and equitable and that could replace the current motor fuel tax at both the state and federal level. This growing desire has been spurred by a combination of more fuel-efficient vehicles, fewer miles being driven, lack of inflationary tax increases and a reluctance of most elected officials to increase fuel tax rates. One potential alternative is to convert states' flat motor fuel taxes from a cents-per-gallon basis to a percentage basis, which would allow revenue to rise in future years as the price of oil increases. As subsequently discussed in this section of Technical Appendix 10, this alternative could also be applied to federal motor fuel taxes. Such a mitigation would not cure funding shortfalls at state levels, but it would somewhat reduce the further erosion of fuel tax revenues.

Aside from tolls, or another user fee structure like a vehicle miles travelled (VMT) fee, dedicated increases in the state motor fuel taxes in the I-70 Coalition member states would provide the largest revenue potential for supplemental state funding for the I-70 DTLs project. However, increasing state motor fuel taxes is a highly political topic, and the increases are difficult to institute, particularly when they are statewide increases dedicated to a select project or projects.

Table 8 – 2008 State and local motor Fuel tax revenue

State	2008 State & Local Motor Fuel Tax Revenue
Illinois	1,526,617,000
Indiana	856,301,000
Missouri	736,303,000
Ohio	1,932,654,000
Totals	$5,051,875,000

Source: US Census Bureau, Annual Survey of State and Local Government Finances

As shown in **Table 8**, recent available data indicates that the I-70 Coalition member states collected approximately $5 billion in state and local motor fuel tax revenues in 2008. For illustrative purposes, assuming that these revenues will continue to be used to fund other state transportation projects and based on the results of the financing capacity analysis presented in Technical Appendix 10-B, such annual revenues would need to increase by an average of approximately 10 percent, with the increase dedicated to the I-70 DTLs project over a 25-year period to fully cover the project costs that cannot be supported by tolls or like user fees. Without tolls or a user fee, this increase would need to be approximately 72 percent. If the I-70 DTLs project is not constructed, annual revenues would need to increase by approximately 42 percent over a 25-year period to cover the maintenance and rehabilitation costs of the existing corridor.

Miscellaneous smaller state fees

Other common state transportation revenue sources include vehicle license fees, driver license fees, automobile title fees and penalties for overweight and/or over-dimension trucks. These fees would be difficult to rationalize as dedicated funding sources for a single corridor that carries a preponderance of through traffic, and the revenue potential would be very limited relative to the size of the corridor. These sources are not considered to be worthwhile sources of funding for the I-70 DTLs project.

Value capture funding sources examined

Value capture funding sources are not considered to be worthwhile sources of funding for the I-70 DTLs project. Value capture, as discussed here, refers to a variety of practices that have been utilized to capture revenue resulting from increased property values associated with transportation improvements. Tax increment financing is one of the more traditional value capture practices.

Value capture policies present many hurdles to their application to a multi-jurisdictional project of the size of the I-70 DTLs project. They are traditionally imposed at the local government level for financing of local road improvements that will benefit land development and increase property values. These policies are referenced here because they may be applicable to small components of the I-70 DTLs project, or, more likely, applicable to other state transportation improvements, which could free up other funds

for the I-70 DTLs project. The political, legal, logistical and administrative challenges for their implementation and the collection of fees at the state level are deemed to be too great for a project the size of the I-70 DTLs project. The potential for legal challenges would be even greater at a multi-state level. Some of the challenges of utilizing value capture policies for the I-70 DTLs project are briefly outlined in the text that follows.

As the federal and state governments struggle to meet the growing demands of maintaining and upgrading the nation's aging transportation infrastructure, a number of studies have been conducted in recent years to examine alternative or supplemental funding mechanisms for highway transportation. Components of four of these studies are referenced here for the coalition member states' consideration regarding future funding needs, of which the I-70 DTLs project may be a part. These studies are as follows:

- *Paving Our Way, A New Framework for Transportation Finance* - National Surface Transportation Infrastructure Financing Commission, Washington D.C., February 2009; financecommission.dot.gov
- *Transportation Reform Series, Improving Efficiency and Equity in Transportation Finance* - The Brookings Institution, Martin Wachs, April 2003; www.brookings.edu/urban
- *The Fuel Tax and Alternatives for Transportation Funding, Special Report 285* - Transportation Research Board, Washington D.C., 2006; www.TRB.org
- *Value Capture for Transportation Finance, Report to the Minnesota Legislature* - University of Minnesota Center for Transportation Studies, M. Iacono, D. Levinson, Z. Zhao, and A. Lari, June 2009; www.cts.umn.edu/Research/Featured/ValueCapture/

The most comprehensive of these finance studies in terms of options and evaluation of benefits is entitled Paving Our Way, A New Framework for Transportation Finance. This 2009 Report to Congress evaluates the viability of various funding mechanisms, as well as their long-term sustainability. **Table 9**, which is a summary table from that report, illustrates what the Commission deemed to be the relative viability of the many funding sources examined. It is important to note that this was a federal study focused on revenue options at the federal level. Hence, facility tolling and asset sales, leases and concessions are the only potential new revenue sources identified as having moderate to strong viability at the state level. More traditional sources, like state fuel taxes and registration fees, are identified as potential sources of additional funding only at the federal level because they are already standard fare at the state level.

Table 9 – Revenue option evaluation Summary*

Strong	Moderate	Weak	Not Applicable/Seriously Flawed**
Federal Options			
• Vehicle miles traveled fee • Automobile tire tax • Motor fuel tax • Carbon tax/cap and trade • Customs duties • Truck/trailer sales tax • Vehicle registration fee • Heavy Vehicle Use Tax • Container fee • Tariff on imported oil • Sales tax on motor fuels • Truck tire tax	• Freight waybill tax • Vehicle sales tax • Harbor maintenance tax • General fund transfer	• Freight ton-mile tax • Driver's license surcharge • Bicycle tire tax • Dedicated income tax • Auto-related sales tax • Freight ton-based tax • General sales tax	• Vehicle inspection and traffic citation surcharge • Vehicle personal property tax • Windfall profits tax • Petroleum franchise tax • Minerals severance tax • Federal tax on local transit fares • Federal tax on local parking fees
State and Local Options Benefiting from Federal Action			
• Facility level tolling and pricing	• Proceeds of asset sales, leases, and concessions	• Cordon area pricing • Passenger facility charges	• Development and impact fees • Tourism-related taxes • Tobacco, alcohol, and gambling taxes

**For revenue options that are dependent upon utilization of a targeted investment fund as a basic premise for feasibility, such a fund is assumed for evaluation purposes (e.g., for all freight-related funding mechanisms and more specifically those more narrowly targeted to intermodal port and harbor-related investment).*

*** State and local options in this category may have applicability but there is no relevant federal action or role.*

Source: Paving Our Way, A Framework for Transportation Finance; Exhibit 3-8. National Surface Transportation Infrastructure Finance Commission, Report to Congress, February, 2009.

Value Capture Policies

At the state level, some of the less traditional fees listed under the State and Local Options section in **Table 9** are development and impact fees. These can be classified under the broader heading of value capture policies. Value capture refers to a variety of practices that have been utilized to capture revenue resulting from increased property values associated with transportation improvements. Examples include:

- Land value taxes,
- Tax increment financing,
- Special assessments,
- Transportation utility fees,
- Development impact fees, and
- Negotiated exactions

The above referenced fees are collected in association with development permitting and property tax collections and hence are typically administered by local, not state, governments. The individual member states of the I-70 coalition might find opportunities to use various of the Value Capture programs described here to contribute to individual state financing needs. However, these mechanisms would not provide a significant revenue source relative to the magnitude of costs for I-70. They are far less efficient in terms of administrative requirements than more traditional revenue sources like fuel taxes, they do not provide a stable source of revenue, and two of these, impact fees and negotiated exactions, provide only one time benefits associated with new development. Collectively, the administrative challenges to implementation of value capture policies at a large scale include:

- Development permitting and assessment of property values is at the local level
- Collection of impact fees and property taxes is at the local level
- Political challenges to uniform implementation among innumerable local jurisdictions
- Need for comprehensive legislative changes
- Potential for state, local and private sector opposition and challenges
- Local jurisdictional differences in property assessment upon which some fees are based
- Administrative assessment and collection costs at the local and state levels
- Dependence on real-estate economics creates uncertainty in revenue forecasts
- Potential revenue contribution not of a size proportionate to project cost

The Minnesota state legislature commissioned the *2009 Value Capture for Transportation Finance* study of value capture policies as might be applied to its state transportation financing needs. The cited study, as conducted by the University of Minnesota Center for Transportation Studies, did not conclude whether any of these programs were or were not suited to transportation funding in Minnesota. It did, however, highlight some of the challenges to utilizing these various policies. *The following summaries, which are largely taken directly from Section 3 and the Executive Summary of that report, are more fully described in the cited Report to the Minnesota Legislature*.

Two additional funding tools classified within this study as Value Capture programs are more typically administered at the state level and are also described here, these are:

- Air rights leasing, and

- Joint development

The historical use of each of these funding sources has typically been at the local level as noted in the following examples. For some, their utilization has been further limited to transit facilities. This lack of widespread historical precedent and public acceptance of these policies would be another challenge to their implementation at a state level.

Land Value Tax (LVT)

Rather than being assigned to a specific project, land value taxes more generally capture the value created by the provision of public goods, including the accessibility afforded by transportation networks. A tax on land would be preferred to a tax on buildings, as the former would result in less economic distortion due to the fixed supply of land. A pure tax on land is possible, though rarely used. While land value taxes are desirable from the standpoint of economic efficiency and sustainability, they would most likely be slightly regressive in terms of ability-to-pay. Further, land value taxes may prove politically challenging due to high visibility and potential unpopularity.

From an administrative perspective, land value taxes would be fairly easy to implement, as the knowledge and administrative capacity already exist in most local governments to assess real property. However, accurately determining the value of land and buildings separately may be a challenging task, as they are typically bundled together at the point of sale. Compliance, moreover, would require the ability to maintain an independent and neutral source of property assessment. The experience in many cities that adopted a split-rate tax, including Pittsburgh, has indicated that this may prove to be a difficult task. Pressures from landowners to reassess the value of a property downward, similar to the experience in California that led to the adoption of Proposition 13, may lead to a rejection of split-rate taxes, as they did in Pittsburgh where the split-rate property tax was recently discontinued.

Tax Increment Financing (TIF)

Tax increment financing uses taxes levied on the increment in property value within a development to finance development-related costs. It is most commonly used by local governments to promote housing, economic development, and redevelopment in established neighborhoods. Tax increment financing has been used in some instances to finance transportation projects. However, this can raise some unique issues related to geographic equity, as some overlapping jurisdictions often do not share in the benefit from a TIF district.

While tax increment financing has seen widespread adoption in many states for the promotion of local development projects, experience in the United States with tax increment financing for transportation purposes

has been largely limited to public transit projects. One large example of the application of a TIF district in Chicago was the construction of the Randolph/Washington station, which derived $13.5 million in TIF funds from nearby development. Another example is the TIF district that was created to support the development of the Central City Streetcar in Portland. This TIF generated approximately $7.5 million in TIF funds. Also, on Portland's north side, the Interstate Avenue light rail project was supported by the issuance of $30 million in general fund notes, which are assumed to eventually be paid back from funds generated by a TIF district established near the line.

Special Assessments (SA)

Special assessments impose charges on property owners near a new or improved transportation facility based on geographic proximity or some other measure of special benefit. Various methods have been used to determine which properties receive special benefit and how to allocate charges among these beneficiaries. Some of these methods include measurement of distance from an improved facility, property frontage adjacent to an improved facility, and property acreage. Given the location-specific nature of the mechanism, the amount of revenue generated in each instance is relatively small and limited in use to initial capital costs. Political feasibility may be an issue with special assessments, as they are highly visible to affected property owners.

Special assessment districts for road improvements are found in parts of some rural states, where fiscal capacity is more limited. Under the formation of "rural improvement districts," local property owners can petition their counties to initiate infrastructure improvements with the assent of a simple majority of property owners along the proposed route. Property owners are then assessed for the cost of the improvements. Transit projects in cities like Seattle and Portland have involved the authorization and formation of "local improvements districts," within which special assessments are levied to finance a portion of the capital costs of these projects. Other U.S. cities that are exploring assessment districts for similar types of projects include Atlanta, Georgia; Tampa, Florida; and Columbus, Ohio.

The rationale underlying special assessment districts is that owners of property near a major transportation improvement receive a disproportionate benefit in the form of property value appreciation and should accordingly be charged for this benefit. If applied to an interstate corridor like I-70, the rationale of disproportionate benefit would likely not apply.

Transportation Utility Fees (TUF)

Transportation utility fees derive from the notion that transportation networks can be treated like a utility, similar to other local services such as water and wastewater treatment, which are financed primarily from user

charges. Transportation utility fees are assessed on characteristics thought to be more closely related to transportation demand than property taxes. Such fees have the potential to improve efficiency by shifting the cost burden from residential properties to commercial and industrial properties, which tend to consume more transportation services than their relative tax contributions would imply. In principle, transportation utility fees could help promote equity, but only if a link can be established between the various characteristics that form the basis of utility fees and the value of the benefits received from consumption of transportation services, a link that, in the past, has not been strongly established.

The adoption of transportation utility fees is sometimes merely a matter of political expediency since, as a fee rather than a tax, it can be established without the requirement of a public referendum. The first known application of a utility fee was a fee adopted in Fort Collins, Colorado, in 1984, which tied the level of the fee to the amount of street frontage on each parcel. This fee system was abandoned in 1987 following a legal challenge by local residents, but the experience sparked interest among other cities, primarily in Oregon, where transportation utility fees have seen their most widespread use. Subsequent transportation utility fees have used a number of different bases for setting fee rates, including flat fees, fees that apply per unit of housing or per parking space, fees based on square footage or gross floor area, fees that vary with the trip generation rate for a given property type, and fees that are set at the discretion of local city councils. It remains unclear how well these different indicators correlate with transportation demand, with the exception of trip generation rates for different property types, which are published for planning purposes by the Institute of Transportation Engineers' Trip Generation Handbook.

Development Impact Fees (DIF)

Development impact fees are one-time charges collected by local governments from developers for the purpose of financing new infrastructure and services associated with new development. They are similar to negotiated exactions in that they are charged primarily to new development to help recover growth-related, public-service costs, but differ in that impact fees can be levied for off-site services, such as roads. Impact fees are not a primary source of revenue for transportation in most jurisdictions, but can help finance the share of transportation budgets attributable to new development. They are also aided by the fact that they are politically and administratively feasible. Legislation would need to ensure a nexus between the charges and legitimate state interest, and also to ensure a degree of connection between the charges imposed on a specific development and the impact of that development.

Development impact fees are used widely throughout the United States, especially in fast-growing parts of the country, such as California, Florida,

and Texas. Their acceptance as a means of financing for transportation infrastructure and other growth-related public services is a fairly recent phenomenon. One study estimates that while fewer than 10 percent of local jurisdictions used development impact fees or negotiated exactions prior to 1960, the share of jurisdictions using impact fees along with in-kind levies grew to more than 60 percent by the mid-1980s (Altshuler and Gomez-Ibanez, 1993). The legal foundation for impact fees, as well as negotiated exactions, rests on what has come to be known as the "rational nexus" test. Roughly speaking, the rational nexus test suggests that a link must exist between the services being provided with the impact fee revenue and the cost of the services allocated to a specific development.

Negotiated Exactions

Negotiated exactions are functionally similar to development impact fees, with the exceptions that they are not determined through a formal, formulaic process and are typically not applied to provision of off-site infrastructure. Exactions can take the form of in-kind contributions to road networks or other public goods as a condition of development approval, or can be requested in the form of in-lieu fees.

The adoption of exactions as a method of infrastructure provision appears to be even more widespread than that of development impact fees, as the same study that estimated the share of jurisdictions adopting impact fees to be around 60 percent (Altshuler and Gomez-Ibanez, 1993) also estimated that around 90 percent of local governments were applying some form of exaction to new development by the mid-1980s. Also, similar to development impact fees, the legality of negotiated exactions is grounded in the establishment of a rational nexus between the required exaction and the services provided.

Joint Development (JD)

Joint development, as typically applied in discussions of value capture, refers to the spatially coincidental development of a transportation facility (e.g., an interchange) and adjacent private real estate development, where a private sector partner makes a contribution of land and/or financing to offset its costs. The term "joint development", for the purposes of this report, is used to refer to various forms of cost-sharing or revenue-sharing arrangements. Joint Development arrangements generally promote efficiency, as the voluntary nature of the transaction ensures that the expected benefits of the private sector partner exceed the cost (or share of costs) of the transportation improvement that he or she anticipates. Since the nature of JD arrangements is often location-specific, the tax base is rather narrow and the amount of revenue generated is relatively small. Joint developments are often politically feasible, due to their narrow impact, but entail a higher degree of administrative complexity.

Another way of classifying JD policies is to specify whether the agreements entered into by the public and private sector participants involve revenue-sharing or cost-sharing arrangements. The adoption of JD arrangements has been more common abroad, with prominent examples in Hong Kong and Tokyo. These cities boast extensive railway systems, whose expansion is often tied to new real estate development through financial arrangements that involve the sale or lease of newly-developed properties near the rail stations. Examples from the United States are more limited, but still illustrate the application of value capture strategies. For example, Washington, D.C.'s public transit agency (WMATA) sells air rights at stations and land near stations to generate revenue that can be applied to the capital and operating costs of providing its rail services. In New York City, density bonuses are offered to developers who agree to improve subway entrances and incorporate these entrances into their development. Portland, Oregon provides an example of a rare case in which a private development team agreed to contribute a small share of the capital costs for construction of a light rail link between Portland's central business district and that city's airport, in exchange for the rights to develop a large, vacant property near the airport.

In the broader sense, concession arrangements for the leasing of an entire highway facility such as I-70 can also be classified as JD, in which case the potential revenue generated is large, and the user impact and administrative complexity would be much greater. As applicable to the I-70 DTLs project, and as with any new capacity improvement, individual states or a coalition may be able to obtain donations of land from individual property owners who will derive some benefit from the project, but it is not anticipated to have a sizeable impact on overall cost.

Air Rights

Air rights are a form of value capture that involves the establishment of development rights above (or in some cases below) a transportation facility that generates an increment in land value. Air rights agreements promote efficiency to the extent that the increment in land value generated by the facility exceeds the cost of its development. Similar to JD, air rights agreements tend to provide a narrow tax base and a relatively small amount of revenue, though they can provide some or all of the initial capital costs of a specific project (e.g. an overhead rest area concession). The narrow scope of impact of air rights projects indicates that they should be politically feasible, though they share some of the administrative complexities associated with JD arrangements.

Applications of air rights to urban highways and subway systems have appeared in many large U.S. cities. Boston has had a history of working with the Massachusetts Turnpike Authority to facilitate the construction of major developments on top of major access points to the Massachusetts

Turnpike. Other locations where development has been pursued on top of depressed sections of urban freeway include Seattle, Washington; New York City, New York; Columbus, Ohio; and Duluth, Minnesota. Subway stations in many large U.S. cities have also proven to be ideal locations for air rights development. Stations along systems in Washington, D.C.; Atlanta, Georgia; Los Angeles, California; and Boston, Massachusetts have invited dense development, from which lease agreements have provided a stream of operating revenue.

With regard to the I-70 DTLs project, with proper enabling legislation, air rights development may be viable on more densely developed segments of the highway at some future date. Locations where air rights are typically deemed financially viable, however, are not freight corridors. They become more attractive in urban locations on corridors with a large potential commercial user / customer base and high property values that would make the investment in elevated development cost competitive.

User Fees

It has become increasingly apparent that states cannot continue to rely solely on Federal-Aid funds for the bulk of financing for major highway improvements. The cost of bringing the nation's existing transportation infrastructure into good repair is estimated by the American Society of Civil Engineers at $2.2 trillion (Report Card for America's Infrastructure, 2009). This is without the inclusion of capacity improvements and enhancements. However, a six-year Surface Transportation Bill from Congress has yet to top $250 billion. For this reason, many states have been examining and utilizing user fees in the form of tolls to move major improvements forward, frequently in combination with private equity through public-private concession procurements as discussed in a subsequent section of this paper.

User fees in which the driver/user pays for the use of a facility are commonly utilized as a dedicated revenue stream for the repayment of infrastructure debt from loans and bonds. The currently accepted form of fee is a toll, which is typically charged by vehicle classification with higher rates for larger vehicles. Charges are also sometimes applied by axle and even weight. User fees provide a relatively stable source of revenue and are likely to provide the largest viable source of new revenue for the I-70 DTLs project under study. Other user fee options, which are discussed below, include box/container fees, dedicated truck only tolls, and a vehicle miles travelled fee.

Box/ User Fees

Even though there do not appear to be any direct examples in which user fees are imposed solely to access the Interstate Highway System for "over-the-road truckers" to haul freight, there are numerous examples of user fees being implemented to support freight infrastructure improvements in

the form of per container (box) or per rail car charges, which are usually assessed at or out of the gate.

Beyond the obvious probability of trucker opposition, the legality of charging for such access and any potential impact on interstate commerce would have to be determined and appropriately resolved. Implementation of container fees, as well any other user fees, would need to have state and federal approval and appropriate enabling legislation. For the I-70 DTLs project, a box fee would likely not be a viable alternative option to tolling all vehicles.

Tolling

Tolling is increasingly becoming a relied upon source to fund transportation infrastructure, including ongoing operations and maintenance. Toll receipts are often pledged as a revenue stream for the repayment of revenue bonds used in the construction of transportation infrastructure, as well as with TIFIA and PABs. Most recently, tolling has become much more than a mere project revenue generator. It is increasingly seen as an effective tool to manage congestion through variable pricing during peak periods of the day. However, tolling an existing Interstate highway has an entirely different set of issues that must be addressed. To date, in the United States, there has not been an existing non-tolled Interstate transformed into a tolled facility. The "Interstate System Reconstruction and Rehabilitation Pilot Program" under SAFTEA-LU allows for the application of tolls to an existing non-tolled Interstate highway for three pilot projects nationwide. The Missouri segment of I-70 has tentatively been granted one of these pilot slots, which theoretically could be extended the length of the I-70 DTLs study corridor.

Notwithstanding the simple fact that this option requires state toll enabling legislation in each of the participating corridor states, a prerequisite will be a high level of acceptance on the part of the public, local, state and federal political bodies and core user groups like the trucking industry. To assist in the implementation of tolling, SAFETEA-LU provided states with greater flexibility for using tolling as a means to manage congestion and finance infrastructure improvements. Two such programs provided for in SAFETEA-LU are the Interstate System Construction Toll Pilot Program, which permits a compact of states to collect tolls on an Interstate facility for the purpose of constructing Interstate highways, and the Interstate System Reconstruction and Rehabilitation Toll Pilot Program for reconstructing or rehabilitating Interstate highways that could not be adequately maintained or improved without the collection of tolls. Like all programs provided under SAFETEA-LU, the opportunity for their application to the I-70 DTLs project will be dependent on these programs continuing to be available in future Authorizations.

Truck-Only-Tolls (TOT)

Truck-Only-Tolls (TOTs) have not currently been implemented anywhere in the United States. Where proposed TOT lanes have been studied, the trucking industry has come out in strong opposition to the notion. This could be somewhat mitigated by assessing a user fee in the form of a toll that everyone must subscribe to, thereby eliminating the argument that truckers are being singled out. For the purposes of this I-70 DTLs study, the traffic and revenue estimates are based on tolling all vehicles.

VMT and Potential Gas Tax Alternatives

A recently released study, Well Within Reach: America's New Transportation Agenda By the Miller Center for Public Affairs at the University of Virginia, recommends adoption of a tax or fee on vehicle miles traveled (VMT) that could be variably priced (by time of day and location) as a replacement of the current motor fuel tax, and potentially as a means of reducing congestion. The shift from a flat motor fuel tax to a direct user charge based on VMT addresses many of the problems associated with the current motor fuel tax. A VMT user fee was recommended as the preferred method of transportation funding at both the state and federal levels within the 2009 National Surface Transportation Infrastructure Financing Commission's Report to Congress, Paving Our Way, A New Framework for Transportation Finance. The Commission recommended an aggressive research and development program leading to widespread implementation by 2020. However, at present, an implementation time frame is uncertain and is subject to much speculation associated with the technologies employed. At some point, perhaps within the next decade, it is anticipated that all new vehicles will be equipped with GPS and associated data technologies needed to facilitate direct road user charging on virtually all facilities. This will greatly simplify the technology and operations requirements for tolling, eliminating the need for cash collection all together and reducing potential inefficiencies and revenue leakage due to toll violations.

A VMT fee structure, if employed, has special pertinence to a multi-state corridor like I-70. Initial implementation of a nationwide VMT fee structure would naturally be a complex undertaking, but, once implemented, the "to toll or not to toll" question is taken out of the equation. Assuming that all roads, or at least all NHS routes, will have an associated VMT rate, special corridors like I-70 could simply have a slightly higher rate per mile. Under this scenario the federal government becomes a partner in addressing the complexities of user charge and pay systems, legislative issues, and identification of common technology standards not just between the I-70 Coalition states, but rather for all states nationwide.

Another option to the current flat motor fuel tax is to convert the tax on gasoline and diesel fuel from a cents-per-gallon basis to a percentage basis, similar to a sales tax. This would be a more readily implemented change than a VMT fee, and could perhaps serve as a transition to implementation of a non-fuel based revenue system like VMT fees. Conversion from a flat tax to a sales tax would allow revenue to rise in future years as the price of oil increases. To aid in the transition from a flat tax to a sales tax, the initial percentage rate could start out at a rate that would be approximately equivalent to the current flat tax. For example, based on the average gas price at the pump today, the current federal gas tax of 18.4 cents and diesel fuel tax of 24.4 cents would be equivalent to a tax of 8.4 percent and 10.6 percent , respectively. It is estimated by AASHTO (American Association of State Highway and Transportation Officials), based on projected increases in the cost of oil, that the conversion to a percentage tax would generate a modest 15 percent increase in revenue for transportation projects over SAFTEA-LU funding for an anticipated six-year transportation funding bill.

Carbon Tax / Cap and Trade Dedicated Transportation Fees

AASHTO, in its 2011 recommendations for transportation reauthorization asks that Congress "Assure that any climate change legislation that creates a new revenue source, either through a carbon tax or cap-and-trade, provides substantial funding for transportation." A carbon tax or cap and trade fee system proposed as a means to limit green house gas emissions continues to get national attention and support and it remains a potential new revenue source in future transportation authorizations or through other legislative programs.

Table 10 – Annual percentage and estimated average annual value of allowance auction revenue dedicated to the Transportation Sector Emission Reduction Fund

Years	Percentage	Average Annual Value
2012-2017	1.00 percent	1,163,791,667
2018-2021	2.00 percent	2,733,832,000
2022-2060	2.75 percent	5,297,024,207

Note: Assumes emissions allowance price under Scenario10, EPA Analysis of Lieberman-Warner.

Source: The Impact of Climate Change on Transportation Funding. www.transportation.org

In 2008 the U.S. Senate failed by 12 votes to pass the Climate Security Act which would have initiated a Cap and Trade emissions control system. Under that act, an average 2.5 percent of program revenues were to be dedicated to public transportation. As defined, EPA estimated that, between 2012 and 2050, this program would have generated $171 billion in new transportation funding. If instituted, the proposed rate of accelerated allocations to transportation as presented in **Table 10** would have equated to an average annual allocation of over $100 million per state by 2022.

Under Section 621 of the bill, to verify that grants from the Fund achieved significant reductions in greenhouse gas emissions from the transportation sector, Section 621-funded projects and activities would have needed to be part of new statewide transportation plans that included the following elements: 1) include all modes of surface transportation; 2) integrate transportation data collection, monitoring, planning, and modeling; 3) report on estimated greenhouse gas emissions; 4) be designed to reduce greenhouse gas emissions from the transportation sector; and 5) be certified by the EPA Administrator as consistent with the purposes of the legislation.

Under these provisions, I-70 would likely have been a viable contender for funding as a corridor designed to:

- Reduce congestion by the separation of truck and automobile traffic,
- Facilitate multi-modal transportation, and
- Accommodate Long Combination Vehicles to increase freight efficiency and reduce truck traffic

This failed bill illustrates just how tenuous any forecast of funding for the I-70 DTLs project is. If this bill had moved forward, or should a similar policy come to fruition in the future, it cannot be presumed that dedicated transportation funding, if any, would not become simply a replacement of ever dwindling transportation resources as opposed to a new revenue source. It is also possible that transportation in competition with other national priorities would end up with substantially less than was proposed in this bill, and there is no guarantee that the I-70 DTLs project would qualify under the criteria of a new piece of legislation.

Public-Private Partnerships (PPPs) and Multi-State Authority Administration

The financing capacity analysis in Technical Appendix 10-B assumes that the I-70 DTLs project will be constructed, operated, and maintained through one or more public-private partnerships (PPPs). A PPP refers to the contractual agreement between a public agency and a private sector entity that allows the private sector entity to have greater participation in the delivery of a transportation project. Under a PPP, the private partner takes on some or all of the project's risks and responsibilities, and these often include risks and responsibilities associated with project financing.

Public-private partnerships are consistent with the goals and objectives of SAFETEA-LU to create a multi-state cooperative effort in tolling of the Interstates. For the I-70 DTLs project, such a multi-state authority could provide several distinct advantages to each of the I-70 Coalition member states. First, a multi-state toll authority could be empowered

to tax, establish debt, or both, with no-recourse to the individual states. Second, a multi-state toll authority could compete for earmarks and special program funds directly. Third, the necessary multistate coordination to meet deadlines, which are critical to private partner, are much less of an obstacle with a single authority dedicated to the project. Finally, it eliminates the need for a highly complex project accounting system (other than what would be required of the multi-state toll authority by the individual states for reporting purposes only) to separate and track each of the I-70 Coalition member states' funds to ensure that costs are incurred in the correct geographical area and for the proper use.

Not only do PPPs foster innovation and promote new technology, they bring private resources and equity to finance projects, which potentially can free up federal, state, and local funding and resources for other transportation needs. Public-Private Partnerships for transportation project delivery are increasingly seen as an accepted means of providing infrastructure improvements in the United States, and they are most often preferred for mega-projects. PPP arrangements can be structured in various ways, depending on the level of participation and responsibility of the private sector partner, to include project financing, operations and maintenance.

The private partner, or concessionaire, receives a return on its investment from either direct user charges (including tolls, fares and fees) or indirect payments, in the form of availability payments by the public sponsor to the operator or concessionaire based upon the availability of the facility to the public. Availability payments can be supported by various types of revenue streams ranging from actual tolls, where the governmental entity assumes the toll revenue risk, to payments supported by taxes or General Fund allocations. Concessions allow the public agency to lease the development, operation and maintenance of a facility to a private entity for a predetermined length of time and rate of return. In exchange, the private entity provides up-front project financing. Such arrangements can also include requirements for the private partner to provide revenue sharing with the public agency.

Public-private partnerships not only require enabling state legislation, but also an environment supportive of private investment in public infrastructure. Irrespective of existing state enabling legislation, the many unique parameters of the I-70 DTLs project are anticipated to require project-specific legislation in each of the I-70 Coalition member states. Some of the more fundamental elements may include:

- Procedures for mitigating the political risk of project stagnation / termination for private investors
- Authorization for establishment and collection of user fees on an existing Interstate

- Financial participation responsibilities of public sector
- Unique operational allowances, e.g. longer / heavier vehicles
- Mechanisms for accounting management across multiple jurisdictions
- Assignment of enforcement policies and responsibilities across multiple jurisdictions
- Interstate policies with regard to common technology and resource sharing

Third Party Donations

Third party donations should be considered as a funding source for the I-70 DTLs project. They have the potential to be instrumental in various project development stages, especially as each of the I-70 Coalition member states invest resources in project planning and scoping. As the project development moves forward, third party donated funds, land, material and services by private companies, organizations, individuals and local governments can be applied toward the non-federal share of the project. While these donations may not cover a sizeable percentage of the project development costs, they can be important to its development. In addition to the possibility of accelerating development by means of donated resources, third party donations can also benefit each of the I-70 Coalition member states through either the reallocation of funds that would have been used as a match to Federal-Aid, or, more importantly, as part of the governmental entity's subsidy or financial participation.

Conclusions

In today's transportation infrastructure financing environment, with declining motor fuel tax revenues at both the federal and state levels and with the subsequent solvency issues surrounding the Federal Highway Trust Fund, the traditional mechanisms for financing Interstate projects are impractical and inefficient for a corridor of the size and uniqueness of the I-70 DTLs project. Realistically, delivering this project will require solutions that leverage traditional transportation funds with various other revenue sources.

A project of this size will require substantive sources of new revenue. Primary among these are likely to be some form of user fee, whereby the state constituencies do not feel that they are being burdened with the full cost of project that benefits a high volume of passenger and commercial through traffic. Though VMT or other user fee mechanisms may very well be in place prior to any potential build-out of this project, the traditional user fee at this time is tolling. Even though many toll projects do not generate sufficient revenues to be self-funding, they are gaining considerable acceptance for their operational benefits. Tolling is only one of the available

tools for transportation infrastructure financing and can be leveraged with other sources necessary to achieve a feasible plan of finance for the I-70 DTLs project, to include Federal-aid, state funds and tax-exempt bonding among others. The creation of a multi-state toll authority may be the "right-fit" for the I-70 DTLs project for numerous reasons. A properly structured authority can take advantage of various state and federal funding sources; federal financing tools remain available for utilization in a private sector plan of finance; an authority is well positioned to leverage private equity through PPPs with less political influence; private sector concessionaires will prefer to have a sole owner instead of a band of states for negotiation and contracting; and an authority can survive political elections, changes in funding priorities and state budgetary crises. The importance of being able to take advantage of every available source of funding and fully utilize financing tools to provide the lowest cost for borrowing, while facilitating a long-term, sustainable facility, cannot be overstated for this mega-project.

Given the close linkage between each of the individual states' transportation systems with the I-70 corridor as a backbone for economic prosperity, it will be critical that each of the I-70 Coalition member states explore the various funding sources available to them in concert with each other and with neighboring states along the corridor if the I-70 DTLs project is to move forward.

B. Updated Sketch-Level Financing Capacity Analysis

Introduction

Determining the sketch-level financing capacity of a toll road or bridge project is an iterative process. The first step is to develop an initial understanding of the potential traffic and revenue characteristics of the project through a sketch-level traffic and revenue study. The next step is to develop an estimate of total project costs, including costs associated with the construction, operation, maintenance, and capital replacement over the term of the project. The final step is to compare potential project revenues and costs through a sketch-level financing capacity analysis to determine whether the project will be financially self-sufficient (can generate enough toll revenue to fund the total project costs) or will require a public investment to help fund the project. For PPP projects, the sketch-level financing capacity analysis also indicates whether the project will have extra financing capacity that could result in up-front or ongoing payments from a private partner to the public agency. Such payments could be used by the public agency to help fund other transportation projects. The sketch-level financing capacity analysis typically results in a series of recommendations regarding if and how further development of the project should proceed.

Sketch-level traffic and revenue estimates, cost estimates, and financing capacity estimates for the proposed I-70 Dedicated Truck Lanes (DTLs) project were developed and presented in the Phase 1 report. As part of this Phase 2 report, the traffic and revenue estimates and cost estimates were refined and updated, resulting in the need to reevaluate the financing capacity of the proposed project. This section of Technical Appendix 10 presents the updated sketch-level financing capacity analysis.

Sketch-level traffic and revenue studies and financing capacity analyses, by themselves, do not determine project feasibility, though such studies play a significant role in making initial assessments of project feasibility. Subsequent planning steps are required after completion of such studies if it is determined that the project has the potential to be feasible as a toll facility. This planning process often incorporates an analysis of the project in the context of a regional or statewide transportation plan, a major investment study, the preferred alignment, an environmental review, preliminary design and engineering, and the development of a Tier II plan of finance.

Project Description

The Corridor study area includes an 800-mile stretch of I-70, starting at the Ohio / West Virginia state line, extending west across Ohio, Indiana, Illinois, and Missouri, ending just west of Kansas City, Missouri. Because

of the size of the proposed project and because the project is in the initial planning stages, simplifying assumptions were made regarding the project configuration, phasing, construction, and operation for the purposes of refining the traffic and revenue estimates and cost estimates, as well as for updating the financing capacity analysis.

Financing Capacity

A sketch-level financing capacity analysis was conducted to determine the bonding capacity or potential funding shortfall for the proposed project. The financing capacity was estimated using a PPP financial model, which assumes that the Coalition of states will contract with a private partner to construct, operate, and maintain the tolled facility for the term of the project, while the states retain ownership of the facility.

Consistent with the Phase 1 report, the updated sketch-level financing capacity analysis considers one corridor scenario and assumes that all vehicles in all lanes will be tolled. However, the updated analysis is based on a refined implementation schedule, which assumes that the project will be constructed in five phases according to the construction schedule presented in **Table 1**.

Table 1 – Financing Capacity Analysis Project Construction Schedule

Project Phase	Begin Construction (Jan. 1, Year)	Construction Duration (Years)	Open to Traffic (Jan. 1, Year)
1	2020	5	2025
2	2025	5	2030
3	2030	5	2035
4	2035	5	2040
5	2040	5	2045

As each phase is constructed, it will become part of the PPP concession and will be constructed, operated, and maintained by the concessionaire for a total project term of 75 years, extending from the beginning of year 2025 to the end of year 2099. Until a phase is included in the concession, it must continue to be maintained by the responsible I-70 Coalition member state. Therefore, the I-70 Coalition member states will be responsible for maintaining portions of the project corridor until year 2040, when all phases have been included in the concession. Consistent with the Phase 1 report, the updated sketch-level financing capacity analysis assumes that the facility will be operated as a unified facility by a single entity.

The updated sketch-level financing capacity analysis assumes that each phase of the project will be financed separately, for a total of five financings. The traffic and revenue data developed as part of this Phase 2 study was further refined to develop a separate revenue stream for each project phase. The updated financing capacity analysis assumes that costs during the construction period for each phase will be financed and that all costs associated with future reconstruction for each phase will be paid out of toll revenues after debt service has been paid.

The updated financing capacity model utilizes Transportation Infrastructure Finance and Innovation Act (TIFIA) financing and Private Activity Bonds (PABs). It assumes a return on equity (ROE) of 10.0 percent for phase 1, with the ROE increasing by 1.0 percent for each successive phase to account for increased risks associated with future project phases to the private partner. The assumed coverage ratio for senior debt is 1.75, and the assumed total debt coverage ratio is 1.55.

The results of the updated sketch-level financing capacity analysis are presented in **Table 2**. As shown, public investments will be required to finance each of the first four phases of the project under a PPP based on the parameters identified above. The fifth phase has excess financing capacity.

Table 2 – Financing Capacity analysis results

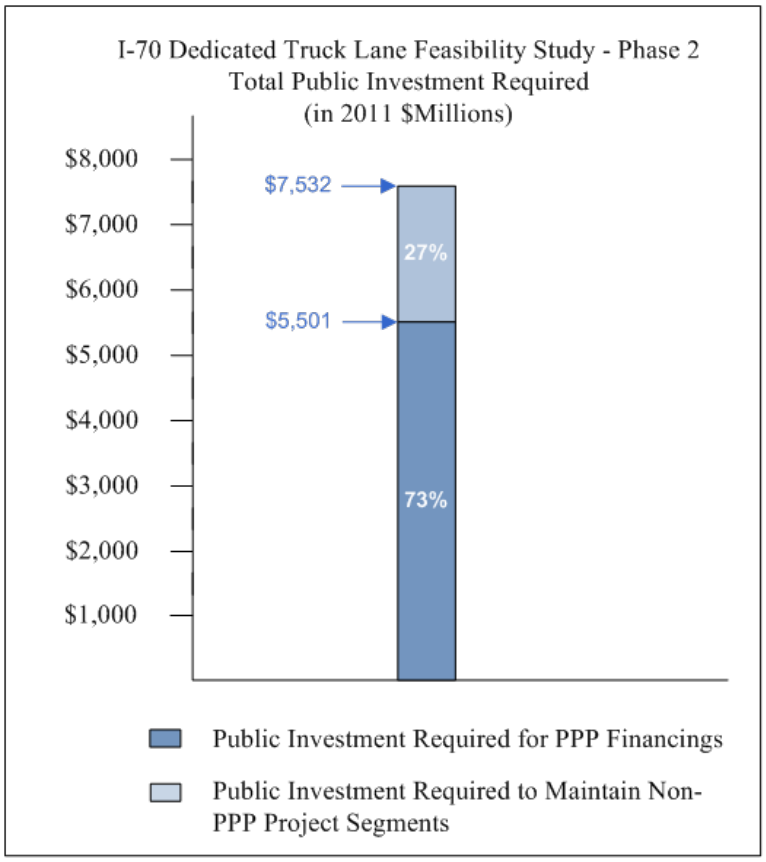
I-70 Dedicated Truck Lanes Feasibility Study - Phase 2 Financing Capacity Analysis Results ($ Millions)					
	Phase 1 (in 2020 Dollars)	Phase 2 (in 2025 Dollars)	Phase 3 (in 2030 Dollars)	Phase 4 (in 2035 Dollars)	Phase 5 (in 2040 Dollars
Sources					
Debt	$3,804.6	$1,669.3	$2,880.5	$5,444.8	$9,188.2
TIFIA	$574.3	$301.1	$485.3	$852.5	$1,384.4
Equity	$1,745.2	$574.1	$983.9	$1,638.3	$3,061.5
Investment Earnings	$899.7	$491.0	$377.3	$446.7	$117.0
Total Sources	$7,023.8	$3035.5	$4,727.0	$8382.3	$13,751.2
Uses					
Project Costs	$11,903.5	$5,774.0	$5,454.3	$7,290.8	$5,748.3
Financing Costs	$874.8	$319.2	$592.0	$1,195.4	$2,078.7
Reserves	$380.5	$6,260.1	$6,334.3	$9,030.7	$8,745,8
Excess/(Shortfall)	($6,135.0)	($3224,5)	($1,607.3)	($648.4)	$5,005.4

As previously mentioned, the updated sketch-level financing capacity analysis assumes that the I-70 Coalition member states will continue to maintain the I-70 corridor segments until the segments are included in the project, at which time they will be constructed, operated and maintained by the concessionaire. Therefore, in addition to the public investment required to finance the project, public investment will be required between year 2020 (when construction of the initial project phase is assumed to begin) and year 2045 (when the final project phase is assumed to open) to maintain existing corridor segments that have not yet been included in the concession. As presented in the project cost estimates in Technical Appendix 6, these public agency costs total $1,981 (in year 2010 $Millions).

To determine the total amount of public investment required for the I-70 DTLs project, the present values of the financing capacity analysis results

presented in **Table 2** were added to the present value of the public agency cost estimate presented above. The resulting total public investment, which is presented in Figure 1, is approximately $7.5 billion in current year dollars. It should be noted that this amount does not include public investments required for the corridor prior to year 2020, when construction of the first project phase is assumed to begin.

Figure 1 – Total public investment required for the I-70 DTLs project



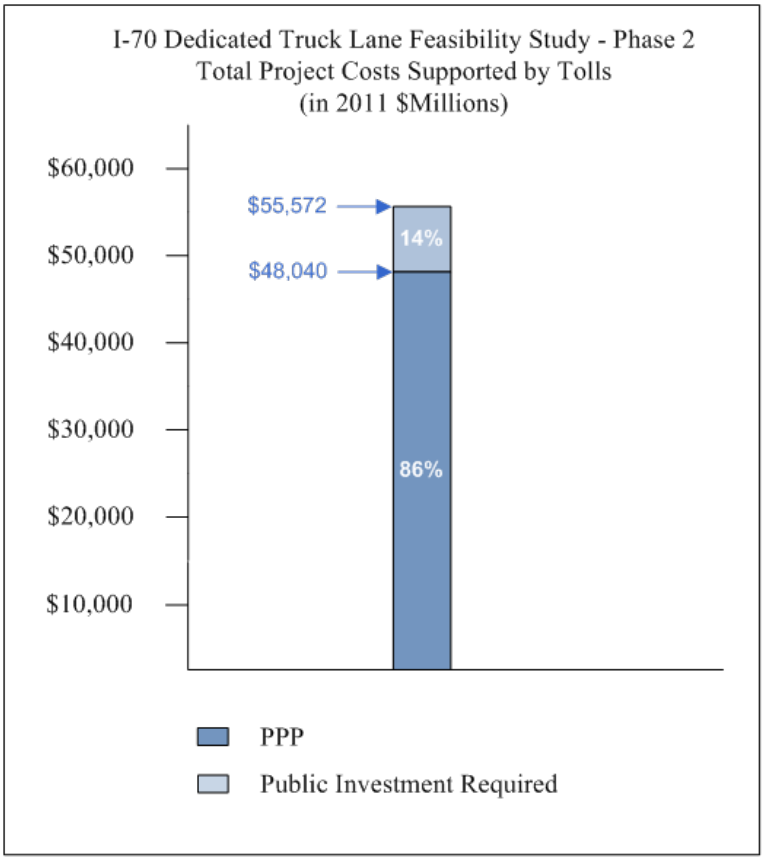
Conclusions and Next Steps

The updated sketch-level financing capacity analysis indicates that, although tolls will not generate enough revenue for the project to pay for itself, tolls will serve as a significant funding source for the project. As shown in Figure 2, tolls, or an equivalent user fee, will support approximately 86 percent of the total project costs using a PPP.

The updated sketch-level financing capacity analysis presented in this technical appendix is conceptual-level and is intended only for planning purposes. It is not intended to supplant the analysis that will be required by a financial advisor or underwriter as part of the financing process. Changes in financial market conditions and further refinements by a financial advisor could materially alter the results of these analyses.

As discussed in this technical appendix, several simplifying assumptions had to be made for the purposes of refining the sketch-level traffic and revenue analysis, refining the cost estimates, and refining the sketch-level financing capacity analysis. Although such assumptions are acceptable for developing a business case for a more detailed study of the project, they are not sufficient for use in developing the project. As previously recommended in the Phase 1 report, the next phase of study should include a developmental plan that considers a more reasonable approach to developing, constructing and operating the facility. In particular, thought should be given to statutory requirements that will impact the project in each state, as well as the statutory changes that will need to occur in each state in order for the project to be implemented. Other considerations should include the environmental status of the project, the time frames for acquiring necessary environmental approvals, and the phasing of the project's implementation. It is anticipated that the project would be constructed in phases, and that the sections that are most desirable and feasible would be constructed first. The phasing of the project will impact revenues, as well as construction costs, and these impacts should be measured as part of the developmental plan.

Figure 2 – Total project costs supported by tolls



C: Analysis of Federal Fuel Tax Revenue Attributable to Interstate 70 Corridor Traffic within Missouri, Indiana, Illinois and Ohio

As part of the I-70 DTL analysis, the research team identified and assessed a series of different funding mechanisms that could be considered for revenue generation. Some of these are presented in TA 10 – A and TA 10-B. One additional mechanism analyzed through this Technical Appendix 10-C, focuses on identifying and estimating the amount of federal motor fuel tax revenue generated from both passenger and commercial vehicles driving on the I-70 DTL.

The findings from this analysis concluded that using 2009 VMT and based on existing federal rates of $0.184 per gallon for gasoline and $0.244 per gallon for diesel, it is estimated that federal motor fuel taxes generated by travel on I-70 resulted in approximately $250 million. Findings suggests that a $0.12 per gallon increase in the federal motor fuel tax rate to $0.304 and $0.364 for gasoline and diesel respectively, would increase federal motor fuel tax revenue from the I-70 DTL by approximately $135 million to $385 million annually, an annual increase of 35 percent . These calculations assume an increase of in gasoline taxes of 65.2 percent and an increase in diesel taxes of 49.2 percent . These calculations also assume that there are no changes in VMT as a result of these increases in fuel tax rates.

The research team is not advocating for any specific approach to funding the DTLs. The team is not advocating for any specific cents increase. The $0.12 was used because it was suggested by other federal research studies. The team also acknowledges that this increased amount may not be directed back to I-70. The purpose for this and the other financial analyses is to evaluate funding options.

Background

The assumptions and formulas applied to the federal motor fuel tax revenue analysis are as follows:

Vehicles that travel on the I-70 corridor consume fuel while on the corridor. The purchase of each gallon of that fuel contributes either 24.4 or 18.4 cents to the Highway Trust Fund (HTF). Following these assumptions, the analysis calculates an estimate of the amount of federal HTF revenue that can be tied directly to motor vehicle usage on the corridor, reflecting the direct cost (i.e. use, damage or impact) that is associated with a car or truck's operation of the facility.

This analysis can be included with analyses of other funding mechanisms, allowing I-70 Corridor Coalition stakeholders to understand the relative costs and benefits associated with different highway funding alternatives.

Methodology and Analysis

To estimate the federal motor fuel tax revenues that are attributable to Interstate 70 the following inputs were collected:

- Annual truck and automobile vehicle miles traveled (VMT) estimates for the corridor.
- Average fuel economy for vehicles within the truck and automobile VMT categories.
- Federal tax rates on motor fuels for trucks and automobiles (based on typical fuel types consumed).

Table 1 - Truck VMT estimates for 2009

Segment	2009 Truck VMT	2009 Passenger Car VMT	2009 Total VMT
A	623,167,035	972,354,080	1,595,521,115
B	1,512,050,869	2,690,348,398	4,202,399,267
C	910,151,224	2,492,869,732	3,403,020,956
D	647,046,502	2,233,639,186	2,880,685,688
E	50,697,250	402,741,399	453,438,649
F	49,855,500	421,734,165	471,589,665
TOTAL	3,792,968,381	9,213,686,959	13,006,655,340

As a first step, truck VMT estimates for 2009 were identified from the Phase I analysis of 7 segments of Interstate 70. These annual VMT estimates are shown in **Table 1**.

A conservative fuel economy average of 18.5 mpg for the passenger car category and 5.9 mpg for the truck category were utilized in the calculation.

Finally, it was assumed that the passenger car category, which predominately consumes gasoline, would have a per-gallon federal motor fuels tax of 18.4 cents. It was also assumed that the truck category, which primarily consumes diesel fuel, would pay a per-gallon federal diesel fuel tax rate of 24.4 cents.

The VMT figures were divided by the MPG estimate to get an "annual gallons consumed" estimate. This was then multiplied by the relevant fuel tax rates to produce aggregate revenue estimates. By way of this analysis, it is estimated that the revenue generated by I-70 corridor activity is slightly less than $250 million annually (see **Table 2)**. Over 15 years, if annual VMT, average MPG and the fuel taxes remain constant, this represents approximately $3.7 billion in revenue generated by activity along the corridor. This conservatively presumes that increases in VMT will be offset by increases in average fuel economy.

TABLE 2

	Annual VMT I-70 - Four State Corridor (Miles) {2009}	Average MPG Estimate	Annual Gallons Consumed on I-70	Federal Tax (per gallon) [Gasoline/ Diesel]	Annual Revenue Estimate Using 2009 VMT Estimates
Passenger Car	9,213,686,959	18.5	498,037,133	0.184	$ 91,638,832
Truck	3,792,968,381	5.9	642,875,997	0.244	$ 156,861,743
				1 Year TOTAL	$ 248,500,576
				15 Year TOTAL	$ 3,727,508,635

A modest federal tax increase of 12 cents per gallon, which is supported by the trucking industry, would bolster the 1 year and 15 year numbers to $385 million and $5.7 billion respectively. This again assumes constant VMT and average MPG.

It should finally be noted that such an increase in federal motor fuels taxes would not result in additional administrative costs related to revenue collection. The collection of federal motor fuels taxes is highly efficient relative to other funding mechanisms since funds are collected directly from a small number of fuel distributors; the cost of Federal revenue collection is often cited as 0.2 percent of the total revenue. Other forms of user fees, such as tolling, can consume more than 20 percent of revenue collected to cover administrative costs. Thus, the figures presented above are not eroded by the administrative inefficiencies found in other forms of highway funding.

DISCUSSION & CONCLUSION

This analysis offers a method for tying motor fuels tax revenue to the infrastructure that produces those revenues while at the same time quantifying the revenue produced by the I-70 corridor. The analysis also demonstrates the ability of a modest tax increase to offer additional support for key national infrastructure improvements such as the Interstate 70 dedicated truck lanes concept. Based on this analysis it appears that the fuel tax can be a credible consideration for funding DTLs and could be considered as one of several alternatives for financing this and other "Corridors of the Future" programs.