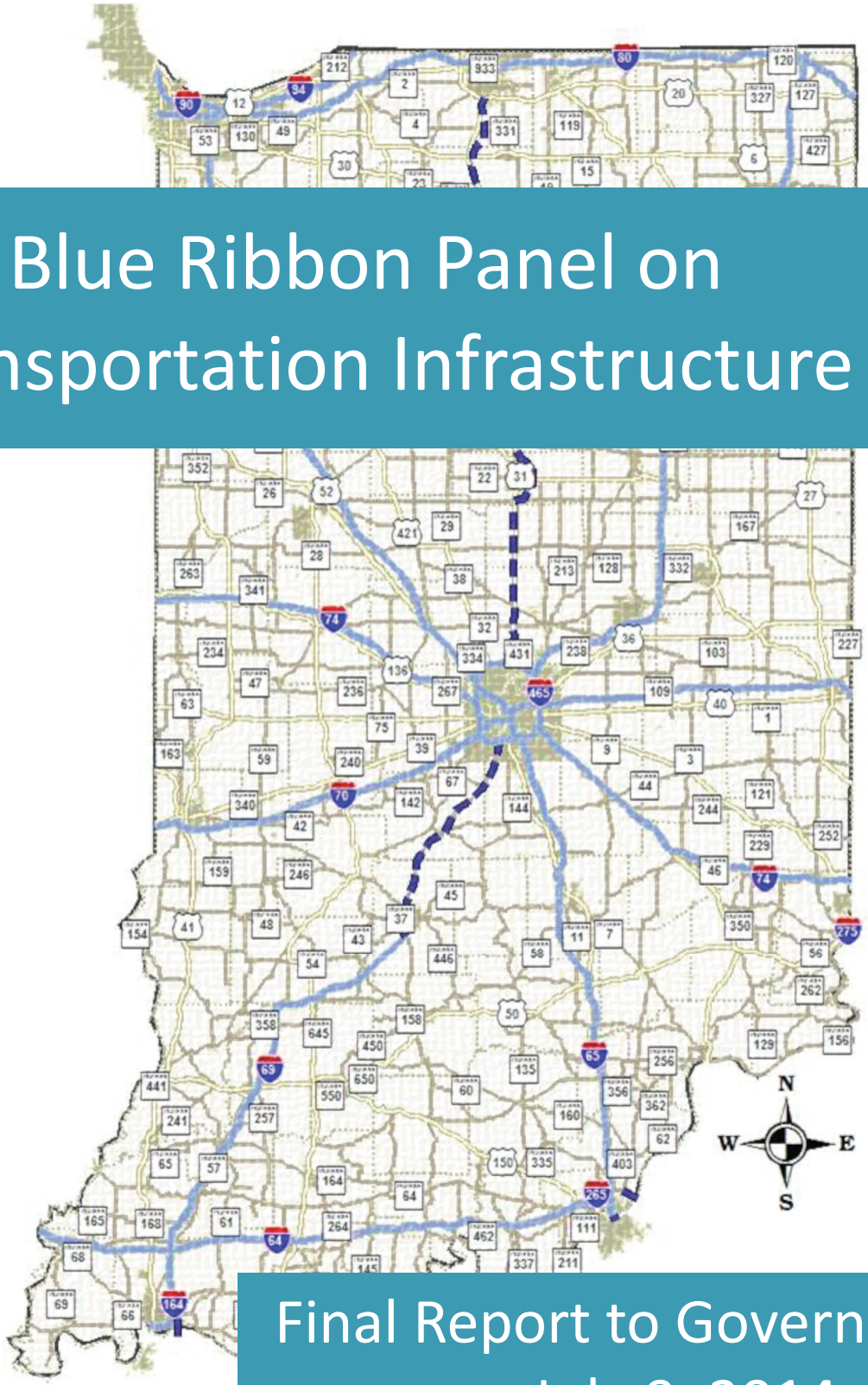

Blue Ribbon Panel on Transportation Infrastructure

Final Report to Governor Pence

July 9, 2014

Members of the Governor's
Blue Ribbon Panel on Transportation Infrastructure

Lt. Governor Sue Ellspermann, Co-Chair
Cathy Langham, Langham Logistics, Co-Chair

Mike Cline, Purdue University
Rick Conner, American Structurepoint
Mike Daigle, St. Joseph County Airport Authority
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Chip Edgington, OSP Group
Dennis Faulkenberg, APPIAN, Inc.
Andrew Fox, Chicago South Shore & South Bend Railroad
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Pete Georgeon, ArcelorMittal
Mayor Tom Henry, City of Fort Wayne
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With special thanks to our presenters and facilitators,

David Holt, Conexus
Lawrence D. Burns, Ph.D.
Dan Brassard, Indiana Department of Transportation
Kendra York, Indiana Finance Authority

and the following members of state government who supported the Panel's work:

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BLUE RIBBON PANEL ON TRANSPORTATION INFRASTRUCTURE

July 9, 2014

Governor Michael R. Pence
State House – Room 206
Indianapolis, Indiana 46204

Re: Blue Ribbon Panel Report

Dear Governor Pence:

Our work is complete!

You tasked the Blue Ribbon Panel on Transportation Infrastructure to recommend a set of priority projects for the shorter term and to provide a vision of transportation in Indiana for the longer term. In response, the Panel engaged in an eight-month journey, culminating with the presentation to you of this Report. Within its pages, this Report will guide you on that same journey, and we are confident you will arrive at the same underlying conclusion reached by the Panel: transportation is ripe for transformation.

The Panel has identified the priority projects and initiatives that will enhance Indiana's transportation system, across all modes of transportation, for both freight and passengers. The Panel offers regulatory and financial policy recommendations to complement and support the asphalt and steel projects on its priority list. Laying over all of these items is the recognition that technological innovation is on the cusp of reality. As the Crossroads of America, Indiana is uniquely positioned to lead this transformation for the entire nation. The future is now. Indiana must get ready.

On behalf of the Panel, thank you for the opportunity to serve our state through this unique and important project.

Sincerely,

Lt. Governor Sue Ellspermann
Co-Chair

Cathy Langham
Co-Chair

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- Project Summaries (by project number)

RECOMMENDATIONS

Objective: Ensure that Indiana has the best transportation infrastructure system in the nation.

Recommendation 1: Current priority projects and initiatives

Recommendation 1-1: Address top priority projects.

Recommendation 1-2: Pursue initiatives to enhance effectiveness of Indiana's transportation system.

Recommendation 1-3: Consider passenger rail projects if circumstances justify state support of the project.

Recommendation 2: Emphasize policy changes to maximize throughput on and efficiency of existing infrastructure.

Recommendation 2-1: Indiana should consider changing transportation policy to enhance the movement of freight and passenger.

Recommendation 3: Consider new, creative funding streams.

Recommendation 3-1: Funding streams should be indexed to inflation for all modes of transportation.

Recommendation 3-2: Funding streams should be "user fee" in concept for all modes of transportation.

Recommendation 3-3: End any and all revenue diversions from transportation-related activities from their original intended funding purpose.

Recommendation 3-4: Create new dedicated funds to enhance the effectiveness of airways and waterways infrastructure.

Recommendation 4: Prepare infrastructure for inevitable innovations.

Recommendation 4-1: Develop the Indiana iWay

Recommendation 4-2: Establish a university-based Innovation Fund driven by student competitions.

Recommendation 4-3: Establish the Indiana Collaborative Transportation Innovation Panel.

Recommendation 4-4: Pursue the organizational capabilities in state government to manage a fully integrated transportation system.

Recommendation 1: Current priority projects and initiatives

Background:

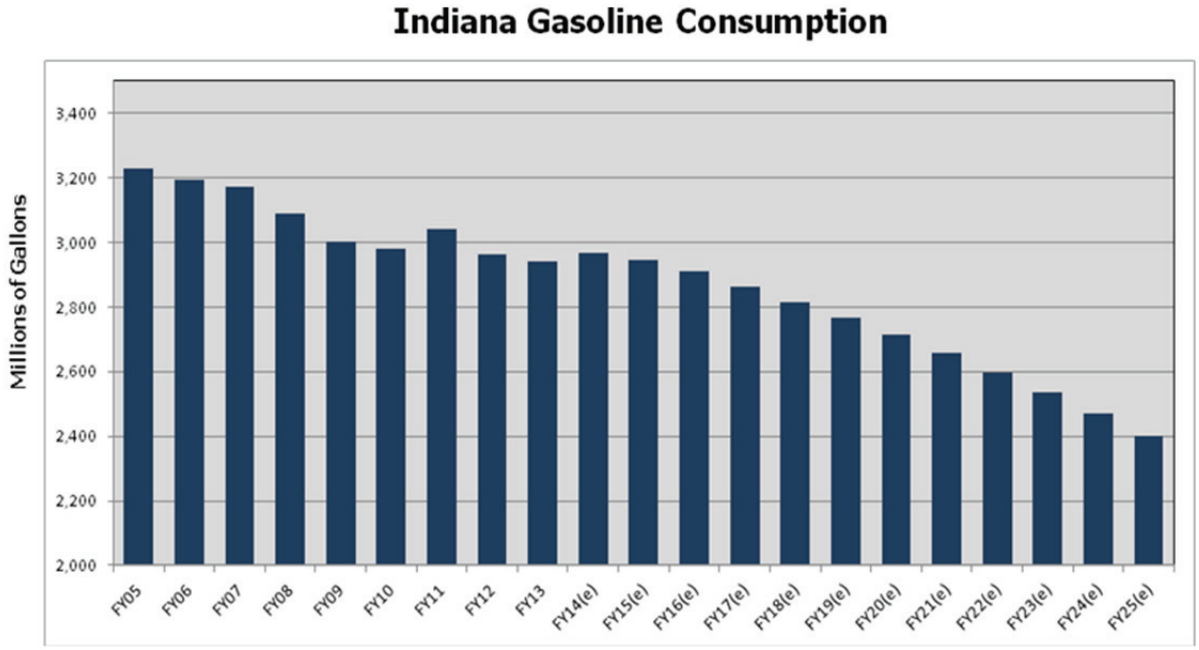
Governor Pence established a three-part philosophy regarding transportation infrastructure:

1. Take care of what we have
2. Finish what we start
3. Plan for the future

Take Care of What We Have

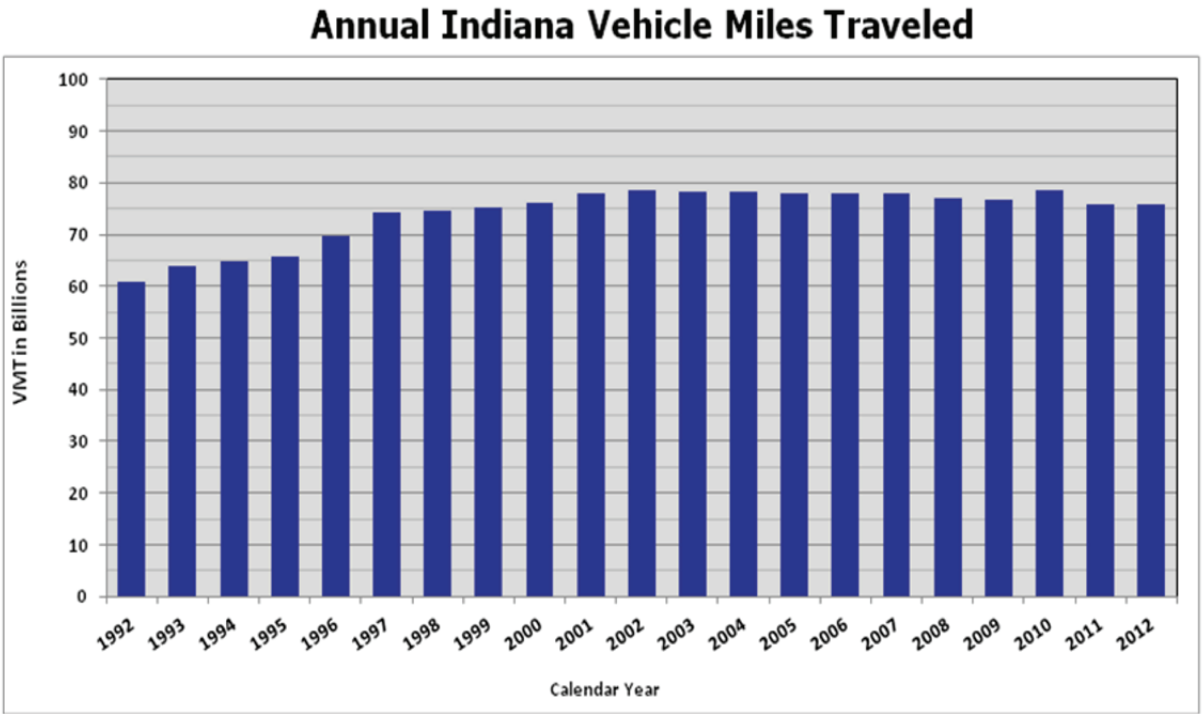
Taking care of what we have is becoming increasingly difficult due to declining revenues. For example, the Indiana Department of Transportation requires $600 million each year from the state highway fund for preservation purposes. Long term revenue forecasts for the state highway fund indicate that the revenue is not sustainable over the long term.

The decline in state revenues is primarily due to two factors: a decline in the number of miles travelled each year by motorists and an increase in vehicle fuel mileage. The state highway fund receives a $0.18 per gallon gasoline tax. Because motorists are going further between refueling stops and driving fewer miles overall, Indiana's overall gasoline consumption has declined precipitously. The following chart illustrates the historical and forecasted decline in gasoline consumption in Indiana.



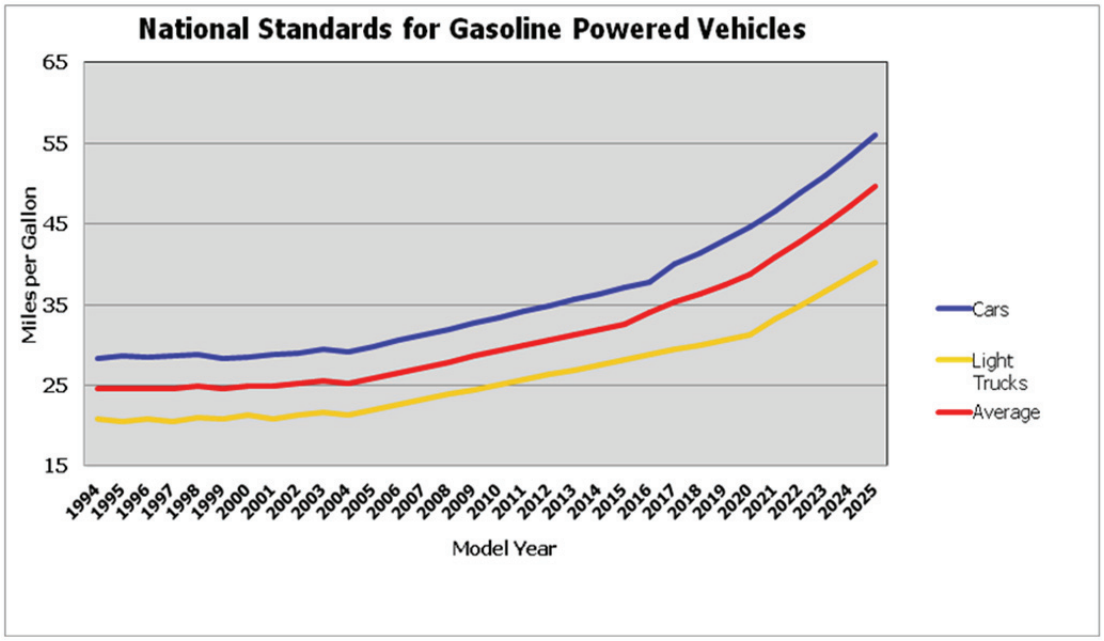
Source: Indiana Department of Transportation

The number of vehicle miles travelled annually in Indiana had steadily increased throughout the 1990s. The 2000s saw a leveling-off of Indiana's vehicle miles travelled, and that number has been declining in recent years. The following chart illustrates the historical trend in vehicle miles traveled in Indiana.



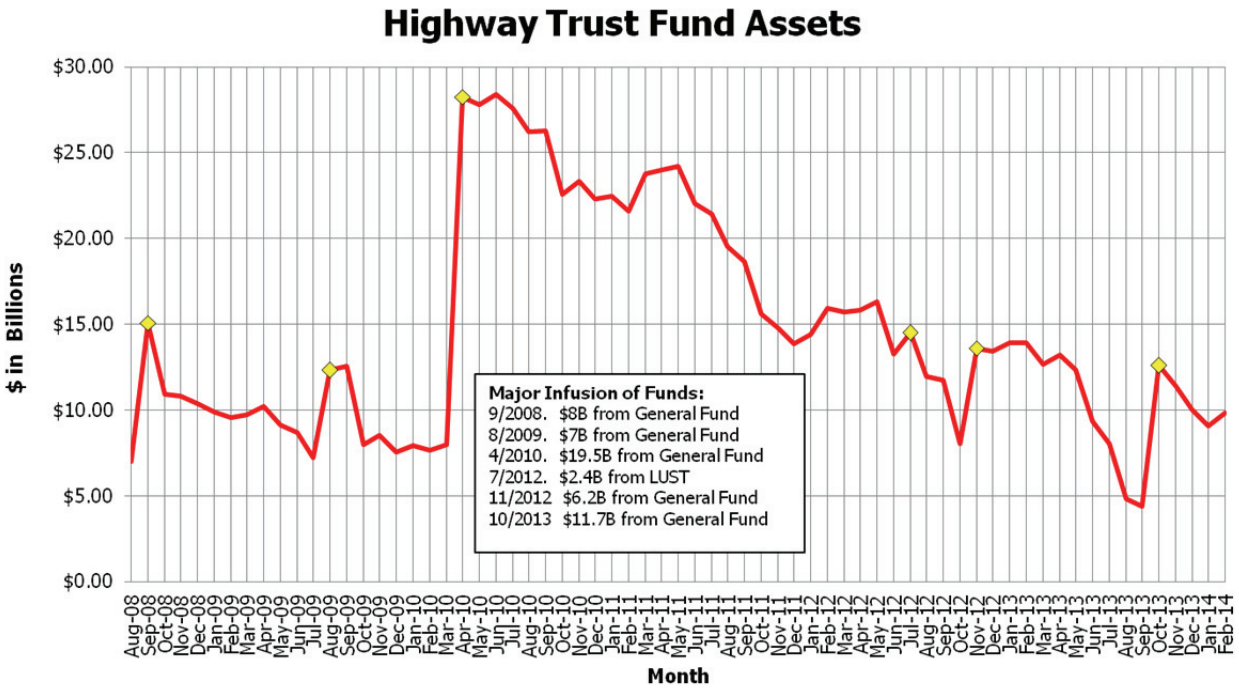
Source: Indiana Department of Transportation

While motorists in Indiana are driving fewer miles, the efficiency of their vehicles is increasing. Federal regulations require that vehicle fleets increase their fuel efficiency each year. The following chart illustrates the required increase in fuel efficiency.



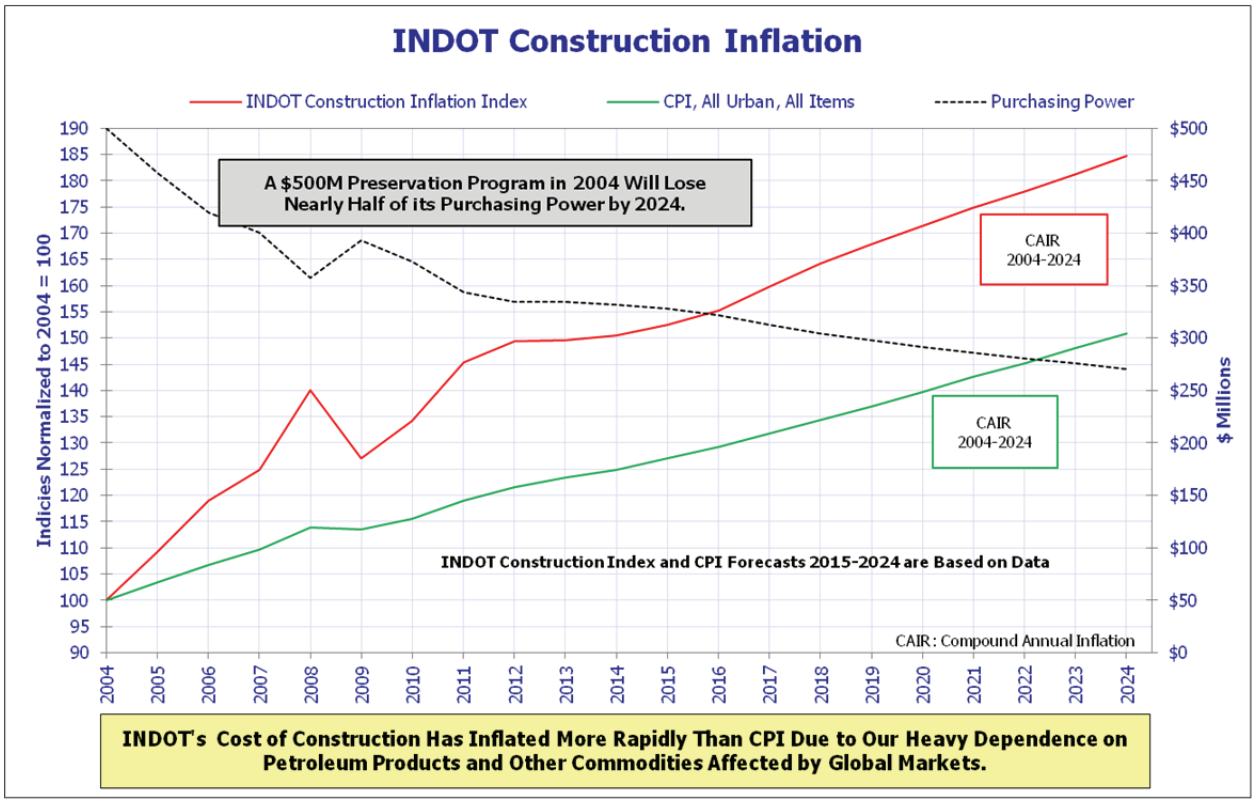
Source: Indiana Department of Transportation

The foregoing paints a grim picture for the state highway fund. In addition, Indiana's receipt of federal funding for road preservation is unreliable. Without Congressional action, the federal Highway Trust Fund will be bankrupt later this year. The following chart illustrates the historical balance in the federal Highway Trust Fund.



Source: Indiana Department of Transportation

In short, Indiana's revenue streams for preservation activities are unsustainable. Compounding the problem is the rising cost of those preservation activities. As the cost of preservation activities increases, the purchasing power of the revenue INDOT receives diminishes, meaning INDOT can do even less preservation. The following chart illustrates the inflation trends (red and green lines) and the corresponding effect on purchasing power (black, dotted line).



Source: Indiana Department of Transportation

Preserving Indiana's existing infrastructure is paramount to maintaining Indiana's position as the Crossroads of America. Though "taking care of what we have" was not officially a part of the Panel's mission, the responsibility to preserve existing infrastructure affects revenue streams and, therefore, potentially impacts future projects. Accordingly, the Panel included the foregoing discussion to provide context for its recommendations.

Finish What We Start

Certain projects fall into the "finish what we start" category. These projects were not evaluated by the Panel because the state is committed to completing them. For purposes of making this report comprehensive and keeping these projects in the conversation, these "finish what we start" projects are identified here:

- Ohio River Bridges
- I-69 from Evansville to Indianapolis
- Illiana Expressway
- US 31 from Indianapolis to South Bend

The Indiana Department of Transportation is already working toward bringing these projects to reality.

Plan for the Future

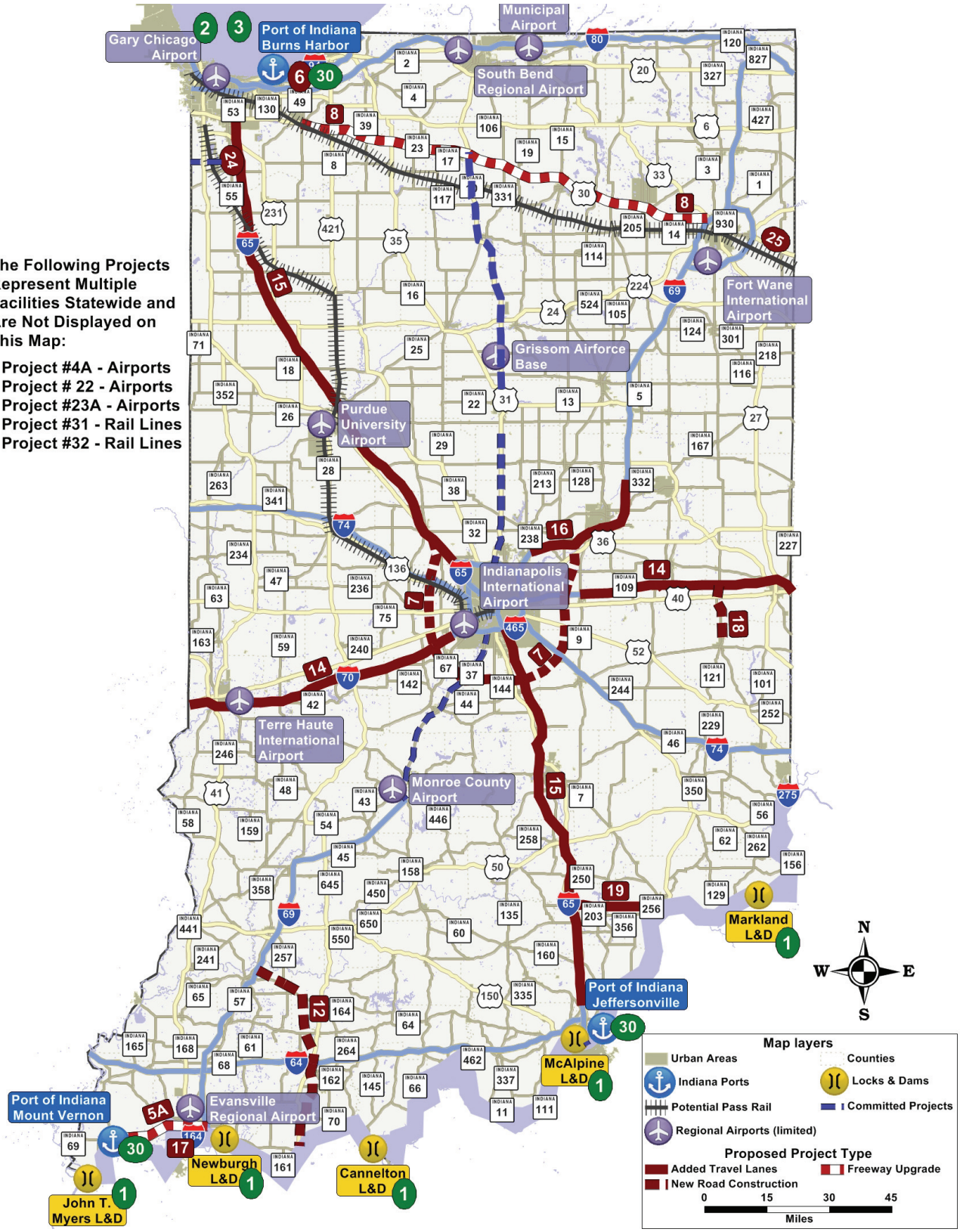
As Indiana grows, new infrastructure and other structural improvements will be required to facilitate the efficient movement of people and freight. The following recommendations address the best thinking

about current project priorities and initiatives as Indiana plans for the future. The Panel evaluated the various projects contained in the Appendix to this report against five key metrics and arranged the projects into tiers to signify relative priority among the top priorities. The tier one projects are those projects that are critical to Indiana's transportation system. The state must find a way to do these projects. The tier two projects are those that would be good for Indiana, though not critical. The tier three are desirable and should be pursued if funds become available.
The tiers are not intended to suggest a chronological priority.

Each of these projects is summarized in the attached Appendix, along with those projects removed from consideration. The process for evaluating the projects is more fully explained within the body of this Report. The following map identifies the location or impacted region of each of the projects and initiatives recommended.

The Following Projects Represent Multiple Facilities Statewide and Are Not Displayed on This Map:

- Project #4A - Airports
- Project # 22 - Airports
- Project #23A - Airports
- Project #31 - Rail Lines
- Project #32 - Rail Lines



Recommendation 1-1: Address top priority projects.

The following chart identifies those projects with the greatest statewide significance for Indiana.

Projects				
Name	**#**	**Tier 1**	**Tier 2**	**Tier 3**
I-65: Added Travel Lanes	15			
I-70: Added Travel Lanes	14			
I-69 Ohio River Bridge	17			
Commerce Connector	7			
I-69: Added Travel Lanes	16			
SW Indiana Port Connections	5A			
Mid-States Corridor	12			
US 30- Fort Wayne to Valparaiso	8			
Port Bridge Over National Rail Corridor	6			
Municipal Connector: Madison	19			
Municipal Connector: Connersville	18			

Of all the recommended projects, the Commerce Connector has drawn particularly heavy scrutiny due to its potential impact on Indianapolis. The City of Indianapolis is concerned that the Commerce Connector will encourage growth outside of Marion County along the Connector's corridor, which the City believes will contribute to additional and continuing blight within the City's south side. The Panel recognizes that the City of Indianapolis does not support the Commerce Connector and appreciates its concerns. However, the Panel believes that the Commerce Connector is a high priority, critical project because of its ability to facilitate the movement of freight and passenger traffic into and around Indianapolis, particularly at bottleneck locations such as the intersection of I-69 and I-465 on the northeast side of Indianapolis.

Recommendation 1-2: Pursue initiatives to enhance effectiveness of Indiana's transportation system.

Certain projects are more aptly described as initiatives. In some cases, the initiative involves seeking federal funding. In other cases, the initiative requires a consideration of greater use of state funding. The following chart identifies the list of recommended initiatives.

Initiatives				
Name	**#**	**Tier 1**	**Tier 2**	**Tier 3**
Inland Waterways Infrastructure (Olmstead Locks)	1			
Seaway Locks (Soo Locks)	3			
Lake Michigan Harbor Dredging	2			
Improved Intermodal Rail Service	32			
Leverage Excess Air Freight Capacity	4/4A			
Improved Rail Service to Indiana's Ports	30			
Non-Stop/Direct Commercial Flights	23/23A			
Regional Airport Development	22			
Light Density Branch Lines	31			

Recommendation 1-3: Consider passenger rail projects if circumstances justify state support of the project.

Passenger rail may have a role in Indiana's transportation infrastructure future, but historically these projects have required significant assistance and support from the state. Passenger rail projects must increase their value through enhanced performance before the state justifies providing assistance. The following chart identifies two passenger rail projects with potential statewide significance.

Projects	
Name	**#**
Northeast IN Passenger Rail Line	25
Hoosier State Rail Passenger Line	24

Recommendation 2: Emphasize policy changes to maximize throughput on and efficiency of existing infrastructure.

Background:

Indiana can make changes to its transportation policy that will maximize the efficiency of existing infrastructure. Policy changes do not require asphalt, concrete, or steel, and they can better leverage existing infrastructure without increasing preservation requirements. In some cases, policy changes can reduce the cost of preserving the system. Policy changes can also prepare Indiana's transportation system for the inevitable innovations.

Recommendation 2-1: Indiana should consider changing transportation policy to enhance the movement of freight and passenger.

The following chart identifies transportation policy changes that Indiana could consider. This list is not intended to be exhaustive. The chart captures policy changes that are "top of mind" for the Panel.

Freight	Passenger
Increase the length of semi-trailers from 53 ft to 57 ft to increase the payload per truck, which increases the efficiency of the system, reduces the number of trucks on the road, and reduces the damage to the roads	Revise Indiana statute to allow for driverless vehicles
Designate separate truck-only lanes to facilitate more efficient movement of goods and facilitate platooning of trucks	Designate high occupancy lanes to encourage more passengers per vehicle
Mandate trailers to have 3 axles instead of 2 to reduce the weight per axle approximately 50% and, therefore, reduce damage to roads	Develop a program that supports additional scheduled air service to Indiana's commercial service airports
Develop intermodal/multimodal heavy weight limit distribution zones that would allow for heavy weight intermodal distribution ozone within a specific geographic area.	

Recommendation 3: Consider new, creative funding streams

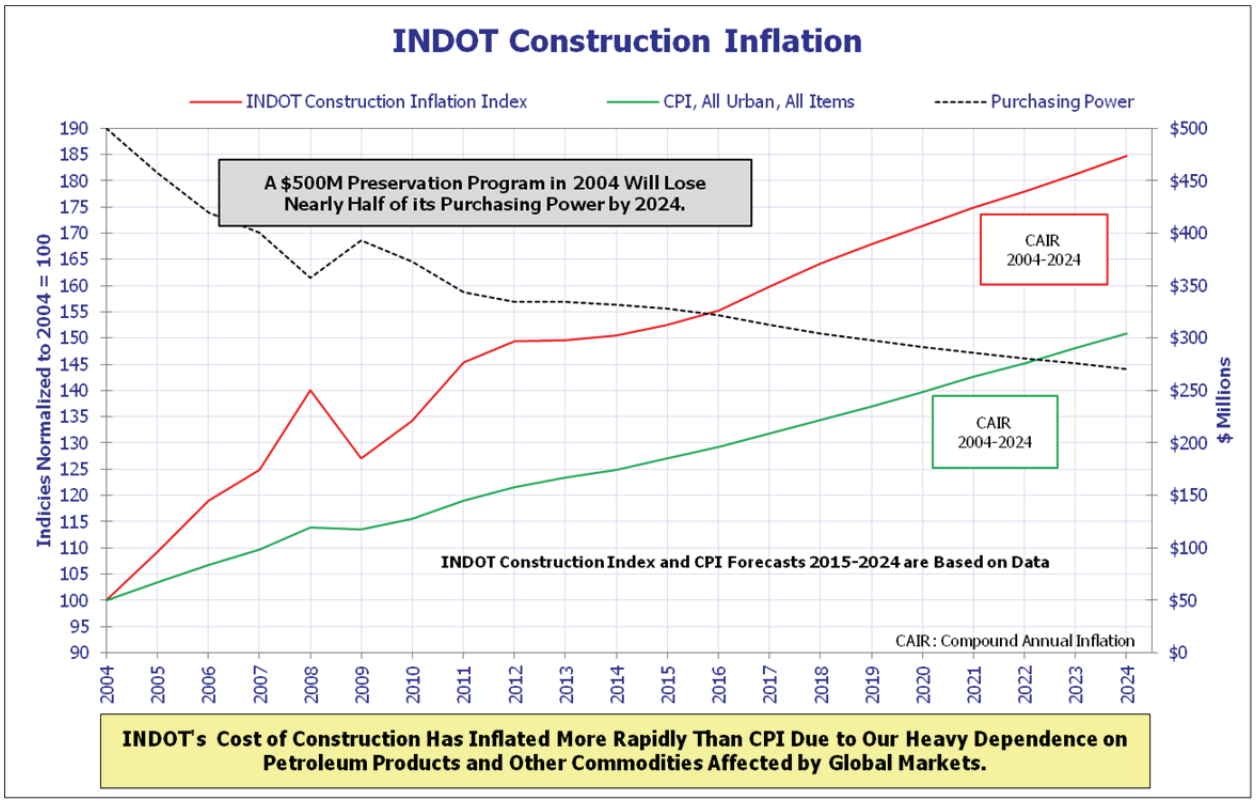
Background:

Motorists are driving fewer miles per year, and they are travelling further on a gallon of fuel due to greater fuel efficiency. The result is less gasoline tax revenue to support transportation infrastructure. In order to generate sufficient revenue to preserve existing infrastructure and allow for expansion of Indiana's transportation system, Indiana needs to consider new approaches to its transportation funding.

In addition, transportation innovations are changing the way people and business use transportation. In today's transportation paradigm, we sell vehicles, gasoline, and insurance. In the future, we will sell miles, trips, and experiences. Funding strategies need to reflect this reality.

Recommendation 3-1: Funding streams should be indexed to inflation for all modes of transportation.

Inflation leads to diminished purchasing power, which inhibits the state's ability to preserve and enhance its transportation system. As noted in the chart below, the cost of construction continues to rise due to inflation. In order to maintain the purchasing power of transportation funding streams, funding should be indexed to inflation.



Source: Indiana Department of Transportation

<u>Recommendation 3-2: Funding streams should be "user fee" in concept for all modes of transportation.</u>

User fees tie the use of transportation infrastructure to the responsibility for preserving the infrastructure. Examples of possible user fees are:

1. Possible vehicle mileage fee for road funding; would replace traditional gas tax
2. User fee for alternative fuel vehicles, either based on fuel equivalency or relative impact on infrastructure
3. Vehicle registration fee
4. Dedicate aircraft license excise tax or sales tax on aviation-related activities to a new Aviation Account that would fund improvements to Indiana's airports
5. Dedicate state funds generated from natural resources fees or sales tax on waterways-related activities on the Ohio River and/or Great Lakes collected by the state to a newly created Waterways Account that would funding dredging, dredge material disposal, and breakwater maintenance
6. User fees for pleasure craft on Ohio River and Great Lakes dedicated to maintenance of our locks, dams, dredging, dredge material disposal, and breakwater maintenance.

The foregoing list identifies examples of possible user fees. The Panel is not endorsing a specific fee. Rather, these possible fees are identified to illustrate the user fee concept recommendation. The federal government is also considering user fees to fill its funding gap.

Recommendation 3-3: End any and all revenue diversions from transportation related activities from their original intended funding purpose.

Ending diversion will protect the integrity of the programs established by federal and state legislators and ensure that the user fees collected are used for their intended purpose. Examples of such diversions include:

1. Federal and State Highway funds no longer used for mass transit.
2. Federal fuel tax, vehicle mileage fee and other highway fund user fees flow directly to the Highway Trust Fund, not the General Revenue Fund.
3. State fuel tax, vehicle mileage fee, state sales tax on gasoline and vehicle registration fee flow directly to the State Motor Vehicle Highway Account.
4. Federal and State Highway Funds should not pay for transit, enhancement, safety, and other non-road programs.
5. Federal aviation taxes and user fees flow directly to the Airport and Airways Trust Fund and not into the General Revenue Fund.
6. Federal barge fuel tax and harbor maintenance tax dedicated specifically for locks, dams, dredging, dredge material disposal, and breakwater maintenance.

Recommendation 3-4: Create new dedicated funds to enhance the effectiveness of airways and waterways infrastructure.

Existing user fees should be directed to funds dedicated to improving the infrastructure related to the fees, thereby providing a funding stream to preserve and improve the infrastructure. State aircraft license excise tax or sales tax on aviation-related activities flow into a newly created State Aviation Account that would fund improvements to the state's airports. State funds generated from natural resources fees or sales tax on waterways-related activities on the Ohio River and/or Great Lakes collected by the state to a newly created Waterways Account that would fund dredging, dredge material disposal, and breakwater maintenance.

Recommendation 4: Prepare infrastructure for inevitable innovations.

Background:

Transportation is ripe for transformation. The last time transportation stood on a precipice of this magnitude may have been 1886 when Karl Benz obtained a patent for the first gasoline powered automobile, allowing a switch from horses to horsepower. Since that time, innovations and advancements have centered around improving or supporting the use of the automobile as a means of transportation. Innovations like steering wheels, speedometers, automatic starters, air conditioning, turn signals, and airbags made our automobiles safer and more convenient to use, while paved roads, gas stations, and drive-thru restaurants made automobiles the organizing tool for transporting people and commerce.

Now, new tools are on the horizon, shaped by forces never before seen. Digital technology now allows for methods of transporting people and goods that are connected, coordinated, shared, driverless, tailored, and electrical.

Digital connectivity will enable automobiles to communicate with one another and coordinate movement. The image on the right is a driverless vehicle under development at Google, Inc. This self-driving vehicle has logged over 700,000 miles and is expected to be commercially available by 2017. The box atop the vehicle houses a laser that spins at a rapid rate, feeding information about the vehicle's surroundings to its control system, enabling the vehicle to evade collisions while allowing its passengers to read, work, or take a nap.

Source: Google, Inc.

Source: General Motors Corporation

The concept car on the left takes connectivity and coordinated movement to an entirely different level. This is a two passenger vehicle built on a self-balancing, two-wheel system. The vehicle's sensors can detect the location and movement of other vehicles, which, like the Google self-driving vehicle, allows for greater passenger productivity and greater

The following graphic illustrates an intersection full of these vehicles. Note the absence of a traffic signal. The signal is not needed. The vehicles coordinate their movement to avoid collisions.

Source: General Motors Corporation

The transformative potential of this technology is not limited to passenger vehicles. Digital technology creates the same opportunity for movement of freight that is connected, coordinated, driverless, tailored, and efficient. Digitally connected and coordinated movement of freight will provide:

- Ubiquitous sensors
- "Big data" analytics
- Real-time situation awareness
- Integrated intermodal systems
- Faster more reliable deliveries
- Better equipment and workforce utilization
- Better performance measurement
- Enhanced shipper/carrier collaboration
- Usage-based road pricing (location, time and weight)

The technology will allow for smaller, lighter, and more frequent shipments. Tractor-trailers will operate in tandem, or "platoons", that allow vehicles to travel closer together, increasing efficiency and throughput. Small package delivery will be made available via drones. For certain, this is not 1886.

The innovations do not stop with the vehicles. The roads themselves are sources of new thinking. Some road technology imbeds light-absorbing, glow-in-the-dark markings that could replace streetlights.

Source: http://arstechnica.com/business/2014/04/glow-in-the-dark-roads-make-debut-in-netherlands/

The same technology could enable our roads to communicate air temperature and road surface conditions.

Source: http://arstechnica.com/business/2014/04/glow-in-the-dark-roads-make-debut-in-netherlands/

This is not Star Trek. These technologies are not under development in some galaxy far, far away. This innovation is happening here, right now. The question is not when or whether these technologies will be realized in the marketplace. The question is will these technologies become a reality sooner or later. Indiana should create the opportunities for these technologies to become a reality and lead the nation as an early adopter of the innovation.

Recommendation 4-1: Develop the Indiana iWay

The Panel has identified among its top projects Indiana's three main interstates (I-65, I-70, and I-69). These critical corridors provide a logical starting point for constructing road infrastructure capable of supporting connected vehicles. Indiana should designate a one-mile stretch of I-65 as the Indiana iWay. The iWay could include:

- a third lane which electric cars can travel on and recharge their batteries from the roadbed; still accessible for all vehicles (except trucks)
- all lanes communicate weather conditions using symbols transmitted onto windshields
- all lanes consist of roadbeds capable of maintaining minimum temperatures of 32 degrees so plowing of snow and salting of roadway is not necessary
    - reduces maintenance as it prevents/minimizes freeze/thaw effects on pavement
    - reduces/eliminates need to plow or salt
    - improves safety as plowing and salting still contain hazards
    - uses solar power to power electronic conducting particles blended into road bed material to power both temperature demands as well as charging of electric cars
    - system can draw from/"buy in" from electronic grid during peak demands (technology is available today from Indiana company by the name of Mesh Systems)
    - use of natural gas as supplement to solar should be explored
- all lanes capable of communicating signage on windshields (speed limits, exits, hazards, etc)

The iWay could be implemented in conjunction with the widening of I-65. Indiana would make a five year commitment/grant to the engineering school at one of Indiana's colleges or universities to fund the development of Indiana's iWay.

Recommendation 4-2: Establish a university-based Innovation Fund driven by student competitions.

The Innovation Fund would establish cash price awards following competitive submissions of projects intended to meet the following types of criteria:

- Design to take cost out of roads and bridges
- Design to extend life of pavement (like Indiana soybean's sealant)
- Design to reduce build and repave time
- Design to increase safety on roads
- Design for smart roads
- Design for "load leveling" traffic on interstates
- Design for measuring VMT in Indiana licensed vehicles on Indiana roads

The awards could be a $25,000 first prize and a $10,000 second prize. The competition would be open to all engineering schools in Indiana and would run two or three topics per year.

Recommendation 4-3: Establish the Indiana Collaborative Transportation Innovation Panel.

Indiana should establish a mechanism for the ongoing collaboration and exploration of best practices and leading technologies in transportation equipment and infrastructure. The Indiana Collaborative Transportation Innovation Panel ("ICTIP") would be that mechanism. Indiana would establish the ICTIP as a "think tank" with the representatives from across all modes and sectors of Indiana's transportation industry, including auto, rail, air, barge, truck, mass transit, manufacturers (trucks, trailers, barges, engines, auto and auto suppliers, etc). The ICTIP would meet periodically to share ideas for Indiana's future transportation infrastructure. The state would commit sufficient resources to provide staff for the ICTIP. Conexus could organize, conduct and report the results of the meetings directly to the Governor and/or Lt. Governor as a means for not only the results of this Blue Ribbon Panel to carry on but as a conduit for new ideas in the future.

Recommendation 4-4: Pursue the organizational capabilities in state government to manage a fully integrated transportation system.

The transformative change in transportation will create a seamless, fully-integrated transportation system. Managing that system and all of its moving parts will require simultaneously choreographing the movement of people and goods from origins to destinations across all modes of transportation. The state will have to be able to learn and react quickly to evolving system needs if the state is to be on the leading edge of transportation innovation. State government may not be currently organized in a way that facilitates the quick action required.

At present, the Indiana Department of Transportation focuses almost exclusively on roads and bridges. The Department is a "project mill", specializing in the planning, design, and procurement of road and bridge projects. The Department has small divisions assigned to rail, air, and intermodal facilities, but those divisions primarily serve as administrators for federal funds. Those divisions do not have a significant system management function.

The Indiana Ports Commission manages Indiana's port system, which includes the land around the port facilities. In effect, the Ports Commission serves as a landlord for tenants at the Ports' property.

Aside from the minor divisions at INDOT, state government has historically played a small role in coordinating the activities at rail, air, and intermodal facilities. That will have to change as infrastructure becomes connected and coordinated.

Indiana's future transportation infrastructure will require the state to serve as an "air traffic controller" of sorts, managing the fully-integrated transportation system. The infrastructure will require state policymakers and regulators to act as information technology specialists while also serving as landlords and project managers. The fully-integrated system will require a greater emphasis on coordination of air, rail, and intermodal activities along with water and roads. The state needs to determine how to most effectively organize the structure of its state agencies to plan for, implement, and manage the connected, coordinated transportation systems brought to Indiana by inevitable transformative innovations.

PLANNING PROCESS

Introduction: Indiana's three guiding principles for transportation infrastructure established by Governor Pence are: 1) take care of what we have, 2) finish what you start, and 3) plan for the future. The Blue Ribbon Panel on Transportation Infrastructure was formed to turn the third principle into a tangible reality.

Road Map Objective: Attracting investment in Indiana with an emphasis on manufacturing, agriculture, life sciences, and logistics.

Blue Ribbon Panel Mission and Purpose: To recommend a plan for the next generation of transportation infrastructure.

Strategies for Consideration:

- Economic growth
- Quality of life
- Intermodal synergies
- Environmental impact

Deliverables:

- A 10-year plan and a 30-year look
- Include water, air, road, and rail infrastructure
- Address both freight and passenger transportation infrastructure
- Metrics for evaluating project priority
- Use metrics to identify priority projects within a 10-year plan

Timeline:

The Panel's work was organized over five meetings. At the first meeting, the Panel familiarized itself with its mission, guiding principles, and deliverables. The Panel reviewed background information and began its conversation about the appropriate metrics against which to evaluate various potential projects.

At its second meeting, the Panel began reviewing its initial list of possible projects. This list was generated from the Indiana Department of Transportation, Conexus, and other various sources. The initial list was never intended to be exhaustive, and it contained some projects recommended by members of the public. The Panel spent its second meeting getting familiar with the initial list of projects and began its evaluation of individual projects.

At the third meeting, the Panel continued its project evaluation. The project list had grown to include projects recommended by Panel members. The list also included variations of initial projects. By the end of the third meeting, the Panel had completed its first review of the project list.

At the fourth meeting, the Panel heard presentations about transportation innovation and transportation funding. The information presented helped the Panel shape the character of its recommendations.

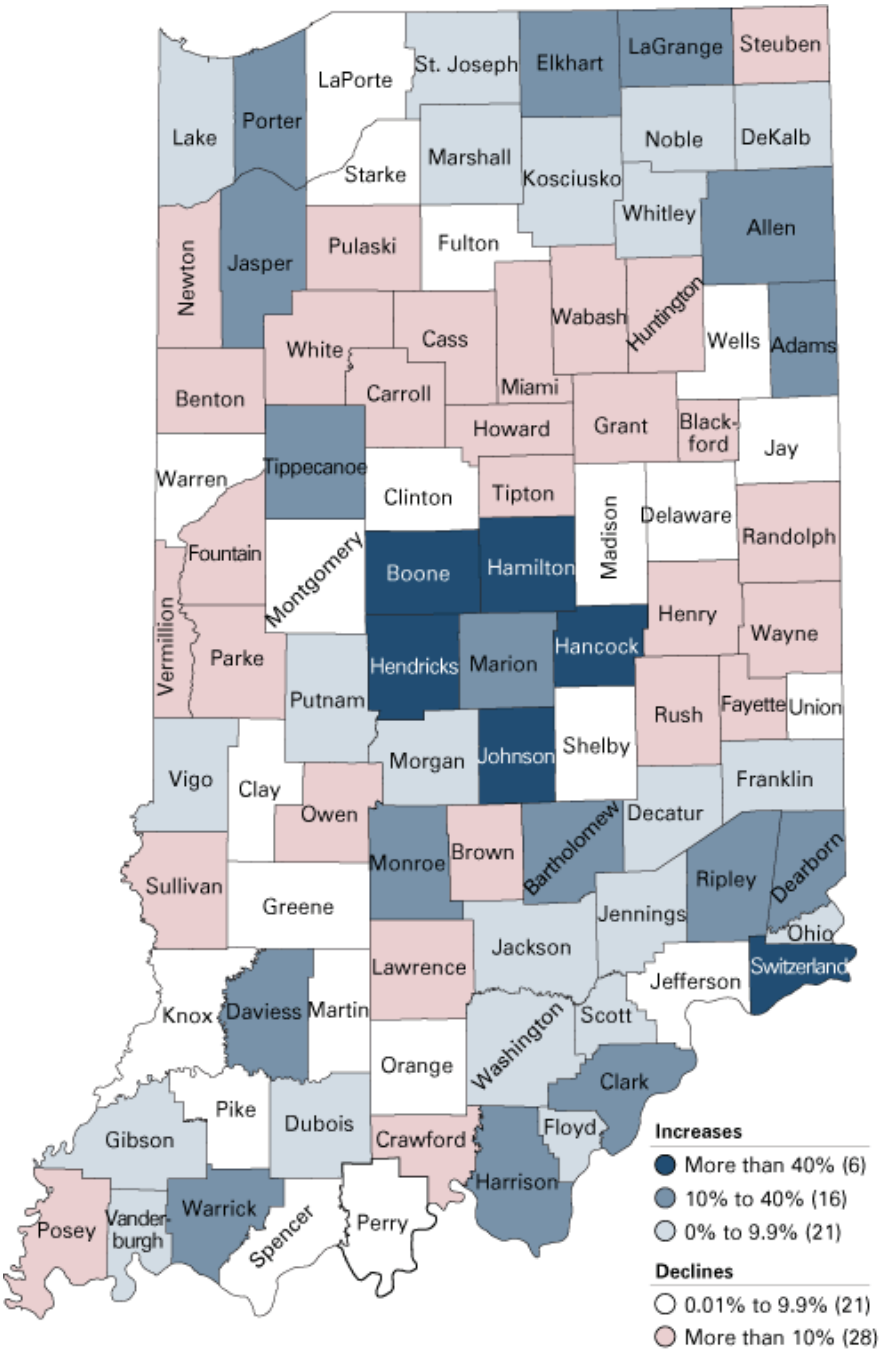
At the fifth and final meeting, the Panel finalized its recommendations.

BACKGROUND INFORMATION

The following presents a series of maps, charts, and other data compilations the Blue Ribbon Panel used to formulate the context for identifying the next generation of transportation infrastructure.

A. Projected Rate of Population Growth – 2010-2050

Heavy population growth is projected in Marion County and surrounding counties. Moderate growth is projected in the southeast, northeast, and northwest. Population decline is projected for ring surrounding Indianapolis metro area.



Source: US Census Bureau

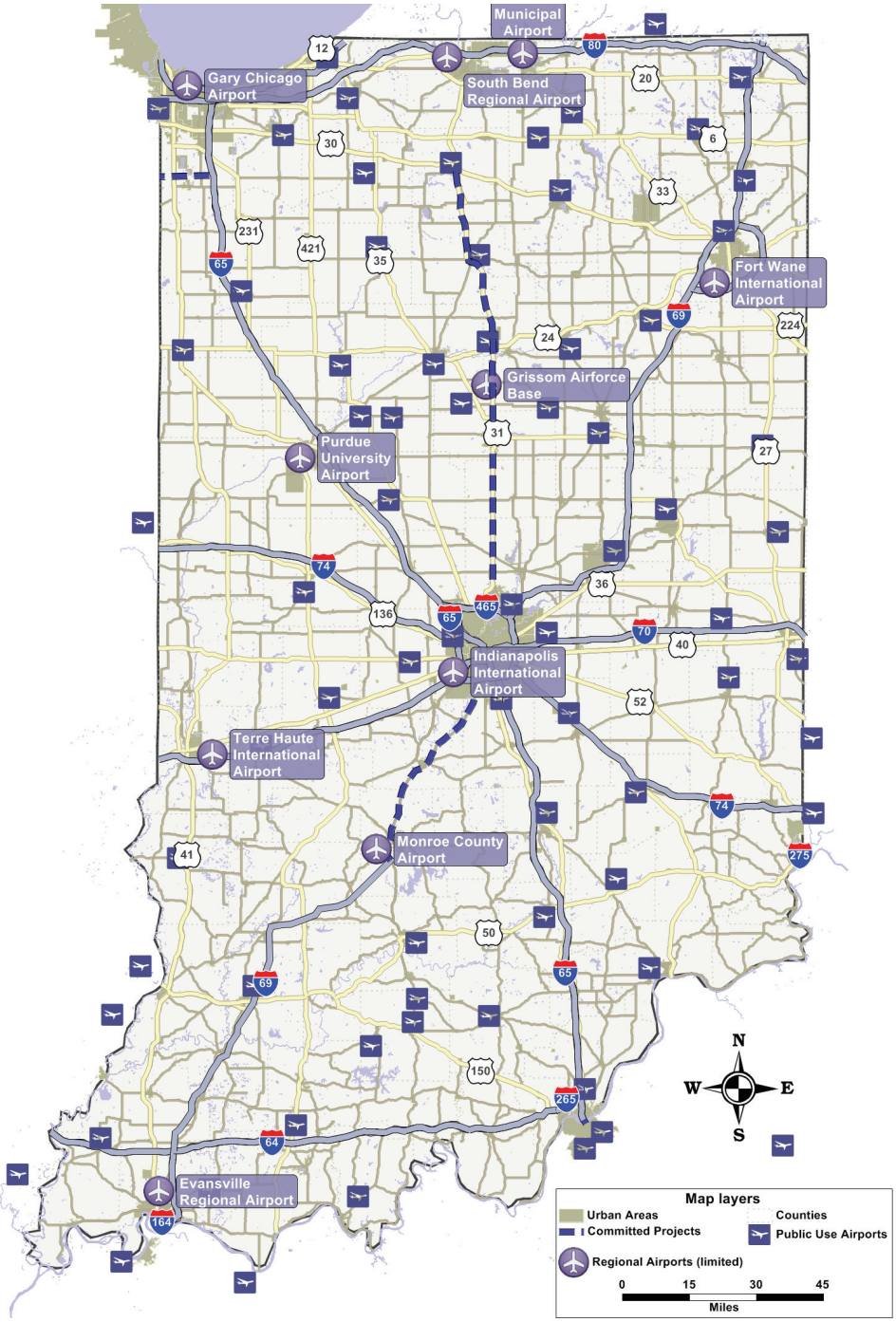
B. Existing Port Infrastructure

Indiana has three ports: Burns Harbor, Mount Vernon, and Jeffersonville. Burns Harbor is able to accommodate seagoing ships, while Mount Vernon and Jeffersonville provide access to the Gulf of Mexico via the Inland Waterway System (Ohio and Mississippi Rivers). Indiana has 400 miles of navigable waterways.

Source: Indiana Department of Transportation

C. Existing Airport Infrastructure

Indiana has 112 airport facilities available for use by the public. Of those facilities, 69 are a part of the Indiana State Aviation System Plan.



Source: Indiana Department of Transportation

D. Existing Rail Infrastructure

Indiana has 5,347 miles of railways.

Source: Indiana Department of Transportation

E. Existing Highway Infrastructure

Indiana has 11,168 total centerline miles of state (7,220) and US (2,710) roadways.

Source: Indiana Department of Transportation

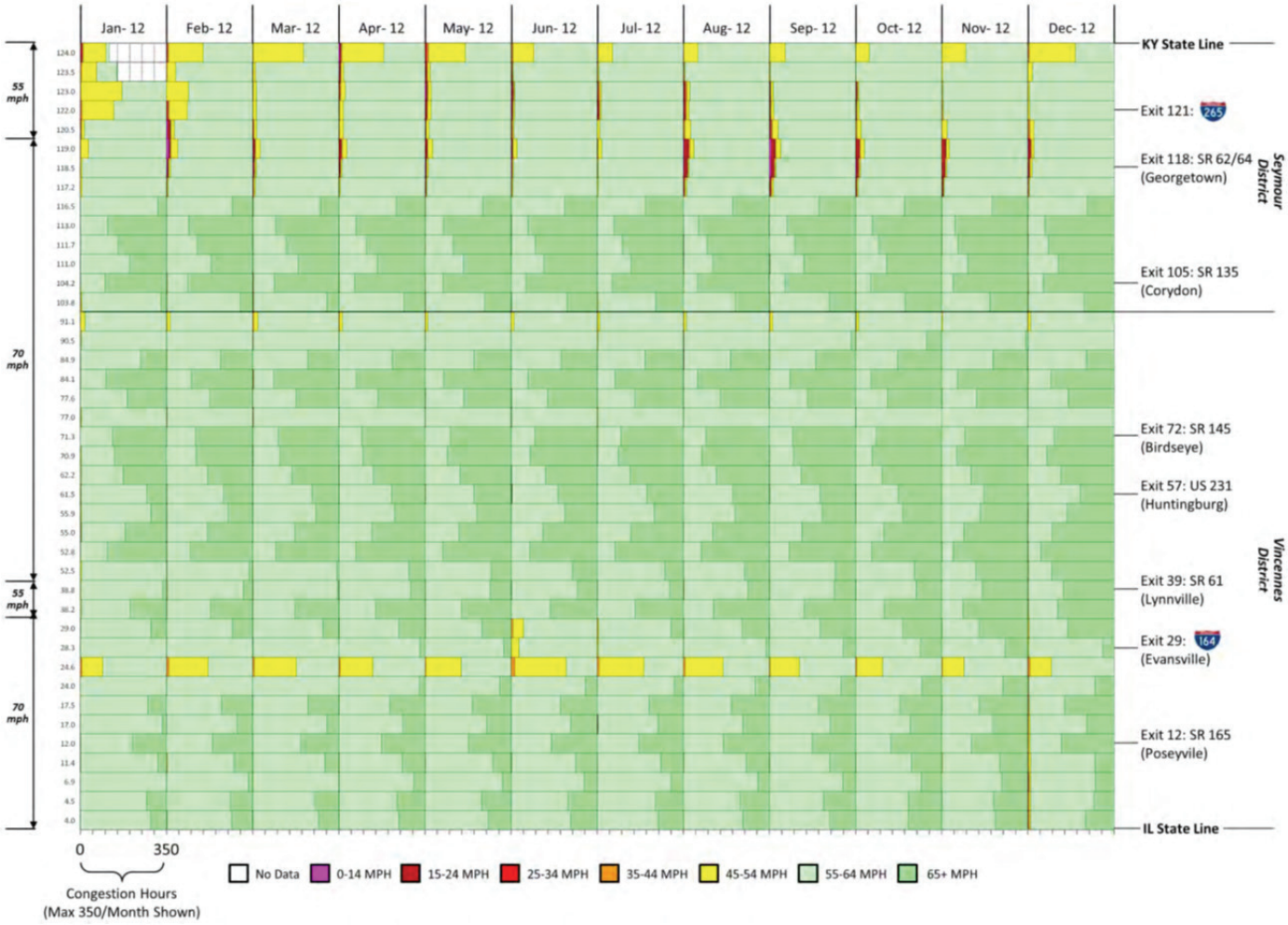
F. 2012 Indiana Mobility Report

INDOT and Purdue University collaborated to prepare the 2012 Indiana Mobility Report. The Report identified areas of congestion on Indiana's Interstates. Overall, the Report concluded that our Interstate system functions very well.

The Report defines congestion as segments of time in which traffic moves at less than 45 mph. In the Speed Profiles that follow, areas of green indicate no congestion. Yellow indicates heavy traffic with speeds still exceeding 45 mph. Areas of orange, red, and purple indicate increasingly congested segments of Interstate. Each Speed Profile measures average speeds for each Interstate from entry to exit (e.g., state line to state line) in both directions of travel (e.g., northbound and southbound I-69). This report can be found online at http://docs.lib.purdue.edu/imr/4/.

I-64

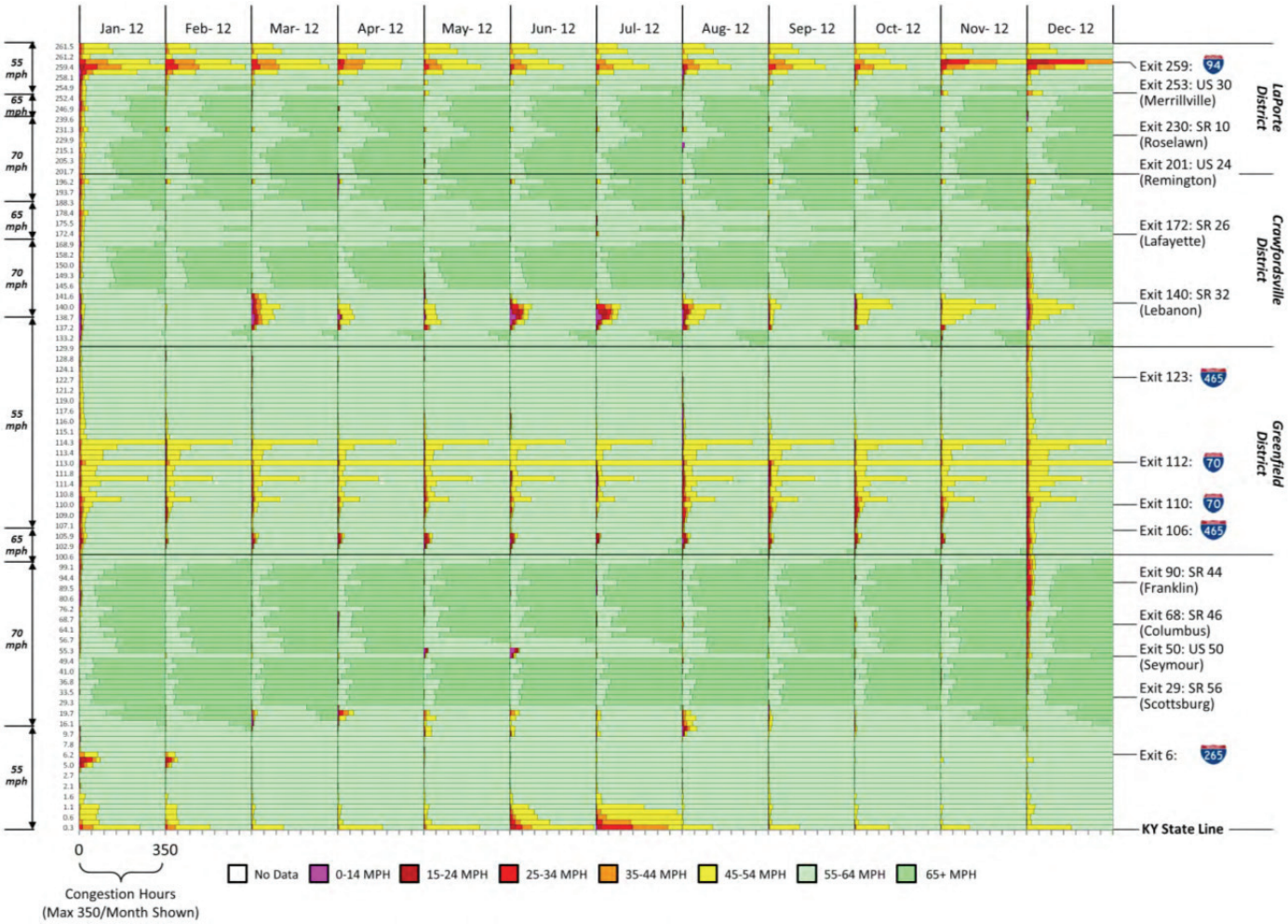
Eastbound I-64 Speed Profile, 2012



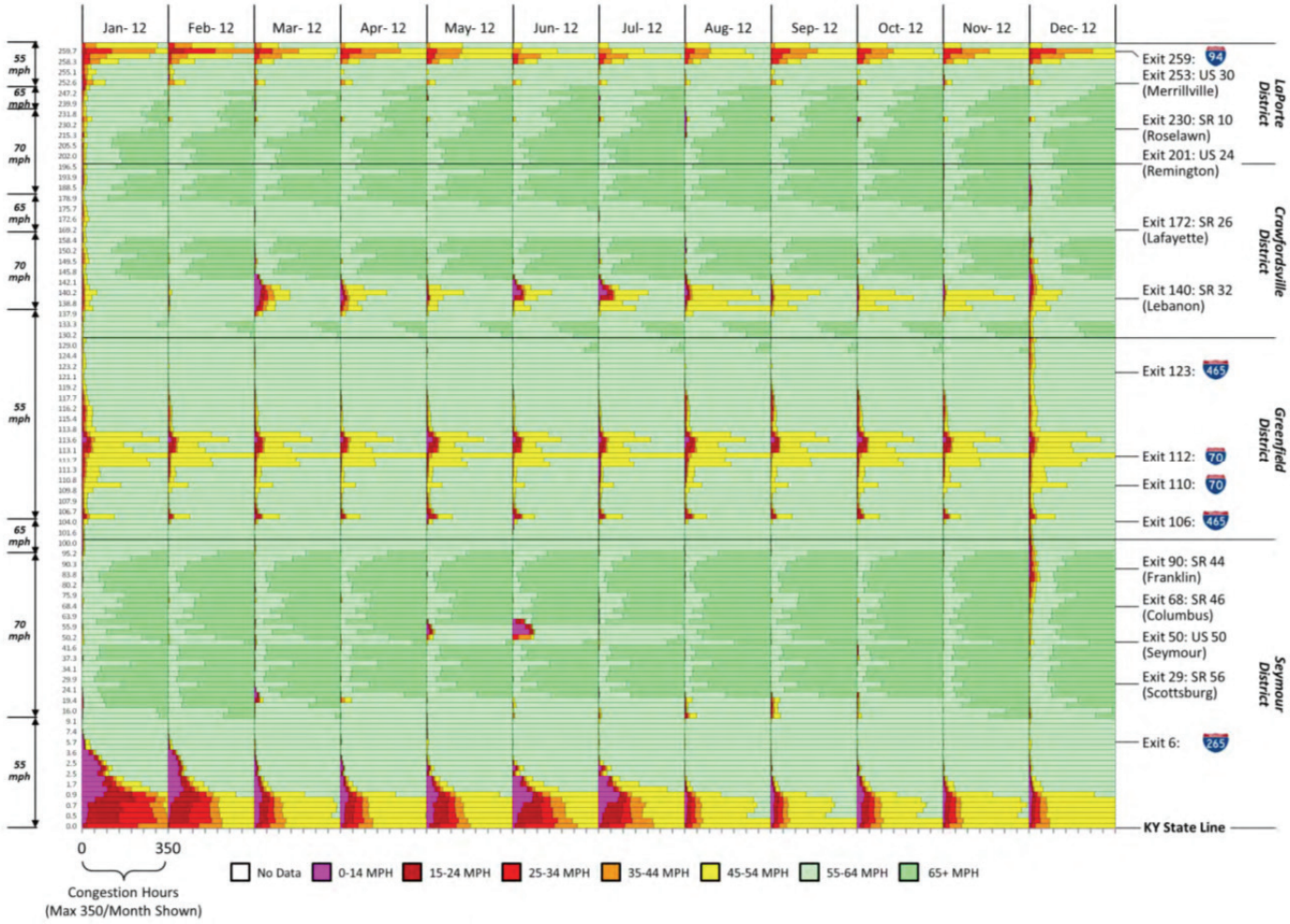
Westbound I-64 Speed Profile, 2012

I-65

Northbound I-65 Speed Profile, 2012

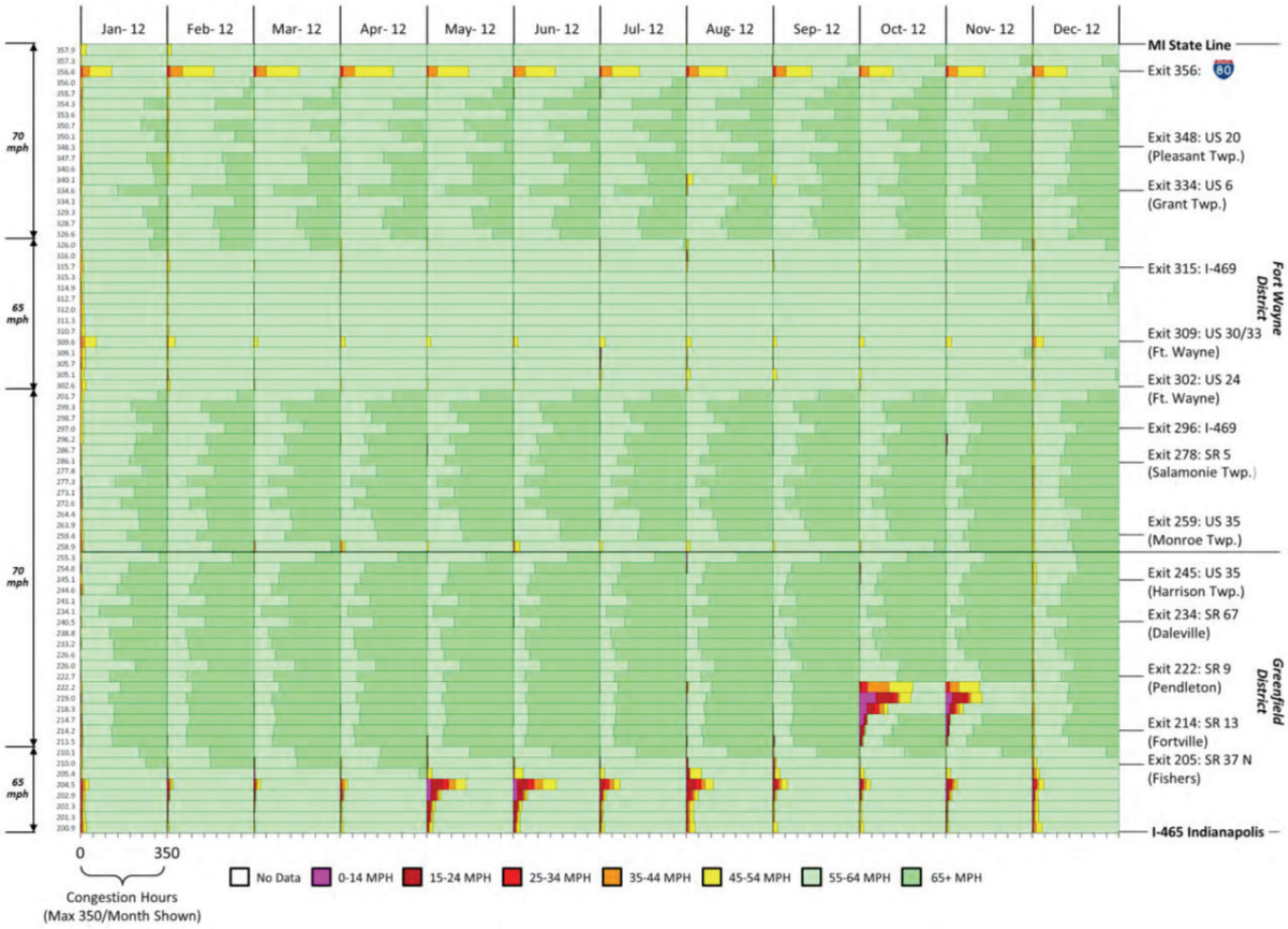


Southbound I-65 Speed Profile, 2012.

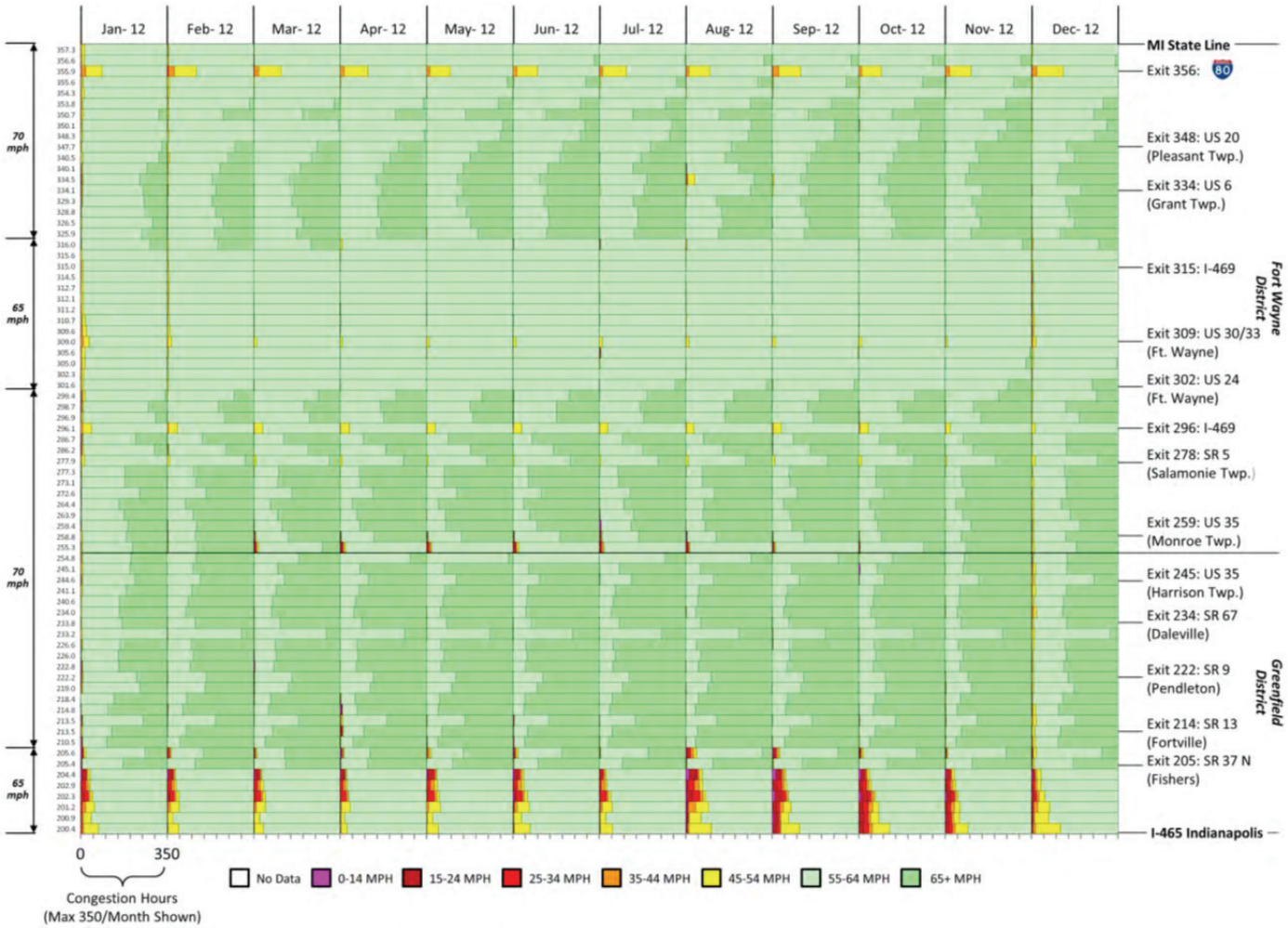


I-69

Northbound I-69 Speed Profile, 2012



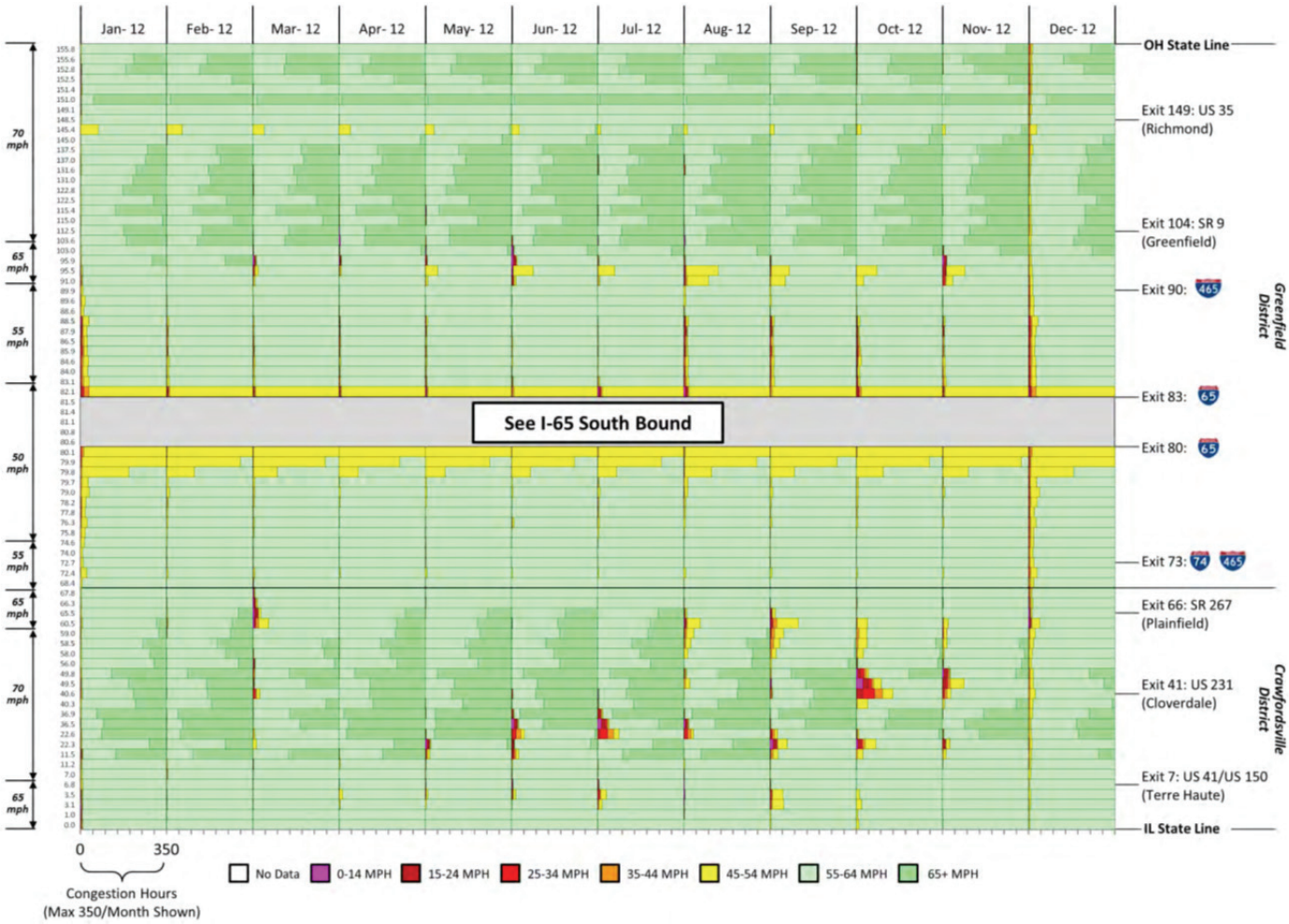
Southbound I-69 Speed Profile, 2012



I-70

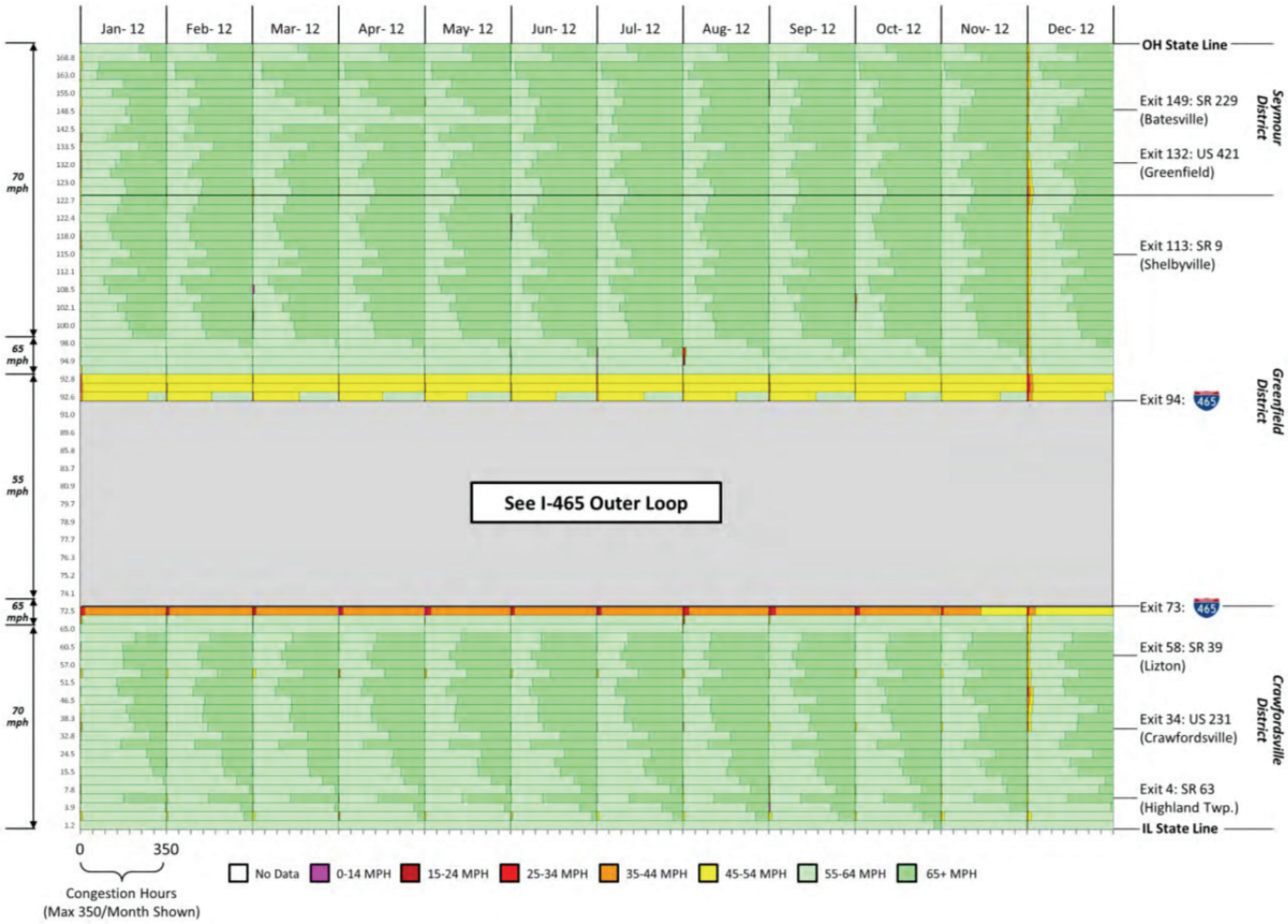
Eastbound I-70 Speed Profile, 2012

Westbound I-70 Speed Profile, 2012

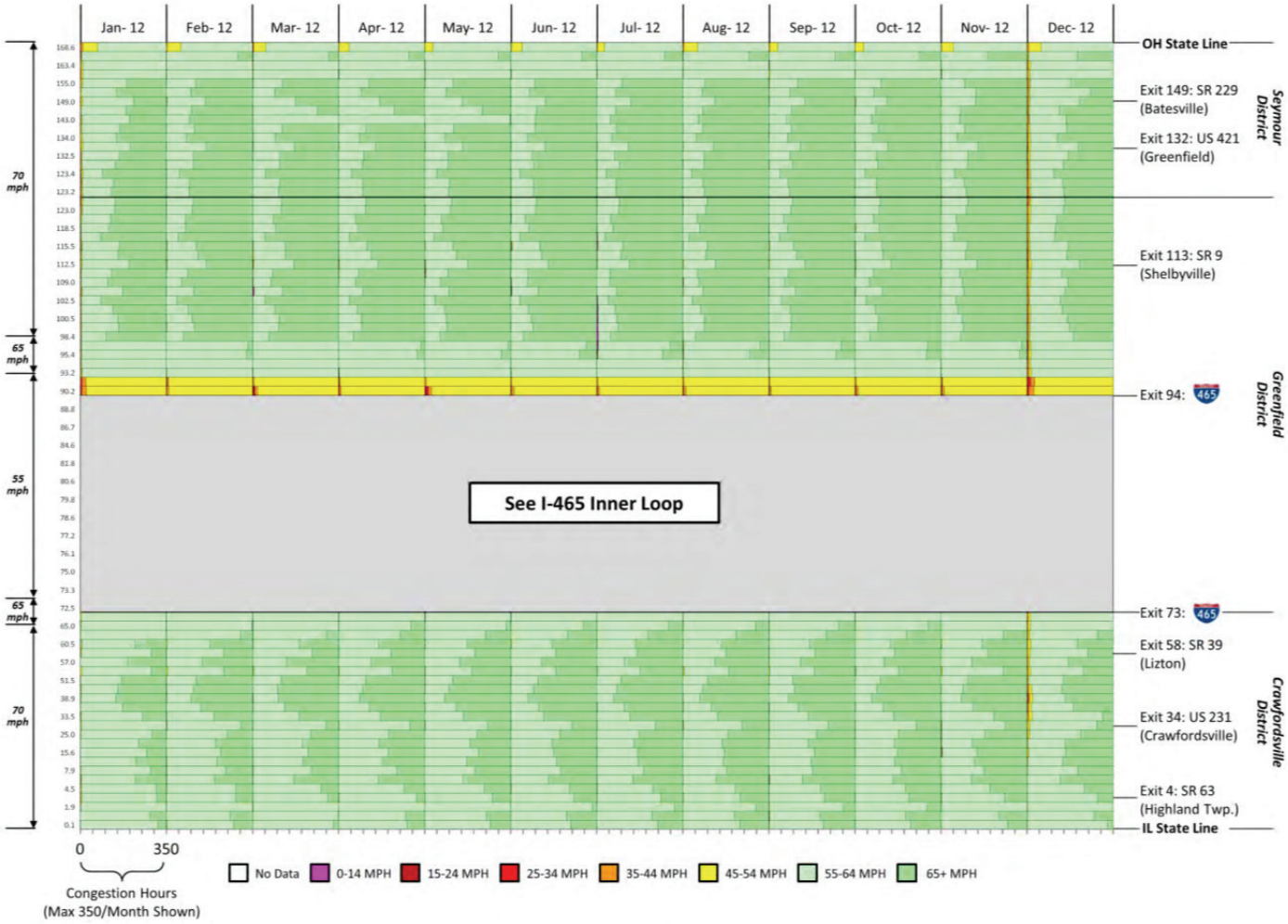


I-74

Eastbound I-74 Speed Profile, 2012

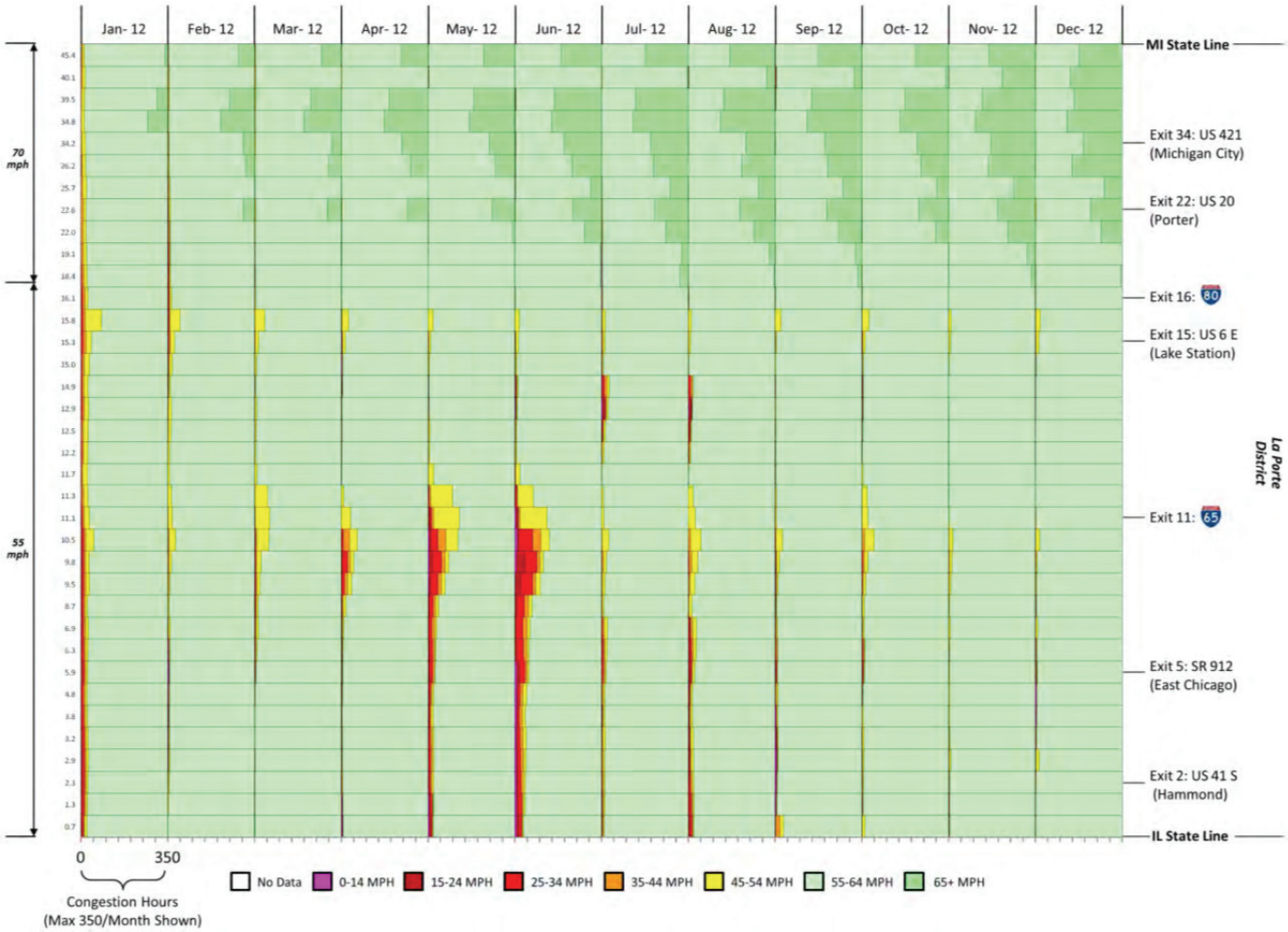


Westbound I-74 Speed Profile, 2012

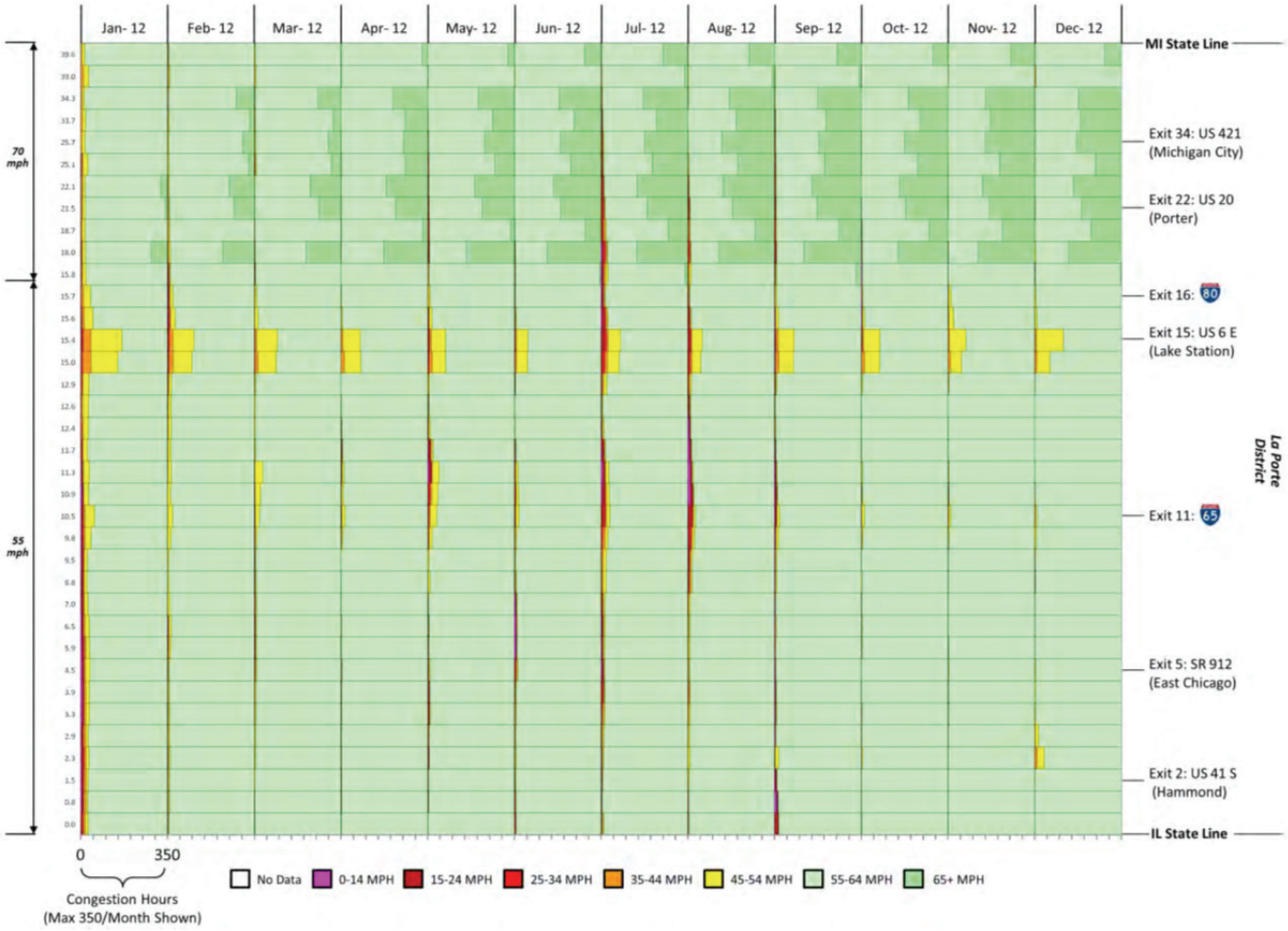


I-94

Eastbound I-94 Speed Profile, 2012



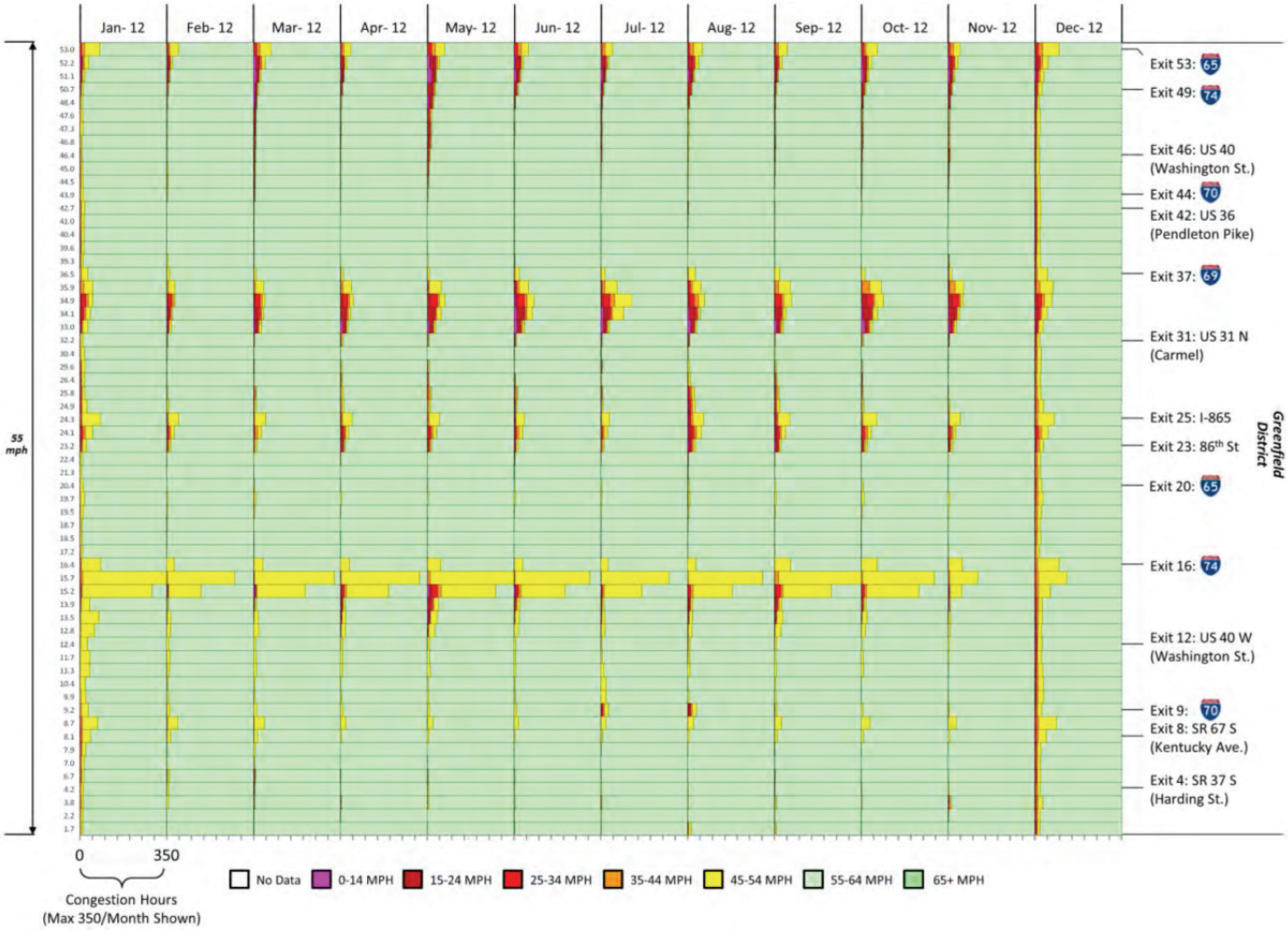
Westbound I-94 Speed Profile, 2012



I-465

Outer Loop I-465 Speed Profile, 2012

Inner Loop I-465 Speed Profile, 2012



TRANSPORTATION INNOVATION

The following summary was prepared by and reproduced here with permission from Lawrence D. Burns, Ph.D.

Transportation Innovation: Summary

Indiana Blue Ribbon Panel on Next Generation Transportation Infrastructure
Lawrence D. Burns
Professor of Engineering Practice, University of Michigan
April 25, 2014

Transportation is Ripe for Transformation

New technology and business models are converging to transform the way people and goods move around and interact economically and socially. It is now possible to supply better mobility experiences and logistics services at significantly lower cost by innovatively combining connected, coordinated, driverless, shared, tailored and electrical vehicles. Individually, each of these building blocks promises incremental improvements over today's transportation system. When combined, the improvements are meaningful, the changes are transformational and the business growth opportunities are significant.

In addition, shifting consumer behavior and fuel economy regulations are reducing gasoline demand. Because road infrastructure is financed primarily through gasoline taxes, Federal and State governments are increasingly challenged to preserve existing infrastructure. This increases the importance of realizing greater throughput and productivity with intelligent transportation systems. The ultimate vision is one totally integrated system that "choreographs" the seamless movement of people and goods across all modes. This is enabled through integrated information and communications systems that allow transportation to be optimized based on real-time demand and supply.

It is no longer a question of *whether* significant transportation system enhancements are likely, but *when*. Figure 1 summarizes the relative timing of what appears inevitable.

Timing

Sooner	Later
• Reduced Gasoline Use	
• More Natural Gas Vehicles	• Hydrogen Fuel Cell Vehicles
• Connected Vehicles	
• Coordinated Vehicles	• Integrated Intermodal System
• Platooned Trucks	• Driverless Fleets
• Shared Vehicles	
• Smart Parking Systems	• Significantly Less Parking
• Self-Driving Features	• Driverless Vehicles
• Lower Mass Vehicles	• Tailored Vehicles
• Significant Hybrid Share	• Significant ZEV Share
• Improved Safety	• 90% Fewer Crashes
• Improved Throughput	• Optimized System Throughput
• E-Commerce	

Figure 1. Relative Timing of Transportation System Change

Transformation Could Significantly Impact Transportation Infrastructure

Transportation innovation could have a significant impact on transportation infrastructure. These potential impacts are summarized in Figure 2.

Infrastructure	Potential Impacts	
	Sooner	Later
Roads	• Improved Safety • Improved Throughput • Usage-Based Pricing • Changing Travel Patterns	• Revised Highway and Bridge Construction Specifications
Railroads	• Improved Safety • Changing Freight Mix • Improved Operations • Repurposed Right-of-Ways	
Airports	• Improved Throughput • Improved Operations	• Fewer Short Flights • Drones
Water Ports	• Improved Coordination • Improved Throughput • Improved Operations • Lower Cost	
Public Transit	• Improved Coordination • Improved Operations • Improved Service	• Challenged to compete with driverless-shared mobility systems
Intermodal Terminals	• Integrated Intermodal Coordination	• "Traffic Control System" for all Surface Transportation
Information Systems	• "Big" Data • Software and Algorithms	• Cyber-Security • Ubiquitous Sensors
Communication Systems	• 5.9GHz DSRC • Wi Fi • Cloud	• Ubiquitous Sensors
Operating Systems	• Usage-Based Pricing	• Real-Time "Traffic" Control
Energy Systems	• Natural Gas • Bio Fuel • Distributed Systems	• Electricity • Hydrogen • Integrated Systems
Parking	• Smart Parking Systems • Improved Coordination • Improved Revenues • Improved Service	• Less Parking • Repurposed Land • Virtual Valet
Signage and Traffic Lights	• Intelligent Signal Systems	• Fewer Physical Signs • Virtual Signs
Know-How	• Systems Integration • Communications Systems • Information Systems • Controls and Analytics	
Laws, Regulations, Standards and Enforcement	• Enabling Policies • Enabling Standards • Limited Virtual Enforcement • Privacy Protection	• Extensive Virtual Enforcement

Figure 2. Potential Transportation Infrastructure Impacts

Indiana's Transportation Plan Should Reflect Transformation Potential

While the future cannot be predicted, scenarios can be framed based on key forces shaping the future. Figures 3 and 4 summarize scenarios for the type and speed of change.

Type of Change

Speed of Change	Incremental	Transformational
Slow	**"Evolution"**	**"Preparation"**
Fast	**"Acceleration"**	**"Disruption"**

Scenario	Description	Approach
"Evolution"	Inertia due to scale, installed based and vested interests results in incremental and slow change	Extrapolate and Prioritize
"Acceleration"	Regulations, changing consumer behavior and low cost natural gas accelerates incremental change	Sense and Respond
"Preparation"	Technology and business innovation lead to new value propositions that scale slowly	Anticipate and Learn
"Disruption"	Technology and business innovation lead to a market "tipping point" that accelerates transformation and obsoletes legacy systems	Create and Lead

The range of possible futures implies Indiana must simultaneously sustain its existing infrastructure and prepare for the possibility of transformational change. Declining revenue for infrastructure makes this an especially difficult challenge.

Leadership will require purposeful decisions on new approaches to roadway infrastructure financing, enabling policy for transportation innovation and projects that "get in front of the inevitable." In addition, Indiana should pursue infrastructure throughput and productivity improvements to make better use of existing infrastructure and free up resources to prepare for change. Finally, recognizing that infrastructure is more than a prioritized list of projects, Indiana should plan transportation as one totally integrated system. This will enhance competitiveness vs. other States and simultaneously improve performance and reduce cost.

Specific suggestions include:

1. Focus on throughput improvement in addition to preserving existing infrastructure
    - Create a system throughput improvement process and test opportunities
    - Aim to double the throughput of Indiana's logistics corridors using connected and autonomous vehicle technology and intermodal coordination
2. Think big, start small, and learn fast relative to transportation innovation
    - Comprehend what is possible
    - Be sure know-how exists in Indiana
    - Consider a community like Bloomington as a first mover for connected and autonomous vehicles
    - Position for new approaches to financing transportation infrastructure
    - Develop an intermodal logistics coordination system
    - Consider making Indiana a test-bed (and incubator) for logistics systems technology
3. Consider infrastructure for all modes simultaneously as one totally integrated system
    - Integrated information systems
    - Integrated communications systems
    - Enhanced robustness based on better capacity utilization and infrastructure pricing
4. Integrate transportation, energy and environmental policies
    - Align policy objectives and remove disconnects

TRANSPORTATION FUNDING

The following summaries were prepared by Dan Brassard and Kendra York.

Indiana's Transportation Financial Outlook

Dan Brassard
Chief Financial Officer, INDOT
April 25, 2014

In the post-Major Moves era, INDOT has adopted Preservation as its first priority. Consistent with Governor Pence's motto toward transportation, "Take care of what you have, Finish what you start, and Plan for the future", INDOT is working hard to accomplish all three facets. Given INDOT's annual use of funds (currently at ~$1.5B) driven largely by motor fuel taxes, BMV fees and a small slice of State sales tax, there is little opportunity to economically balance both preservation and added capacity when it comes to transportation infrastructure.

Today, approximately 85% of INDOT's budget is consumed with Operating Expense, Debt Service on previous bond issuances, and Preservation investment. The other 15% is consumed with finalizing some Major Moves projects as well as providing up-front equity investments in select public-private partnership projects (I69 Section 5, Ohio River Bridge, and Illiana Expressway).

The vast majority of INDOT funding comes from Federal and State sources. Motor fuel taxes represent virtually all of the Federal funds while 68% of the State funds are sourced from motor fuel taxes. Vehicle registrations, licenses, and title fees make up the next largest source of state transportation funding (22%).

In FY2013, HB1001 provided a significant increase (~$100M) in State revenue starting in FY2014. While providing needed resources for matching Federal funds and fulfilling Preservation investment needs, it did not address the long term outlook of declining revenues associated with fuel taxes.

One of the biggest obstacles from a planning perspective is the lack of certainty around Federal funding – INDOT's largest single funding source (~$700M annually). There has not been a long term transportation funding bill passed in Washington since the expiration of the previous bill in 2009. Contributing to the uncertainty is the looming insolvency of the Federal Highway Trust Fund, projected to hit critically low levels in July, 2014 unless more subsidy funds are found to maintain payments to the States for road and bridge projects.

In 2005/2006, INDOT was the beneficiary of proceeds resulting from the lease of the Indiana Toll Road. At the end of FY2013, nearly 96% of those funds have been obligated on major projects across the entire state. For FY2016 and every 5 years thereafter, INDOT shall receive the interest from the Next Generation Trust Fund ($500M) that was established as a result of the lease mentioned above. Based on current investments and the applicable market rates, this source of funds is projected to equal $124M and is currently being planned for additional preservation work.

Due to declining revenues (largely driven by fewer fuel tax dollars), INDOT's projected 5 year spending plan reflects more investment in Preservation and less directed to large capacity projects. Operating expense remains relatively flat across all years. Comparing 2003 to 2019, INDOT is expected to spend only $200M more in FY2019. Yet, when adjusted for construction inflation, INDOT should be spending $1.2B more than 2003. Revenues are not there to support the needs nor can they maintain the rate of inflation which is projected to grow at nearly 60% faster than the CPI (consumer price index) over the next 10 years.

In summary, INDOT views the following as its largest financial challenges:

- Decline of fuel taxes primarily due to more fuel efficient vehicles, hybrids, and alternative fuel vehicles and changing technology
- Sustainability of condition ratings for Bridges, Roadways, and all other Asset classes
- Construction inflation and the reduction of INDOT's purchasing power
- Solvency of the Federal Highway Trust Fund

Additional Facts:

- Since 2005, INDOT's gasoline consumption (gallons) has decreased 9.7% resulting in an annual loss of revenue to the State of ~$30M. From current levels, it is projected that another $100M decline will occur by 2025.
- Indiana's diesel fuel consumption fell over 12% between 2005 and 2010 due primarily to the economic downturn. While there have been improvements recently, future fuel economy regulation will negatively impact this revenue source as well.
- Vehicle miles traveled in Indiana have remained flat since 2002, reversing a trend that had been the case for over 50 years.
- Corporate Average Fuel Economy (CAFÉ' standards) mandates are in place to drive an improvement in average fuel economy >50% (2004 vs. 2025) contributing to reduced fuel consumption.

Enacted in 1932 during the Hoover Administration, the fuel tax model for funding transportation is structurally obsolete. Many factors are contributing to the declining tax base. Alternative funding mechanisms will be the focal point of a study to be commissioned by INDOT in FY2015 as instructed by Enrolled Act 1104, passed by the general assembly in FY2014.

INDOT has set aside approximately $100M to be used to advance projects such as I69, Section 6 (Martinsville to Indianapolis) and the priority projects identified by the Blue Ribbon Panel. While this amount will not be sufficient for construction or possibly design work, it will be instrumental in providing seed money for creating decision making materials (environmental studies, tolling analysis, etc.) that will be needed to further the projects until proper funding can be arranged for design and construction.

Summary of Blue Ribbon Panel Presentation
Kendra York
Public Finance Director, IFA

Indiana Transportation Finance Authority (ITFA) Projects [now IFA]
IFA issues debt in partnership with the Indiana Department of Transportation to finance the cost of construction, acquisition, reconstruction, improvement, or extension of the State's public ways. However, no new debt has been issued since 2004. Payment is made on Highways and Bridges bonds primarily using State-appropriated gas tax dollars, among other resources. ITFA debt is 100% fixed rate. Other appropriation debt includes State Office Buildings, Recreational Development, and other strategic initiatives.

Public Private Partnership (P3) Transportation Projects

Ohio River Bridge – East End Crossing
Estimated project cost is $763M. Private Activity Bonds issued by Private Developer and repaid from Availability Payments made by the IFA with funds received from INDOT. Bridge will be tolled. Contract term is 35 years.

I-69 Section 5
Estimated project cost is $326M. Private Activity Bonds issued by Private Developer and repaid from Availability Payments made by the IFA with funds received from INDOT. Not tolled. Contract term is 35 years.

Illiana Expressway
Private Activity Bonds issued by Private Developer and repaid from Availability Payments made by the IFA with funds received from INDOT. Facility will be tolled. Contract term is 35 years.

Rating Agency Treatment of Public Private Partnership (P3) Projects

The Rating Agencies will review all P3 Road/Bridge Projects. It is believed that any shortfall between Tolling Revenue and Availability Payments over term of contract may be added to State's Debt burden. This treatment would have an effect on State's rating. Indiana is one of eleven States with AAA Rating from all three major Rating Agencies.

State of Indiana Credit Rating History

Standard & Poor's
- 7/2008: AAA Stable
- 1/2006: AA+ Stable
- 6/2005: AA Positive
- 1/2004: AA Stable
- 1/2002: AA+ Negative
- 12/1997: AA+ Stable

Moody's Investor Services

- 4/2010: Aaa Stable
- 8/2006: Aa1 Stable
- 12/2001: Aa1 Negative
- 12/1997: Aa1 Stable

Fitch Ratings[1]

- 4/2010: AAA Stable
- 4/2006: AA+ Stable
- 5/2000: AA+

[1] *Fitch Ratings only assigns an appropriation/lease credit rating. As a result, this rating is hypothetical.*

Credit Strengths of the State of Indiana

(As noted by the rating agencies in the February 2014 state ratings reports)

- Balanced budget that maintains solid level of reserves
- Strong Governance Framework
- Low overall debt levels
- Active Budget Management
- Trend of recent expenditure restraint
- Diversifying economic base

PROJECT PERFORMANCE METRICS

The Plan for the next generation of transportation infrastructure will identify priority projects for the next 10 years based on a set of recommended metrics. The following metrics are offered as a starting point for the Blue Ribbon Panel's discussion.

- Economic Impact
- Capacity to Meet Demand
- Multimodal Integration & Synergy
- Access to National and International Markets
- Quality of Life

The Blue Ribbon Panel will assign each project a score from 1-5 for each metric, with 1 being a low score and 5 being the highest or best score. The score represents the strength or weakness of a particular project as evaluated by the metrics. The Panel may conclude that a different scale is preferable. A 1-5 scale is a suggested starting point.

The underlying data for each metric may be different for each transportation mode. The following pages explain the proposed metrics and identify possible data to support a determination for each metric. While the score assigned under a metric for a particular project may ultimately rely on an intuitive judgment, these metrics and the following data seek to make the determination as objective as possible.

TRANSPORTATION INFRASTRUCTURE PERFORMANCE METRICS			
PORTS Analysis			
Performance Metric		**Description**	**Data Source**
Economic Impact	Value of Economic Activity	The total value of economic activity related to the project.	Ports of Indiana Maritime Economic Impact Analysis
	Employee earnings	The wages and salaries earned by direct jobs related to providing port services.	Ports of Indiana Maritime Economic Impact Analysis
	Direct Jobs	Jobs with local firms which provide services to the port.	Ports of Indiana Maritime Economic Impact Analysis
	State and Local Taxes	Direct return from project in State/Local tax dollars.	Ports of Indiana Maritime Economic Impact Analysis
Capacity to meet demand	Ship Calls	Total number of ship calls	Internal
	Barge Calls	Total number of barge calls	Internal
	Rail Cars	Total number of rail cars	Internal
	Truck Traffic	Total number of truck traffic	Internal
	Maritime Industrial Sites	Acres of available land directly connected to maritime docks by road and rail corridors	Internal
	Congestion reduction	Comparison of congestion impacts by transportation modes for the movement of cargo related to the project	A Modal Comparison of Domestic Frieght Transportation Effects on the General Public
Multimodal Integration & Synergy	Onsite modes available	Total modes and services available onsite (0-7): truck, rail, barge, laker vessel, ocean ship, intermodal rail service, airfreight service	Internal
	Distance to multimodal hubs	Distance to major Airport, Port, Rail Hub, Intermodal Terminal	Internal

TRANSPORTATION INFRASTRUCTURE PERFORMANCE METRICS			
PORTS Analysis			
Performance Metric		**Description**	**Data Source**
Access to National and International Markets	Access to International Markets	Ability to import or export goods outside of U.S.	Internal
	Access to National Markets Outside Indiana	Ability to ship and receive goods outside Indiana.	Interal
Quality of Life	Emissions	Comparison of average pollution emissions by transportation modes for the movement of cargo related to the project	A Modal Comparison of Domestic Frieght Transportation Effects on the General Public
	Environmental and user benefits	Decreased energy consumption, reduced land for facilities, intensified and reuse of urban area lands and reduced wetland and water resource impacts by reuse of existing routes.	Narrative
	Safety	Comparison of average fatalities by transportation modes for the movement of cargo related to the project	A Modal Comparison of Domestic Frieght Transportation Effects on the General Public
	Energy efficiency	Comparison of average fuel consumption by transportation modes for the movement of cargo related to the project	A Modal Comparison of Domestic Frieght Transportation Effects on the General Public
	Congestion reduction	Comparison of congestion impacts by transportation modes for the movement of cargo related to the project	A Modal Comparison of Domestic Frieght Transportation Effects on the General Public
	Highway maintenance reduction	Comparison of impacts on highway maintenance costs for the movement of cargo related to the project	A Modal Comparison of Domestic Frieght Transportation Effects on the General Public

TRANSPORTATION INFRASTRUCTURE PERFORMANCE METRICS			
AIR Analysis			
Performance Metric		**Description**	**Data Source**
Economic Impact	Gross Regional Product	The change in the total value of goods & services produced in the state over a control forecast.	1. REMI 2. TREDIS 3. TREDIS MCBA 4. Modified MCIBAS
	Real Personal Income	The change in total earnings of everyone residing in the state over a control forecast.	1. REMI 2. TREDIS 3. TREDIS MCBA 4. Modified MCIBAS
	Employment	The change in total employment in the state over a control forecast as measured in job years.	1. REMI 2. TREDIS 3. TREDIS MCBA 4. Modified MCIBAS
Capacity to meet demand	Congestion	Delay in moving freight or passengers.	Industry Sources+ FAA+INDOT Aviation
	1. Total System VMT, VHT, center line miles, or lane-miles at a specified LOS. 2. Total System Delay in Vehicle-Hours and/or cost of this delay.	1. The change in total Vehicle Miles Traveled(VMT), Vehicle Hours Traveled(VHT), center-line, or lane-miles of roadway that operated below an acceptable Level of Service(LOS). 2. Change in total system delay in vehicle-hours or dollars.	ISTDM Post Alt
Multimodal Integration & Synergy	Total modes available within *x distance or travel time.*	Change in an accessibility index for a given mode.	ISTDM
Access to National and International Markets	Access to move goods and people quickly	Change in transportation costs to move goods and people across the state or between Indiana and major markets.	ISTDM + industry sources

TRANSPORTATION INFRASTRUCTURE PERFORMANCE METRICS			
AIR Analysis			
Performance Metric		**Description**	**Data Source**
Quality of Life	Vehicle Operating cost savings	The change in costs to highway users and other modes to operate their vehicles over a control forecast.	MCIBAS+ or TREDIS
	Accident Cost Savings	The change in total accident costs versus a control forecasts for all modes.	MCIBAS+ or TREDIS
	Emmissions Costs savings	The change in air pollution costs versus a control forecast for all modes.	MCIBAS+ or TREDIS
	Environmental and user benefits	Decreased energy consumption, reduced land for facilities, intensified and reuse of urban area lands and reduced wetland and water resource impacts by reuse of existing routes.	Narrative
	Safety	Changes in total crashes and fatalities for all modes.	MCIBAS+ or TREDIS

TRANSPORTATION INFRASTRUCTURE PERFORMANCE METRICS			
RAIL Analysis			
Performance Metric		**Description**	**Data Source**
Economic Impact	Gross Regional Product	The change in the total value of goods & services produced in the state over a control forecast.	1. REMI 2. TREDIS 3. TREDIS MCBA 4. Modified MCIBAS
	Real Personal Income	The change in total earnings of everyone residing in the state over a control forecast.	1. REMI 2. TREDIS 3. TREDIS MCBA 4. Modified MCIBAS
	Employment	The change in total employment in the state over a control forecast as measured in job years.	1. REMI 2. TREDIS 3. TREDIS MCBA 4. Modified MCIBAS
Capacity to meet demand	Congestion	Delay in moving freight or passengers.	Industry Sources +FRA+INDOT Rail
	Impact to highway network	1. The change in total Vehicle Miles Traveled(VMT), Vehicle Hours Traveled(VHT), center-line, or lane-miles of roadway that operated below an acceptable Level of Service(LOS). 2. Change in total system delay in vehicle-hours or dollars.	REMI
Multimodal Integration & Synergy	Total modes available within *x distance or travel time.*	Change in an accessibility index for a given mode.	ISTDM
Access to National and International Markets	Access to move goods and people quickly	Change in transportation costs to move goods and people across the state or between Indiana and major markets.	ISTDM + industry sources

TRANSPORTATION INFRASTRUCTURE PERFORMANCE METRICS			
RAIL Analysis			
Performance Metric		Description	Data Source
Quality of Life	Vehicle Operating cost savings	The change in costs to highway users and other modes to operate their vehicles over a control forecast.	MCIBAS+ or TREDIS
	Accident Cost Savings	The change in total accident costs versus a control forecasts for all modes.	MCIBAS+ or TREDIS
	Emmissions Costs savings	The change in air pollution costs versus a control forecast for all modes.	MCIBAS+ or TREDIS
	Environmental and user benefits	Decreased energy consumption, reduced land for facilities, intensified and reuse of urban area lands and reduced wetland and water resource impacts by reuse of existing routes.	Narrative
	Safety	Changes in total crashes and fatalities for all modes.	MCIBAS+ or TREDIS

TRANSPORTATION INFRASTRUCTURE PERFORMANCE METRICS			
ROADS Analysis			
Performance Metric		**Description**	**Data Source**
Economic Impact	Gross Regional Product	The change in the total value of goods & services produced in the state over a control forecast.	MCIBAS
	Real Personal Income	The change in total earnings of everyone residing in the state over a control forecast.	MCIBAS
	Employment	The change in total employment in the state over a control forecast as measured in job years.	MCIBAS
Capacity to meet demand	Congestion	This measure will focus on the congestion of roads and the ability to move people regionally.	Purdue congestion analysis
	1. Total System VMT, VHT, center line miles, or lane-miles at a specified LOS. 2. Total System Delay in Vehicle-Hours and/or cost of this delay.	1. The change in total Vehicle Miles Traveled(VMT), Vehicle Hours Traveled(VHT), center-line, or lane-miles of roadway that operated below an acceptable Level of Service(LOS). 2. Change in total system delay in vehicle-hours or dollars.	ISTDM Post Alt
Multimodal Integration & Synergy	Total modes available within *x distance or travel time.*	Change in an accessibility index for a given mode.	ISTDM
Access to National and International Markets	Access to move goods and people quickly	Change in transportation costs to move goods and people across the state or between Indiana and major markets.	ISTDM

TRANSPORTATION INFRASTRUCTURE PERFORMANCE METRICS			
ROADS Analysis			
Performance Metric		**Description**	**Data Source**
Quality of Life	Vehicle Operating cost savings	The change in costs to highway users to operate their vehicle over a control forecast.	MCIBAS
	Accident Cost Savings	The change in total accident costs versus a control forecasts.	MCIBAS
	Emmissions Costs savings	The change in air pollution costs versus a control forecast.	MCIBAS
	Environmental and user benefits	Decreased energy consumption, reduced land for facilities, intensified and reuse of urban area lands and reduced wetland and water resource impacts by reuse of existing routes.	Narrative
	Safety	Changes in total crashes and fatalities.	MCIBAS

PROJECT EVALUATIONS

Using these metrics, the Panel assigned a score to each project. The Panel is then organized the top projects into three tiers to further indicate levels of priority. The following chart identifies those projects, their scores, and the initial assigned.

Projects					
Project Name	**#**	**Score**	**Tier 1**	**Tier 2**	**Tier 3**
I-65: Added Travel Lanes	15	3.99			
I-70: Added Travel Lanes	14	3.64			
I-69 Ohio River Bridge	17	3.51			
I-69: Added Travel Lanes	16	3.44			
Commerce Connector	7	3.38			
SW Indiana Port Connections	5A	3.24			
Port Bridge Over National Rail Corridor	6	2.96			
Mid-States Corridor	12	2.84			
Northeast IN Passenger Rail Line	25	2.82			
US 30- Fort Wayne to Valparaiso	8	2.81			
Hoosier State Rail Passenger Line	24	2.51			
Municipal Connector: Madison	19	2.32			
Municipal Connector: Connersville	18	2.30			

Some high scoring projects have been categorized as “policy initiatives.” These are projects that may require lobbying for federal funding or further definition and funding by state grants. The following chart identifies the “policy initiative” projects, their score, and their tier assignment.

Policy Initiatives					
Project Name	**#**	**Score**	**Tier 1**	**Tier 2**	**Tier 3**
Inland Waterways Infrastructure (Olmstead Locks)	1	3.92			
Seaway Locks (Soo Locks)	3	3.83			
Lake Michigan Harbor Dredging	2	3.80			
Leverage Excess Air Freight Capacity	4/4A	3.60			
Non-Stop/Direct Commercial Flights	23/23A	3.32			
Improved Intermodal Rail Service	32	3.22			
Improved Rail Service to Indiana's Ports	30	3.12			
Regional Airport Development	22	3.01			
Light Density Branch Lines	31	2.56			

Finally, some projects have been removed from consideration because they are local in nature, have no statewide significance, or are variations on other projects. The Panel wants its recommendation to focus on those projects or policy initiatives that will make the greatest impact for Hoosiers statewide, though the Panel does recognize that projects no longer under consideration may still have merit at the regional or local level. The following chart lists the projects removed from consideration.

Projects Removed From Consideration (Local Projects, Projects with No Statewide Significance, or Variations on Other Projects)	
Project Name	**#**
U.S. 20- Elkhart County	10
U.S. 50- North Vernon	9
US 231: Added Travel Lanes	20
US 231 Bypass	21
SR 3 between I-70 and I-74	13
SR 3 North Vernon	11
Mt. Vernon Port Connector	5
SW Indiana Port Connections	5B
SW Indiana Port Connections	5C
Commerce Connector (Northeast Portion)	7A
Commerce Connector (East Portion)	7B
Commerce Connector (South and East Portion)	7C
Commerce Connector (South and East Portion)	7D
Commerce Connector (Southeast Portion)	7E
Commerce Connector (West Portion)	7F
I-69/I-465 Interchange Upgrade	26
SR 37 Freeway Upgrade: I-69 to SR 32	27
US 36 Freeway Upgrade: I-465 to Avon	28
Upgrade I-65/I-70 Freeway Flow Downtown Indpls	29
South Shore Extension	33

RESOURCE LIST

1. *Waterways Work for Indiana: Fact Sheet*; **U.S. Chamber of Commerce**
http://www.uschamber.com/sites/default/files/lra/docs/Indiana_USChamb_Waterway_StateFactSheet_071513a.pdf

2. *A MODAL COMPARISON OF DOMESTIC FREIGHT TRANSPORTATION EFFECTS ON THE GENERAL PUBLIC: 2001–2009;* **Texas Transportation Institute/Center for Ports and Waterways***;* Prepared for the National Waterways Foundation*;* February 2012
http://www.portsofindinaa.com/newsroom/publications/pdfs/FinalReportTTI.pdf

3. 2011 Ports of Indiana Economic Impact Study; **Martin Associates**; May 2012
http://www.portsofindiana.com/newsroom/press_releases/2011%20Ports%20of%20Indiana%20Economic%20Impact%20Study%20-%20Executive%20Summary%20-%205-30-1....pdf

4. The Economic Impacts of the Great Lakes-St. Lawrence Seaway System; **Martin Associates** October 2011
http://www.marinedelivers.com/sites/default/files/documents/Econ%20Study%20-%20Full%20Report%20Final.pdf

5. Environmental and Social Impacts of Marine Transport in the Great Lakes-St. Lawrence Seaway System; **Research and Traffic Group**; January 2013
http://www.marinedelivers.com/mwg-internal/de5fs23hu73ds/progress?id=iYHwaGERDd

6. World Air Cargo Forecast: 2012-2013; **Boeing**; 2012
http://www.boeing.com/mwg-internal/de5fs23hu73ds/progress?id=3EyY3RVCal

7. Phase 1: A Plan for Indiana's Logistics Future; **Conexus Indiana**; March 2010
http://mpcms.blob.core.windows.net/6864e884-8313-4d1f-97b8-696c824cfd60/docs/0100b922-6047-4fca-ad14-96287cfc273f/logisticsreport_022311.pdf

8. Executive Summary: Indiana Airports' Economic Impact Study; **Conexus Indiana/Aviation Association of Indiana**; 2012
http://cdn2.content.compendiumblog.com/uploads/user/aea49b94-232c-4063-9c6a-f375249089e7/fc1cc263-80cc-44f2-b3bc-5ab083b25e81/File/b8f4ff68af8fb7fb3d12143e0b7ee688/aai_economic_impact_study_final.pdf

9. *An Evaluation of the Kansas Affordable Airfares Program*; **Arthur P. Hall, PhD.;** February 2013
http://www.business.ku.edu/sites/business.drupal.ku.edu/files/images/galleries/An%20Evaluation%20of%20the%20Kansas%20Affordable%20Airfares%20Program.pdf

10. *Hoosier State Rail Service Cost Benefit Analysis*; **CDM Smith**; September 2013;
http://www.in.gov/indot/files/Amtrak_CostBenefitAnalysis_2013.pdf

11. Northern Indiana/Ohio Passenger Rail Corridor Feasibility Study and Business Plan Summary; **TEMS: Transportation and Economic Management Systems, Inc.**; Prepared for Northeast Indiana Passenger Rail Association; January 2013
http://niprarail.org/wp-content/uploads/2013/06/Executive-Summary-for-Press-Release_62813_Final.pdf

12. Conceptual Financing Plan for I-69 Corridor: Henderson, Kentucky and Evansville, Indiana; **URS/Citi Group**; Prepared for Kentucky Transportation Cabinet; May 2008;
http://transportation.ky.gov/planning/planning%20studies%20and%20reports/i-69-interstate080519.final.kentucky%20financing%20plan%20report.pdf

13. Department of Transportation Average Daily Traffic and Commercial Vehicles Interactive Map; **Indiana Department of Transportation**
http://dotmaps.indot.in.gov/apps/trafficcounts/

14. Indiana Statewide Travel Demand Model (ISTDM)

INDOT's Asset Planning & Management Division uses state-of-the-art analysis tools to support critical transportation planning and major capital investments decision making. Transportation models, to the most extent possible, are used to replicate the "real world" in terms of environmental impacts; system performance; and agency operation impacts. Transportation models are also used to predict changes in travel patterns and the utilization of the transportation system in response to changes in regional development, demographics, and transportation supply. Transportation modeling is required for rational planning and evaluation of transportation systems.

INDOT's Statewide Travel Demand Model (ISTDM) is used to predict changes in travel patterns and the utilization of the transportation system in response to changes in regional developments (new/widen roads, new buildings, shopping malls, large industries); changes in the land use (e.g., more residential developments, a new industrial site, etc.); changing demographics (more or less people in a specific area, access to a vehicle, etc.) and transportation supply. The ISTDM covers all 92 counties in Indiana and parts of adjacent states. A detailed network was developed for areas within the state of Indiana, including all state jurisdictional highways (more than 19,500 links) and additional local streets (more than 11,500 links) **Figure 1**. A less detailed network was used for areas outside Indiana, as shown in **Figure 2**. Data from INDOT's Road Inventory Data were incorporated into the network including number of lanes, shoulder widths, medians, access control types, and functional classifications. A total of 4,720 traffic analysis zones TAZs were created with external stations representing the areas in neighboring states. The TAZ structure was developed to generally conform to the roadway network and previously developed TAZs from older versions of the model. ISTDM components include the following:

Figure 1: ISTDM Zonal Coverage

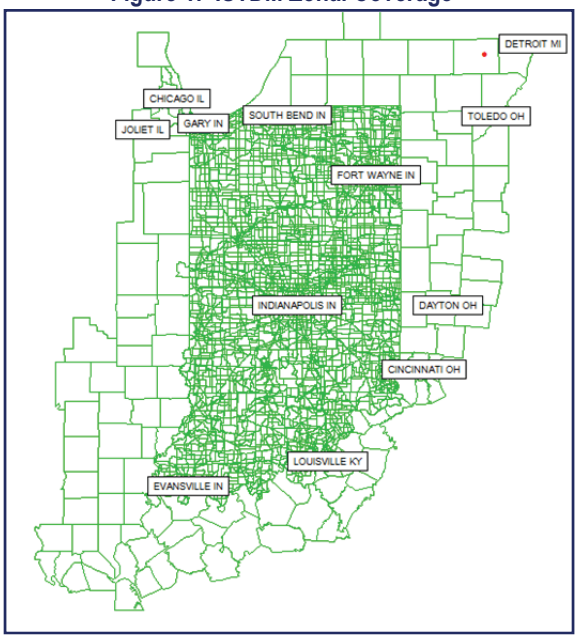
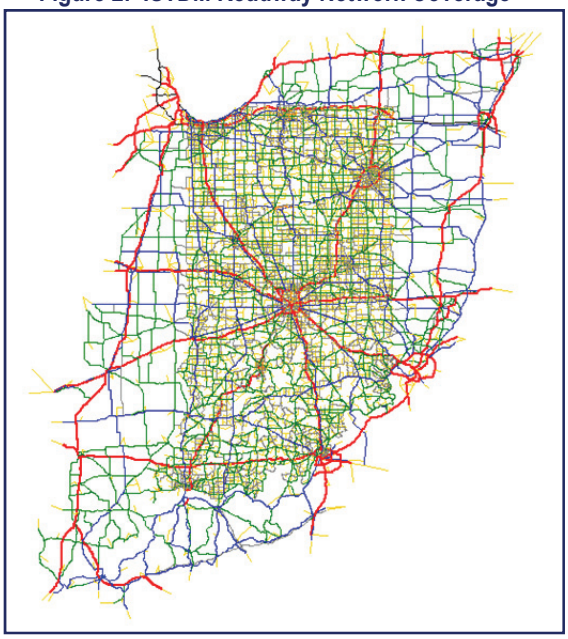


Figure 2: ISTDM Roadway Network Coverage



- Roadway Speeds and Capacities – A procedure is used to estimate free-flow speed based on detailed geometric features and functional types of the roadway. The data were obtained from the Roadway Inventory database. Free-flow speed computed for the model is based on posted speed for each unique facility type (number of lanes, divided/undivided, area type, and access control type). Highway Capacity Manual 2000 (HCM 2000) procedures are followed to calculate speed reduction factors based on the limiting factors from HCM 2000. The speed reduction factors were applied to estimate peak-hour and daily roadway capacities.

- Traffic Signal Information - Traffic signal information is integrated into the network includes signal location, approach priority, and number of upstream signals. Almost 3,900 traffic signals were located on the network. INDOT's traffic signal data was used to locate state jurisdictional highway signals, and the INDOT's crash database was used to locate signals on local streets. Subsequently, the free-flow speed and roadway capacities were adjusted to account for signal delays through a process that first estimates control delays at signals using a simplified version of the HCM 2000 uniform delay term. The delay is then used in an empirical formula to create capacity-reduction factors for links with signals.

- Travel Demand - Trip Generation – On the travel demand side, special ISTDM trip generation models were developed for four trip purposes (home-based work, home-based other, non-home- based, and long purpose) and for three area types (urban, suburban, and rural). Cross classification of household size and automobile ownership was used for trip production estimation. Trip attractions were related to employment categories and number of households. Year 2010 Census household data was an important input to TAZ assumptions and in model development. Additionally, three major household surveys were used to develop the travel demand portion of the model:

1. 2009 National Household Travel Survey (NHTS) data (which included a special add-on sample of thousands of Indiana households)
2. 2009 Central Indiana Household Survey (Indianapolis MPO)
3. 2009 Chicago Area Household Survey (covers the Chicago MPO and NW Indiana)

Stratification curves were developed to breakout the households into categorical income groupings to apply the cross-classification trip rates.

Travel Demand and Trip Distribution – Gravity expressions were used for ISTDM trip distribution. The friction factors were calibrated by trip purposes using real-world trips reported by Indiana residents as reported in the three household survey datasets.

Travel Demand and Mode's Used and Auto Occupancy – The model also predicts which mode will be used (Auto vs. Transit), and auto occupancy, for a given trip. Mode shares were derived from trips reported in the household surveys. Automobile occupancy rates were also obtained from the surveys. For the long trip purpose, a methodology was adapted from the California High Speed Rail Study Model and then recalibrated for the ISTDM for a division of trips between automobile and the South Shore intercity commuter rail.

Travel Demand and Commercial Vehicle Flows – Freight and non-freight trucks were estimated separately. For freight trucks, base year 2007 truck trip tables from the Indiana Commodity Flow Model were factored up to year 2010 levels by commodity group. Non-freight truck trip tables were estimated from truck ground counts after first removing freight trucks.

Traffic Flow over the Highway Network – The ISTDM used a multi-class assignment approach for traffic assignment, with truck trips and automobile trips loaded to the network at the same time. Two trip tables were developed for truck trips: freight truck trips and non-freight truck trips. The traffic assignment procedure was run twice by including a feedback loop to trip distribution so that the gravity expression could use travel times based on the initially assigned roadway volumes. Travel time and volume-delay curves, which predict travel times depending on the level of demand, were specified by functional classification.

ISTDM Validation

The ISTDM model was validated by comparing the 2010 observed daily traffic counts to the model estimates for the same year. Overall, the ISTDM shows base year 2010 forecasted volume as being close to actual volumes. The ISTDM also includes a post-processor that uses the output of the travel model to estimate speeds, levels of service, crashes, and other measures of effectiveness. The performance measurement post-processor was used extensively in the development of corridor statistics for this study.

Growth Forecasts

Socio-economic forecasts are key inputs to modeling traffic growth. Development efforts of the ISTDM paid particular attention to its socioeconomic forecasts, which underlie the traffic forecasts. Zonal population forecasts were developed by first establishing county control totals and then distributing the totals to TAZs using an accessibility-based regression model. Historical data from Woods & Poole economics forecasts, Indiana State Data Center forecasts by county, and the Regional Economics Model Inc. (REMI) forecast for the state of Indiana were examined to produce county-level population. Independent variables in the regression model included existing population, households,

population density, workers, average household income, and several accessibility terms.
Then the model was used to produce population changes from year 2010 to 2035 in terms of changes in zonal shares of county totals. The same approach for forecasting population was used to forecast zonal employment.

The year 2035 forecast estimates are checked for reasonableness for the within the state of Indiana as well as the entire modeled area. Person trips and vehicle trips by trip purpose are evaluated for consistent growth with socio-economic data.

15. Economic Modeling
The interface between transportation investment and economic development has broad ramifications that go beyond transportation's basic purpose of moving goods and people from one place to another. An efficient transportation system can improve the productivity of the economy and helps businesses contain final costs to customers and makes them more competitive in the global market. INDOT using economic models to assess the impacts of providing access to regional industrial, manufacturing, freight distribution, and multimodal facilities.

Major Corridor Investment-Benefit Analysis System (MCIBAS)
INDOT uses the Major Corridor Investment-Benefit Analysis System (MCIBAS) tool which assesses the relative costs and benefits of proposed major transportation corridor improvements. It consists of a traffic impact simulation model, a user benefit-cost analysis processor and an integrated economic impact analysis system.

The MCIBAS tool processes economic impact analysis in 5-basic steps:

- Conduct transportation network comparison analysis. Two networks are compared; one assuming the improvements are implemented (build) and another assumes improvements are not implemented (no-build). Changes such as traffic volume, travel times, and congested hours of travel are calculated outputs.
- Estimate user benefits. Network changes are used to calculate the costs associated with changes in travel time, safety, and vehicle operation in the corridor.
- Calculate direct economic benefits. A system of linked economic models is applied to monetize the user and direct economic benefits for businesses. The portion of user benefits that accrue to businesses is estimated in terms of its impact on business costs and productivity. The changes in customer and labor market size are estimated based on the travel time changes, and applied in a business location model to identify the types of industries that may be attracted to the study area as a result of the highway improvements, and a projected number of additional jobs in each industry. Direct tourist impacts are estimated based on changes in travel time from major tourist origin markets.
- Improvement secondary economic benefits. A regional economic simulation model developed by Regional Economic Models, Inc. is applied to forecast the indirect and induced impacts of the direct economic benefits. This model generates estimates of changes in regional employment, income, and output.
- Conduct total benefit/cost analysis. These direct, indirect, and induced impacts are aggregated, discounted over time, and compared to the stream of capital and operating costs to determine an overall project benefit/cost ratio.

Types of Benefits Measured in MCIBAS

Highway User Benefits – User benefits are measures of the travel time, cost and safety improvements experienced by highway users.

Economic Benefits – Economic benefits are benefits felt beyond the direct highway users and extend to the wider State or regional economy. Ultimately, increased efficiency and reduced business costs lead to a flow of dollars through the State's economy and into the pockets of Indiana residents. This important measure of project impact is produced by economic models.

Societal Benefits – Societal benefits are the value of all project benefits, irrespective of our ability to measure them in monetary terms. They include both income benefits to Indiana households and any quality of life benefits that do not affect personal incomes. In practice, this is only partially represented in benefit-cost analysis because of the lack of full valuation of environmental and social factors.

Types of Impacts

For highway infrastructure investments, there are four categories of economic impacts:

Economic Impact of Construction Activity – These impacts are derived from short-term economic effects of construction spending (materials and labor for road construction). Construction impacts are not included in MCIBAS due to the short duration of the construction activity.

Business Expansion – Impacts related to long-term effects of reducing travel-related costs for businesses and for individuals. Business cost savings can improve the cost competitiveness of businesses. Any cost savings for individual motorists can also release household financial resources for spending on non-transportation items.

Business Attraction – Refers to long lasting effects on commercial operations beyond those directly associated with travel costs savings. These can include more efficient inventory and logistics, implementation of just-in-time production processes, customer market expansion and associated scale economies, and access to a broader (and more competitively priced) set of suppliers.

Tourism Effects – These are mainly geographic effects on tourism patterns due to expanded market access.

Differences between Economic Impacts and User Benefits

Within the MCIBAS environment, the value of economic benefits is different than the value of direct user benefits. Direct user benefits accrue only to those vehicles operated by private individuals and businesses that are directly affected by highway corridor improvements. Economic benefits are much more wide-ranging in that they may accrue to anyone receiving additional income from business growth caused by the highway. Economic benefits can be derived from business generated in two ways:

- Indirect effects - growth of markets or suppliers to the directly-benefiting businesses
- Induced, or secondary effects – involves growth of other sectors due to increased consumer spending

User benefits cover all vehicles experiencing improved travel conditions, including through trips that have no stop inside Indiana. As opposed to economic benefits, which are counted only for households/businesses located in Indiana. Economic benefits accruing to out-of-state residents are not counted in MCIBAS. In MCIBAS, direct user benefits cover all safety, time savings, and

cost savings. Economic benefits are only counted for business users (94% of this is due to trucking cost reductions). These business benefits are realized because of reduced costs, or increased sales. For personal travel, including commuting to work, the time savings and safety benefits due to increased highway capacity will not generate additional activity in the economy.

16. Transportation Economic Development Impact System (TREDIS)
INDOT uses the TREDIS Multimodal Benefit-Cost Analysis (MBCA) tool, which is a free, web-based calculation system for comparing the costs and user benefits of individual transportation projects. MBCA is unique in that it covers both passenger and freight transportation spanning all modes – road, rail, air and marine – and it also includes pedestrian and bicycle modes. It is designed to be consistent with USDOT guidelines, making it useful for multimodal project assessment, grant applications and education programs. MBCA is set up with standard US values for user benefit, which are not tied to any specific study area. It is provided as a free public service by TREDIS Software.

BCA is implemented as a comparison of project costs and user benefits, and is the first stage in a broader process of economic assessment. It is sometimes referred to as engineering-based analysis because all of its elements: construction cost, traffic flow, safety and emissions, can be directly observed or estimated. The results is a benefit/cost ratio and net benefit value, calculated based on the assignment of monetary valuation factors for transportation-related improvements.

TREDIS builds upon economic data from the US Bureau of Economic Analysis and US Bureau of Labor Statistics, demographic data from the US Census, interregional network impedances from Oak Ridge National Laboratories, domestic trade flows from MIG, international trade flows from WiserTrade, traffic and commodity flows from the Federal Highway Administration, baseline forecasts from Moody's Analytics and spatial market data from ESRI.

17. I-67 Corridor Feasibility Study; **Cambridge Systematics, Inc.;** Prepared for I-67 Development Corporation; October 2, 2012
http://www.in.gov/indot/3218.htm

18. Indiana Vision 2025: A plan for Hoosier Prosperity; Driver Number 3 Superior Infrastructure; Indiana Chamber of Commerce; December, 2011
http://www.indianachamber.com/images/media/2025/SuperiorInfrastructure.pdf

19. Air Service Economic Impact Scenarios: West Coast Air Service, Europe Air Service, Asia Air Cargo Service, Commuter and Low-Cost-Carrier Air Hub Analysis; **Wilbur Smith Associates;** July 2, 2010
www.cdmsmith.com

20. Developing Financial Support: Building Community-Backed Air Service; Sixel Consulting Group; July 2009
http://www.sixelconsulting.com/FinSupport7-09.pdf

21. Airline Origin and Destination Survey (DB1B); U.S. Department of Transportation: Research and Innovative Technology Administration (RITA); 2013
http://www.transtats.bts.gov/DatabaseInfo.asp?DB_ID=125&DB_Name=Airline%20Origin%20and%20Destination%20Survey%20(DB1B)

22. U.S. Traveler Answer Sheet: Facts about leading an American Industry that's more than just fun; **US Travel Association;** March 2013;
http://www.ustravel.org/sites/default/files/page/2009/11/US_Travel_Answer_Sheet_March_2013.pdf

23. See Source 19

24. Indianapolis Traveler Profile Analysis; Sabre Airline Solutions; August 2009;
http://www.sabreairlinesolutions.com/home/software_solutions/airports/

25. **The Indiana International Issues Task Force – Air Transportation: Then & Now;** Global Indy; August 16, 2013
http://spea.provocate.org/archives/11153

26. 2012 Indiana Mobility Report: Full Version; **Purdue University;** August 9, 2013;
http://docs.lib.purdue.edu/cgi/viewcontent.cgi?article=1004&context=imr

27. Ports of Indiana Intermodal Rail Studies

28. Freight Railroads in Indiana: Rail Fast Facts for 2011; **Association of American Railroads;** June 2013;
https://www.aar.org/keyissues/Documents/Railroads-States/Indiana-2010.pdf

29. IANA | The Intermodal Association of North America; http://www.intermodal.org/

30. Load Match; http://www.loadmatch.com/

31. Economic Impact Analysis for CenterPoint Intermodal Center Joliet Preliminary Assessment final report prepared for CenterPoint Properties; **Cambridge Systematics, Inc.;** May 14, 2008;
http://www.docstoc.com/docs/46805103/Economic-Impact-Analysis-for-CenterPoint-Intermodal-Center-Joliet-Preliminary-Assessment-final-report-prepared-for-CenterPoint-Properties-pr

32. USDOT FHWA Freight Analysis Framework; U.S. Department of Transportation: Federal Highway Administration;
http://www.ops.fhwa.dot.gov/freight/freight_analysis/faf/index.htm

33. South Shore proponents lay tracks for expansion; January 18, 2014;
http://www.nwitimes.com/business/local/south-shore-proponents-lay-tracks-for-expansion/article_a43e1704-bc0a-5a12-8fe3-03ed48d7a860.html

34. South Shore Rail Extension- The Time is Now; Representative Pete Visclosky;
http://www.youtube.com/watch?v=4HTI-ouGRYQ&feature=youtu.be

35. Economy; **World Business Chicago;**
http://www.worldbusinesschicago.com/data/economy

GLOSSARY

Barge Calls – The total number of instances where barges utilize the port facilities. The number counts each time a barge utilizes the port facilities. A particular individual barge could have multiple "calls."

HCM – Highway Capacity Manual

INDOT – Indiana Department of Transportation

ISTDM - Indiana Statewide Travel Demand Model

LOS – Level of Service

MBCA – Multimodal Benefit Cost Analysis

MCIBAS - Major Corridor Investment Benefit Analysis System

MPO – Metropolitan Planning Organization

NHTS – National Household Travel Survey

REMI – Regional Economic Modeling Inc.

Ship Calls – The total number of instances where ships utilize the port facilities. The number counts each time a ship utilizes the port facilities. A particular individual ship could have multiple "calls."

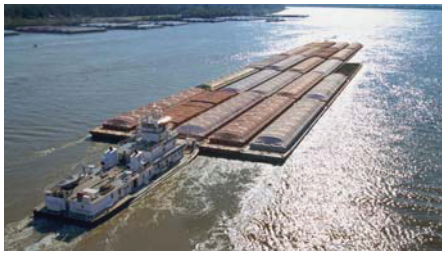
TAZ – Traffic Analysis Zone

TREDIS - Transportation Economic Development Impact System

VHT – Vehicle Hours Traveled

VMT – Vehicle Miles Traveled

APPENDIX – Project Summaries

Inland Waterways Infrastructure		1
Project Description	The Inland Waterways System includes 12,000 miles of commercially navigable channels and 240 locks that connect 38 states and handle 624 million tons of barge shipments annually. Locks provide flood control and vessel lifts for commercial and recreational boats to navigate around dams, waterfalls and major elevation changes. Indiana depends on Ohio River locks bordering the state as well as those connecting key trading partners (in KY,LA,OH,WV,IL,PA) for shipping steel, coal, grain, iron ore and various industrial cargoes as well as for access to international gateway ports in the Gulf. The U.S. Army Corps of Engineers does not receive sufficient funding for maintaining lock operations, routine maintenance and modernization projects. As a result, more than half of the 240 federally-funded locks are over 50 years old and have exceeded their design life – 37% are over 80 years old and 80% are over 40 years old. Modernization is needed to repair aging infrastructure, expand locks to meet industry standards and provide auxiliary locks for use during repairs, major failures and high traffic periods. Any state action will require Army Corps of Engineers approval. **Inland Waterways Infrastructure Project Needs:** • Sufficient funding for Army Corps of Engineers O&M budget • New funds for modernization of waterways and locks • Policies to ensure waterways can support growing economy • Future planning for waterways to be key solution for highway congestion and multimodal freight policy	 
Cost	TBD	

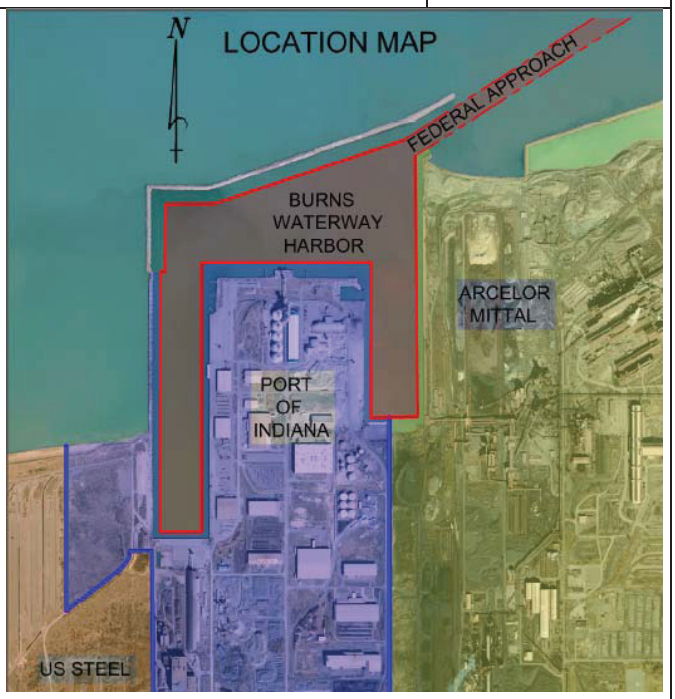
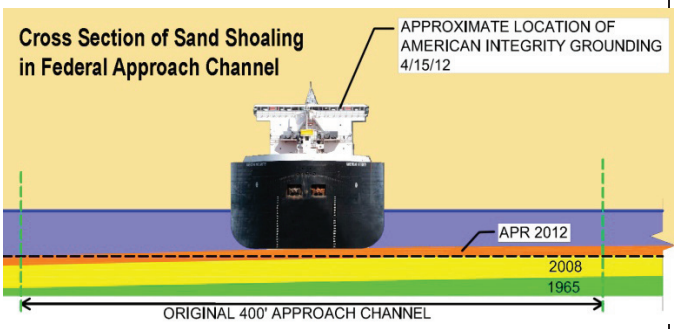
Economic Impact	
Jobs (Current): 85,715 **Gross Regional Product:** $14 Billion / Year **Personal Income:** $6.3 Billion / Year	Figures represent economic impacts of waterways/ports on state economy. Data Source: U.S. Chamber of Commerce Report (1).
System Utilization Maximization	
Indiana Barge Shipments: 38 Million Tons / Year	Barges handle 1.5 million truckloads of cargo per year for state, reducing impacts on highway congestion and maintenance costs.
Multimodal Integration & Synergy	
Modes available: 3 (road, rail, barge)	State ports provide access to barge, rail, truck, allowing shippers to reach new markets and select best mode for each shipment.

Access to National and International Markets

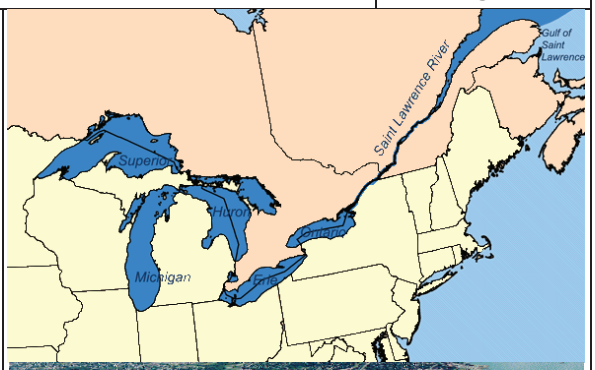
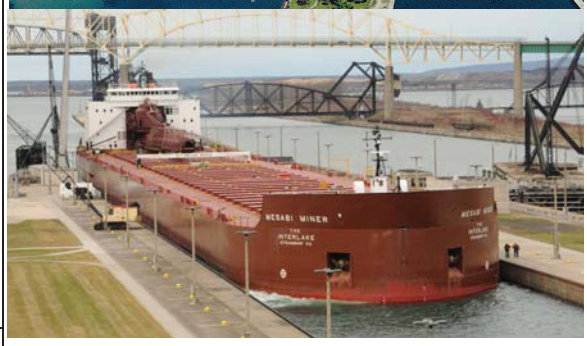
Inland waterways connect 38 states to international gateway ports in Gulf of Mexico and provide Indiana's only year-round ocean access (Great Lakes close to ships in winter). Indiana barge shipments are transloaded in the Gulf with ocean vessels for import/export providing maritime access to world markets.

Quality of Life

Closures on the inland waterways would cause a major modal shift in the transportation of Indiana's maritime cargoes to rail and truck, causing significant increases in fuel consumption, congestion, emissions, transportation fatalities and infrastructure costs. Shipping cargo by inland river barge is 29% more fuel-efficient than rail and 311% more efficient than trucks (2).

Lake Michigan Harbor Dredging		2
Project Description	The federal harbor serving the Port of Indiana-Burns Harbor requires regular dredging to maintain the proper channel depth for ocean ships and larger Great Lakes vessels to move safely in and out of the port when fully loaded with cargo. Regular federal funding is required for the U.S. Army Corps of Engineers to provide adequate dredging for the port to remain open. The Burns Waterway Harbor approach channel is designed to be 400-feet wide and more than 30-feet deep. At present, less than 40% of the channel has a depth greater than 30-feet deep. The Port of Indiana-Burns Harbor serves the largest steel producing region in the world and is home to more than 30 companies that handle a variety of bulk and break-bulk cargoes, including steel, grain, iron ore, coal, fertilizer, limestone, minerals, road salt, windmills and construction equipment. If the harbor was closed, the primary alternate ports would be in Illinois, Michigan, Ohio, Louisiana, South Carolina and Pennsylvania. Indiana would stand to lose significant economic impacts to these states. If dredging is not conducted and the port's federal approach is closed to ships, the port would not be able to handle ships and laker vessels, which likely cause the port businesses to close or relocate. Any state action will require Army Corps of Engineers approval.	 
Cost	$2 million annually	

Economic Impact	
Jobs (current): 32,587 **Value of Economic Activity:** $4.3 Billion/Year **Personal Income:** $1.9 Billion/Year **Local Purchases:** $606 million **State and Local Taxes:** $185 million	Figures represent total economic impacts of all business activity at the Port of Indiana-Burns Harbor. (3).
System Utilization Maximization	
Annual Traffic: 100 Ships, 250 Lakers, 700 Barges, 55,000 Railcars, 350,000 Trucks. **Annual Cargo Tons:** Truck: 7 million, Rail: 5 million, Maritime: 10 million.	If Ships and Laker Vessels cannot access harbor, all modes would be severely impacted. Ships and Laker Vessels directly account for approximately 90% of the harbor's Maritime cargoes as well as 1-2 million in related Truck and Rail tonnage.
Multimodal Integration & Synergy	
Modes Available: 5 (Ocean Ship, Laker Vessel, River Barge, Truck, Rail)	One of state's busiest multimodal hubs, no other facility in state handles multimodal cargoes by ocean ships.
Access to National and International Markets	
The Port of Indiana-Burns Harbor is the state's only deep-water port that receives Ocean Vessels carrying international shipments between Indiana and ports around the world as well as Great Lakes Vessels trading with U.S./Canadian ports.	
Quality of Life	
Closing the port to Ships and Laker Vessels would cause a major modal shift in the transportation of maritime cargoes moving in and out of Indiana. If 90% of the port's maritime cargo moving through Indiana were shifted to an equal split between truck and rail modes, it would increase fuel consumption for those shipments by 304% - an increase 24 million gallons per year - and negatively impact state highway congestion, traffic injuries/fatalities and road maintenance costs.	

Seaway Locks		3
Project Description	Indiana shipments pass through a series of 19 water-filled locks in order to bypass Niagara Falls and elevation changes in the Great Lakes/St. Lawrence Seaway. Ships measuring longer than two football fields carrying 25,000 tons are lifted as high as 60-story buildings by locks constructed in the 1940s, 50s, 60s. U.S. DOT and U.S. Army Corps require regular funding approvals from Congress for operation, maintenance and rehabilitation of the locks to meet the state's shipping needs. Any state action will require Army Corps of Engineers approval. **Key Locks Include:** • **U.S. DOT Seaway Locks:** Opened in 1959, connect Great Lakes to Atlantic Ocean, provide region with access to world trade. • **U.S. Army Corps of Engineers Soo Locks** - Opened in 1948 and 1968 at Sault Ste Marie, MI, connect Lake Superior and Lake Huron, enable ships to carry iron ore/raw materials to U.S. steel industry, grain exports and low-sulfur coal for electric utilities. **Great Lakes/Seaway Locks Project Needs:** • Sufficient funding for Lock Operation & Maintenance • New funds for Rehabilitation of Locks and Channels • Policies to ensure shipping can support economy • Planning for Great Lakes as transportation solution for highway congestion and multimodal freight policy	 
Cost	TBD	

Economic Impact	
Jobs (current): 46,172 **Business Revenue:** $11.8 Billion / Year	Figures represent total economic impacts of Great Lakes shipping on Indiana. (4).
System Utilization Maximization	
Ships: 500 Calls / Year **Tons**: 28 Million / Year	Ships handle 1.1 million truckloads of cargo per year for state, reducing impacts on highway congestion and maintenance costs.
Multimodal Integration & Synergy	
Modes available: 5 (Road, Rail, River Barge, Laker Vessel, Ocean Ship)	Indiana's Lake Michigan shoreline provides unique multimodal connections between Ocean Ships, Laker Vessels, River Barges, North America's busiest rail lines and all major Chicago-area interstates.
Access to National and International Markets	
Port of Indiana-Burns Harbor is the state's only port that receives Ocean Vessels carrying international shipments between Indiana and ports around the world. This access is not possible without the locks.	
Quality of Life	
Lock closures cause major modal shifts in the transportation of maritime cargoes to rail and truck, creating significant increases in fuel consumption, congestion, CO2 emissions, transportation fatalities and infrastructure costs. Moving cargo by Great Lakes ships is 14% more fuel-efficient than rail and 594% more efficient than trucks (5).	

Leverage Excess Air Freight Capacity		4
Project Description	Indiana's central location and logistics capabilities present an opportunity to capitalize on the cargo bottlenecks in Chicago. The state could establish a program to support the expansion of air cargo with the long-term objective of maximizing the use of airport capacity. To get there, the state could help Indiana airports position themselves as a viable alternative to moving cargo through Chicago, both domestic and international. This can be done in part by assisting airports in targeting specific cargo opportunities much like the state has done with passenger flights. More direct flights from Asia or Europe are good examples.	
Cost	Project dependent	

Economic Impact	
Jobs: **Gross Regional Product:** **Real Personal Income:**	Offering more air cargo options will help companies reduce transportation time, thus moving products faster to market. This supports the creation of new jobs and also helps increase GRP.

System Utilization Maximization	
Travel Time Savings (business): **Daily Vehicle Hours of Delay Savings:**	According to Boeing (2012, p. 12) (6), world air cargo is projected to grow at 5.2% annually through 2031. Indiana is home to two of the top 125 cargo airports in the nation: Indianapolis (6th) and Ft. Wayne (102nd) (Conexus Phase I Plan, 2010) (7). Indiana airports currently have the runway availability to absorb significantly higher levels of cargo activity.

Multimodal Integration & Synergy	
Modes Available: 5 (road, air, rail, ship, river barge)	Adding new cargo service at Indiana airports offers an additional transportation mode for domestic/international destinations.

Access to National and International Markets
This program will support more efficient access to domestic and international markets by moving cargo through less-congested Indiana airports rather than Chicago.

Quality of Life
Maximizing available air freight capacity will reduce need for truck and rail transportation of goods, thereby reducing accidents, improving safety, and lowering emissions.

Leverage Excess Air Freight Capacity			4A
Project Description	A surprising percentage of Indiana's own shipping volumes end up contributing to the congestion of Chicago's logistics infrastructure. Indiana could develop, educate, and promote programs on the value of direct air cargo service from local airports. Indiana could take a proactive approach to identify the state's larger producers of air cargo, encourage support from companies, or collaboration from multiple companies, if sufficient volume could support a local direct air cargo.		
Cost	$1 million (max, case dependent)		

Economic Impact

Jobs: 177 (23) **Personal Income (annual):** $6,000,000 (23) **Economic Output (annual):** $32,000,000 (23)	This scenario is a weekly cargo flight direct from Indiana to Asia (Shanghai). Indiana hosts the 7th largest cargo airport in North America, including FedEx's 2nd largest hub moving over 1 million tons of air cargo annually through a predominant domestic network with approximately 70 daily flights and supporting over 4,000 jobs. Indiana's airports and their air freight capacities can offer a variety of additional service to support the region's air cargo needs. EXAMPLE: Indiana has over 100 million kilos annually in air cargo exports, but only 2% leave from an Indiana airport, the remainder of those air cargo export volumes travel to out-of-state airports, Chicago O'Hare with over 50% (23) Based on import/export value ratios, the air cargo commodity value related to a potential Shanghai to Indianapolis freighter route is estimated at $1.8 billion annually. (23)

System Utilization Maximization

Travel Time Savings (business):	Chicago O'Hare handles a dominating position of our region's air cargo activity, despite a large percentage of volumes traveling through Indiana on its way to O'Hare. Although air cargo is the most expensive mode of transportation due to time sensitivity, the air cargo operations at O'Hare are congested, compete along significant passenger operations, and are surrounded by a congested transportation infrastructure. Indiana has air freight capacity to provide more reliable options for the raised needs of air cargo. EXAMPLE: Due to pre-existing air cargo handling challenges, a large Indiana manufacturer and forwarder were able to help coordinate an international cargo flight from Europe directly into Indianapolis. By circumventing congested O'Hare air cargo activities, the Indiana manufacturer saw delivery times improve by 18-36 hours as well as significant savings elsewhere within the supply chain. (25)

Multimodal Integration & Synergy

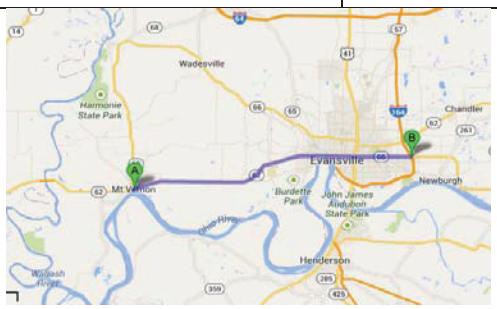
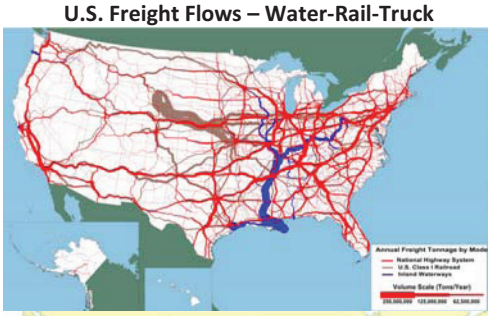
Modes Available: 4 (road, air, water, rail)	Adding new cargo service at Indiana airports offers an additional transportation mode for domestic/international destinations. By shortening the transportation distance to our local airports, it will help reduce the wear/tear and maintenance of our interstate highways. Currently almost 100 million kilos in international air cargo travels our highways to/from out-of-state airports. Developing sustainable air cargo options from Indiana's airports will ease the demand on our roads. Almost 100 million kilos of international air cargo gets trucked each way between our state and Chicago O'Hare, putting significant wear and tear on our connecting interstate highway.

Access to National and International Markets

This program will support more efficient access to domestic and international markets by moving cargo through less-congested Indiana airports rather than Chicago. This will also increase Indiana's competitiveness to attract and retain corporate development by allowing companies to have quicker and more efficient supply chains to reach their customers.

Quality of Life

By localizing Indiana's air cargo through airports within the state, a quality of life improvement could be realized in trucking. Interstates could see a reduced demand of trucks moving product between out-of-state airports. Local truck drivers would benefit from more 'local' delivery activity. Airports may see benefits as the development of air cargo connections can identify regions with strong economic activity that could support efforts to establish future non-stop commercial passenger flights.

Mt. Vernon Port Connector		5
Project Description	Construction of a freeway upgrade connecting the state's largest port and the new I-69 International Trade Corridor. The Port of Indiana-Mount Vernon is the 6th largest inland port in the U.S., but it does not have interstate access within 25 miles of the Port's rail and river terminals. The new I-69 International Trade Corridor linking Canada to Mexico is being constructed 25 miles from the port. Developing an interstate-like Port Connector would provide businesses along the new International Trade Corridor with access to the Port's multimodal international connections and greatly broaden the Port's impact on economic development throughout the state. The Mount Vernon port is the state's largest in cargo tons and total land. It is one of the only ports in the country with a 500+acre mega-site on port property and is closest to the Median Center of the U.S. and the confluence of the Ohio Mississippi Rivers. Project would greatly expand economic impacts of the Port by making truck access to the Port more feasible for more companies in a larger geographical area. Having interstate access to an Ohio River port would also be an incentive for businesses locating along I-69 in SW Indiana. Interstate connection to Port of Indiana-Jeffersonville more than doubled rate of development. Possible alternate routes would connect SR 62 and I-64, providing access from Mount Vernon port to I-69 via I-64.	 **U.S. Freight Flows – Water-Rail-Truck** 
Cost	$620.5 (mil. 2013$)	

Economic Impact

Port Impacts: **Jobs:** 6,892 **Value of Economic Activity:**$770 mil. / yr **Personal Income:** $317 mil. / yr	Impacts do not include potential increases in development on 25-mile Port Connector or new I-69 Corridor because of these roadway improvements or new access to Port. Projections are based solely on doubling the annual economic contributions of the Mount Vernon Port (3). Indiana's Jeffersonville Port developed at a comparable rate after construction of a similar interstate connection to I-65 and I-265.

System Utilization Maximization

Project would greatly expand SW Indiana capacity for maritime shipments by connecting the Port to a larger geographical area. Creating a limited-access expressway between the I-69 corridor and the Port would have significant benefits for public safety and traffic velocity for SW Indiana as Port now receives trucks that pass through Evansville's city streets, stop light intersections and country roads.

Multimodal Integration & Synergy

Modes Available: 3 (river barge, road, rail)	Project provides multimodal connections to barge and rail services at Port for business throughout new I-69 International Trade Corridor.

Access to National and International Markets

International access is provided by the Port through barge service to the Gulf of Mexico and mid-stream transload with ocean vessels transiting the globe.

Quality of Life

Creating a limited-access expressway between I-69 and the Port would reduce the number of trucks hauling grain from Vigo, Sullivan, Knox and Gibson Counties that currently have to pass through Evansville's city streets, stop light intersections and country roads to reach the Mt. Vernon Port.

SW Indiana Port Connections			5A
Project Description	The Port of Mount Vernon Indiana is the 6th largest inland port in the U.S.; the State's largest Port in terms of cargo tonnage and land acreage; and is the only port in the country with a 500+ acre mega site on the port property. Currently the Port lacks direct/uncongested access to the new I-69 international trade corridor. 3-alternatives have been identified to improve access to the Mount Vernon Port. Upgrade existing SR 62 from Mount Vernon to I-69 as a 4-lane freeway.		
Cost	$620.5 (mil. 2013$)		

Economic Impact

Jobs (25-year period): 11,067 job-years (15) **Gross Regional Product**: $1,026 million(2013$) (15) **Real Personal Income**: $996.23 million (2013$) (15)	This project alleviates congestion on SR 62 through Evansville and Posey County and addresses a need for a direct east/west freeway connection for both passenger and freight traffic to/from SW Indiana's regional port to/from the NAFTA I-69 Corridor in southern Indiana, including Vanderburgh and surrounding counties. A direct east/west connection provides businesses who are considering locating in the Evansville metro area a faster, more direct route to/from the Port of Indiana. With the advancement in completing I-69, improved access to/from the Port contributes towards economic development throughout the I-69 Corridor in Southern Indiana.

System Utilization Maximization

Travel Time Savings: $736 million (2013 $) (14) **Daily Vehicle Hours of Delay Savings:** 10,028 hours per day (2013 $) (14)	Creates a limited access expressway between the I-69 corridor and the Port. This alternative would have significant benefits for public safety and traffic flow through the Evansville Area.

Multimodal Integration & Synergy

Modes Available: 3 (river barge, road, rail)	Project alternative provides multimodal connections to barge and rail services at the Port of Mount Vernon for business throughout the new I-69 international Trade Corridor.

Access to National and International Markets

International access is provided by the Port through barge services to the Gulf of Mexico and mid-stream transload with ocean vessels transiting the globe.

Quality of Life

Would reduce the number of trucks hauling grain from Vigo, Sullivan, Knox, and Gibson Counties that currently have to pass through Evansville's city street, stop light intersections, and county roads to reach the Mt. Vernon Port.

Vehicle Operating Cost Savings (Business & non-business): $86 million (2013 $) (15)

Accident Cost Savings (non-business): $23 million (2013 $)(15)

Emission Cost Savings: $9.11(2013$) (15)

Safety: 239 fewer total accidents per year, 2 fewer fatalities per year (15)

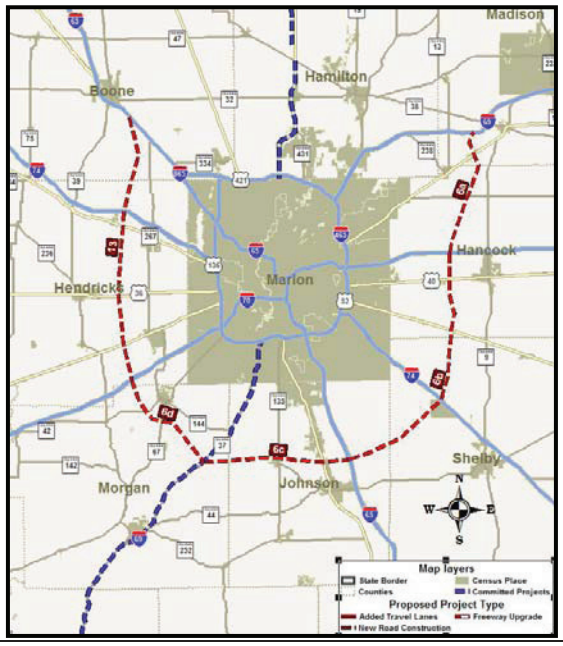
SW Indiana Port Connections			5B
Project Description	The Port of Mount Vernon Indiana is the 6th largest inland port in the U.S.; the State's largest Port in terms of cargo tonnage and land acreage; and is the only port in the country with a 500+ acre mega site on the port property. Currently the Port lacks direct/uncongested access to the new I-69 international trade corridor. 3-alternatives have been identified to improve access to the Mount Vernon Port. Construct a new 4-lane facility on/near SR 69 from SR 62 just east of Mount Vernon to I-64.		
Cost	$181.15 (mil. 2013$) (15)		

Economic Impact	
Jobs (25-year period): 3,374 job-years (15) **Gross Regional Product**: $311.40 million (2013$) (15) **Real Personal Income**: $303.10 million (2013$) (15)	This project expands the current two-lane SR 69 north/south route with direct connection to I-64 for both Eastern U.S and Western U.S passenger and freight traffic. This route also serves as most direct access to/from I-64 for the growing industrial base of the Port and the surrounding area. Inbound raw materials and outbound manufactured products will be able to reach their east/west destinations faster. The Port serves as a gateway for large volumes of grain produced in Southern Indiana and Illinois and this north/south route is crucial. The route becomes more critical as the port and the SW Indiana region manufacturing base grows.
System Utilization Maximization	
Travel Time Savings: $182.09 million (2013 $) (14) **Daily Vehicle Hours of Delay Savings:** 3,508 hours per day (2013 $) (14)	Creates a direct 4-lane connector to I-64 and to I-69 allowing motorist through trips to bypass the congested sections of SR 62 Lloyd Expressway.
Multimodal Integration & Synergy	
Modes Available: 3 (river barge, road, rail)	Project alternative provides multimodal connections to barge and rail services at the Port of Mount Vernon for business throughout the new I-69 international Trade Corridor.
Access to National and International Markets	
International access is provided by the Port through barge services to the Gulf of Mexico and mid-stream transload with ocean vessels transiting the globe.	
Quality of Life	
Would reduce the number of trucks hauling grain from Vigo, Sullivan, Knox, and Gibson Counties that currently have to pass through Evansville's city street, stop light intersections, and county roads to reach the Mt. Vernon Port. **Vehicle Operating Cost Savings (Business & non-business)**: $21.91 million (2013 $) (15) **Accident Cost Savings (non-business):** $26.90 million (2013 $) (15) **Emission Cost Savings**: $2.37 (2013$) (15) **Safety**: 23 fewer total accidents per year, 0 fewer fatalities per year (15)	

SW Indiana Port Connections			5C
Project Description	The Port of Mount Vernon Indiana is the 6th largest inland port in the U.S.; the State's largest Port in terms of cargo tonnage and land acreage; and is the only port in the country with a 500+ acre mega site on the port property. Currently the Port lacks direct/uncongested access to the new I-69 international trade corridor. 3-alternatives have been identified to improve access to the Mount Vernon Port. Construct a new 4-lane facility on University Parkway from SR 62 (Lloyd) to I-64.		
Cost	$193.41(mil. 2013$) (15)		
Economic Impact			
Jobs (25-year period): 1,366 job-years (15) **Gross Regional Product**: $126.68 million (2013$) (15) **Real Personal Income**: $122.96 million (2013$) (15)	Proximity to western Evansville would provide additional growth activity to Western Evansville and improve connection to the University of Southern Indiana west of Evansville.		
System Utilization Maximization			
Travel Time Savings: 86.60 million (2013 $) (14) **Daily Vehicle Hours of Delay Savings:** 1,045 hours per day (2013 $) (14)	Creates a direct 4-lane connector to I-64 and to I-69 allowing motorist, including Western Evansville businesses and residents to bypass congested section of the SR 62 Lloyd Expressway.		
Multimodal Integration & Synergy			
Modes Available: 3 (river barge, road, rail)	Project alternative provides multimodal connections to barge and rail services at the Port of Mount Vernon for business throughout the new I-69 international Trade Corridor.		
Access to National and International Markets			
International access is provided by the Port through barge services to the Gulf of Mexico and mid-stream transload with ocean vessels transiting the globe.			
Quality of Life			
Would reduce the number of trucks hauling grain from Vigo, Sullivan, Knox, and Gibson Counties that currently have to pass through Evansville's city street, stop light intersections, and county roads to reach the Mt. Vernon Port. **Vehicle Operating Cost Savings (Business & non-business)**: $1.86 million (2013 $) (15) **Accident Cost Savings (non-business):** $5.59 million (2013 $) (15) **Emission Cost Savings**: $0.21 (2013$) (15) **Safety**: 8 fewer total accidents per year, 0 fewer fatalities per year (15)			

Port Bridge Over National Rail Corridor		6
Project Description	The only roadway entrance into the Port of Indiana-Burns Harbor is a two-lane bridge that carries truck traffic over seven railroad tracks. This bridge is considered one of the most critical pieces of infrastructure in the state because it provides access to the state's only Great Lakes port over some of the busiest rail lines in the country. There are no alternative entrances into the port and if this bridge were to fail, emergency evacuations would need to be directed through a working steel mill. Building a secondary heavy-haul bridge entrance into the Port would provide an alternative access point in case the existing bridge was to fail. A second bridge would also provide relief for truck and commuter traffic during peak travel times and offer alternative routing options during routine roadwork in and around the current bridge.	
Cost	$18 million (rough estimate)	

Economic Impact	
Jobs (current): 32,587 **Value of Economic Activity:** $4.3 Billion/Year **Personal Income:** $1.9 Billion/Year **Local Purchases:** $606 million **State and Local Taxes:** $185 million	Figures represent total economic impacts of all business activity at the Port of Indiana-Burns Harbor (3).
System Utilization Maximization	
Annual Traffic – 150 Ships/Lakers, 400 Barges, 55,000 Railcars, 350,000 Trucks, 200,000 Cars.	Bridge handles all truck and employee car traffic entering and exiting the port. If the bridge were closed, the port would not have capacity to handle shipments by any mode because there would be no way for workers or trucks to access the port.
Multimodal Integration & Synergy	
Modes Available: 5 (road, rail, river barge, laker vessel, ocean ship)	If current bridge fails, public port would be closed to all modes. A second bridge would allow facility to remain open and connected to road infrastructure during roadwork, an emergency or heavy congestion at the port entrance.
Access to National and International Markets	
The Port of Indiana-Burns Harbor is the state's only port that receives ocean vessels carrying international shipments between Indiana and ports around the world.	
Quality of Life	
Closing the bridge would close the public port and eliminate all jobs related to the port's operation as well as many of the nearby related jobs, which would likely be relocated to other states.	

Commerce Connector			7
Project Description	A new 4-lane divided connector from I-65 north of Indianapolis to I-69 northeast of Indianapolis. Addresses current congestion during peak hours on I-69 from I-465 to 116th Street and congestion on select portions of I-465 from I-65 north of Indianapolis currently and in future year projection analysis. The project expedites long distance trips and freight movement.		
Cost	$1,838.27 (mil)		

Economic Impact	
Jobs: 30,107 jobs (15) **Gross Regional Product**: $2,838.04 (mil. 2013$) (15) **Real Personal Income**: $2,729.53 (mil. 2013$) (15)	Project will create more than 30,000 jobs over the 25 year life of the project by reducing business transportation costs (15). This will add $2.8 billion to Indiana's economy yielding a $2.8 billion increase in personal income for the state (15). The project will save motorists about 16,000 hours per day yielding a cost savings to motorists of $1.2 billion over the life of the project (14).
System Utilization Maximization	
Travel Time Savings: $1,223.81 (mil. 2013$) (14) **Daily Vehicle Hours of Delay Savings**: 16,653 hours per day (14)	Levels of service on I-69 in Fishers, I-465 on the east, west, and south of Indianapolis will continue to reach unacceptable levels up to 2035. Added travel lanes on these corridors is too cost prohibitive. The Commerce Connector would provide enhance travel time for logistical industries and for thru trips (trips with origins and destinations outside of Indianapolis) in general. Combined with multi-modal options (transit, park and rides, carpooling) demand reducing strategies (HOT lanes & employee flex time scheduling), and good land-use development practices, the connector could provide effective congestion relief. Could be designated a "truck only" route.
Multimodal Integration & Synergy	
Modes Available: 3 (road, rail, air)	Project will facilitate the movement of freight through and around Indianapolis (18).
Access to National and International Markets	
By reducing congestion, this project will improve freight mobility and improve access to national markets by reducing the cost of traveling through the congested Indianapolis area during peak hours (18).	
Quality of Life	
Vehicle Operating Cost Savings: -$452.76 (mil. 2013$) (15) **Accident Cost Savings:**$2,493.36 (mil. 2013$) (15) **Emission Cost Savings**: -$50.62 (mil. 2013$) (15) **Safety**: 2,245 fewer total accidents per year, 8 fewer fatalities per year (15)	

Commerce Connector (Northeast Portion)		7A
Project Description	The purpose of this project is to address severe congestion during peak hours on I-465 from I-70 on the east side to I-69 NE of Indianapolis, and future congestion on I-69 from I-465 to SR-9 northeast of Indianapolis. The project will construct a new 4-lane divided freeway connector from I-70 east of Indianapolis to I-69 near Pendleton. The project expedites long distance trips and freight movement.	
Cost	$295.60 (mil. 2013$) (15)	

Economic Impact

Jobs: 1,121 job-years (15) **Gross Regional Product**: $97.25 (mil. 2013$) (15) **Real Personal Income**: $98.06 (mil. 2013$) (15)	Project will create more than 1,100 jobs over the 25 year life of the project by reducing business transportation costs. This will add $97 million to Indiana's economy yielding a $98 million increase in personal income for the state. (15)

System Utilization Maximization

Travel Time Savings: $151.46 (mil. 2013$) (14) **Daily Vehicle Hours of Delay Savings**: 1,954 hours per day (14)	The project will save motorists about 1,900 hours per day yielding a cost savings to motorists of $151 million over the life of the project. This section of the connector has the highest independent utility. (15)

Multimodal Integration & Synergy

Modes Available: 3 (road, rail, air)	Project will facilitate the movement of freight through and around Indianapolis.

Access to National and International Markets

By reducing congestion, this project will improve freight mobility and improve access to national markets by reducing the cost of traveling through the Indianapolis area.

Quality of Life

Vehicle Operating Cost Savings (non-business): -$47.95 (mil. 2013$) (15)
Accident Cost Savings (non-business):$164.87 (mil. 2013$) (15)
Emission Cost Savings: -$5.07 (mil. 2013$) (15)
Safety: 211 fewer total accidents per year, no change in annual fatalities (15)

Commerce Connector (East Portion)			7B
Project Description	The purpose of this project is to address severe congestion during peak hours on I-465 from I-65 South of Indianapolis to I-69 NE of Indianapolis, and moderate to severe current and future congestion on select portions of I-465 from I-65 north of Indianapolis to I-69 NE of Indianapolis. The proposed project will construct a new 4-lane freeway from I-65 south of Indianapolis to I-69 NE of Indianapolis is proposed. The project expedites long distance trips and freight movement.		
Cost	$773.94 (mil. 2013$) (15)		

Economic Impact	
Jobs: 8,463 job-years (15) **Gross Regional Product**: $791.47 (mil. 2013$) (15) **Real Personal Income**: $764.62 (mil. 2013$) (15)	Project will create more than 8,000 jobs over the 25 year life of the project by reducing business transportation costs. This will add $800 million to Indiana's economy yielding a $765 million increase in personal income for the state. (15)

System Utilization Maximization	
Travel Time Savings: $437.00 (mil. 2013$) (14) **Daily Vehicle Hours of Delay Savings**: 5,637 hours per day (14)	The project will save motorists about 5,600 hours per day yielding a cost savings to motorists of $437 million over the life of the project.

Multimodal Integration & Synergy	
Modes Available: 3 (road, rail, air)	Project will facilitate the movement of freight through and around Indianapolis.

Access to National and International Markets
By reducing congestion, this project will improve freight mobility and improve access to national markets by reducing the cost of traveling through the Indianapolis area.

Quality of Life
Vehicle Operating Cost Savings (non-business): -$ 107.05 (mil. 2013$) (15) **Accident Cost Savings (non-business):**$343.81 (mil. 2013$) (15) **Emission Cost Savings**: -$12.92 (mil. 2013$) (15) **Safety**: 609 fewer total accidents per year, no change in annual fatalities (15)

Commerce Connector (South and East Portion)		7C
Project Description	The purpose of this project is to address severe congestion during peak hours on I-465 from SR-37/Harding Street southwest of Indianapolis to I-69 NE of Indianapolis, and future congestion on selected portions of I-70, I-65 and I-69 NE of Indianapolis. The project will construct a new 4-lane freeway from SR-37 of Indianapolis to I-69 NE of Indianapolis. The project expedites long distance trips and freight movement.	
Cost	$898.22 (mil. 2013$) (15)	

Economic Impact	
Jobs: 11,980 job-years (15) **Gross Regional Product**: $1,123.5 (mil. 2013$) (15) **Real Personal Income**: $1,083.7 (mil. 2013$) (15)	Project will create almost 12,000 jobs over a 25 year period by reducing business transportation costs. This will add $1.1 billion to Indiana's economy yielding a $1 billion increase in personal income for the state. (15)

System Utilization Maximization	
Travel Time Savings: $652.4 (mil. 2013$) (15) **Daily Vehicle Hours of Delay Savings**: 7,404 hours per day (15)	The project will save motorists about 7,400 hours per day yielding a cost savings to motorists of $652 million over the life of the project. The project will provide motorist the option to avoid congested portions of I-69 in Fishers and I-465 congestion east of Indianapolis. This project assumes SR 37 has not been upgraded to freeway standards. (15)

Multimodal Integration & Synergy	
Modes Available: 3 (road, rail, air)	Project will facilitate the movement of freight through and around Indianapolis .

Access to National and International Markets
By reducing congestion, this project will improve freight mobility and improve access to national markets by reducing the cost of traveling through the Indianapolis area.

Quality of Life
Vehicle Operating Cost Savings (non-business): -$263.3 (mil. 2013$) (15) **Accident Cost Savings (non-business):** $758.4 (mil. 2013$) (15) **Emission Cost Savings**: -$30.8 (mil. 2013$) (15) **Safety**: 943 fewer total accidents per year, and annual fatalities will decrease by 2 deaths (15)

Commerce Connector (South and East Portion)		7D
Project Description	The purpose of this project is to address severe congestion during peak hours on I-465 from I-70 west of Indianapolis to I-69 NE of Indianapolis, and future congestion on selected portions of I-70, I-65 and I-69 NE of Indianapolis. The project will construct a new 4-lane freeway from I-70 west of Indianapolis to I-69 NE of Indianapolis is proposed. The project expedites long distance trips and freight movement.	
Cost	$1,352.77 (mil. 2013$) (15)	

Economic Impact

Jobs: 13,936 job-years (15) **Gross Regional Product**: $1,295.93 (mil. 2013$) (15) **Real Personal Income**: $1,255.95 (mil. 2013$) (15)	Project will create more than 13,000 jobs over the 25 year life of the project by reducing business transportation costs. This will add $1.3 billion to Indiana's economy yielding a $1.4 billion increase in personal income for the state. (15)

System Utilization Maximization

Travel Time Savings: $948.34 (mil. 2013$) (14) **Daily Vehicle Hours of Delay Savings**: 12,786 hours per day (14)	The project will save motorists about 13,000 hours per day yielding a cost savings to motorists of $948 million over the life of the project. This project segment assumes SR 37 has not been upgraded to I-69. (14)

Multimodal Integration & Synergy

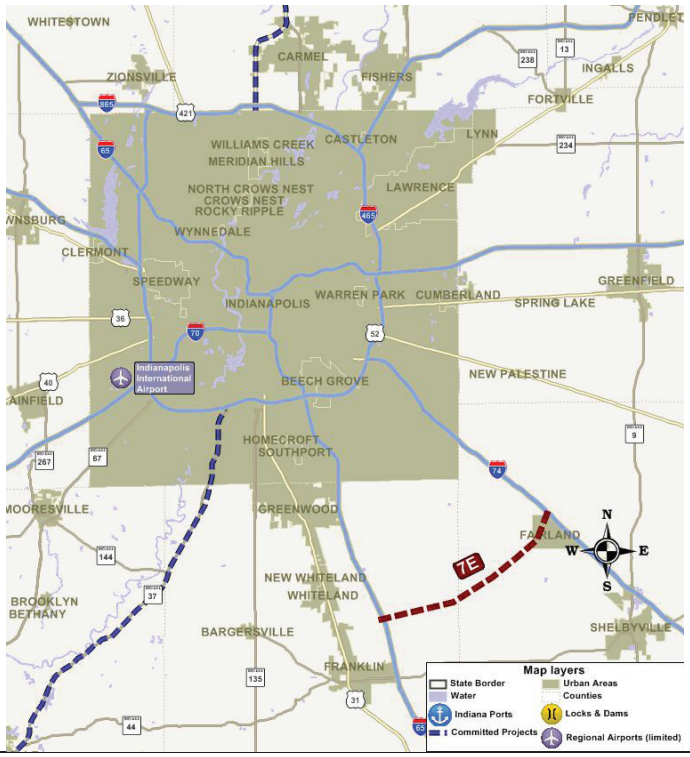
Modes Available: 3 (road, rail, air)	Project will facilitate the movement of freight through and around Indianapolis.

Access to National and International Markets

By reducing congestion, this project will improve freight mobility and improve access to national markets by reducing the cost of traveling through the Indianapolis area.

Quality of Life

Vehicle Operating Cost Savings (non-business): -$345.94 (mil. 2013$) (15)
Accident Cost Savings (non-business):$625.94 (mil. 2013$) (15)
Emission Cost Savings: -$38.74 (mil. 2013$) (15)
Safety: 1,091 fewer total accidents per year, no change in annual fatalities (15)

Commerce Connector (Southeast Portion)		7E
Project Description	Independent Connector from I-65 South of Indy to I-74 East of Indy. The project will construct a new 4-lane freeway from I-65 south of Indianapolis to I-74 SE of Indianapolis.	
Cost	$211.63 (mil. 2013$) (15)	

Economic Impact

Jobs: 0 job-years (15) **Gross Regional Product**:$0 Gain(mil. 2013$) (15) **Real Personal Income**: $0 Gain (mil. 2013$) (15)	This project won't create any jobs over the 25 year life of the project and as an independent connector does not provide reduced transportation cost to business. The project will not provide a positive impact to the GRP or real personal income for the state.

System Utilization Maximization

Travel Time Savings: $12.7 (mil. 2013$) **Daily Vehicle Hours of Delay Savings**: 87 hours per day	The project will save motorists about 87 hours per day yielding a cost savings to motorists of $12.7 million over the life of the project. The independent segment will attract less than 1,000 trips per day.

Multimodal Integration& Synergy

Modes Available: 3 (road, rail, air)	Project will facilitate the movement of freight through and around Indianapolis.

Access to National and International Markets

By reducing congestion, this project will improve freight mobility and improve access to national markets by reducing the cost of traveling through the Indianapolis area.

Quality of Life

Vehicle Operating Cost Savings (non-business): -$79.3 (mil. 2013$) (15)
Accident Cost Savings (non-business): $45.3 (mil. 2013$) (15)
Emission Cost Savings: -$6.0 (mil. 2013$) (15)
Safety: 96 fewer total accidents per year, no change in annual fatalities (15)

Commerce Connector (West Portion)		7F
Project Description	This project will construct a new 4-lane freeway around the west side of Indianapolis connecting I-65 north of Indianapolis to the proposed I-69 (SR 37) south of Indianapolis. The project expedites long distance trips and freight movement.	
Cost	$767.35 (mil. 2013$) (15)	

Economic Impact	
Jobs: 806 job-years (15) **Gross Regional Product**: $73.0 (mil. 2013$) (15) **Real Personal Income**: $71.8 (mil. 2013$) (15)	This project is expected to have low to moderate economic impact for the State of Indiana and the western Indianapolis metropolitan area. More direct access western portion of Hendricks County may allow for increased industrial development adjacent to the corridor.
System Utilization Maximization	
Travel Time Savings: $75.6 (mil. 2013$) (15) **Daily Vehicle Hours of Delay Savings**: 998 hours per day (15)	The proposed connector provides a secondary direct interstate connection from I-69 to I-65 and direct connectivity to western portions of Hendricks County. This project does not address congestion issues as I-465 west of Indianapolis was recently upgraded with added lanes and interchange modification that is expected to provide adequate levels of service well until 2030 (assuming conditions grows as expected).
Multimodal Integration & Synergy	
Modes Available: 3 (road, rail, air)	Project will facilitate the movement of freight through and around the western Indianapolis metropolitan area. The proposed connector will provide more direct interstate access to US 36 and the Avon Rail Yard.
Access to National and International Markets	
This project will improve freight mobility and improve access to national markets by reducing the cost of traveling in the western Indianapolis metropolitan area and more direct access to the Avon Rail Yard to I-65 and the NAFTA Trade Corridor (I-69 south of Indianapolis).	
Quality of Life	
Vehicle Operating Cost Savings (non-business): -$ 35.9 (mil. 2013$) (15) **Accident Cost Savings (non-business):** $97.6 (mil. 2013$) (15) **Emission Cost Savings**: -$4.1 (mil. 2013$) (15) **Safety**: 137 fewer total accidents per year, no change in annual fatalities (15)	

US 30 Freeway Upgrade from Valparaiso to Fort Wayne		8
Project Description	Convert the existing 4-lane highway to a 4-lane, full access-controlled freeway with interchanges at major intersections. The project provides safety and mobility improvements by eliminating at-grade intersections and traffic conflict points. The project expedites long distance trips and freight movement.	
Cost	$1,038.62 (mil)	

Economic Impact

Jobs: 10,572 jobs (15) **Gross Regional Product**: $959.03 (mil. 2013$) (15) **Real Personal Income**: $942.65 (mil. 2013$)(15)	Full access control and interchanges at major intersections will increase safety and mobility along the corridor. Improving the roadway will support economic growth along the corridor.

System Utilization Maximization

Travel Time Savings: $1,359.61 (mil. 2013$) (14) **Daily Vehicle Hours of Delay Savings**: 18,382 hours per day (14)	Increasing growth in Southern Porter County, in LaPorte, Marshall and Kosciusko Counties has the potential to create moderate congestion between Valparaiso and I-69. This can be addressed by full access control and interchanges at major intersections. Traffic volume reaches 30,000 vehicles per day on sections of US 30 between Valparaiso and Fort Wayne (13). Traffic is expected to grow conservatively by 2035 with sections of the roadway reaching 38,300 with some sections reaching 31% trucks (14). Converting this corridor to a full access control freeway would result in volumes increasing significantly reaching 81,050 by 2035 with 16% trucks (14). Added capacity may be needed at these high volume locations by 2035. (14)

Multimodal Integration & Synergy

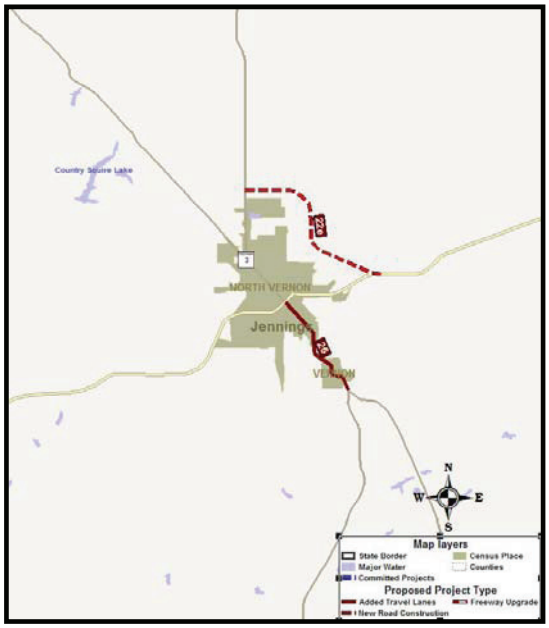
Modes Available: 1 (road)	Corridor improvements will enhance logistics and serve the corporate entities in Porter, Marshall, Kosciusko, and Allen Counties, including manufacturing along the corridor and also provide access to the Illiana Corridor when it is completed.

Access to National and International Markets

Reduced congestion, greater speed and increased safety will allow goods to be moved into and out of the state at a faster rate and in a safer manner (18).

Quality of Life

Vehicle Operating Cost Savings: -$565.90 (mil. 2013$) (15)
Accident Cost Savings:$715.68 (mil. 2013$) (15)
Emission Cost Savings: -$64.41 (mil. 2013$) (15)
Safety: 323 fewer total accidents per year, 4 fewer fatalities per year (15)

US-50- North Vernon			9
Project Description	The project will construct a 2-lane highway bypass around the eastside of North Vernon. Construction on the western half of the project began in March 2012, and will be finished in December 2013 Specifically, the project will reduce congestion & provide a safer transportation facility for both truck and passenger vehicles along U.S. 50 and S.R. 3/S.R. 7 in and around North Vernon. It will also provide an efficient transportation link between the growing industrial area on the north side of North Vernon and US-50.		
Cost	$24.06 (mil)		
Economic Impact			
Jobs: 2,676 jobs (15) **Gross Regional Product**: $256.5 (mil. 2013$) (15) **Real Personal Income**: $244.4 (mil. 2013$) (15)		The improvement will promote growth in the logistics sector along US 50 and SR 3/SR 7 and around North Vernon. It will also serve as the eastern complement to the North Vernon Western Bypass.	
System Utilization Maximization			
Travel Time Savings: $19.3 (mil. 2013$) (14) **Daily Vehicle Hours of Delay Savings**: 237 hours per day (14)		US 50 thru North Vernon is highly congested for the2-lane facility, particularly at the SR 3 intersection. Current volume on US 50 reaches 16,800 (13), with volumes expected to reach 24,000 by 2035 (14). No additional capacity can be added to this section of US 50. The bypass will provide connectivity to the ongoing western bypass from US 50 to SR 3 north of North Vernon. The project will reduce congestion and improve safety on US 50 and SR 7/SR 3 and provide enhance connectivity to the Muscatatuck Training Center west of North Vernon.	
Multimodal Integration & Synergy			
Modes Available: 1 (road)		The Improvement will create synergies with SR 3/SR 7 and US 50 for an efficient transportation link between the growing industrial area on the north side of North Vernon.	
Access to National and International Markets			
Improved traffic movement on US 50/SR 3/SR 7 will promote inter-state and intra-state commerce and also improve access to markets outside the United States (18).			
Quality of Life			
Vehicle Operating Cost Savings: -$35.5 (mil. 2013$) (15) **Accident Cost Savings:**$0.7 (mil. 2013$) (15) **Emission Cost Savings**: $2.6 (mil. 2013$) (15) **Safety**: 18 fewer total accidents per year, 0 fewer fatalities per year (15)			

US 20- Elkhart County			10
Project Description	The purpose of this project is to construct a new 4-lane limited access highway connecting US-20 at SR-15 to I-80/90 west of SR-13. The project will reduce commuter congestion on SR-13 and will improve mobility and freight movement on US-20 and SR-13.		
Cost	$193.64 (mil)		

Economic Impact

Jobs: 1,180 jobs (15) **Gross Regional Product**: $104.81 (mil. 2013$) (15) **Real Personal Income**: $104.29 (mil. 2013$) (15)	The connector will promote reduced congestion in the Elkhart area by routing commercial traffic around the urbanized area. This will improve safety for commuter traffic.

System Utilization Maximization

Travel Time Savings: $126.38 (mil. 2013$) (14) **Daily Vehicle Hours of Delay Savings**: 1,735 hours per day (14)	This connector will provide improved connectivity and travel time from US 20 to the Indiana Toll Road. Traffic volume on US 20 currently reaches 14,600 and SR 13 traffic volume reaches 10,400 thru the Town of Middleburry (13). The proposed new corridor is expected to attract 14,900 trips by 2035, with 20% of the trips trucks (14). The project will reduce congestion and delay for commuter traffic on SR 13 and improve logistics for traffic along US 20 and SR 13. Traffic volume on US 20 west of Middleburry is expected to reach 22,200 by 2035 (14).

Multimodal Integration & Synergy

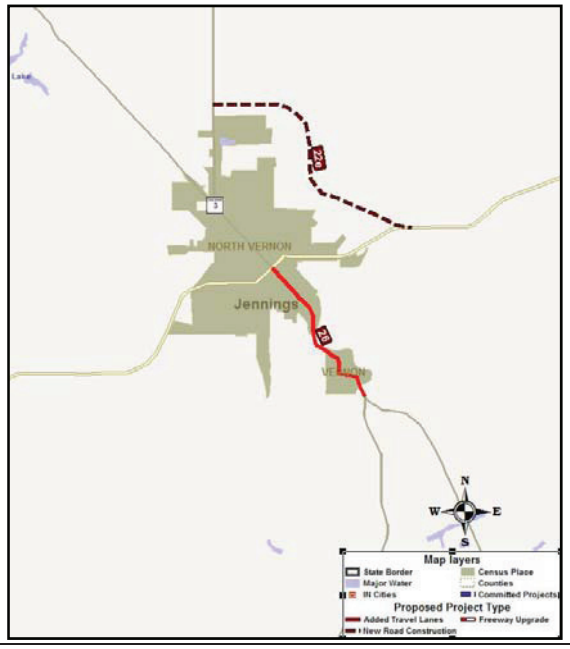
Modes Available: 1 (road)	Connector will increase safety for commuters on SR 13 and promote efficient movement of freight.

Access to National and International Markets

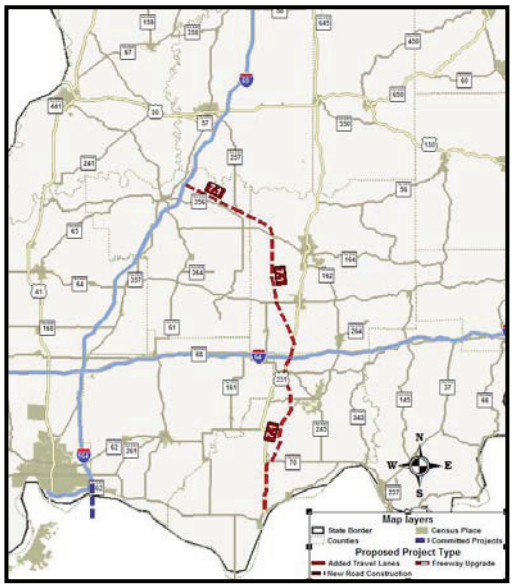
Improved access for products from the Goshen and Middlebury areas will be provided by better access to I-80/I-90 and by connecting to US 131 in Michigan, which in turn connects to I-94.

Quality of Life

Vehicle Operating Cost Savings: -$8.60 (mil. 2013$) (15)
Accident Cost Savings:$79.94 (mil. 2013$)(15)
Emission Cost Savings: -$0.38 (mil. 2013$) (15)
Safety: 75 fewer total accidents per year, 1 fewer fatality per year (15)

SR 3 North Vernon			11
Project Description	Project will add lanes to SR 3 from the south junction with SR 7 south of Vernon to US 50 inside North Vernon.		
Cost	$14.0 (mil. 2013$)		

Economic Impact	
Jobs: 0 jobs (15) **Gross Regional Product**: -$ 0.8 (mil. 2013$) (15) **Real Personal Income**: -$0.8 (mil. 2013$) (15)	The project will support economic growth in the North Vernon area with a better highway to serve the community and Jennings County.
System Utilization Maximization	
Travel Time Savings: $0.5 (mil. 2013$) (14) **Daily Vehicle Hours of Delay Savings**: 7 hours per day (14)	Corridor is reaching near unacceptable capacity during peak hours. 2011 average daily traffic volume currently reaches 13,831 for a 2-lane facility (13). Growth in the area is insignificant. However, a new US 50 bypass could attract development and travel demand in the North Vernon area.
Multimodal Integration & Synergy	
Modes Available: 1 (road)	Improved movement of freight through North Vernon to the growing industrial area north of the community will be a major benefit to the area.
Access to National and International Markets	
Improved access for intra-state and inter-state goods movement will be provided by this improvement, in addition to better access to international markets (18).	
Quality of Life	
Vehicle Operating Cost Savings: -$ 0.1 (mil. 2013$) (15) **Accident Cost Savings: -**$1.7 (mil. 2013$) (15) **Emission Cost Savings**: $0 (mil. 2013$) (15) **Safety**: 1 fewer total accidents per year, 0 fewer fatalities per year (15)	

Midstate Corridor		12
Project Description	The purpose of this project is to construct a new 4-lane connector between the Ohio River near Rockport to I-69 near Petersburg in northern Pike County. The project improves mobility and freight movement. Project would include 29.6 miles of green-field build through Pike and Dubois Counties plus 25.8 miles of upgraded existing 4-lane US 231 in Spencer County to remove remaining at grade intersections. I-67 would utilize existing Natcher Bridge near Rockport and link to Owensboro Bypass Extension (under construction) and Natcher Parkway providing access to I-65 at Bowling Green, KY. KYTC has completed study of Natcher Parkway upgrade plus 10.3 mile section of US 231/60 between bridge and Owensboro bypass. I-64 interchange would be upgraded to full cloverleaf from current partial cloverleaf.	
Cost	$443.83(mil)	

Economic Impact	
Jobs: 3,918 jobs (15) **Gross Regional Product**: $364.00 (mil. 2013$) (15) **Real Personal Income**: $352.97 (mil. 2013$) (15)	This I-67 Petersburg segment is part of a larger interstate concept that will provide better access for goods from manufacturing centers in Huntingburg and Jasper to Nashville, TN to northern Michigan. Project would encourage additional industrial development along Ohio River sites between Rockport and Grandview and near the I-64 interchange at Dale.
System Utilization Maximization	
Travel Time Savings: $247.88 (mil. 2013$) (14) **Daily Vehicle Hours of Delay Savings**: 3,584 hours per day (14)	I-67 will provide a free-flowing, less congested route from Nashville to Indianapolis, avoiding travel time delays associated with I-65 through the Louisville, KY metropolitan area. This corridor is expected to reach 15,800 by 2035 near the connection with I-69 (17). Current volumes on existing US 231 ranges between 4,500 – 13,000 (near Jasper and Huntingburg) (13).
Multimodal Integration & Synergy	
Modes Available: 3 (road, river barge, rail)	I-67 will provide improved freight access to existing and proposed port facilities near Rockport along with parallel NS Railroad line. Route will also provide connection to FBO and potential cargo shipments from Huntingburg Airport along corridor.

Access to National and International Markets

Improved access to Indiana ports and rail facilities will provide direct links to international markets (18). Improved access from manufacturing and distribution facilities in Pike, Dubois, and Spencer Counties, including more direct routing to Central Indiana and Great Lakes. Improved connections to Southeastern US markets and international port facilities.

Quality of Life

Vehicle Operating Cost Savings: -$110.12 (mil. 2013$) (15)
Accident Cost Savings:$186.83 (mil. 2013$) (15)
Emission Cost Savings: -$7.83 (mil. 2013$) (15)
Safety: 160 fewer total accidents per year, 1 fewer fatality per year (15)

SR 3 between I-70 and I-74			13
Project Description	Project will widen SR-3 to a minimum of 4-lanes. Bypasses will be required for Rushville and Spiceland. Project will facilitate regional mobility and freight movement. Corridor could also be straightened to shorten travel times.		
Cost	$318.80 (mil. 2013$)		

Economic Impact

Jobs: 460 jobs (15) **Gross Regional Product**: $ 44.6 (mil. 2013$) (15) **Real Personal Income**: $ 42.2 (mil. 2013$) (15)	Project will provide 4-lane corridor for improved connectivity from New Castle, Rushville and Greensburg to the I-70 and I-74 corridors. This will enhance mobility and connect manufacturing and distribution centers to the interstate system including the Greensburg Honda plant.

System Utilization Maximization

Travel Time Savings: $7.2 (mil. 2013$) (14) **Daily Vehicle Hours of Delay Savings**: 75 hours per day (14)	The corridor does not have a congestion issue. Traffic volumes on the corridor ranges from 4,700 to 6,700 vehicles per day in rural areas, with traffic reaching 9,400 just north of I-74 (13). The proposed improvement will enhance travel time on the SR 3 corridor from I-74 to I-70 by bypassing Rushville and Spiceland.

Multimodal Integration & Synergy

Modes Available: 1 (road)	Access to intermodal hubs in the region will be improved by adding capacity and better connection to the national Interstate network.

Access to National and International Markets

Reduced congestion, greater speed and increased safety will allow goods to be moved into and out of the state at a faster rate and in a safer manner.

Quality of Life

Vehicle Operating Cost Savings: $0.3 (mil. 2013$) (15)
Accident Cost Savings: -$5.6 (mil. 2013$) (15)
Emission Cost Savings: -$0.1 (mil. 2013$) (15)
Safety: 2 fewer total accidents per year, 0 fewer fatalities per year. (15)

I-70: Added Travel Lanes		14
Project Description	The purpose of this project is to widen existing 4-lane rural segments of the interstate to a minimum of 6 lanes. The project will expedite long distance trips, freight movements, and enhance maintenance of traffic operation during roadway maintenance and construction activities.	
Cost	Section W: $501.18 (mil) Section E: $353.04 (mil) Total: $854.22 (mil)	

Economic Impact

Section W Jobs: 3,858 jobs (15) **Section W Gross Regional Product**: $358.28 (mil. 2013$) (15) **Section W Real Personal Income**: $347.51 (mil. 2013$) (15) **Section E Jobs:** 11,573 job-years (15) **Section E Gross Regional Product:** $1,071.79 (mil. 2013$) (15) **Section E Real Personal Income:** $1,041.15 (mil. 2013$) (15)	Added lanes along this corridor will improve mobility and enhance logistics. This will support the growing distribution centers along the corridor. The added capacity has the potential to reduce the number of crashes along the I-70 Corridor.

System Utilization Maximization

Section W Travel Time Savings: $233.64 (mil. 2013$) (14) **Section W Daily Vehicle Hours of Delay Savings**: 2,933 hours per day (14) **Section E Travel Time Savings:** $688.05 (mil. 2013$) (14) **Section E Daily Vehicle Hours of Delay Savings:** 8,764 hours per day (14)	Traffic volume ranges from 29,500 to 44,620 with higher volumes near Indianapolis (13). Traffic growth on section of I-70 is expected to reach 85,100 by 2035 with trucks making up 40% of the volume (14). Added capacity to the corridor will ensure maintenance of traffic operation and improved reliability in rural sections of I-70. Model analysis shows traffic reaching 89,700 with improvements (14).

Multimodal Integration & Synergy

Modes Available: 3 (road, rail, air)	Connections to Indianapolis International Airport will be improved for the communities of central Indiana, allowing goods from the area to reach many markets at home and abroad (18).

Access to National and International Markets

Reduced congestion on Interstate 70 will result in greater speed and increased safety will allow goods to be moved into and out of the state at a faster rate and in a safer manner.

Quality of Life

Section W: Vehicle Operating Cost Savings: -$10.18 (mil. 2013$) **Section E:** -$70.73 (mil.2013$) (15)
Section W: Accident Cost Savings: $66.64 (mil. 2013$) **Section E:** $527.15 (mil.2013$) (15)
Section W: Emission Cost Savings: -$1.16 (mil. 2013$) **Section E:** -$7.60 (mil.2013$) (15)
Section W: Safety: 77 fewer total accidents per year, 1 fewer fatality per year **Section E:** 455 fewer total accidents per year, 4 fewer fatalities per year. (15)

I-65: Added Travel Lanes			15
Project Description	The purpose of this project is to widen existing 4-lane rural segments of the interstate to a minimum of 6 lanes. The project will expedite long distance trips, freight movements, and enhance maintenance of traffic operation during roadway maintenance and construction activities.		
Cost	$ 701.58 million for Section S $ 835.81 million for Section N $1,537.39 Billion Total Cost		

Economic Impact

Section S Jobs: 19,448 jobs (15) **Section S: Gross Regional Product**: $1,804.56 (mil. 2013$) (15) **Section S: Real Personal Income**: $1,751.08 (mil. 2013$) (15) **Section N Jobs:** 15,528 job –years (15) **Section N: Gross Regional Product:** $1,434.52 (mil.2013$) (15) **Section N: Real Personal Income:** $1,395.44 (mil. 2013$)(15)	The roadway's added capacity will support growth in the logistics sector along this corridor, reduce congestion, improve safety and drive economic development. It will also improve connection to the new Ohio River Bridges project on the southern section and improve connections to the Illiana corridor on the northern section.

System Utilization Maximization

Section S: Travel Time Savings: $1,589.51 (mil. 2013$) (14) **Daily Vehicle Hours of Delay Savings**: 20,342 hours/ day (14) **Section N: Travel Time Savings:** $1,283.01 (mil.2023$)(14) **Daily Vehicle Hours of Delay Savings:** 16,407 hours/day (14)	Current traffic volumes on these rural sections of I-65 range between 40,200 to 56,900 with higher volume on section south of Indianapolis (13). Traffic volume is expected to reach 48,700 to 90,800, with truck percents ranging between 30%-42% by 2035 (14). The improvements will reduce congestion along the length of the corridor, improve system reliability, provide additional truck passing opportunities for non-truck motorist, and improve maintenance of traffic operation during construction.

Multimodal Integration & Synergy

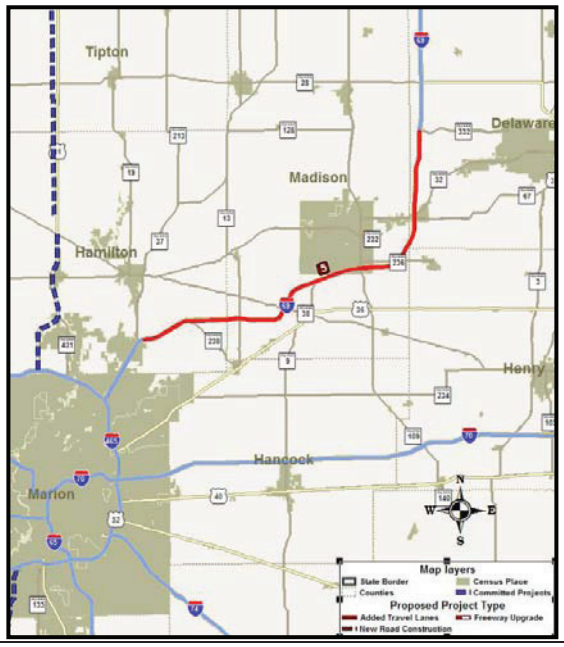
Modes Available: 5 (road, rail, air, ship, river barge)	The Improvements will create synergies for greater movement of freight along the I-65 corridor. They will also improve freight connectivity/linkage to rail and the Indiana's Jeffersonville port on the Ohio River and Burns Harbor on Lake Michigan.

Access to National and International Markets

Improved movement on I-65 will promote inter-state and intra-state commerce and provide access to International markets (18).

Quality of Life

Vehicle Operating Cost Savings Section S: -$366.36 (mil. 2013$) **Section N:** -$364.41 (mil.2013$) (15)
Accident Cost Savings Section S: $133.55 (mil. 2013$) **Section N:** $598.26 (mil.2013$) (15)
Emission Cost Savings Section S: -$36.78 (mil. 2013$) **Section N:** -$36.75 (mil.2013$) (15)
Safety Section S: 132 fewer total accidents per year, 0 fewer fatalities per year **Section N:** 504 fewer total accidents per year, 4 fewer fatalities per year. (15)

I 69: Added Travel Lanes		16
Project Description	The purpose of this project is to widen existing 4-lane rural segments of the interstate to a minimum of 6 lanes. The project will expedite long distance trips, freight movement, and enhance maintenance of traffic operations during roadway maintenance and construction activities.	
Cost	$224.35 (mil)	

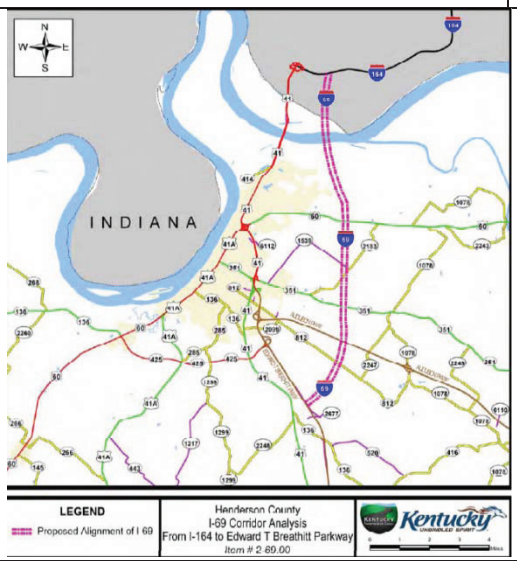
Economic Impact	
Jobs: 9,803 jobs (15) **Gross Regional Product**: $904.44 (mil. 2013$) (15) **Real Personal Income**: $880.48 (mil. 2013$) (15)	This corridor has some of the most congested sections in Indiana. The project will improve mobility and connect distribution and manufacturing centers along the corridor. Growth in the Anderson and Muncie areas can be supported with improvement of this corridor

System Utilization Maximization	
Travel Time Savings: $474.62 (mil. 2013$)(14) **Daily Vehicle Hours of Delay Savings**: 6,020 hours per day (14)	Current traffic volumes range from 31,800 to 61,200 with higher volumes near SR 37 in Fishers (13). With improvements to this corridor, analysis is showing 2035 traffic volumes will range between 61,000 and 76,400 (14). Trucks are expected to make up roughly 31% of the total volume (14). Peak hour speeds near SR 37 is expected to improve from 41 MPH to 52 MPH (14).

Multimodal Integration & Synergy	
Modes Available: 1 (road)	Increased capacity will provide better access for the products and people of Delaware, Madison and Hamilton Counties to Indianapolis International Airport and the various distribution centers along the corridor.

Access to National and International Markets
Reduced congestion, greater speed and increased safety will allow goods to be moved into and out of the state at a faster rate and in a safer manner.

Quality of Life
Vehicle Operating Cost Savings: -$26.30 (mil. 2013$) (15) **Accident Cost Savings:**$909.04 (mil. 2013$) (15) **Emission Cost Savings**: -$2.50 (mil. 2013$) (15) **Safety**: 721 fewer total accidents per year, 6 fewer fatalities per year (15)

I-69 Ohio River Bridge			17
Project Description	Henderson, Kentucky to Evansville Indiana I-69 link that will help to complete national I-69 corridor from the Texas/Mexico border to Port Huron, Michigan at the Canadian border. The project will support the completion of the larger I-69 corridor, provide sufficient cross Ohio River mobility in the Evansville/Henderson area and, strengthen the overall transportation network in southwestern Indiana and western Kentucky.		
Cost	Indiana Share: $ 467 Million Kentucky Share: $ 934 Million Total Estimate: $1.402 Billion (2008 Study)		

Economic Impact

Jobs: 1,628 jobs (12) 318 Jobs (15) **Gross Regional Product**: $ $ 28.23 (mil. 2013$) (15) **Real Personal Income**: $ 28.09 (mil. 2013$) (15)	The project is a part of the larger I-69 corridor through southwestern Indiana which will improve transportation efficiency and reduce the transportation costs for freight and commodities within and throughout the region resulting in an increased level of economic competitiveness. Indiana impacts will be minimal. The bulk of the impact is expected in Henderson, KY.

System Utilization Maximization

Travel Time Savings: $ 0 (mil. 2013$) MHMP Indiana only Impacts. **Daily Vehicle Hours of Delay Savings**: 0 hours per day	The project is the Ohio River Interstate 69 link between the I-69 upgrade in Kentucky and the I-69 expansion in Indiana. The current twin US 41 Ohio River Bridges are 70 plus years old; their capacity is limited and often congested and they do not meet current seismic standards. The new I-69 Bridge will have sufficient capacity to meet future demand and will be designed to the latest seismic standards. Also, the Henderson bridge would provide a level of redundancy for repair and restriction of the US 41 bridges. Indiana has enough capacity on the US 41 bridges and therefore this project would have minimal travel time savings in Indiana. Traffic counts show volumes on the US 41 bridge at 39,600 vehicles daily (13). The bridges combine can handle 59,800 before level of service becomes unacceptable.

Multimodal Integration & Synergy

Modes Available: 4(road, rail, air, port)	The I-69 Henderson to Evansville project will provide improved access to the Indiana Ohio River Port at Mount Vernon and port facilities at Evansville and Henderson. Improved access to rail facilities and aviation providers through the Evansville Airport will result from the project.

Access to National and International Markets

The national I-69 corridor will provide direct land transportation linkage to Mexico and Canada and national markets through the interstate highway system (18).

Quality of Life

Minimal impacts for Indiana without Kentucky buildout.

Municipal Connector: Connersville		18
Project Description	Project will reconstruct and widen SR-1 as a 4-lane divided expressway from Connersville to I-70.	
Cost	$114.9 (mil. 2013$)	

Economic Impact	
Jobs: 1,815 jobs (15) **Gross Regional Product**: $175.4 (mil. 2013$) (15) **Real Personal Income**: $166.4 (mil. 2013$) (15)	Project will improve access to I-70 for manufacturing and distribution centers in Connersville. The lower transportation costs will increase the demand for labor and boost regional productivity.

System Utilization Maximization	
Travel Time Savings: $29.1 (mil. 2013$) (14) **Daily Vehicle Hours of Delay Savings**: 324 hours per day (14)	Project will reduce travel time for vehicles for traveling between Connersville and I-70. Current volumes range from 3,750 to 6,000 near Connersville and I-70 (13). Growth is expected to be low to moderate with traffic volumes ranging from 5,700 to 7,750 by 2035 without corridor improvements (14).

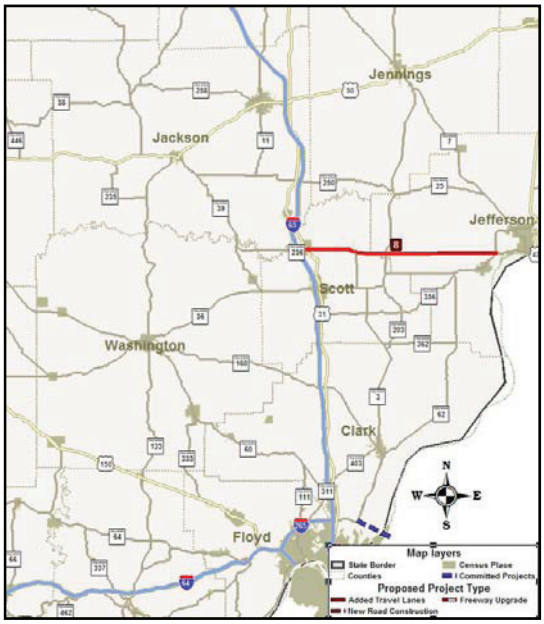
Multimodal Integration & Synergy	
Modes Available: 1 (road)	Project will expedite freight movement from Connersville to the I-70 corridor.

Access to National and International Markets

Project will allow goods and service to be moved through the region at a faster rate and in a safer manner. This will improve access to markets along the I-70 corridor.

Quality of Life

Vehicle Operating Cost Savings: $ 3.1 (mil. 2013$) (15)
Accident Cost Savings: -$9.0 (mil. 2013$) (15)
Emission Cost Savings: $0.1 (mil. 2013$) (15)
Safety: 0 fewer total accidents per year, 0 fewer fatalities per year (15)

Municipal Connector: Madison		19
Project Description	Project will reconstruct and widen SR 256 as a 4-lane expressway between I-65 in Austin and SR 56/62 near Madison. The project will improve interstate access and freight mobility for the City of Madison.	
Cost	$198.35 (mil. 2013$)	

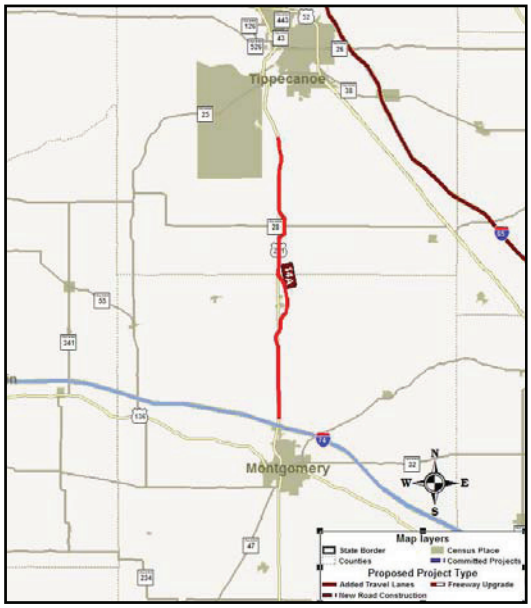
Economic Impact	
Jobs: 1,366 jobs (15) **Gross Regional Product**: $126.68 (mil. 2013$) (15) **Real Personal Income**: $122.96 (mil. 2013$) (15)	This Project will support the movement of people and goods to and from Madison by providing direct access to the interstate system. This should enhance the potential for business expansion and also support the tourism sector for which Madison is noted.

System Utilization Maximization	
Travel Time Savings: $86.60 (mil. 2013$) (14) **Daily Vehicle Hours of Delay Savings**: 1,045 hours per day (14)	This project will save motorists over 1,000 hours per day and provide a safer and more direct connection to the Interstate system (14). The nearest east-west connection is SR 256. Volumes currently range between 2,000 to 4,600 near I-65 (13). Growth is expected to remain conservative for the existing SR 256 corridor out until 2035.

Multimodal Integration & Synergy	
Modes Available: 2 (road, river barge)	This project will provide a better connection for Madison and Jefferson County industries to I-65, where they can connect to the Ohio River port at Jeffersonville.

Access to National and International Markets
The project will provide improved access for Madison and Jefferson County businesses to the Interstate system, which will improve the flow of products both into and out of the area.

Quality of Life
Vehicle Operating Cost Savings: -$ 1.86 (mil. 2013$) (15) **Accident Cost Savings:**-$5.59 (mil. 2013$) (15) **Emission Cost Savings**: -$0.21 (mil. 2013$) (15) **Safety**: 8 fewer total accidents per year, 0 fewer fatalities per year (15)

US 231: Added Travel Lanes			20
Project Description	The purpose of this project is to widen a section of US-231 from I-74 to Tippecanoe County Road 500 South in Lafayette. The project includes bypasses of Linden and Romney. The project improves mobility and freight movement on US 231.		
Cost	$160.8 (mil)		

Economic Impact	
Jobs: 549 jobs (15) **Gross Regional Product**: $50.18 (mil. 2013$) (15) **Real Personal Income**: $49.1 (mil. 2013$) (15)	Added capacity to the corridor will provide better access for the manufacturing facilities and support the movement of goods into and out of the area. Better connections to I-74 and I-65 near Lafayette-West Lafayette will be provided.

System Utilization Maximization	
Travel Time Savings: $71.77 (mil. 2013$) (14) **Daily Vehicle Hours of Delay Savings**: 991 hours per day (14)	Growth of truck traffic along the corridor has increased in small communities north of I-74. The added capacity coupled with bypasses will improve the vehicle speeds and safety. Current volumes range from 9,800 to 11,700 (13). Growth is expected to remain very conservative

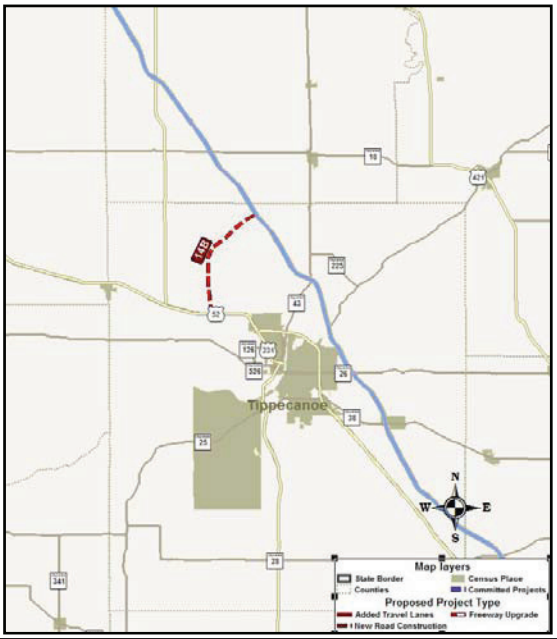
Multimodal Integration & Synergy	
Modes Available: 2 (road, rail)	The project will connect to the existing US 231 improvements in the Lafayette-West Lafayette area to improve logistics in the corridor while also providing better access to Purdue Airport.

Access to National and International Markets

Reduced congestion, greater speed and increased safety will allow goods to be moved into and out of the state at a faster rate and in a safer manner. The project should also benefit Purdue University and the Purdue Research Park with better access to I-74 to supplement current access to I-65.

Quality of Life

Vehicle Operating Cost Savings: -$37.86 (mil. 2013$) (15)
Accident Cost Savings: $19.39 (mil. 2013$) (15)
Emission Cost Savings: -$3.91 (mil. 2013$) (15)
Safety: 19 fewer total accidents per year, 0 fewer fatalities per year (15)

US 231 Bypass			21
Project Description	The purpose of this project is to construct a new 4-lane limited access highway connecting US-231 in West Lafayette to I-65. The project improves mobility, freight movement, and provides congestion relief on US-52 in West Lafayette.		
Cost	$85.97 (mil. 2013$)		
Economic Impact			
Jobs: 58 jobs (15) **Gross Regional Product**: $5.33 (mil. 2013$) (15) **Real Personal Income**: $5.21 (mil. 2013$) (15)		This project will result in additional interstate access for the Lafayette metropolitan area and is part of a larger corridor that will link I-74 to I-65. When completed, the corridor will provide high speed access from I-74 to I-65 and to the recently completed Hoosier Heartland Corridor linking Lafayette to the Great Lakes port terminals in northern Ohio. No traffic count exist given this is a new facility alignment.	
System Utilization Maximization			
Travel Time Savings: $ 7.62 (mil. 2013$) (14) **Daily Vehicle Hours of Delay Savings**: 105 hours per day (14)		This new connecter from US 231 to I-65 will combine with other projects to create a direct corridor link from I-74 to I-65.	
Multimodal Integration & Synergy			
Modes Available: 1 (road)		The overall US 231 corridor improvement concept will result in improved interstate access, including connectivity to the new Hoosier Heartland Corridor which provides linkage to the Great Lakes ports in Ohio and via I-65 to Burns Harbor on Lake Michigan.	
Access to National and International Markets			
The project will result in improvements to a greater corridor linking I-74 to I-65 which results in improved interstate access and subsequent access to international markets through linkages to the Great Lakes ports (18).			
Quality of Life			
Vehicle Operating Cost Savings: -$ 4.02(mil. 2013$) (15) **Accident Cost Savings:**$ 2.06 (mil. 2013$) (15) **Emission Cost Savings**: -$0.42 (mil. 2013$) (15) **Safety**: 2 fewer total accidents per year, 0 fewer fatalities per year (15)			

Regional Airport Development			22
Project Description	Indiana's official State Aviation System Plan includes 69 airports that serve the air transportation needs of more than 6.5 million Hoosiers and, in doing so, directly support more than 69,000 Hoosier jobs. The positive effects Indiana's airports have on the economic sectors of the state are immense. These diverse benefits range from job creation to emergency services and play a crucial role in both Indiana's economy and the lives of its residents by facilitating the movement of people and commerce each and every day (8).		
Cost	Project dependent		

Economic Impact	
Jobs (current): 22,077 (8) **Gross Regional Product:** $3.7 billion (8) **Real Personal Income:** $1.28 billion (payroll) (8)	Indiana airports and the aviation and aerospace industry play a critical role in the Hoosier economy and directly support jobs across the state. The contribution they provide to the success and growth of local businesses should not be understated. In many cases, those businesses would not have chosen to build in small communities if they didn't have access to a local airport. Those airports provide the connectivity to the global marketplace that is required in today's economy.

System Utilization Maximization	
Travel Time Savings (business): **Daily Vehicle Hours of Delay Savings:**	Increase capacity for air cargo shipments and logistics.

Multimodal Integration & Synergy	
Modes Available: 4 (air, truck, rail, water)	Ability to move people and freight regionally will improve access to other modes.

Access to National and International Markets
Access to an airport provides immense value in this measure. Those airports provide the connectivity to the global marketplace that is required in today's economy.

Quality of Life
Vehicle Operating Cost Savings: **Accident Cost Savings:** **Emission Cost Savings:** **Safety:**

Direct Commercial Flights			23
Project Description	Efficient connectivity of Indiana businesses and residents to external markets is critical to moving our state forward both in terms of attracting talent and capital. Two key non-stop routes to the West Coast were announced recently from IND: Los Angeles and San Francisco. Other destinations may be identified for IND or other airports that increase the efficiency of travel and support commerce. Indiana should consider establishing a program modeled after the Kansas Affordable Airfares Program (KAAP) (9), but with the primary goal instead being expanding the connectivity to new markets/destinations.		
Cost	Project dependent		

Economic Impact	
Jobs: **Gross Regional Product:** **Real Personal Income:**	The impact of Indiana's four commercial service airports (Indianapolis, Evansville, Ft. Wayne, and South Bend) is significant to the local and regional economies in terms of jobs, payroll, and economic output. Together they support 37,018 jobs, generate $2.35 Billion in payroll, and produce $8.2 Billion in economic output (8). Nonstop flights will enable corporate headquarters to locate in Indiana but have easy access to investors and manufacturing facilities around the world.

System Utilization and Maximization	
Travel Time Savings (business): **Daily Vehicle Hours of Delay Savings:**	Increase the available flight alternatives connecting to key destinations.

Multimodal Integration & Synergy	
Modes Available: 1 (air)	Minimal integration with other modes

Access to National and International Markets
Non-stop/direct flights can help connect to new destinations and allows Indiana individuals and businesses to spend more time conducting business in national and international markets (and vice versa).

Quality of Life
Vehicle Operating Cost Savings: **Accident Cost Savings:** **Emission Cost Savings:** **Safety:**

Non-Stop/Direct Commercial Flights		23A
Project Description	Passenger flight connectivity is an increasingly important component as regions compete for growth and retention of their corporate presence. Indiana is falling behind in its ability to provide direct flight connections that meet corporate needs and also contribute to a better quality of living. Benchmarking similar state supported initiatives arranged with airlines, those funds could remain untapped if the new flight performs to negotiated levels established by community and airline.	
Cost	$5 million (max annual, case dependent)	

Economic Impact

Jobs: 37,017 (8) **Personal Income: $2.3 Billion** (8) **Economic Output: $8.2 Billion** (8) **Indiana's Commercial Service Airports** **(EVV) Evansville Regional Airport** **(FWA) Fort Wayne International Airport** **(GYY) Gary/Chicago International Airport** **(IND) Indianapolis International Airport** **(SBN) South Bend Airport**	Commercial air service expands the range for Indiana's corporations to support and expand their customer base. Commercial air service can establish strategic links to cities/regions with potential synergies. EXAMPLES: * Study for potential IND to San Francisco flight projected annual economic impact of 417 jobs, $11 million in payroll, and over $26 million in economic output. (19) * State of Wisconsin study shows each new regional airport flight has ~$4 million local annual impact. (20)

System Utilization Maximization

Travel Time Savings (business): (21, 22, 23) **IN business travelers waste $147 Million/yr on connections:** 2012 IN Commercial Airport Passengers = 8.4 million 2012 IN Passengers that had to connect = 4.8 million (57%) 2012 U.S. travel mix = 28% business (1.34 million) Average passenger connect time: 2 hours 18 minutes Business passenger 'per hour' value= $47.80/hour	For Indiana's business travelers, and their visiting customers, non-stop market access is a key component to a company's productivity. One, or multiple, stop connections will often burn up an entire work day just for travel. Improving a community's connectivity with strategic non-stop flights will allow companies and economic regions to have more efficient and productive relationships with those key markets.

Multimodal Integration & Synergy

Modes Available: 2 (road,air) ~16% of Indiana's passengers travel to/from out-of-state airports for their commercial flights (~1,344,000/yr) (24)	Adding commercial flights into new markets will help reduce 'catchment leakage' where travelers drive to other airports to catch non-stop flights, eliminating additional wear and tear on the state's roadway system.

Access to National and International Markets

Non-stop/direct flights can help connect to new destinations and allows Indiana individuals and businesses to spend more time conducting business in national and international markets (and vice versa). Corporate development values better and more efficient access to its network and customers. Indiana will improve its competitiveness in this valued criterion by focusing more efforts to help establish strategic flight connections throughout the state.

Quality of Life

The benefits for improving non-stop connectivity around Indiana's airports range from improving economic development competiveness, which brings jobs and capital investment into our state, to improved tourism and convention through easier access to other markets. Individuals will also benefit from wasted time and increased risks/frustrations due to flight connections that go through our nation's congested hubs.

Hoosier State Passenger Rail Line	24
Project Description: The *Hoosier State Rail Line* runs from Chicago to Indianapolis with stops in Indianapolis, Crawfordsville, Lafayette, Rensselaer, and Dyer.	
Cost: Depends on level of state support	
Economic Impact	
Benefit/Cost: Undetermined	
System Utilization Maximization	
Growth of both freight and passenger traffic has been strong in the last two decades and is expected to grow as economic growth continues and high fuel costs and traffic congestion shift traffic from the highway to rail.	
Multimodal Integration & Synergy	
Modes Available: 3 (road, air, rail)	Increased rail passenger traffic will decrease congestion on roads. Line would provide access to regional airports
Access to National and International Markets	
Through additional daily trips, each option would provide greater access to Chicago, the nation's rail hub for both freight and passenger service. Anticipated freight growth of 1.75% (10).	
Quality of Life	
Environmental benefits include: decreased energy consumption, reduced accidents, reduced air pollution and emissions, reduced land for auto and air facilities, intensified and reuse of urban area lands around stations and reduced wetland and water resource impacts by reuse of existing rail routes. Baby Boomers and under 30 population increasingly likely to utilize passenger rail.	

Northern Indiana/Ohio Passenger Rail Corridor			25
Project Description	The Chicago-Fort Wayne-Columbus corridor would provide high speed rail service for the citizens of Chicago, Northern Indiana and Central Ohio by building a new rail line spanning from Chicago to Columbus. The 300 mile rail system would be operated using 110 or 130 mph Diesel trains.	Chicago to Fort Wayne - Columbus Corridor	
Cost	**$1.285 billion** (eligible for 80% federal funding). $257 million in start up costs shared between Indiana and Ohio. Between $128-$335 million for each state over the next five years. Possible Public-Private Partnership and Private Sector Support.		

Economic Impact	
Jobs: 26,800 (combination of all corridor communities) (11) **Gross Region Product:** $7.1 billion of increased output for region's businesses (11) **Personal Income:** $700 million per year along the corridor (11)	Would strengthen the region's service, manufacturing and tourism industries. Will encourage economic development in urban environment around train stations (e.g. Normal, Milwaukee and Champaign). Estimated property value increase of $2.6 billion among communities along the corridor (11).

System Utilization Maximization

Growth of income and population in the corridor will increase traffic by 30 million trips, or 40% of existing traffic by 2050 (11). The proposed rail system will provide reduced travel times between cities. Four hour trip from Columbus to Chicago. One hour thirty-eight minute trip from Fort Wayne to Chicago. Two-hour trip from Fort Wayne to Columbus. Rail system will produce reduced congestion on highways for auto and bus riders and reduced travel costs due to competitive rail fares and rising gasoline prices. Analysis projects corridor will generate 2.1 million riders in 2020 and that this will rise to over 3.3 million by 2040 (11).

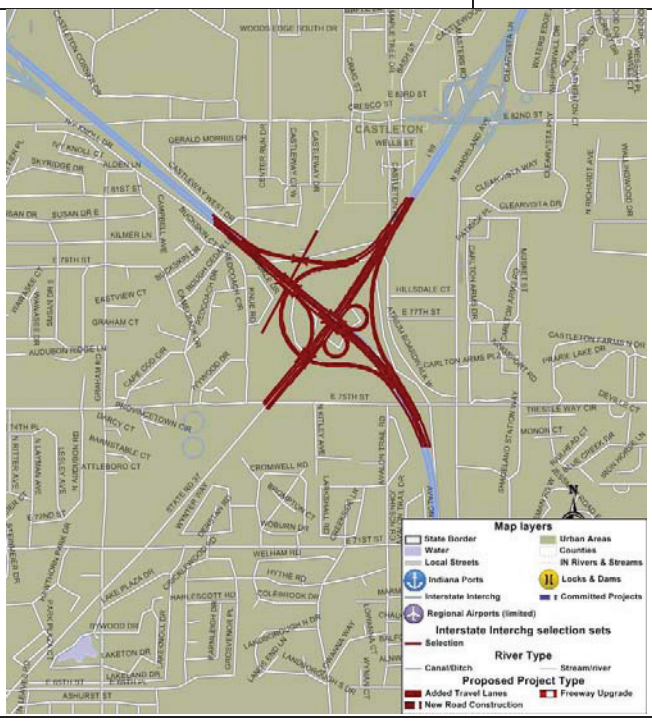
Multimodal Integration & Synergy	
Modes Available: 3 (road, air, rail)	Increased rail passenger traffic will decrease congestion on roads. Line would provide access to regional airports.

Access to National and International Markets

Would have connectivity with the 4,000 miles of regional rail system that will link 100 Midwest and Ohio cities. Would integrate with the proposed MWRRI and Ohio Hub Systems currently being built from Chicago to St. Louis, to Detroit, to Milwaukee and the Twin Cities, to Kansas City, and to Iowa City and Omaha.

Quality of Life

Total of $6 billion in user benefits over thirty year life of the project with a Cost Benefit return for the corridor, states and country of 1.7/1 (11). Environmental benefits include: decreased energy consumption, reduced accidents, reduced air pollution and emissions, reduced land for auto and air facilities, intensified and reuse of urban area lands around stations and reduced wetland and water resource impacts by reuse of existing rail routes (11). Baby Boomers and under 30 population increasingly likely to utilize passenger rail

I-69/I-465 Interchange Upgrade		26
Project Description	Interchange Modification to the I-465/I-69 interchange to improve traffic flow and address congestion, bottleneck, and safety issues. Improvements include a proposed higher speed flow over ramp from WB I-465 to NB I-69, additional travel lane in each direction from I-69 to Allisonville Road, and extended merging lanes on I-69 north of the interchange to just north of the 82nd street interchange.	
Cost	$50 (mil. 2013$) (15)	

Economic Impact

This project is expected to have a strong economic impact for the NE region of Indianapolis and the state economy by reducing transportation dependent business industries and improve just-in-time delivery. This can translate into increased business attraction to the state for lower business costs.

System Utilization Maximization

Current traffic volume at the interchange is range from 139,000 on I-465 and roughly 142,200 on I-69. In the Indiana 2012 Mobility Report, sections of I-69 ranked number 6 statewide in terms of the degraded interstate segments based on travel time and in the top 20 segments of corridors with deficient travel time. Forecasted traffic growth is limited to available roadway capacity on I-465 (1% annually over 22 years). However, with added capacity improvements growth is expected to average 3.6% annually on I-69 over the next 22-years. High demand in the area quickly uses any new capacity added to the network (e.g., Commerce Connector). Coordinated land-use planning and transit options are recommended in addition to interchange modification for effective congestion relief. (14)

Multimodal Integration & Synergy

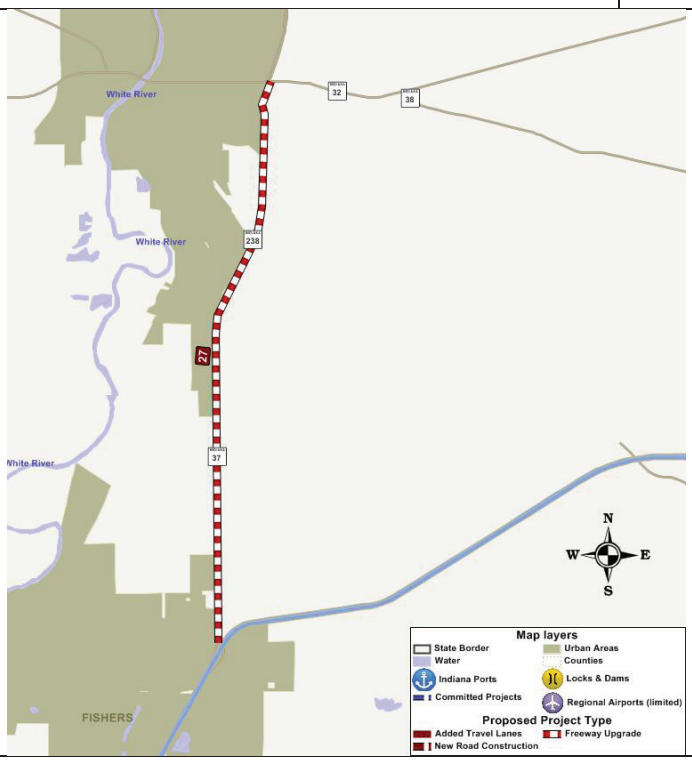
Modes Available: 1 (road)	Public transit options that could potentially provide peak hour congestion relief for the area. Proposed improvements to the interchange will support improved public services that utilize this corridor.

Access to National and International Markets

Will provide improved access to national and international markets by addressing bottleneck issues that are expected to worsen. Improvements will provide congestion relief at the interchange, improving speed, flow, and safety for more reliable movement of freight through the NE Indianapolis area.

Quality of Life

Proposed improvements will increase safety in the immediate area reducing conflict points, improved merging, increase vehicle flow, which will translate into positive air quality emissions savings, accident reductions, reduced vehicle operating costs in terms of fuel usage and wear/tear from stop and go traffic conditions during peak hours and savings to business operating costs. Improvements also allows business staff to arrive to destinations faster, which translates to more productive time and reduced vehicle operating cost.

SR 37 Freeway Upgrade: I-69 to SR 32		27
Project Description	Project will address current and future congestion on SR-37 corridor from I-69 in Fishers to SR-32 in Noblesville. Corridor is the main commuting route for Noblesville and east central Hamilton County and Greater Indianapolis. The project will reconstruct SR-37 as a 4-lane freeway with limited access and interchanges at major intersections.	
Cost	$127.52 (mil. 2013$) (15)	

Economic Impact	
Jobs: 5,495 job-years (15) **Gross Regional Product**: $518.1 (mil. 2013$) (15) **Real Personal Income**: $498.3 (mil. 2013$) (15)	This project is expected to have a strong economic impact for the Hamilton County area. Improvements to travel time can result in business operation savings and better employer to employee matches. This can translate into increased business attraction to the state as a result of improved travel time and lower business operating costs.
System Utilization Maximization	
Travel Time Savings: $298.7 (mil. 2013$) (14) **Daily Vehicle Hours of Delay Savings**: 3,653 hours per day (14)	Current traffic ranges from along the corridor is between 32,000-36,000, with average annual growth rates reaching over 2% per year over the next 22 years. At this point, the only congestion issues are the number of signalized intersection that creates corridor flow delays. (14)
Multimodal Integration & Synergy	
Modes Available: 1 (road)	Project will facilitate the movement of freight through the Hamilton County area and would also improve flow conditions for bus rapid transit that the Central Indiana Regional Transit Authority has identified as a future option in there long range plans.
Access to National and International Markets	
By reducing congestion, this project will improve freight mobility and improve access to national markets by reducing the cost of traveling through the SR 37 corridor	
Quality of Life	
Vehicle Operating Cost Savings (non-business): -$115.2 (mil. 2013$) (15) **Accident Cost Savings (non-business):** $ 203.7 (mil. 2013$) (15) **Emission Cost Savings**: -$13.1 (mil. 2013$) (15) **Safety**: 343 fewer total accidents per year, no change in annual fatalities (15)	

US 36 Freeway Upgrade: Avon to I-465			28
Project Description	Project will address current and future congestion on US-36 corridor from SR-267 to I-465. Corridor is the main commuting route for central Hendricks County and Greater Indianapolis. The project will reconstruct US-36 as a 4-lane expressway with limited access and slip ramps at major intersections.		
Cost	$551.25 (mil. 2013$) (15)		

Economic Impact

Jobs: 1,043 job-years (15) **Gross Regional Product**: $96.6 (mil. 2013$) (15) **Real Personal Income**: $93.8 (mil. 2013$) (15)	This project is expected to have moderate economic impact for the Avon and Danville area west of Indianapolis. Improvements to travel time can result in business operation savings and better employer to employee matches. This can translate into increased business attraction to the state as a result of improved travel time and lower business operating costs.

System Utilization Maximization

Travel Time Savings: $26.3 (mil. 2013$) (14) **Daily Vehicle Hours of Delay Savings**: 252 hours per day (14)	Current traffic ranges from 35,200 near Avon to 42,000 near I-465 west of High School Road. Congestion level is a concern due to the 16 signalized intersections and turning movements at these interchanges to commercial driveways. (15) INDOT's 2012 Mobility Report shows travel time from Avon to I-465 can reach 14 minutes during the AM peaks and from noon until 9 PM from Avon to I-465 and 18 minutes during the evening peaks from I-465 to Avon from 5-6 PM. (26) Model analysis shows conditions will worsen over time. Portions of the US 36 corridor is expected to see a 2.1% average annual growth rate for the next 22 years. (15)

Multimodal Integration & Synergy

Modes Available: 1 (road)	Project will facilitate the movement of freight between the Avon Rail Yard and I-465. Interchanges along the corridor will result in free flowing conditions that places reduce wear and tear on freight trucks and increased levels of safety by reducing intersection conflict points.

Access to National and International Markets

By reducing congestion, this project will improve freight mobility and improve access to national markets by reducing the cost of traveling through the western Indianapolis metro area and improved access to the Avon Rail Yard and I-465.

Quality of Life

Vehicle Operating Cost Savings (non-business): -$12.8 (mil. 2013$) (15)
Accident Cost Savings (non-business): $ 200.5 (mil. 2013$) (15)
Emission Cost Savings: -$1.4 (mil. 2013$) (15)
Safety: 274 fewer total accidents per year, no change in annual fatalities (15)

Upgrade I-65/I-70 Freeway Flow Downtown Indianapolis		29
Project Description	Undefined treatments on I-65 and I-70 in Indianapolis to address congestion and traffic flow issues between Raymond Street on I-65/I-70 to West Street on I-65. Treatments can range from added travel lanes, managed lanes, reversible lanes, and interchange modifications.	
Cost	Not available/lack of definition	

Economic Impact

This project is expected to have a strong economic impact for the Indianapolis region and the state economy by reducing transportation dependent business industries and providing improved travel time during the peak-hours. This can translate into increased business attraction to the state as a result of improved travel time and lower business operating costs. Improvements to the corridor also allows for more direct connection for motorist traveling from/to I-65 south of Indianapolis from/to I-65 North of Indianapolis.

System Utilization Maximization

Current traffic volumes range from 87,000 to 131,500. Higher volumes are near the northern termini of the project. Congestion along this stretch of the interstate is a problem during peak hour effected by motorist traveling to IUPUI, business offices, special events, and other items. Model analysis shows traffic growth ranging at conservative 0.6% annually on I-65 in the northern section of the model and up to 2% annually for sections of the I-65/I-70 corridor south of Washington Street. Select portions of the corridor is currently operating at unacceptable levels of service in terms of congestion, which is expected to worsen in future years if there are no improvements. (14)

Multimodal Integration & Synergy

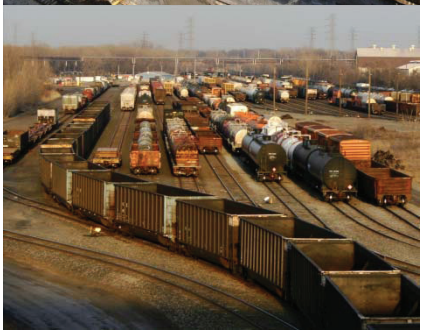
Modes Available: 2 (road, air)	Improved service impacts to rapid bus that utilize the section of roadway, improved flow for freight trucks, and reliable connectivity to the Indianapolis Airport for trips between the Airport and areas east and northeast of Indianapolis.

Access to National and International Markets

Improvements to the I-70/I-65 road sections will provide improved access to national and international markets by addressing bottleneck issues and improving system reliability. Improvements will provide congestion, improve speed, flow, and safety during peak hour conditions.

Quality of Life

Proposed improvements will increase safety reducing conflict points, reduced vehicle merging, increase vehicle flow, which will translate into positive air quality emissions savings, accident reductions, reduced vehicle operating costs in terms of fuel usage and wear/tear from stop and go traffic conditions during peak hours and savings to business operating costs. Improvements also allows business staff to arrive to destinations faster, which translates to more productive time and reduced vehicle operating cost.

Improved Rail Service to Indiana's Ports		30
Project Description	Increasing the number of rail carriers that directly serve Indiana's ports would greatly enhance the state's multimodal transportation system. Benefits would include more choices for rail users, competitive pricing, and additional cargo handling opportunities for rail carriers and access to new markets for Indiana companies. Right now two of Indiana's ports are served by one main rail carrier and the other port has two. These carriers provide indirect connections to other railroads, but track restrictions, physical barriers and competitive pricing structures limit many railroads from serving the ports. Connecting a new rail carrier to one port requires extensive negotiation will multiple entities, new agreements between competing railroads and construction of new track connections. Some rail carriers will be much more difficult to connect than others based on their competitive relationships with railroads that own track leading into the ports.	 
Cost	TBD by each project	

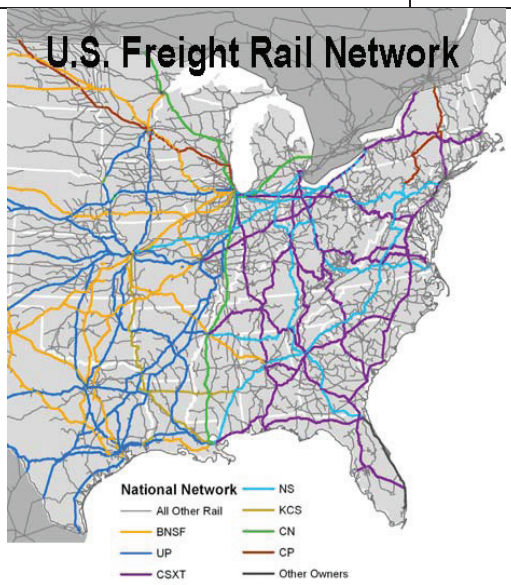
Economic Impact	
TBD by each project	Impacts include competitive pricing advantages for rail cargoes, additional cargo opportunities for rail carriers and access to new markets for Indiana companies.

System Utilization Maximization	
Indiana's 3 Ports Rail Traffic in 2013: Port of Indiana-Burns Harbor: 15,000 railcars (27) Port of Indiana-Mount Vernon: 24,000 railcars (27) Port of Indiana-Jeffersonville: 16,000 railcars (27)	*Rail Carriers for Indiana's Ports:* Port of Indiana-Burns Harbor: Norfolk Southern Port of Indiana-Mount Vernon: Evansville Western Port of Indiana-Jeffersonville: CSX, Louisville-Indiana

Multimodal Integration & Synergy	
Modes Available: 4 (rail, truck, ship, barge)	Indiana railroads serve as important connectors for businesses that rely on road, rail and maritime shipments. These rail connections increase the value and impact of the other modes.

Access to National and International Markets
Indiana's ports are served by both Class I national railroads and smaller regional railroads that operate within Indiana and close proximity around the state. They all provide connections for Indiana business to send/receive rail cargoes by many of the Class I railroads that carry national and international shipments to/from Indiana.

Quality of Life
On average, railroads are four times more fuel efficient than trucks. Moving freight by rail instead of truck reduces greenhouse gas emissions by 75 percent, and provides significant benefits for highway congestion, fuel consumption, traffic fatalities and highway maintenance costs. It would have taken approximately 16.1 million additional trucks to handle the 289.7 million tons of freight that originated in, terminated in, or moved through Indiana by rail in 2011. (28)

Light Density Branch Lines		31
Project Description	Indiana has over 40 railroads that provide service to users throughout the state. The majority of those railroads are short-line and regional railroads that connect to Class 1 railroads. Among all U.S. states, Indiana ranks 2nd in Line Haul Railroads, 3rd in Freight Railroads, 5th in Switching Railroads. (28) Helping rehabilitate light density branch lines on small short-line and regional railroads would further improve Indiana's freight rail transportation system.	
Cost	TBD based on project	

Economic Impact	
TBD based on each project	Rail transportation costs per ton are usually more cost effective than moving freight by trucks due to volume and energy requirements. A railcar can haul as much as 100 tons/car compared to semi-trucks that generally haul 25 tons. Trains travel 202 miles per gallon for every ton of cargo, as compared to 59 mpg for every ton of cargo on semis, according to the U.S. DOT. (28)

System Utilization Maximization	
Indiana Railroads Freight Railroads: 42 (28) Line Haul Railroads: 22 (28) Switching / Terminal Railroads: 14 (28)	Indiana ranks 9th in rail tons originated by state with 56.2M tons and 12th in rail tons terminated by state with 56.3M tons. Indiana ranks 1st in tons originated and terminated for Primary Metal Products (mainly iron and steel products) with 10.3 million tons originating (22% of U.S. total) and 7.6 million tons terminating (14% of U.S. total). (28)

Multimodal Integration & Synergy	
Modes Available: 3 (rail, truck, water)	In Indiana, railroads serve as important connectors for businesses that rely on road, rail and maritime shipments. These rail connections become even more valuable when they connect with the other modes (water, highway).

Access to National and International Markets
Indiana's shortline and regional railroads generally operate solely within Indiana and close proximity around the state. They provide key connections to major, Class 1 railroads and enable Indiana business to ship and receive products nationally and internationally.

Quality of Life
On average, railroads are four times more fuel efficient than trucks. Moving freight by rail instead of truck reduces greenhouse gas emissions by 75 percent, and provides significant benefits for highway congestion, fuel consumption, traffic fatalities and highway maintenance costs. It would have taken approximately 16.1 million additional trucks to handle the 289.7 million tons of freight that originated in, terminated in, or moved through Indiana by rail in 2011. (28)

Improved Intermodal Rail Service		32
Project Description	Intermodal container service is one of the most important and fastest-growing transportation sectors of the world's economy – increasing by over 400% in North America since 1980. (29) Fueled by the growth of global trade, Class I railroads carry millions of containers each year from large coastal ports to inland intermodal terminals for regional distribution by truck or short-line rail. Like ports and airports, intermodal terminals attract businesses by providing logistical advantages and transportation savings. The Midwest is well-positioned for intermodal development because of its central location, proximity to major markets and extensive road/rail networks. Illinois and Ohio have more intermodal rail terminals than any other state – 35 total including mega developments in Joliet, North Baltimore and Columbus. Indiana has only 3 small terminals (Avon, Indianapolis, Evansville). (30) As a result, Hoosier businesses send large volumes of trucks to other states to access intermodal rail lines that pass through Indiana. Without direct intermodal service, Indiana has a competitive disadvantage in the cost of operating business across almost all industry sectors and in the attraction of new businesses to the state.	
Cost	TBD	

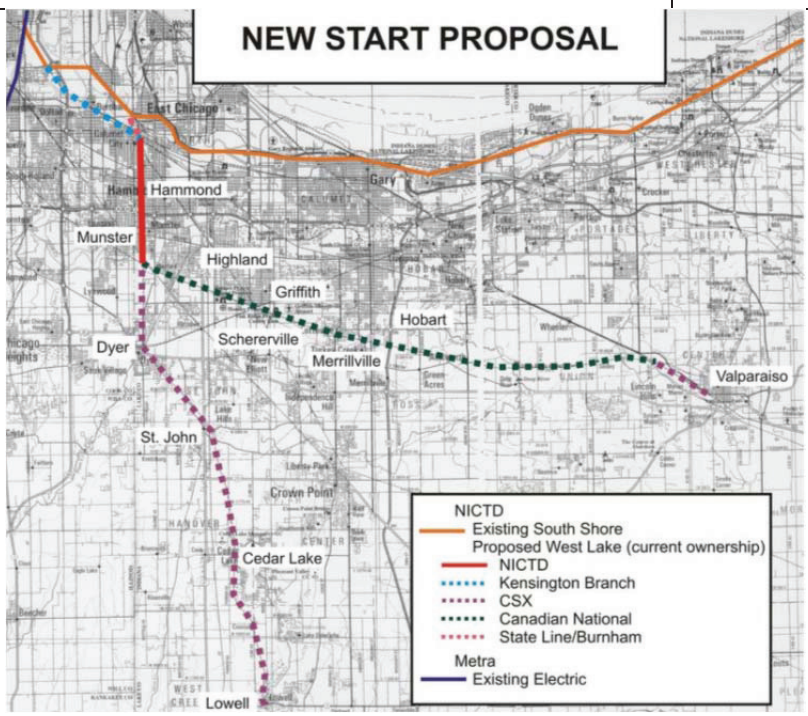
Economic Impact	
Sample 2,500-acre Intermodal Terminal: Economic Impact: $1 billion+ per year (28) Job Creation: 8,000+ (28) Shipper Savings: $100-$300 per container (31)	Using intermodal locations to terminate imports and originate exports can attract new investments by mega distribution centers and manufacturers. They also increase competitiveness of existing business by reducing transportation costs and providing access to new markets.

System Utilization Maximization	
Intermodal Terminals by State - Indiana: 3 Illinois: 23; Ohio: 12; Michigan: 5; Kentucky: 4; (30)	Indiana has been outpaced by neighboring states in the development of intermodal rail terminals. Freight demand is projected to grow more than 60% by 2040. (32) Developing intermodal terminals would allow Indiana to leverage this future growth for economic development.

Multimodal Integration/Synergy	
Modes Available: 3 (rail, truck, ocean liner)	Intermodal rail service connects coastal ports to inland terminals that serve as distribution centers for trucking containers to final destinations (sometimes via short-line rail). Intermodal combines the best abilities of three modes of transportation to create economic and environmental benefits.

Access to National and International Markets
Intermodal container service is a primary transportation mode for global trade, handling 25M containers and trailers per year worldwide. Indiana does not have a major Class 1 intermodal terminal with direct international access. (29)

Quality of Life
Intermodal rail transportation is more efficient than long-haul trucking and creates significant quality of life benefits, including reduced road congestion, air emissions, fuel consumption, traffic fatalities and highway maintenance costs. Intermodal rail also addresses truck driver shortage issues in long-haul trucking by providing local short-haul jobs. (29)

South Shore Extension		33
Project Description	An extension of the South Shore commuter rail line to Dyer, IN. The project would increase Northwest Indiana's connectivity to Chicago.	
Cost	$571 Million (Half of which could be picked up by the Federal New Starts Program) (33)	

Economic Impact	
Jobs: 5,500 by 2025 (33) **Personal Income Increase:** $147 million per year (33)	Objective is to attract young professionals to live in Northwest Indiana who work in Chicago, leading to greater economic development that is needed in the region.

System Utilization Maximization	
Projected ridership is 5,600 new daily riders (33)	There are only 38 miles of commuter lines in Northwest Indiana compared 487 miles in the Illinois portion of the Chicago-region economy. Passenger rail traffic is expected to grow as economic growth continues and high fuel costs and traffic congestion shift traffic from the highway to rail. (34)

Multimodal Integration & Synergy	
Modes Available: 3 (road, air, rail)	Increased rail passenger traffic will decrease congestion on roads. Line would provide access to regional airports

Access to National and International Markets
Would increase Northwest Indiana's connectivity to Chicago, an economy with more than 4 million employees and a GDP of $531 billion. (35) Would provide greater access to Chicago, the nation's rail hub for passenger service.

Quality of Life
Environmental benefits include: decreased energy consumption, reduced accidents, reduced air pollution and emissions, reduced land for auto and air facilities, intensified and reuse of urban area lands around stations and reduced wetland and water resource impacts by reuse of existing rail routes. Baby Boomers and under 30 population increasingly likely to utilize passenger rail. The project would help retain and attract young professionals to live in Northwest Indiana.