INDIANA RURAL ROADS AND BRIDGES
The Crumbling Reality and What it Will Take to Mend These Critical Economic Arteries

EXECUTIVE SUMMARY
Study completed by IU Public Policy Institute for Indiana Soybean Alliance and Indiana Corn Marketing Council
August 2016
Farmers and others involved in the $42.6 billion sector of Indiana’s economy (Indiana Business Research Center, 2015) confirmed what the data in this report indicated — they need better roads to more efficiently produce the grain, livestock, and other commodities that literally feed us.

This study found the trends in agriculture that affect the efficient movement of farm equipment from location-to-location and product from farm-to-market, which includes:

- Increasing size of agricultural equipment;
- Movement of product predominantly by truck;
- Increasing weight of agricultural equipment and truck loads, with heavier truck loads possible in the future; and
- Year-round farm-to-market trips (not only at harvest)

Each of these changes are important to the competitiveness of Hoosier products.

Farming and agribusiness focus group participants identified problematic infrastructure issues that have arisen as a result of these trends, and historically challenging infrastructure design and conditions that cost them time and money because of longer farm-to-market routes:

- Roundabouts and curbs
- Rough pavement
- Poor visibility at crossings
- Peaked or troughed crossings and bridges
- Low overpasses
- Narrow roads that make it hard to move farming equipment
- Road width at intersections hampered by signs, utility poles, mailboxes, crops, and trees
- Narrow intersections
- Freeze/thaw and enforcement of frost limits
- Paved roads vs. chip-and-seal vs. gravel vs. dirt
- Drainage around roads
- Conflicts with urban and suburban road users

These stakeholders frequently reported that these issues result in longer trips from farm-to-farm and from farm-to-market — costing both time and money.

The research team developed estimates for county road and bridge rehabilitation needs, spending, and the funding gap for 20 years (2016-2035). Estimates are based on data for 16 study counties that are extrapolated to the state.

The strategy employed for establishing costs is based on asset management, often referred to as “doing the right treatment at the right time.” This preferred approach utilizes treatment options to improve and extend the life of capital assets; and is a more effective and economical strategy than the more common “worst first” approach.

For road pavements, the quality goal is to raise and maintain pavements to a PASER* 6 (good) across the county network. For bridges, the quality goal is to address all current structurally deficient and functionally obsolete bridges immediately and to address additional bridges that reach these ratings in the future.

Needs include the costs to address immediate needs to update all infrastructure to the minimum quality level described and total needs to maintain county infrastructure over 20 years (Figure ES1).

The spending gap is reported using three scenarios in which immediate needs are addressed over one, three, or five years. Figure ES1 summarizes the findings for needs, spending, and the funding gap for road and bridge rehabilitation.

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Road and bridge rehabilitation needs, spending, and funding gap

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$6.4 BILLION
NEARLY — that’s how much it would cost to bring all of Indiana’s rural roads up to an acceptable level and to repair or replace all of Indiana’s functionally obsolete or structurally-deficient bridges.

This number is nearly triple the state’s financial reserves. It’s quadruple the amount of new money legislators injected into the road funding formulas during the General Assembly’s 2016 session.

It’s an enormous amount of money, yet for a state that rightly calls itself the Crossroads of America, the investment is necessary to ensure Indiana’s farmers and all who make a living in agriculture have a route to continued economic strength.

*The Pavement Surface Evaluation Rating (PASER) is a visual method, based on engineering principles, for evaluating the condition of pavement surfaces in an easy-to-learn, time efficient and consistent way. The PASER rating scale is from 1 to 10, with 1 being the lowest (failed) and 10 being the highest (excellent).
FUNDING STRATEGIES

Augmented motor fuel taxes

Gasoline and diesel taxes are the primary source of transportation funding in Indiana. Due to inflation and improved fuel efficiency, these taxes are increasingly inadequate to maintain the transportation system. The research team provides a forecast of Indiana’s fuel tax revenue based on the current policy and three alternative taxation schemes: indexing to inflation, indexing to inflation and fuel economy, and a vehicles miles traveled (VMT) fee on vehicles.

These projections indicate that by 2035, revenue from fuel taxes will decrease by 41.0 percent under the current taxation scheme (Table ES1). Switching to a mileage fee and indexing to inflation and fuel economy would address the challenge of financial sustainability by providing a revenue source that increases at or exceeds the rate of inflation between now and 2035. If Indiana were to enact policies that link fuel taxes to a measure of inflation, state governments would avoid the decreasing purchasing power of their current revenue streams. While the fuel tax would remain constant in real terms, increases in population, real income, which ultimately current revenue streams. While the fuel tax would remain constant in real terms, increases in population, real income, which ultimately current revenue streams.

The politics of adopting a taxing structure that requires the government to monitor driving habits is politically or technologically difficult to achieve in the near term. There also is widespread public opposition to the enactment of a VMT fee, with reasons including that the taxation is unfair to rural drivers, to people who drive more as part of their job, to people who drive fuel-efficient vehicles, and to people who are concerned about privacy issues (Duncan & Graham, 2013). The research team provides a forecast of Indiana’s fuel tax revenue based on the current policy and three alternative taxation schemes: indexing to inflation, indexing to inflation and fuel economy, and a vehicles miles traveled (VMT) fee on vehicles.

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This analysis suggests that indexing fuel taxes to inflation or implementing a VMT fee would address the challenge of financial sustainability by providing a revenue source that increases at or exceeds the rate of inflation between now and 2035. If Indiana were to enact policies that link fuel taxes to a measure of inflation, state governments would avoid the decreasing purchasing power of their current revenue streams. While the fuel tax would remain constant in real terms, increases in population, real income, which ultimately drives up vehicle miles traveled, will result in increased revenue. However, the issue of increased fuel economy is not addressed by indexing fuel taxes to inflation.

### TABLE ES1

20-year statewide summary of county road and bridge rehabilitation needs, spending, and funding gap (2016-2035; 2015 dollars)

<table>
<thead>
<tr>
<th>Pavement Mileage/Bridges</th>
<th>Pavement Rehabilitation</th>
<th>Bridge Rehabilitation</th>
<th>Total Rehabilitation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Needs</td>
<td>$6,760</td>
<td>13,090</td>
<td>N/A</td>
</tr>
<tr>
<td>Annual Spending</td>
<td>$119,233 million</td>
<td>$126,050 million</td>
<td>$245,283 million</td>
</tr>
<tr>
<td>Pavement Rehabilitation</td>
<td>$6,409 billion</td>
<td>$6,477,440,000</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
- Pavement Rehabilitation — Immediate: $3,204,171,000
- Pavement Rehabilitation — 20 Years: $2,477,842,000
- Bridge Rehabilitation — Immediate: $1,762,700
- Bridge Rehabilitation — 20 Years: $1,710,700
- Debt Service
- General and Unassigned
- Maintenance and Repair
- New Construction
- Roads & Bridges
- Cities and Towns
- SHF INDOT
- Counties
- Cities and Towns
- SHF INDOT
- Counties

### TABLE ES2

Fuel consumption, tax revenue and tax distributions by scenario (2016-2035; 2015 dollars)

<table>
<thead>
<tr>
<th>Year</th>
<th>Gasoline Car</th>
<th>Gasoline Truck</th>
<th>Diesel Truck (Light Duty)</th>
<th>Diesel Truck (Heavy Duty)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>$95.16</td>
<td>$0.126</td>
<td>$0.171</td>
<td>$0.139</td>
</tr>
<tr>
<td>2035</td>
<td>$2,332 billion</td>
<td>$2,073.24</td>
<td>$2,667.84</td>
<td>$2,477,842,000</td>
</tr>
</tbody>
</table>

**Notes:**
- All values in 2015 dollars.
- "All sources" includes gasoline and diesel taxes, Major Moves Draw, permits, sales tax, etc.
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### TABLE ES3

Estimated annual fuel tax costs for selected vehicle types (2015 dollars)

<table>
<thead>
<tr>
<th>Vehicle Type</th>
<th>2016</th>
<th>2035</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasoline Car</td>
<td>$95.16</td>
<td>$190.64</td>
</tr>
<tr>
<td>Gasoline Truck</td>
<td>$0.126</td>
<td>$2,477,842,000</td>
</tr>
<tr>
<td>Diesel Truck (Light Duty)</td>
<td>$0.171</td>
<td>$2,477,842,000</td>
</tr>
<tr>
<td>Diesel Truck (Heavy Duty)</td>
<td>$0.139</td>
<td>$2,477,842,000</td>
</tr>
</tbody>
</table>

**Notes:**
- 1. "All sources" includes gasoline and diesel taxes, Major Moves Draw, permits, sales tax, etc.
- 2. All values in 2015 dollars.

Cost per mile decreases for cars and light trucks may be useful in communicating with taxpayers and increasing acceptance of a fiscal solution. For these vehicle types, the cost per mile decreases for all policy scenarios (Table ES4). This is a direct consequence of the increasing fuel efficiency, which outpaces growth in VMT. The cost per driver is decreasing under all tax scenarios and a change in tax rate only affects how much it decreases. The variation across the different tax scenarios is small because taxes are relatively small proportion of the overall cost-per-mile. It is the large amount of fuel consumed (gallons) and miles driven multiplied a few cents in fuel tax or by the VMT fee that makes a big difference in revenue. The fuel efficiency for medium- and heavy-duty trucks; however, is not expected to improve significantly over the projection period and those vehicle owners are affected more by the increase in fuel price than the light trucks and cars.

### TABLE ES4

Cost-per-mile in 2016 and 2035 under various tax scenarios (2015 dollars)

<table>
<thead>
<tr>
<th>Vehicle Type</th>
<th>2016</th>
<th>2035</th>
<th>2035 (% Change)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasoline Car</td>
<td>$0.126</td>
<td>$0.098</td>
<td>$0.100</td>
</tr>
<tr>
<td>Gasoline Truck</td>
<td>$0.171</td>
<td>$0.133</td>
<td>$0.136</td>
</tr>
<tr>
<td>Diesel Truck (Light Duty)</td>
<td>$0.139</td>
<td>$0.143</td>
<td>$0.144</td>
</tr>
<tr>
<td>Diesel Truck (Heavy Duty)</td>
<td>$0.139</td>
<td>$0.143</td>
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Local Option Highway Use Tax (LOHUT) has been available to local governments in Indiana since 1980. Counties that adopt this tax must adopt the vehicle excise surtax and the wheel tax. Each of the two components apply to a distinct set of vehicle types. Fifty-one counties have adopted this tax (LTAP, 2016). In 2016, HB1001 and SB67 allow counties to double the vehicle excise surtax and the wheel tax with the adoption of an approved INDOT transportation asset management plan (AMP).

In addition, municipalities with a population greater than 10,000 are allowed to impose an additional municipal motor vehicle license excise tax and a municipal wheel tax.

Total estimated potential revenue from LOHUT adopted by counties in 2017 is $217 million and $108 million with and without AMP, respectively. Projected potential revenue in 2035 is estimated to be $229 million and $114 million with and without AMP, respectively. Potential revenues vary across counties.

Because this tool taxes vehicles, more urban and suburban counties can generate more revenue. County-adopted LOHUT revenues are distributed by county government as well as the cities and towns within each adopting county. Potential revenue for LOHUT adopted by cities and town is not estimated here.

The network of rural roads and bridges under the jurisdiction of county governments and the gap between current and needed funding for rehabilitation are vast. Clearly, more state support is needed, but funds to address the entire rehabilitation funding gap combined with needs for new infrastructure and maintenance seems unlikely.

In addition, the complex formula for distributing increases to gas tax or a replacement source may not deliver adequate resources to all counties. In light of that, local governments must identify additional local resources, make choices among local needs, and do more to wring additional utility out of all federal, state, and local dollars.

Several local tools are described within the report, including:
- Utilizing debt
- Cost sharing mechanisms
- Planning for infrastructure improvements using asset management or capital improvements planning
- Managing infrastructure inventory using a “fix-it-first” strategy
- Selective reduction of the bridge inventory
- Returning selected paved infrastructure to gravel
- Prioritizing farm-to-market routes
- Aligning land use and transportation planning
- Joint purchasing
- Outsourcing
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