

Transportation Infrastructure

11-C48

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Since President Eisenhower created the federal highway system in the 1950s, our nation's transportation program has not been significantly upgraded, and now faces a serious infrastructure deficit. According to the American Society of Civil Engineers, we need to spend \$110 billion more per year in order to simply maintain our infrastructure system at current performance levels (Kahn & Levinson, 2011). In addition to crumbling infrastructure, there are limited transportation options. For various reasons, including lifestyle changes, the recession, and increasing gas prices, public transportation ridership is at record highs. According to Transportation for America, public transportation use has increased 38 percent since 1995; nearly triple the growth rate of the population in the United States. Yet, "incredibly, these record ridership numbers are being met with one trend at transit agencies from coast to coast: service cuts, layoffs and fare increases" (Transportation for America, 2011).

A litany of sources has documented this infrastructure deficit with regards to our transportation, both on a national scale and at the state and local levels. This report takes a wide-ranging look at transportation infrastructure needs through five sections. A summary of this report is included as Appendix G in the report of the Commission on State and Local Tax Policy, one of the three commissions of the *Policy Choices* project of the IU Public Policy Institute. Section 1 provides an overview through a national lens. Section 2 explores some of the recommended actions states can take: adopting fix-it-first policies and prioritizing investments through State Infrastructure Banks. Section 3 details the status of Indiana's infrastructure. Section 4 investigates the link between investing in transportation and economic development, and Section 5 discusses various methods for financing transportation, with a brief description of the commission Indiana recently established to look into the issue.

Section 1: Overview of the Issue

Transportation advocates strongly recommend a federal transportation policy that repairs and maintains the existing transportation network, builds a system that more accurately meets the needs of communities, invests in more modern public transportation and pedestrian safety, wisely utilizes tolling to better control congestion, and designs better land use policies that control urban sprawl. Reform is necessary to meet these goals however, because of the extent of the need.

Since the federal Highway Trust Fund was established in the 1950s, total combined highway and transit spending as a share of GDP has fallen by about 25 percent (NSTIFC, 2009). Without changes to current policies, a transportation gap of nearly \$2.3 trillion dollars through 2035 is predicted (Nichols & Holywell, 2011).

The Highway Trust Fund balance was \$23 billion in 2000. Today, it has an estimated deficit of \$8.1 billion, which required a taxpayer bailout (Kahn & Levinson, 2011). Despite the immediate need to repair our current network of roads and bridges, currently, about one-third of federal highway spending goes to new projects that expand the existing system. Nichols and Holywell (2011) detail a road map of possible solutions:

- 1) REVAMP THE HIGHWAY TRUST FUND:** the nation's highways are largely financed through this fund, which gets most of its revenue from a gas tax of 18.4 cents per gallon, a rate that has not changed

since 1993. This tax also is not tied to the price of gas or inflation, which has caused a drastic decline in its purchasing power and significant short- and long-term problems. In the short term, this has caused the fund to spend more money than it collects. In the long term, as more people choose to drive hybrid/electric vehicles, and cars become more fuel efficient, our highways are reliant on a fund that is consistently under-funded. To resolve this problem, the authors recommend a short-term 10 cent per gallon increase, indexed to inflation, which would generate an additional \$20 billion in revenue for the fund and restore the purchasing power of the tax. According to Nichols and Holywell, this would cost households only \$9 more per month on average, but gas prices are already high and many families still struggle to recover from the recession. No state raised its gas taxes last year.

One alternative to raising the gas tax is to transition to a vehicle miles-traveled fee (VMT). This would be a user fee that ties what drivers' pay to how much they use the roads. However, there is a privacy concern, as a policy along these lines would require monitors that track driving history.

An additional problem is the lack of public understanding about funding mechanisms for roads. Many people are simply unaware of the problem. The National Conference of State Legislatures (NCSL) notes that as many as 16 states have looked at the feasibility of a VMT, and some are finding it workable. As states can enact a VMT without federal approval, this may be an efficient way to solve the issue, provided implementation concerns can be resolved.

2) FIX THE PROBLEM IN WASHINGTON: For most of Congress, transportation needs simply are not a priority, despite evidence of the positive effects of transportation investment on the economy and jobs creation (more on this in Section 4). The previous transportation bill expired in 2009, and has been funded ad hoc since then, crippling states' ability to pursue long-term projects. According to Nichols and Holywell, Representative Paul Ryan's budget proposal calls for 30 percent reduction in transportation funding and claims to fix the Trust Fund, without explaining the sources of the savings. In contrast, the White House has asked for nearly double the amount of funding in the previous bill, without describing the sources of revenue. With the 2012 elections approaching, transportation advocates are finding it difficult to give state leaders what they need: a fully-funded, long-term bill. A two-year bill is appearing more likely, but Republican John Mica, who heads the House Committee on Transportation and Infrastructure, is pushing for a six-year plan that will allow states to strategically invest. Until the bill is determined, states will find planning for transportation investments under the current financing system difficult, if not impossible.

3) EMPOWER STATE AND LOCAL GOVERNMENTS: With less funding available from the federal government, states need more flexibility on how they can utilize the federal funds they do receive. America Fast Forward has received bipartisan support, and calls for expansion of the Transportation Infrastructure Finance and Innovation Act (TIFIA). This act provides low-interest loans for transportation projects. As an example, the authors cite the citizens of Los Angeles approving a sales-tax increase for highway and transit projects. However, instead of putting that revenue directly into the projects, the Mayor of Los Angeles asked to use it to access a federal transportation loan. This means the city could complete the project rapidly and use the revenue to pay back the loan over time. TIFIA isn't currently large enough to accommodate projects such as this, leading to a national push to increase the scope of the program. In addition, there are currently 55 different federal highway programs, with different methods for disbursing funds. If the number of programs

were reduced, states would have greater flexibility. A National Infrastructure Bank, and more public-private-partnerships (more on this in Section 5) would also give states the flexibility they need.

4) INCREASE RURAL ACCESS: In 2005, 5.4 million rural residents lacked access to intercity transportation. In 2010, that number had increased to 8.9 million (Firestine, 2010). The authors believe that rural states should not wait for federal funds to reach them, but should use their funds to widen and upgrade two-lane roads, and invest in redesigns that reduce congestion. In the meantime, the need for more public transit continues to increase. According to one study, by 2025, one in five Americans will be over the age of 65 and one-fifth of those seniors will be unable to drive (Transportation for America, 2009). Rural areas will need access to van services for those individuals who are unable to access public transportation. Currently, there is a movement in Indiana to support legislation that would allow voters to choose how to fund their transit options at the local level.

5) GET METROPOLITAN AREAS TO THINK BIGGER: Despite current economic challenges, some cities are thinking big. In 1992, a traffic congestion study of Denver's southeast corridor found that it had exceeded its capacity of 180,000 vehicles per day. Sources cite the annual average daily traffic (AADT) in the northeast corner of Indianapolis as similar to Denver. Between 1978 and 1998, traffic increased 75 percent on I-70, and average daily traffic increased 150 percent on I-465 between Allisonville Road and I-69 (Major Moves, 2011). However, Indianapolis has yet to strategically invest in more public transit. In contrast, Denver invested \$1.67 billion for the Transportation Expansion (T-Rex) Project. The project was a multi-agency effort to overhaul numerous modes of transportation throughout the region, and is being hailed as a model for the nation. In 1999, the voters approved two bond measures that gave innovative financing structures to the project, which finished 3.2 percent *under* budget and 22 months ahead of schedule (Metro Denver Economic Development Corporation, 2011). The project's success led to the voters approving FasTracks in 2004, a multi-billion dollar comprehensive transit plan. It is funded by a variety of sources (details on the financing of this project in Section 5) and is similar to what IndyConnect now proposes for Central Indiana. As the academic literature indicates metropolitan areas will drive the next economy, central Indiana's role in drastically improving the connectivity of the state, and stimulating the economy in those regions (more on this in Section 4) could be a significant one.

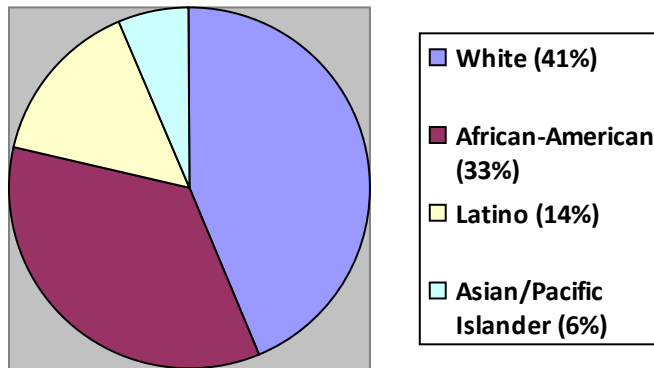
6) MAKE BRIDGES SMARTER: According to the authors, more than 600,000 bridges across the country are in distress (specifics on Indiana's bridges in Section 3). Bridges are built to last 50 years, and the nation's bridges are, on average, 45 years old at this time. As quality sensors cannot be placed on every bridge in the country, one recommendation is to divide the bridges throughout the country into categories (based on their age, how long they are, construction composition, etc.), and then sample test a few bridges from those categories. Indiana could consider implementing this procedure, known as stratified sampling.

The road map presented by Nichols and Holywell outlines a set of proposed solutions, which have been advocated for elsewhere. Denver, Charlotte, Dallas, Minneapolis, Salt Lake, and Seattle are all investing heavily in infrastructure, despite lack of direction at the federal level (as of the date of this report, funding expired over two years ago), which indicates Indiana may be able to forge its own path with infrastructure investment. This path could include strategic coordination of transportation investments with housing, land use, and energy sectors; more effective use of the state infrastructure bank; or voter referenda to approve funding.

At the national level, there appears to be a consensus that our transportation needs are profound. In 2009, each commuter lost 34 hours in congestion, which is over twice the number from 1982, or, 4.8 billion hours nationally lost in traffic (Schrank, Lomax, & Eisele, 2011). This increased congestion, has caused the transit ridership rate to grow at almost three times the population rate, and almost two times the number of miles driven, since 1995. Cities and states have been responding to this demand by building light rail, improving buses, and installing commuter trains, with positive results. Businesses gain access to more workers with reliable transportation, property values in neighborhoods close to service hubs increases. Yet, currently, the federal government devotes 82 percent of every transportation dollar to roads and only 18 percent to public transportation. Every federal public transportation dollar must be matched equally by local transportation, but roads only require a quarter match (Transportation for America, 2009). The financing system must be reformed to be more performance driven.

FIGURE 1. DEMOGRAPHICS OF U.S. PUBLIC TRANSIT RIDERS

- 59 percent between the ages of 25 and 54
- 72 percent are employed
- 11 percent are students
- Median household income in 2004 was \$39,000 (average American, \$44,400)



Source: Neff & Pham, 2007

Section 2: Prioritizing Investments—Fix it First

As American infrastructure needs have changed drastically, states wishing to drive the next economy must be innovative with prioritizing investments. Kahn and Levinson (2011) propose that all federal Highway Trust Funds be used to repair, maintain, rehabilitate, reconstruct, and enhance existing roads and bridges that have been significantly neglected for decades. At a minimum, this would increase spending for infrastructure by \$12 billion. Kahn and Levinson also encourage states to use road and congestion pricing. Specifically, they recommend the following:

1. **FIX IT FIRST:** New Priorities for the Highway Trust Fund: It is estimated that an annual expenditure of \$145 billion is needed to maintain current highways and bridges (some studies estimate up to \$195 billion). Their proposal would take revenue from the federal gas tax away from new construction, and reserve it to support the existing system, with projects funded on rigorous cost benefit analyses.

2. **EXPAND IT SECOND:** The authors propose that capacity adding or “new” projects be funded by a new organization, the Federal Highway Bank (FHB). Loans would be contingent on stringent performance and return on investment tests. Loans would be repaid principally with dedicated revenue from user charges, and with “land value capture on benefitting properties” if user charges do not capture enough revenue.
3. **REWARD IT THIRD:** Projects that meet or exceed performance would receive an interest rate subsidy from a Highway Performance Fund. Projects that fail would not receive the subsidy. This subsidy would be funded from profits of FHB operations, but administered by another organization to make sure the bank is not given incentives to seek out projects that fail. Some possible performance objectives: speed, throughput, safety, accessibility, economic development, durability, equity and environmental factors.

The Obama administration and other elected officials have called for a National Infrastructure Bank repeatedly, but Kahn and Levinson believe a highway bank is needed because transportation needs are vastly different than other types of infrastructure (water, sewage systems, dams, public transit, etc.). The authors advocate for establishing separate banks for these needs so problems can be addressed with specialized solutions.

As for the causes of transportation infrastructure’s consistent neglect, the authors believe there are two main forces at work in causing this problem. First, infrastructure by its very nature is often unnoticed by the public. Many citizens are simply unaware their roads and bridges are crumbling. Second, high profile new projects are often more attractive to the public than lesser-noticed maintenance projects. Both of these factors have led to a drastic underinvestment in maintaining our aging infrastructure.

Others support Kahn and Levinson in their advocacy for Fix it First policies. According to Transportation for America, investing in repair can create jobs and economic activity. Projects of this type produce, on average, 16 percent more jobs than new highway construction per dollar; partly because a greater share of costs go directly into employees’ paychecks, and less to expensive start-up costs. Every \$1 billion invested in bridge repair creates more than 20,000 jobs (Heintz, Pollin, & Garrett-Peltier, 2009).

Seventeen states have adopted Fix it First policies. New Jersey’s, created in 2000, required transportation agencies to cut the amount of decaying infrastructure within five years, and the Governor issued an executive order to expedite Fix it First projects. In contrast, Indiana ranks 42nd on spending per square foot for federal funds put toward bridge repair versus new capacity (at \$9.23, versus Delaware ranked first, which spends \$73.16 per square foot) (Road Work Ahead, 2010).

FUNDING MECHANISMS

The National Highway System Designation Act of 1995 authorized the U.S. Department of Transportation to establish the State Infrastructure Bank (SIB) program so that states could use federal dollars to leverage innovative sources of revenue. Many states use their infrastructure banks (SIB) to implement some of these policies and invest taxpayer approved dollars in projects that will stimulate the economy and prove a return on investment. The U.S. Department of Transportation’s Project Finance Primer, released in August 2010 (FHWA, 2010) provides a general definition:

SIBs are revolving infrastructure investment funds, and can offer loans and other credit products to “public and private sponsors of Title 23 highway construction projects or Title 49 transit and rail-capital projects” (FHWA, 2010, p. 21). As of December 2008, 32 states and

Puerto Rico had entered into 609 SIB loan agreements with \$6.2 billion in value. SIBs can complement traditional funding techniques in many ways:

- Flexible project financing (low interest loans, tailored to projects)
- Accelerated completion of projects
- Provide incentives for additional state and local funding
- Enhanced possibility of private investment due to lower risk
- Recycling of funds to provide funding for future projects

States can customize the structure of their SIB. Florida's is very active, with \$1.1 billion in 64 loan agreements executed through the end of 2008. Texas' SIB has funded and expedited more than \$3.4 billion in transportation projects through 88 loans (total dollar value \$374.6 million). Over 21 percent of Texas SIB loans are for transportation improvements on the border with Mexico.

Maine is unique in how it operates its SIB in that it provides interest free loans (most states have an interest rate that varies, depending on risk, repayment terms, etc.). It has a capitalization level over \$3 million, and is used often to fund projects that get ignored by other funding sources, such as major collector roads (FHWA, 2000).

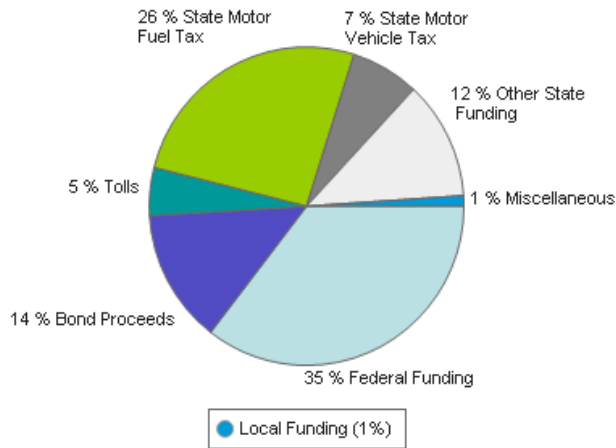
Other innovative financing techniques include Grant Anticipation Revenue Vehicles bonds (GARVEES), and the Transportation Infrastructure Financing and Innovation Act (TIFIA), which also utilize the concept of financing projects through leveraging federal funds. These, along with SIBs, typically fund single, large-scale construction projects, such as the Boston Central Artery or New Mexico's Corridor 44.

PROJECT EXAMPLE: GEORGE BUSH TURNPIKE

A 30-mile beltway north of Dallas, the George Bush Turnpike provides a second limited access highway in Texas' rapidly growing Telecom Corridor, which contains the corporate headquarters for several large companies. It contains four to eight toll lanes in addition to six toll-free frontage road lanes. It links seven cities in three counties. Considering the high cost of the project, it would have been almost impossible to finance with toll revenue bonds alone. Use of the SIB allowed Texas to access low-interest, long-term loan and revenue bonds disbursed in five payments. The innovative financing allowed the project to be finished at least a decade sooner than possible under traditional funding systems.

There is great diversity in how most states utilize their SIBs, but several states are significantly more active and strategic with their investments. Nearly 95 percent of the dollar amount in SIB loans is concentrated in eight states. South Carolina, Arizona, Florida, Texas, and Ohio lead the nation in significant SIB activity (AASHTO, n.d.).

FIGURE 2. INDIANA'S 2008 TRANSPORTATION REVENUE SOURCES, TOTAL \$3,059,403,000



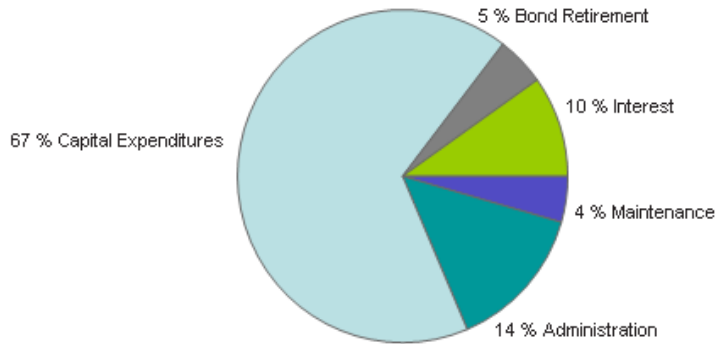
Source: AASHTO Center for Excellence in Project Finance (*Project Finance State by State 1992-2008*)

TABLE 1. INDIANA'S 2008 TRANSPORTATION REVENUE SOURCES DETAILED, TOTAL \$3,059,403,000

Source	Amount of funding (in millions \$)	Percent of total transportation revenues
Federal funding	\$1,084.6	35%
Bond proceeds	\$415.9	14%
Tolls	\$149.2	5%
State motor fuel tax	\$793.9	26%
State motor vehicle tax	\$214.7	7%
Other state funding	\$368.5	12%
Local funding	\$32.5	1%
Total	\$3,059.4	100%

Source: AASHTO Center for Excellence in Project Finance (*Project Finance State by State 1992-2008*)

FIGURE 3. INDIANA DEPARTMENT OF TRANSPORTATION DISBURSEMENTS, 2008, TOTAL \$2,731,935,000



Source: AASHTO Center for Excellence in Project Finance (*Project Finance State by State 1992-2008*)

TABLE 2. INDIANA DEPARTMENT OF TRANSPORTATION DISBURSEMENTS DETAILED, 2008, TOTAL \$2,731,935,000

Source	Amount of funding (in millions \$)	Percent of total transportation revenues
Capital expenditures	\$1,823.4	67%
Maintenance	\$121.8	4%
Administration	\$386.1	14%
Interest	\$268.5	10%
Bond retirement	\$130.7	5%
Local government grants	\$1.5	0.1%
Total	\$2,731.9	100%

Source: AASHTO Center for Excellence in Project Finance (*Project Finance State by State 1992-2008*)

INDIANA’S SIB

Indiana utilizes its SIB (established in 1999) minimally. In a comparison by Purdue University in 2002, at that time, 32 states had SIBs. Indiana (along with 15 other states) had entered into only one SIB loan agreement. In contrast, Ohio had entered into 35, Texas 25, Michigan 23, Maine 22, and Pennsylvania and Florida 15 (Drike, Genetti, & Sinha, 2002). By 2008, Indiana’s number had barely changed, and it had only entered into two SIB loan agreements. With Indiana’s SIB capital so limited, the Purdue authors note that the funding technique may be more useful on the local level. Indiana DOT specified SIB assistance go to local entities. That being the case, the authors recommend that the Indiana SIB be made available to any local or private entity “authorized by law to construct, maintain, or finance a transportation project” (Drike et al., 2002, p. 129). At the time, the Indiana legislation authorizing the SIB limited the amount it could disburse, making it difficult to finance larger projects that are needed. The objectives of Indiana’s SIB also need to be defined, and should include scope of work and eligibility requirements, so that entities are better informed on how to utilize the innovative financing technique. Finally, to be consistent with what has worked in other states, Indiana would need to provide a large capital base. More funds could also be made available by leveraging SIBs with bonds, but as of 2001,

only nine states had the legal authority to issue debt through their SIB (Indiana was not one of them). This lack of legislative authority limits a state's ability to increase capitalization.

Section 3: The State of Indiana's Roads

Like many other states, Indiana's roads are in immediate need of attention. In 2009, the Indiana Local Technical Assistance Program (LTAP) Center at Purdue University conducted a Needs Assessment for Local Roads and Streets and found evidence of a "severe shortage of funds to adequately maintain local transportation facilities," which perhaps indicates an opportunity for Indiana to better utilize its SIB, as it is legislatively required to focus on local issues. LTAP looked at both needs and resources available to local public agencies (LPAs) in three main areas: roads and streets, bridges and culverts, and traffic safety features. Operational/administrative costs were also examined. The study found a significant funding shortfall in all 3 main areas.

TABLE 3. Transportation Infrastructure Funding Shortfalls for Local Agencies

Component	Short-term (backlog) (in millions \$)	Long-term (annual) (in millions\$)
Roads and Streets	\$3,504	\$715
Bridges and Culverts	\$1,169	\$117
Safety Improvements	\$706	\$26
Total	\$5,379	\$858

ROADS

Indiana's funding has not kept pace with increased expenses. Net State Police Expenses increased by 62 percent in fiscal year (FY) 04-05 (\$54 million) to FY 07-08 (\$86 million). The Bureau of Motor Vehicle expenses increased by 29 percent, from \$39 million in FY 05-06 to \$50 million in FY 07-08, and both of these are funded by the Motor Vehicle Highway Funds. In addition, increasing fuel efficiency in vehicles and decreasing miles traveled has led to less revenue for local agencies. Revenues in FY 07-08 were 17 percent **below** FY 99-00 although costs have **increased** 29 percent from 1999-2008. Adjusting for inflation, FY 07-08 revenue was 36 percent lower than FY 99-00.

The report also found that driving on smoother roads could save each driver hundreds of dollars a year in fuel and vehicle maintenance costs, and Indiana's county roads have become markedly worse between 2001 and 2008. LTAP used a vehicle that tests the surface of county roads (using PASER, a 1-10 scale, where 1=total failure). While state roads slightly improved, county roads declined in quality. In 2001, only 28 percent of miles driven with the test van showed a PASER of 4 or less. In 2008, 51 percent of roads did. LTAP also tested for roughness and found that while state roads had declined slightly in quality from 2001-2008, they were still considered in excellent condition. However, they found county roads in poor condition. A rating of 200 is considered poor, and the average score was 199 for county roads.

BRIDGES

Overall, Indiana's bridges rank 19th (1 is the best) in the nation, but county bridges are a concern in a comparison of deficient bridges in Indiana and surrounding states. Only two states—Indiana and Ohio—have a greater percentage of county bridge deficiencies than state bridges, and Indiana's percentage is much larger than other states. Twenty-five percent of our county bridges are classified structurally deficient or functionally obsolete, and are older than 50 years. More than 9 percent of all county bridges

cannot be crossed by school buses, and in 2007, only seven counties were on pace with a proposed bridge replacement program.

TRAFFIC SAFETY

LTAP surveyed eight counties that were selected to represent population, traffic and weather conditions around the state, and found that approximately 88 percent of paved roads do not have edgeline marking (which will reduce off-the-road crashes). Approximately 72 percent do not have centerline marking (which will reduce incidences of crossover and sideswipe crashes), and 53 percent of paved roads are less than 18 feet wide. Increasing road width by two feet would be expected to result in 12 percent fewer crashes.

FUNDING SOURCES

LTAP identified two major sources, derived from the state excise tax and taxes on gasoline, special fuels and other fees (referred to as Motor Vehicle Highway (MVH) and Local Road and Street (LRS). The sources are received monthly from State Auditor’s office. Indiana received American Recovery and Reinvestment Act funds, and applied approximately \$71 million of these funds to Major Moves new construction.

Section 4: Making the Link Between Investment and Growth

The Economic Policy Institute (Bivens, Irons, & Pollack, 2009) estimates that each dollar of infrastructure investment provides a net of \$1.59 in additional economic growth, is 33 percent more effective than generic tax cuts, and 10 to 15 times more effective than variants of business tax cuts. According to Cambridge Systematics, Inc. (1999), every dollar invested in transit generates six dollars of economic activity, and every \$10 million invested results in approximately 570 jobs and \$32 million in sales for businesses (Cambridge Systematics, 1999).

“Infrastructure spending does pack a significant economic punch, particularly to the nation’s depressed construction and manufacturing industries” (Blinder & Zandi, 2010, p. 17). When it comes to bang for the buck, Moody’s Analytics ranked increased infrastructure spending as one of the most effective. Table 4 evaluates the fiscal stimulus measures (Table shown below is Table 11 in Blinder & Zandi, 2010, p. 16):

TABLE 4: Fiscal Stimulus Bang for the Buck	
Tax Cuts	Bang for the Buck
Non-refundable Lump-Sum Tax Rebate	1.01
Refundable Lump-Sum Tax Rebate	1.22
Temporary Tax Cuts	
Payroll Tax Holiday	1.24
Job Tax Credit	1.30
Across the Board Tax Cut	1.02
Accelerated Depreciation	0.25
Loss Carryback	0.22
Housing Tax Credit	0.90
Permanent Tax Cuts	
Extend Alternative Minimum Tax Patch	0.51

Make Bush Income Tax Cuts Permanent	0.32
Make Dividend and Capital Gains Tax Cuts Permanent	0.37
Cut in Corporate Tax Rate	0.32
Spending Increases	Bang for the Buck
Extending Unemployment Insurance Benefits	1.61
Temporary Federal Financing of Work-Share Programs	1.69
Temporary Increase in Food Stamps	1.74
General Aid to State Governments	1.41
Increased Infrastructure Spending	1.57
Low Income Home Energy Assistance Program (LIHEAP)	1.13
<i>Source: Moody's Analytics</i>	
<i>Note: The bang for the buck is estimated by the one year \$ change in GDP for a given \$ reduction in federal tax revenue or increase in spending.</i>	

The U.S. Public Interest Research Group supports the findings collected by Moody's, stating that transportation funding produced more jobs per dollar across the states. Digging deeper, they found that specifically investing in public transportation produces more jobs than highway spending. For every dollar spent on public transportation, 1.6 to 2.5 times more jobs are supported than dollars spent on highways. In addition, contrary to the popular belief that pavement projects get funding out more quickly, U.S. PIRG found that transit spending was faster (Baxandall, Schroeer, & Bernstein, n.d.). As central Indiana currently debates the Indy Connect public transportation plan, this information might be helpful to those involved.

Many states (and particularly metropolitan cities) are exploring the benefits of investing in public transportation. According to Cambridge Systematics (1999), Chicago estimates an additional \$4.6 billion in business sales from a 20-year repair to Metra, its commuter rail system. New York's MTA-LIRR East Side Access Project was expected to generate 375,000 jobs and \$26 billion in wages. Washington D.C.'s Metro has generated almost \$15 billion in private development surrounding the lines. Between 1980 and 1990, 40 percent of the area's retail and office space was built within walking distance of a Metro Station. Public transportation greatly expands the labor pool from which companies can draw workers. Detroit's Job Express Service connects 800 employers and 16,000 jobs. Motorola placed a new factory on a Chicago Metra Commuter Rail line. Treasure Valley Transit in Idaho provides 91,000 residents spread over 583 square miles with access to jobs, schools and healthcare. And finally, public transportation investments appear to give a return on dollars far greater than the costs: With regards to economic benefits in excess of costs, Los Angeles found a 6 to 1 ratio (in 1999); New York, 4.3 to 1 (in 1997); Chicago, 6 to 1 (in 1995); and rural areas, 3 to 1 (in 1998).

According to Dan Smith, Transportation Associate with U.S. PIRG, public transit generates 31 percent more jobs per billion dollars invested than similar spending on highways, and for states with heavy manufacturing capabilities such as Indiana, "Auto factories that were shut down during the last decade could be reopened and repurposed to manufacture the new railcars and bullet trains of the future" (2010).

However, despite evidence that investing in transportation infrastructure has positive effects on the economy, states are finding it difficult to do so for a number of reasons. Fortunately, there are lower cost options states could consider.

A Brookings-Rockefeller paper titled *State Transportation Reform: Cut to Invest in Transportation to Deliver the Next Economy* (Puentes, 2011) strongly advocates for transportation investment in assisting states with not only getting through the recovery, but helping their economies grow. However, recognizing the difficult economic climate, the authors recommend low-to-no cost options that would at least be improvements toward economic strategy.

- I. Governors should consider strategic reorganization and **appoint a “super secretariat”** with the authority to link departments (p. 3).
- II. Governors should **order a full audit of their state’s transportation programs** to ensure efficiency. Governor McDonnell of Virginia called for an independent assessment and found over \$600 million in savings due to better contracting and project acceleration (p. 4).
- III. Create new public-private-partnerships (more on this in the next section). This requires better use of SIB’s, **only funding projects that meet strict return on investment criteria**. After California’s Infrastructure and Economic Bank (I-Bank) had an initial capitalization of \$181 million, it has funded itself since 1999 and supported over \$400 million in loans (p. 5).

GUIDING TRANSPORTATION INVESTMENT CHOICES IN INDIANA

Purdue University’s Joint Transportation Research Program issued a report in June 2011 that studied how transportation decision makers can identify appropriate courses of action for selecting and implementing projects. Recognizing the increasing importance of measuring a transportation investment’s ability to achieve economic development, the authors argue for better economic development measures and focused on what is feasible for Indiana (Sharkey & Fricker, 2009). They focused on the potential of rural areas in Indiana with the expressed goal of providing INDOT with economic development measures that work for policy choices. The final product of the study will “demonstrate the value of investing in transportation corridors to support rural economic growth” (p. 3).

The report in its entirety could be helpful to Indiana’s recently established Transportation and Infrastructure Commission when it begins its work, including the 12 economic development measures they identify as having great potential, particularly for rural areas, when determining which transportation projects Indiana should select. Specifically, the authors advocate for county-level data, case study research, and better development of quality of life measures. At the time of publication, 7 of the 12 measures were recommended for immediate use by economic development personnel, listed here:

- Business expansion, business retention, number of jobs, total income, average income, output per capita, and absolute amount of poverty in an economy (p. 28).
- The remaining five measures (capital investment, economic stability, number of activities, number of businesses, and property appreciation) were determined not ready due to lack of data or subjectivity.

Section 5: Financing Transportation Investments

A joint article by Taxpayers for Common Sense, the Reason Foundation, and Transportation for America issued seven transportation-financing tools for legislators to consider (Zimmerman, Ybarra, Staley, & Donohu, n.d.), which may be more intermediary steps for cash-strapped states to implement:

1. **SCENARIO PLANNING:** A tactic utilized by the military and private sector for decades, this would allow states to encourage development near existing infrastructure to reduce future congestion caused by urban sprawl. It also ensures a community's transportation investments are made with the fiscal restraints of its citizens taken into account.
2. **HIGH-OCCUPANCY TOLL LANES (HOT LANES):** Cost-effective and beneficial, these lanes allow cars with single drivers to access high-occupancy vehicle lanes (HOV lanes) for a fee. It's varied throughout the day, and tolls collected are utilized for maintaining that highway corridor. They can also be used to pay for express bus service in the area. This causes drivers in non HOT lanes to experience less congestion.
3. **BUS RAPID TRANSIT (BRT):** Typically more comfortable, quicker and more reliable than city transit, these buses run on separate right of ways or on HOT or HOV lanes, and allow boarding at multiple doors on the vehicle. Passengers gain access at stations that collect fares in advance (saving time). This is a large part of Indy Connect's plan for Central Indiana, along with much needed improvements to IndyGo.
4. **INTELLIGENT TRANSPORTATION SYSTEMS:** allow HOT lane users to pay their toll without ever slowing down, which helps coordinate traffic signals. Typically can be implemented at minimal cost relative to the resulting benefits and have an enormous impact on congestion.
5. **INTERCITY AND MOTOR COACH BUS SERVICES:** Privately owned, these account for more than 750 million passenger trips each year (more than the airlines), and do so with a low level of federal assistance. Intercity buses can keep many cars off the highways.
6. **TELEWORK:** Provided areas have access to reliable, high-speed internet access, telecommuting can be an effective tool for state governments to save costs, reduce congestion, reduce energy use and improve employee morale [although states have implemented this with mixed results. Utah is repealing its four-day work week].
7. **IMPROVE CONNECTIVITY OF LOCAL ROADS:** Offering multiple routes, rather than forcing local traffic onto interstates and larger highways could also relieve congestion and help preserve the health of national infrastructure.

PUBLIC PRIVATE PARTNERSHIPS (PPPs)

According to NCSL, as of December 2010, 29 states and Puerto Rico had legislated authorization for transportation PPP's, and more than \$46 billion had been invested over the last 20 years (Rall, Reed, & Farber, 2010). These do not create new funds, but leverage private sector resources. When Indiana's Infrastructure Commission becomes active, it may find NCSL's report helpful: *Public-Private Partnerships for Transportation: A Toolkit for Legislators*. NCSL has also compiled a complete state-by-state list of transportation finance mechanisms (Rall et al., 2010). According to the report, Indiana does not utilize many resources that could be available to it, including GARVEE bonds, Private Activity Bonds, Build

America Bonds, and TIFIA. Utilization of these resources may require changing some of the infrastructure legislation in the state.

To strategically utilize Indiana's transportation resources for the next economy, much further research is needed. Many states successfully investing in their transportation infrastructure are able to do so because of established Commissions which studied the issue at length. Established by House Bill 1371, and signed into law by Governor Daniels in March 2011, the Joint Committee on Transportation Infrastructure will attempt to address many of the questions addressed in this report.

References

- AASHTO . (n.d.). State infrastructure banks. Retrieved February 15, 2012, from http://transportation-finance.org/funding_financing/financing/credit_assistance/state_infrastructure_banks.aspx
- Baxandall, P., Schroeer, W., & Bernstein, S. (n.d.). *Analysis of Latest Jobs Data Show Stimulus Spending on Public Transportation Produces More Jobs, Faster, than Highways*. U.S.PIRG. Accessed from <http://cdn.publicinterestnetwork.org/assets/ef936f09ceacb6903ef81ec70b49c512/Data-show-public-transportation-producing-more-jobs-12-22-09.pdf>
- Bivens, J., Irons, J., & Pollack, E. (2009, April 7). Transportation Investments and the Labor Market: How Many Jobs Could Be Generated and What Type? *Economic Policy Institute Issue Brief* 252nd ser. <http://www.epi.org/publication/ib252/>
- Blinder, A., & Zandi, M. (2010, July 27). *How the Great Recession Was Brought to an End*. Rep. Moody's Analytics. <http://www.economy.com/mark-zandi/documents/End-of-Great-Recession.pdf>
- Cambridge Systematics, Inc., & Economic Development Research Group. (1999, October). Public Transportation and the Nation's Economy: A Quantitative Analysis of Public Transportation's Economic Impact. *American Public Transportation Association*. <http://www.apta.com/resources/reportsandpublications/Documents/vary.pdf>
- Drake, K., Genetti, A.V., & Sinha, K.C. (2002). An Evaluation of Innovative Transportation Financing Techniques for Indiana. *Joint Transportation Research Program, Indiana Department of Transportation and Purdue University, West Lafayette, Indiana; Publication FHWA/IN/JTRP-2002/11*. <http://docs.lib.purdue.edu/cgi/viewcontent.cgi?article=1487&context=jtrp>
- FHWA. (2011, November 4). FHWA Office of Innovative Program Delivery: Innovative Finance. *Home / Federal Highway Administration*. <http://www.fhwa.dot.gov/ipd/finance/resources/general/index.htm>
- FHWA. (2000). SIBs Demonstrate Their Effectiveness in Funding Transportation Infrastructure. *Innovative Finance Quarterly* 6.2:1-10. http://www.fhwa.dot.gov/ipd/pdfs/finance/if_quarterly/ifq62.pdf
- Firestine, T. (2010). Rural Access to Intercity Transportation Has Declined. *RITA / Bureau of Transportation Statistics (BTS)*. Research and Innovative Technology Administration. Accessed November 16, 2011 from http://www.bts.gov/press_releases/2011/bts010_11/html/bts010_11.html

- Heintz, J., Pollin, R., & Garrett-Peltier, H. (2009, January 16). How Infrastructure Investments Support the U.S. Economy: Employment, Productivity and Growth." *Political Economy Research Institute*.
http://www.peri.umass.edu/fileadmin/pdf/other_publication_types/green_economics/PERI_Infrastructure_Investments
- Kahn, M., & Levinson, D. (2011). Fix It First, Expand It Second, Reward It Third: A New Strategy for America's Highways. Accessed February 2011 from
http://www.brookings.edu/~media/Files/rc/papers/2011/02_highway_infrastructure_kahn_levinson/02_highway_infrastructure_kahn_levinson_brief.pdf
- LTAP. (2009, April). Needs Assessment for Local Roads and Streets. *Indiana Local Technical Assistance Program (LTAP)*. Accessed November 4, 2011 from
<http://rebar.ecn.purdue.edu/LTAP/Resources/Publications.aspx>
- Metro Denver Economic Development Corporation. (2011). Transportation overview. Retrieved October 28, 2011, from <http://www.metrodenver.org/transportation-infrastructure/transportation/mass-transit.html>
- Major Moves. (2011, October 28). 465-69 Northeast : 465/69 Northeast Construction Project Frequently Asked Questions. *465-69 Northeast : 465-69 Northeast*. Accessed from <http://www.465-69northeast.in.gov/faq.html#3>
- Neff, J., & Pham, L. (2007, May). A Profile of Public Transportation Passenger Demographics and Travel Characteristics Reported in On-Board Surveys. *American Public Transportation Association*.
http://www.apta.com/resources/statistics/Documents/transit_passenger_characteristics_text_5_29_2007.pdf
- Nichols, R., & Holywell, R. (2011, June). Six Ideas for Fixing the Nation's Infrastructure Problems. *Governing*. <http://www.governing.com/topics/transportation-infrastructure/six-ideas-for-fixing-the-nations-infrastructure-problems.html>
- NSTIFC. (2009, February 26). Paying Our Way: A New Framework for Transportation Finance. *National Surface Transportation Infrastructure Financing Commission (NSTIFC)*. Accessed October 28, 2011 from <http://financecommission.dot.gov/>
- AASHTO. (n.d.). Project Finance State by State 1992-2008. *AASHTO Center for Excellence in Project Finance*. Accessed November 4, 2011 from http://www.transportation-finance.org/tools/state_by_state/sibs.aspx
- Puentes, R. (2011, February). State Transportation Reform: Cut to Invest in Transportation to Deliver the Next Economy. *Brookings.edu*. BROOKINGS-ROCKEFELLER | PROJECT ON STATE AND METROPOLITAN INNOVATION.
http://www.brookings.edu/~media/Files/rc/papers/2011/0222_infrastructure_puentes/0222_infrastructure_puentes.pdf
- Rall, Jaime, James B. Reed, and Nicholas J. Farber. "Public-Private Partnerships for Transportation: A Toolkit for Legislators." *NCSL.com*. National Conference of State Legislatures, NCSL Partners Project on Public-Private Partnerships (PPPs) for Transportation, Oct. 2010.
<http://www.ncsl.org/documents/transportation/PPPTOOLKIT.pdf>

- Massachusetts Public Interest Research Group. (2010, April). Road Work Ahead: Holding Government Accountable for Fixing America's Crumbling Roads and Bridges. *Massachusetts Public Interest Research Group*.
<http://www.masspirg.org/uploads/e1/e0/e1e0641907f0ee35b56cd0f0022d6823/Road-Work-Ahead-vMA.pdf>.
- Schrank, D, Lomax, T., & Eisele, B. (2011, September). 2011 Urban Mobility Report and Appendices — Urban Mobility Information. *Urban Mobility Information — Texas Transportation Institute*. Accessed November 4, 2011 from <http://mobility.tamu.edu/ums/report/>
- Sharkey, J., & Fricker, J. (2009, April). Economic Development Performance Measures and Rural Economic Development in Indiana. *Purdue E-Pubs | Purdue University Scholarship Online*. Accessed November 16, 2011 from <http://docs.lib.purdue.edu/jtrp/1148/>
- Smith, D. (2010, September 16). Better Transportation Investment Creates More Jobs. *Breaking News and Opinion on The Huffington Post*. Transportation Associate, U.S. Public Interest Research Group. Accessed November 16, 2011 from http://www.huffingtonpost.com/dan/better-transportation-inv_b_719527.html
- Transportation For America . (2009, August). Stranded at the station: The impact of the financial crisis in public transportation. Retrieved from http://www.t4america.org/docs/081809_stranded_at_thestation.PDF
- Transportation For America . (2011, October 28). Mapping the transit funding crisis. Retrieved from <http://t4america.org/resources/transitfundingcrisis/>
- U. S. Department of Transportation. (2002, February). State Infrastructure Bank Review. *U.S. Department of Transportation Federal Highway Administration*.
http://www.fhwa.dot.gov/ipd/pdfs/finance/sib_complete.pdf
- Zimmerman, E., Ybarra, S., Staley, S., & Donohue, N. (n.d.). The Most for Our Money: Taxpayer Friendly Solutions for the Nation's Transportation Challenges. *Transportation 4 America*.
<http://t4america.org/docs/The%20Most%20For%20Our%20Money.pdf>.