Appendix C: Transportation

Northwest Indiana's Congestion Management Process

May, 2009 - April 2011 and Beyond

May 6, 2011

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I. Introduction and Background

This report documents the Northwestern Indiana Regional Planning Commission's (NIRPC) efforts to implement a Congestion Management Process (CMP). As part of a conditional certification following the certification review on May 11-13, 2009, two corrective actions were issued by the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA). One of the corrective actions called for NIRPC to implement a CMP in compliance with federal planning requirements. This document is a status report of what has been accomplished. NIRPC has worked to implement this requirement in conjunction with the development of the 2040 Comprehensive Regional Plan (CRP). NIRPC formed a CMP committee and integrated the CMP into NIRPC's CRP project selection process. This report documents the CMP work to date, which should demonstrate that NIRPC's CMP meets the federal CMP requirements, and that the incorporation of the CMP into the planning process is well underway to full integration.

The main objective of the congestion management process is to determine the solution to reduce congestion and single-occupancy vehicle travel that is most feasible. Once congestion is identified, alternative strategies, other than expanding the roadway network, must be considered. The first criteria of alternatives that are considered is demand management strategies, which are intended to reduce that amount of single-occupancy vehicle travelers. If demand management strategies do not relieve congestion, then transportation systems, intelligent transportation systems, growth management and transit strategies should be considered. These are various strategies, described in sections X and XI, which help relieve congestion without increasing roadway capacity. If all possible strategies have been exhausted and congestion is still present, the roadway capacity expansion strategies may be considered.

II. NIRPC's Step-by-Step process

This section documents the process for creating and refining the NIRPC congestion management process. Due to time constraints and the availability of data, the traditional order of the steps in the congestion management process is altered.

Step 1: Establish a congestion management subcommittee- The subcommittee should consist of -but not be limited to:

- Indiana Department of Transportation – INDOT's participation is essential in that most project evaluations will take place on many state-jurisdiction roads, including major arterials, highways and interstates.
- FHWA, FTA, EPA – Involvement is necessary to provide advice and monitor to assure that the requirements are being followed.
- Local elected officials and municipal and county highway engineers – Scenario planning and project selection will impact the local units of government.
- Transit Service Providers – Transit systems are obviously a part of the travel network, and can be part of the solution to congestion.
- Interested Citizens – Public involvement is necessary for the congestion management process to be understood and effective.

These stakeholders form the Congestion Management Subcommittee, which is a subcommittee of the Transportation Policy Committee. The elected officials in the subcommittee and TPC will carry recommendations to the N IRPC board. The subcommittee meets at least bi-monthly, either at NIRPC or the INDOT Borman Traffic Management Center in Gary.

Step 2: Collect Data- Data relevant to the congestion management process has been collected within the region. Data collection includes traffic crashes, travel time, traffic counts, and roadway configuration. Other database fields were added, including termini descriptions, county area, functional class, direction, congestion threshold, lane capacity and associated traffic count station numbers. In regards to Volume/Capacity ratio, the majority of the data in the region has been collected. The gap in the NIRPC data was travel time, which was resolved with the purchase of and use of devices to record travel time in the field on selected corridors.

Step 3: Develop Congestion Management Objectives –Objectives are derived from the vision and goals articulated in the NIRPC CRP. Objectives may address: traffic incident management, travel information, work zones, freeway management, roadway weather, electronic payment services, freight management or traffic signal coordination.

Examples of objectives relating to a goal of congestion reduction:

- Over the next three to five years, reduce the clearance time of traffic incidents on freeways and major arteries in the region from a current average of X minutes to an average of Y minutes.
- Over the next three to five years, reduce the variability in travel time on freeways and major arteries in the region such that 95% of trips (19 out of 20) have travel times no more than 1.5 times the average travel time for a specific time of day.
- By 2012, enhance connectivity among transit services so that transfers between transit modes (rail, bus) and operators are seamless and can occur with one "smart card."

Step 4: Identify Area of Application – The Congestion Management Plan is applied to a specific geographic area and network of transportation facilities. The area is the NIRPC region, which consists of Lake, La Porte and Porter counties.

Step 5: Define System/Network of Interest – The Congestion Management Plan network should identify the characteristics of the surface transportation network under consideration. The CMP should be multi-modal. The networks that are analyzed in the NIRPC CMP are the roadways, (the arterials and highways more-so than the local roads) and the South Shore commuter rail service. Observing the roadways will allow the evaluation of bus congestion in addition to auto and truck congestion because they all share the same roadways.

Step 6: Develop Performance Measures – Performance measures are used to access the effectiveness and efficiency of the transportation network. The performance measures should fit the "SMART" criteria, meaning that it should be **S**pecific, **M**easurable, **A**greed, **R**ealistic and **T**ime-Bound. There are two performance measures on which this process focused.

Step 7: Evaluate growth and development scenarios to identify future congestion problems in the context of the CRP- Scenario modeling is conducted in the context of congestion for the CRP. Four scenarios were evaluated and discussed with the public, which were extrapolation of trends; build-out of local plans; population and employment concentrated in livable centers; and urban core revitalization and infill.

Step 8: Institute System Performance Monitoring Plan – The performance monitoring plan should monitor both highway and transit. The primary way to monitor the system is to continue to collect data. Types of data will depend on the types of performance measures used, and the data should be relevant to the area, available, timely, reliable, consistent and susceptible to forecasting. The likely agents for monitoring for this congestion management plan would be traffic counts and travel time, which are what NIRPC collects.

Step 9: Identify/Evaluate Strategies – The congested areas of the region have been identified and strategies evaluated for their potential impact on congestion relief. A criterion for evaluating the potential strategies is selected. The key here is to follow the process and only recommend implementation of an expansion of the roadway system if necessary. Categories for strategies include:

- Demand Management
- Access Management
- Intelligent Transportation Systems
- Transit Service
- Growth Management
- Adding Capacity as a Last Resort

Step 10: Incorporate strategies into the CRP and Transportation Improvement Program (TIP) – The CMP will be a part of the 2040 CRP. Projects included in the TIP will be based on the goals and strategies outlined in the CRP, including the CMP.

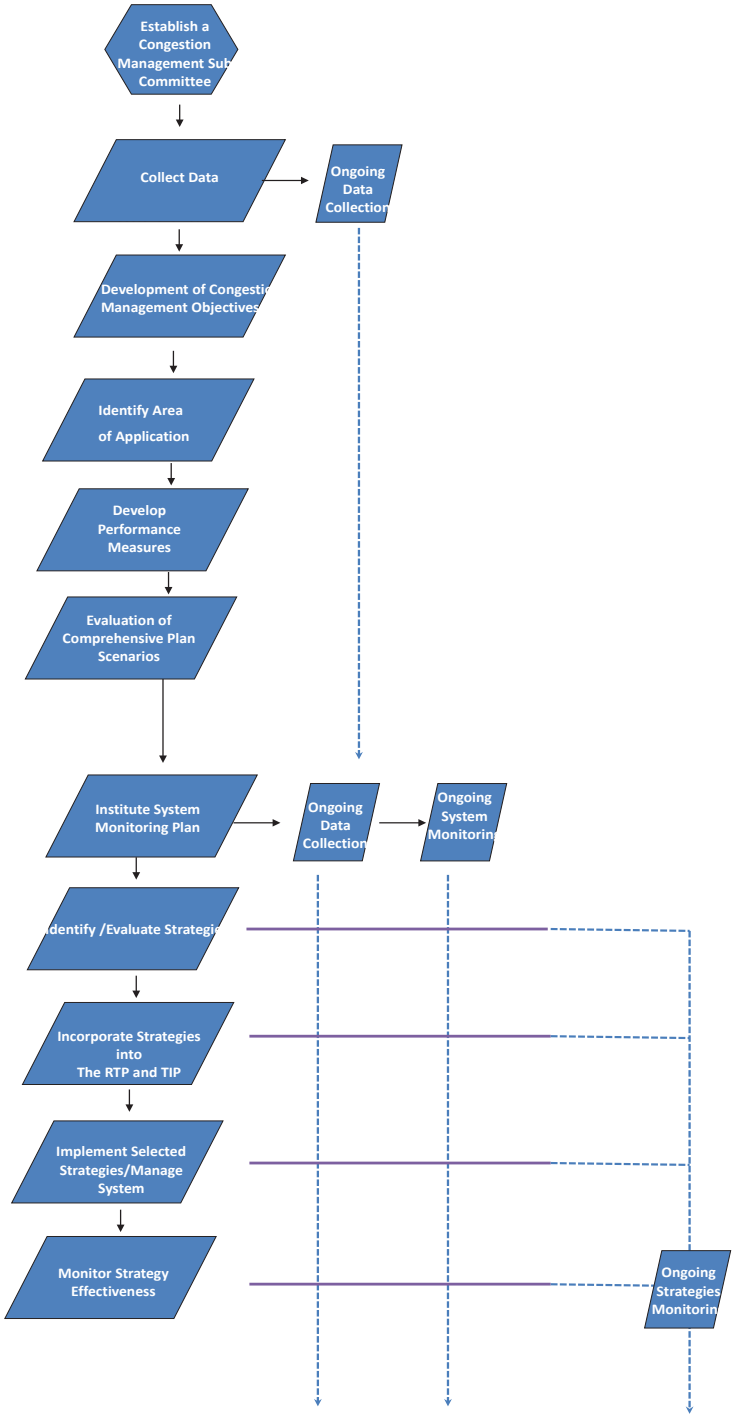
Step 11: Implement Selected Strategies/-Manage System – Implementation and continued management take place at this step. During this step, the congestion relief strategies are implemented by the project sponsors. This step ensures a link between the Congestion Management Process and funding decisions. System management is ongoing.

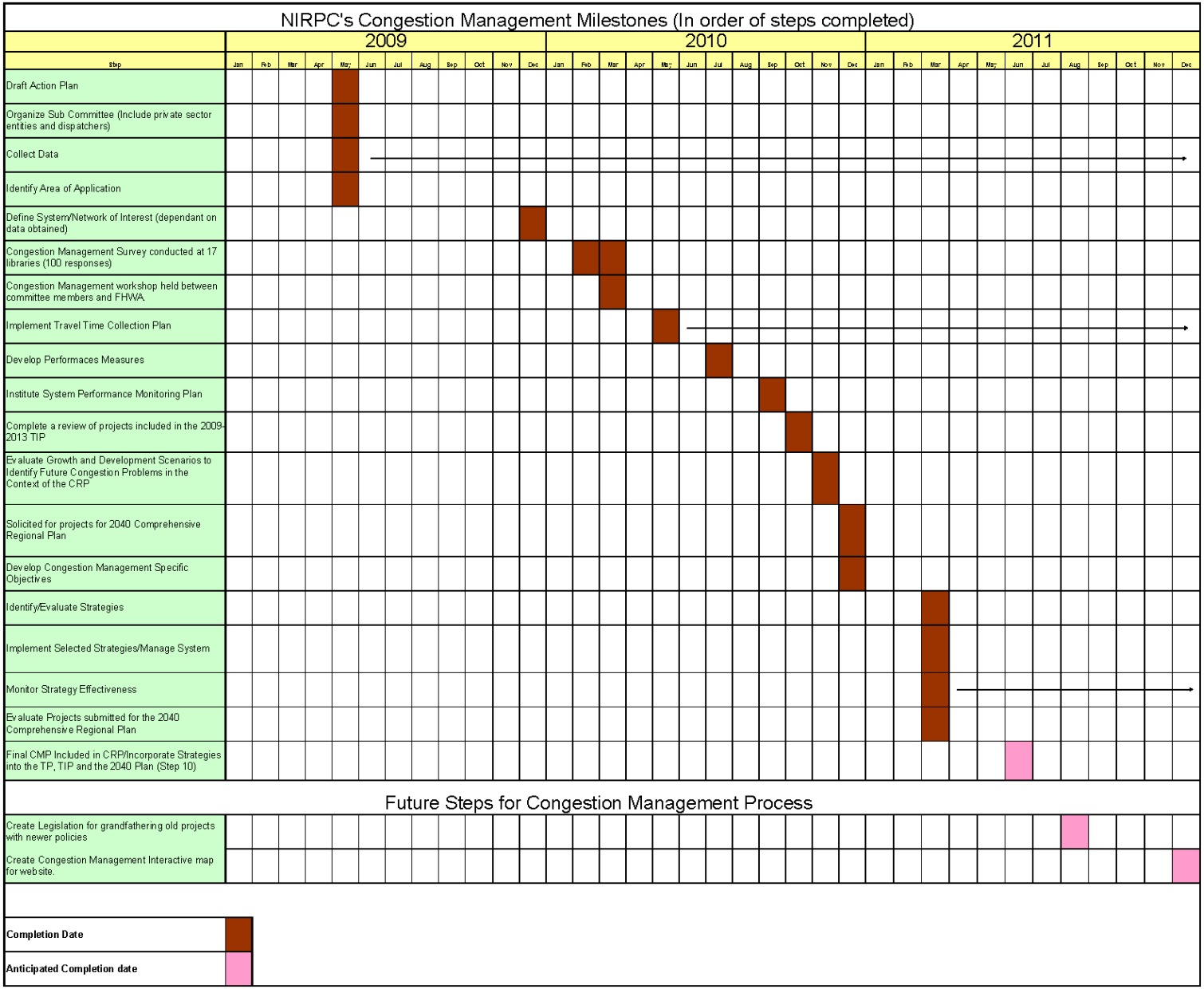
Step 12: Monitor Strategy Effectiveness – The effectiveness and strategies of the CMP should be periodically evaluated. Performance measures should be used to develop the effectiveness of the strategies. Evaluation criteria may be needed to compare how well strategies work. The congestion management process is ongoing.

III. Milestones achieved

The following table, NIRPC's Congestion Management Milestones, displays the major steps and achievements of the congestion management process since 2009. There is a slight difference between the traditional process steps above and the Milestones chart below. In NIRPC's case, timing was an issue and some steps should be completed before others. Also, certain steps were temporarily delayed because of a lack of data at the time.

Diagram of Traditional Congestion Management Process Steps




NIRPC's Congestion Management Milestones (In order of steps completed)
2009
2010
2011
Step
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
Draft Action Plan
Organize Sub Committee (Include private sector entities and dispatchers)
Collect Data
Identify Area of Application
Define System/Network of Interest (dependant on data obtained)
Congestion Management Survey conducted at 17 libraries (100 responses)
Congestion Management workshop held between committee members and FHWA
Implement Travel Time Collection Plan
Develop Performaces Measures
Institute System Performance Monitoring Plan
Complete a review of projects included in the 2009-2013 TIP
Evaluate Growth and Development Scenarios to Identify Future Congestion Problems in the Context of the CRP
Solicited for projects for 2040 Comprehensive Regional Plan
Develop Congestion Management Specific Objectives
Identify/Evaluate Strategies
Implement Selected Strategies/Manage System
Monitor Strategy Effectiveness
Evaluate Projects submitted for the 2040 Comprehensive Regional Plan
Final CMP Included in CRP/Incorporate Strategies into the TP, TIP and the 2040 Plan (Step 10)
Future Steps for Congestion Management Process
Create Legislation for grandfathering old projects with newer policies
Create Congestion Management Interactive map for website.
Completion Date
Anticipated Completion date

IV. Congestion Management Process Objectives

NIRPC's congestion management objectives are derived from the goals and objectives that were determined and adopted by the 2040 CRP Steering Committee. Several workshops that solicited public input helped determine the vision for the CRP and its goals and objectives. The objectives that were selected for the CMP were refined into "**SMART**" objectives (Specific, Measurable, Achievable, Realistic and Time-Oriented in **bold** below). The final refined objectives were presented, revised and approved by the Congestion Management Subcommittee.

NIRPC'S Goals and Objectives for Congestion Management

CRP Vision Theme: *Accessible Region – connected people and opportunities*
Goal: **A safe and secure transportation system**

CMP Objectives & "**SMART"** Objectives

Reduce the number and severity of motor vehicle collisions

- **Reduce the crash rate by .25 (10 percent) and death/injury rate by .19 (15 percent) by the year 2040**

Improve the safety of non-motorized transportation through education, enforcement, engineering, design and construction

- **Reduce the Bike/Ped crashes by 17 (5 percent) by the year 2040**

Reduce emergency response times on major expressways

- **Reduce incident clearance time by 35 percent by the year 2040**

Improve the safety and security of transit facilities including stations, stops and vehicles

- **Reduce incidents per 100,000 trips by 40 percent by the year 2040**

CRP Vision Theme: *Accessible Region – connected people and opportunities*
CRP Goal: **Increased mobility, accessibility and transportation options for people and freight**

CMP Objectives:

Integrate local, regional and national transportation systems to facilitate movement of people and freight between modes

- **Increase mode sharing among region by 15% by the year 2040**

Improve system accessibility for people with special transportation needs including persons with disabilities, the elderly, the young and low-income populations

- **Increase the environmental justice (low-income population, minority population) served in the region from highway projects and public transportation by 10% by the year 2040**

Increase access to and improve the reliability of public mass transit

- **Increase Route Coverage -by 30% and raise on-time performance by 50% by the year 2040**

CRP Vision Theme: *Accessible Region – connected people and opportunities*
CRP Goal: **Adequate transportation funding and efficient use of resources**

CMP Objectives:

Protect previous investments through maintenance and improvements to existing transportation infrastructure, operations and services.

Devote sufficient resources to address reconstruction and maintenance needs

- **Increase funding for maintenance and reconstruction projects by 30% by the year 2020**

V. Performance Measures Methods to Monitoring Multimodal Performance

The performance measures were initially selected by NIRPC staff members, and discussed with and approved by the Congestion Management Subcommittee. Many of these performance measures currently are being used by other Metropolitan Planning Organizations and transportation agencies. These performance measures have been or will be used in the future to evaluate potential regionally significant projects and determine where congestion is located within the region.

Highway Performance Measures

Volume/Capacity Ratio (V/C Ratio)

V/C Ratio is a universal performance measure that is used to gauge the density of a highway facility. This is a performance measure that has been used by NIRPC for many years and the data is readily available. The capacity of a transportation facility is determined by NIRPC's travel demand forecast model.

V/C Ratio = Traffic Volume of a Transportation Facility divided by the Physical Capacity of a Transportation Facility

Travel Time & Travel Time Index

Travel time is the average time it would take for a vehicle to travel from one point of a specific corridor to another. Travel time index is a performance measure that is used to compare travel time in peak periods versus travel time in free flow periods. In order to calculate travel time index, travel time data will need to be collected in peak and off peak hours. Travel time and travel time index can be represented in numerical and level of service form. Travel time index example: Example: TTI of 1.2 means that the average travel time is 20% longer than free flow travel times.

Travel Time Index= Peak Period Travel Time divided by Free Flow Travel Time

Average Speed

Average speed can be displayed both in numerical form and with congestion scans. Average speed also can be derived from travel time data. With average speed, it will be easy to identify congestion by time of day and location. Average speed also can be displayed in indexed form by comparing with the posted speed of a road.

Delay

Delay is a performance measure that can be derived from average speed on expressways and arterials. Delay can be calculated by finding out how long it takes for traffic to move one mile. Delay can be measured in seconds per corridor by time of day. Travel time index also may be used to calculate delay for a corridor.

Safety Performance Measures

Crash Rate

Crash rate measures the number of crashes of a certain type normalized over the number of vehicles along a specific link in the network. This, in effect, "normalizes" the crash rate by the exposure to vehicles traveling in a certain location. Units of measure for crash rate are crashes/million vehicle miles traveled along links. Crashes are a significant source of non-recurring delay, and can drastically affect the operation of a system. Reducing crashes can have a ripple effect in reducing the delay in a transportation network.

Average Incident Clearance Time

This performance measure indicates the average clearance time of a roadway after an incident has occurred until the last vehicle leaves the scene. Longer clearance times usually increase the chances of a secondary crash due to obstructions on the road. NIRPC is unsure whether this data is readily available from sources, such as INDOT, and has not used this performance measure.

Transit Performance Measures

Load Factor

Load factor is an accurate way of measuring how much capacity is being used in a transit system. This performance measure not only affects the availability of room on a transit system, but the comfort of a ride as well.

Load Factor= Ridership/Capacity, where ridership is the number of riders on a given transit system and capacity in this region is the number of seats that a transit vehicle has. This performance measure can be measured in both a numerical and level of service form.

On-Time Performance

On-time performance monitors the percentage of transit vehicles that arrive on time for stops. The threshold for this measure is usually a few minutes. This performance can be measured in a level of service form. On-time performance is a suitable performance measure because most of Northwest Indiana's transit networks have longer headways.

Passenger Trips per Vehicle Revenue Hour and Mile

This performance measure compares ridership with the length of time transit service is offered (Vehicle Revenue Hours) or length of travel that transit service is offered (Vehicle Revenue Miles). The amount of hours and miles is counted for each vehicle in service. This measure can be displayed in level of service form.

Passenger Trips per Vehicle Revenue Hour = Passenger Trips/Vehicle Revenue Hour
Passenger Trips per Vehicle Revenue Mile = Passenger Trips/Vehicle Revenue Mile

Vehicle Revenue Hours/Per Capita

Vehicle Revenue Hours/Per Capita are the hours that transit vehicles travel while in revenue service, including layover/recovery time, but excluding deadhead time. The amount of hours is counted for each vehicle in service. Per capita represents the population in the Northwest Indiana region or specific areas, corridors or municipalities depending on the scope of the measure uses.

Vehicle Revenue Hours/Per Capita = Total Vehicle Revenue Hours/Capita of Area

Other Performance Measures

Customer Satisfaction

The use of surveys indicating if transit service is adequate and effective may be distributed in communities where public transit exists. NIRPC has not yet used this measure. Whether NIRPC has the need and the resources to collect this data will be determined. Content and distribution of the surveys is not known at this time.

Vehicle Miles Traveled/Vehicle Hours Traveled

Vehicle Miles Traveled and Vehicle Hours Traveled is a standard performance measure that can be used as a corridor level or regional level measure.

VI. Congestion Pricing

Congestion pricing is a policy tool that is designed to reduce unnecessary driving and encouraging the use of transit into congested areas (i.e. a central business district, or a particular roadway or bridge) by imposing a charge, usually between certain hours of the day. One of the most famous examples of this is the Congestion Charge Zone (CCZ) in London, which was instituted in 2003. Vehicles entering the CCZ between the hours of 7 a.m. and 6 p.m. Monday through Friday must pay a £10 charge. The funds raised are invested back into the city's transportation system.

While this idea has been proposed for cities all over the world, including Manhattan in New York City, it does not necessarily translate to smaller cities. In Northwest Indiana, the major urban centers of Hammond and Gary might appear, on the surface, to be candidates for this congestion-reduction strategy. This must be considered with care, however, as this pricing could have a detrimental effect on revitalization attempts in both cities.

A place like central London is able to offer a concentration of attractions, services, jobs and the like that act as natural trip attractors and provide enough of an incentive for those who choose to drive in at peak times to be willing to pay the toll. Additionally, London is able to offer an extensive transit system as an alternative to access the central city. In Hammond and Gary, these trip attractions either do not exist or are extremely limited. In addition, the transit systems in Gary and Hammond are not very extensive and are not suitable enough alternatives to driving. As a result, congestion pricing could actually end up *discouraging* people from visiting the area and harm revitalization efforts, as the incentives or transportation alternatives do not exist to encourage them to visit despite the charge. Further redevelopment, the addition of jobs, and extensive transit improvements are needed before this is a viable option for an urban center in Northwest Indiana.

The Illinois Tollway has congestion pricing for semi-trucks that use the roadway. During daytime hours (6 a.m. to 10 p.m.), toll rates for these vehicles are higher than during overnight hours (10 p.m. to 6 a.m.). This pricing scheme encourages the larger, slower vehicles to avoid utilizing the tollway during peak hours, with off-peak hours and its lower prices meant to encourage truck traffic

during periods of typically lighter traffic. This is a possible congestion pricing solution that could be considered for the Indiana Toll Road.

VII. Data Collection

Travel Time Collection

NIRPC obtains Travel Time and speed data from NAVTEQ, which collects travel time data from INDOT. The data that is acquired is for the Borman Expressway (I-80/94) west of the Indiana Toll Road (I-90) and I-65 between the Borman Expressway and U.S. 30. NIRPC also collects travel time data in house by conducting data collection runs on the region's arterials. There are currently five corridors that have completed travel time data. NIRPC's goal is to eventually collect data on 69 regional corridors that have been identified.

Data Collection Steps

1. Corridors were ranked and selected based on three criteria: V/C ratio, Average Annual Daily Traffic (AADT) and public input. The Volume/Capacity Ratio is a road's AADT over the total capacity of a road as determined by the NIRPC model. Public input is from the results of a survey that was distributed in January 2010 and February 2010.
2. Congestion Surveys: In order to receive as accurate of a sample as possible, the survey was distributed in both hard copy and on surveymonkey.com. The hard copy versions of the surveys were distributed by displaying them in 17 local libraries. The online version featured a link from NIRPC's website. The survey also was distributed during several public meetings. People indicated locations where they felt there were significant delays, congestion or safety issues.
3. When the corridors were ranked, data collection began on the highest rated corridors. The objective is, as resources allow, to eventually collect travel time data for all 69 corridors in the Northwest Indiana region.
4. Five geographic information system- based Columbus Data Loggers were purchased for the collection of travel time data.
5. Staff members and interns were trained to conduct travel time data. Training included learning the basics of the "floating car" technique, learning how to operate the GPS equipment and conducting test runs to get data collectors used to the process. No data analysis training will be needed, as designated NIRPC staff will handle the actual data.

6. Data collectors were then assigned a certain corridor to collect data for. For each corridor, five runs would be needed at each of the three specified times of the day, which would total to about 15 runs per direction. Field collection occurs only on non-holiday Tuesdays, Wednesdays, and Thursdays. It is preferable that field collection would occur on days there is no precipitation or an accumulation of rain or snow to get an accurate "floating car" run. The times of collection would be morning peak, afternoon peak and off-peak. Five runs would need to be performed for each of these times.
7. Once the runs are completed for each corridor, the data from the GPS units is analyzed.
8. With the Columbus reader, the data is loaded directly in to Google Earth via the KML format. KML is a file format used to display geographic data in an Earth browser, such as Google Earth. The data logs also can be uploaded onto the desktop. The data is converted into Excel, Access and GIS formats. The data then is used for congestion management planning, which feeds into the TIP project review and fund allocation purposes. Some of these uses would include ranking projects for funding or composing maps that would visually show travel time.

The result of the data collection will be data for evaluating projects, regional maps of actual speeds, travel time index and intersection delays and data for use for the comprehensive plan as well as other purposes. This data may also be made available to entities such as municipalities and regional employers, as well.

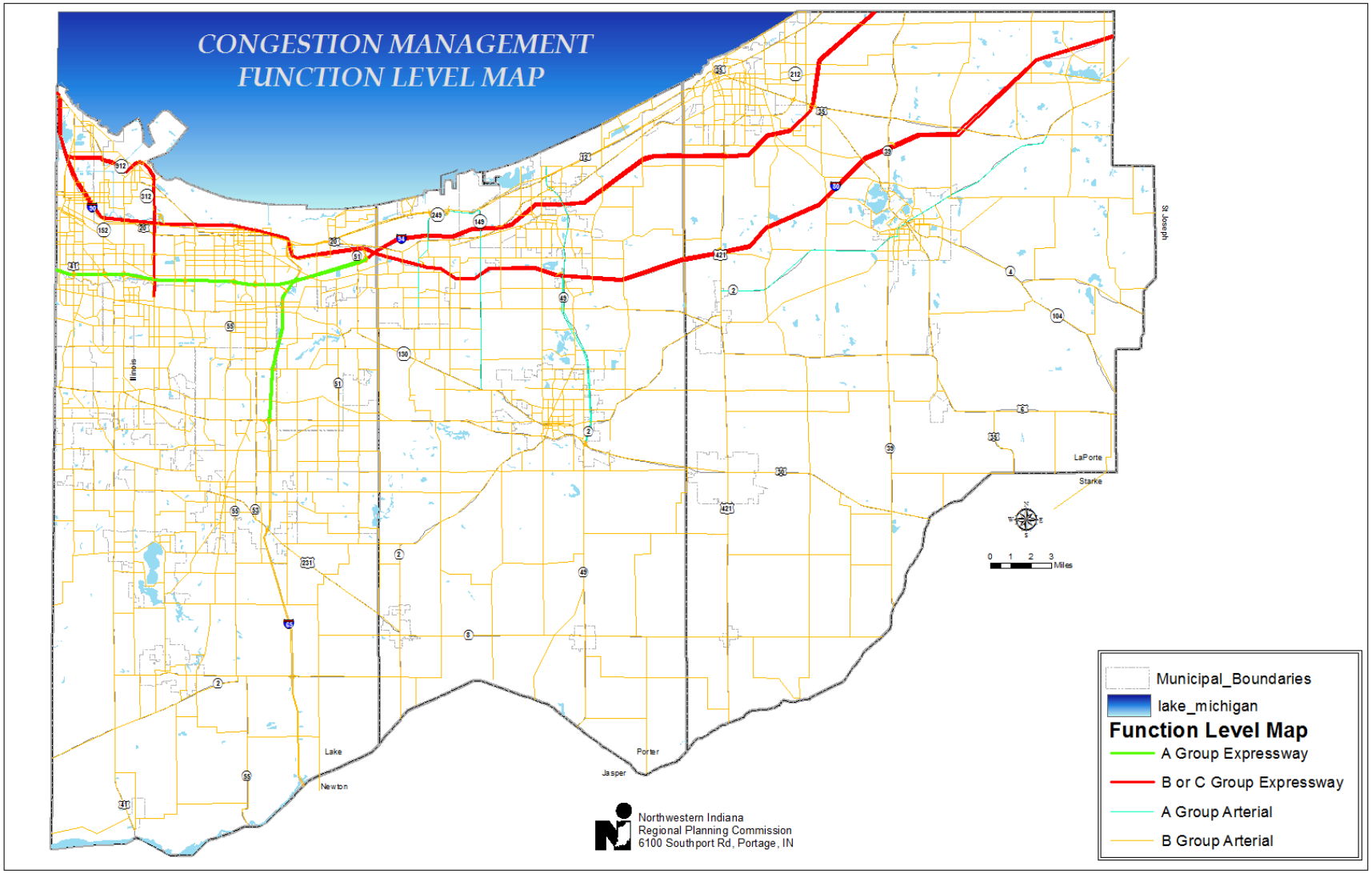
There is currently a total of seven corridors where travel time data has been collected. They are I-65 from I-80/94 to U.S. 30, I-80/94 from the Illinois state line to I-90, U.S. 12 from SR 249 to SR 49, SR 49 U.S. 12 to U.S. 30, SR 240 from U.S. 12 to U.S. 6, SR 149 from U.S. 12 to SR 130 and SR 2 from U.S. 421 to U.S. 20. Presented below are the average speeds from the travel time runs (or Navteq data collected for I-65 and I-80/94) for the A.M., P.M. and off-peak periods. The A.M. period runs from 7 to 10 a.m., the P.M. period runs from 4 to 7 p.m, and the off-peak period is all other times of the day. Data collection runs only are conducted on Tuesdays, Wednesdays and Thursdays.

Volume Capacity Ratio

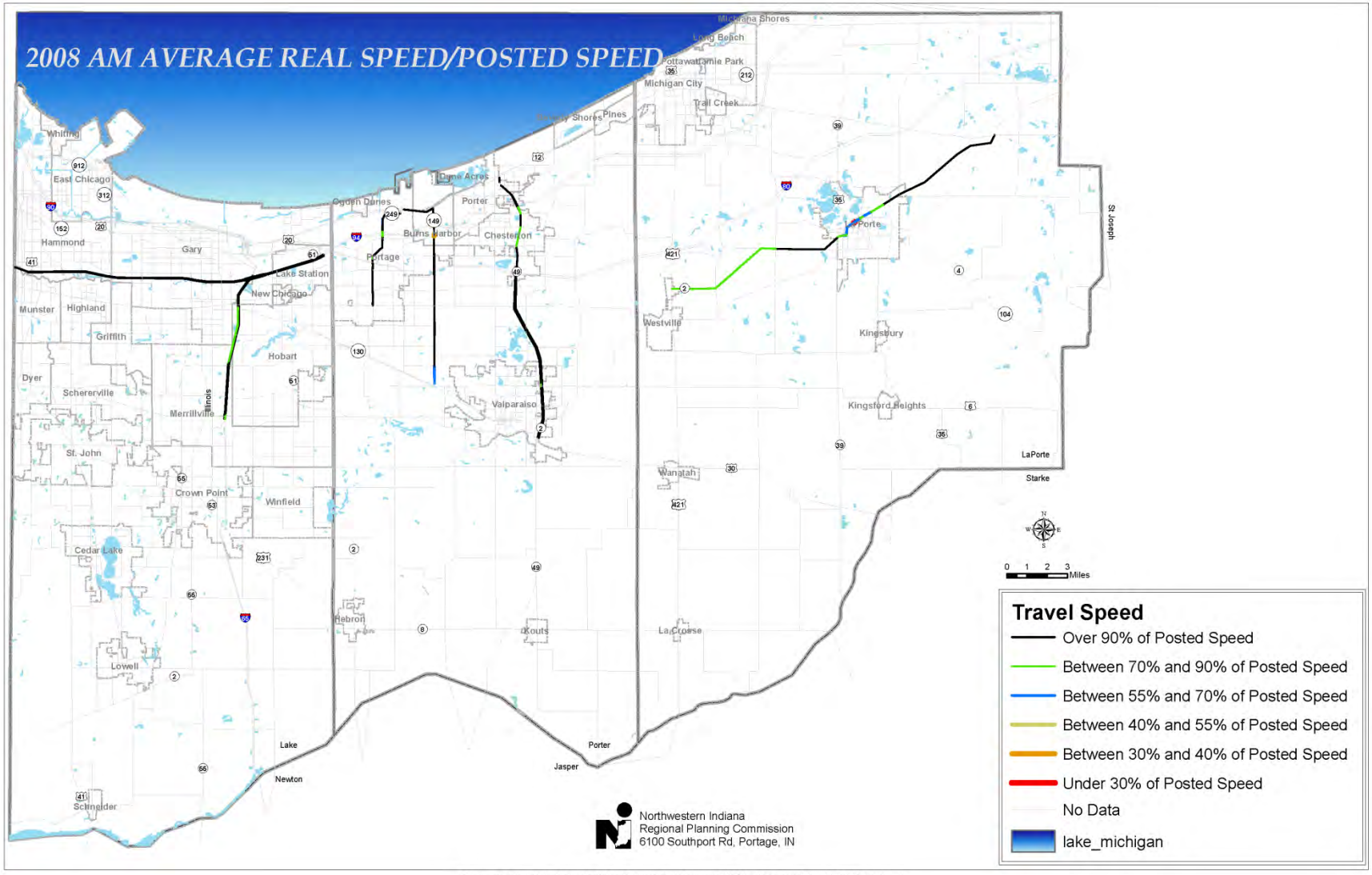
Volume Capacity Ratio data is derived from the transportation model used for the preferred scenario. The model creates a presumed capacity for each link of the roadway network. The model also calculates Average Annual Daily Traffic for each roadway link.

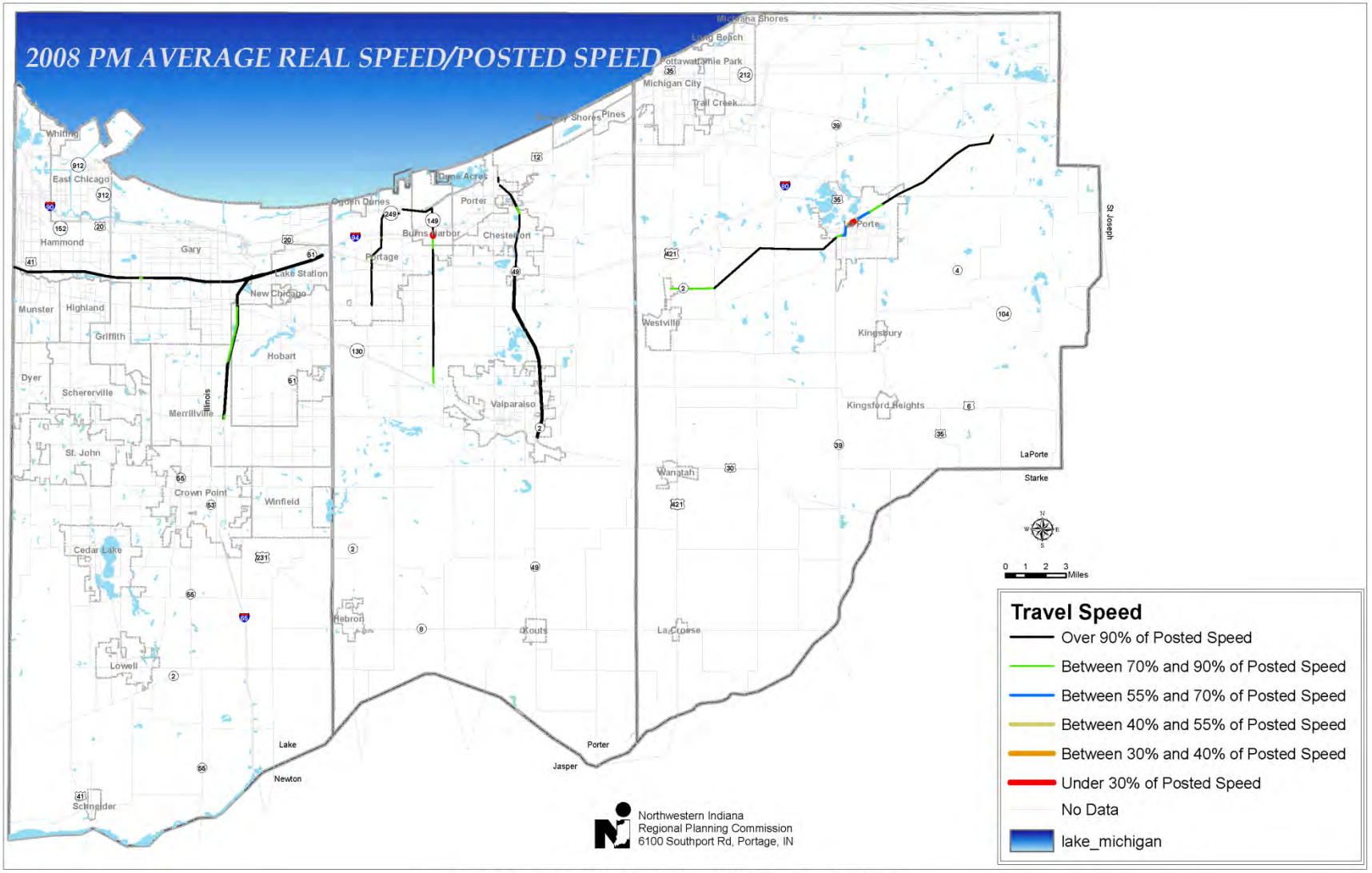
Crash Data

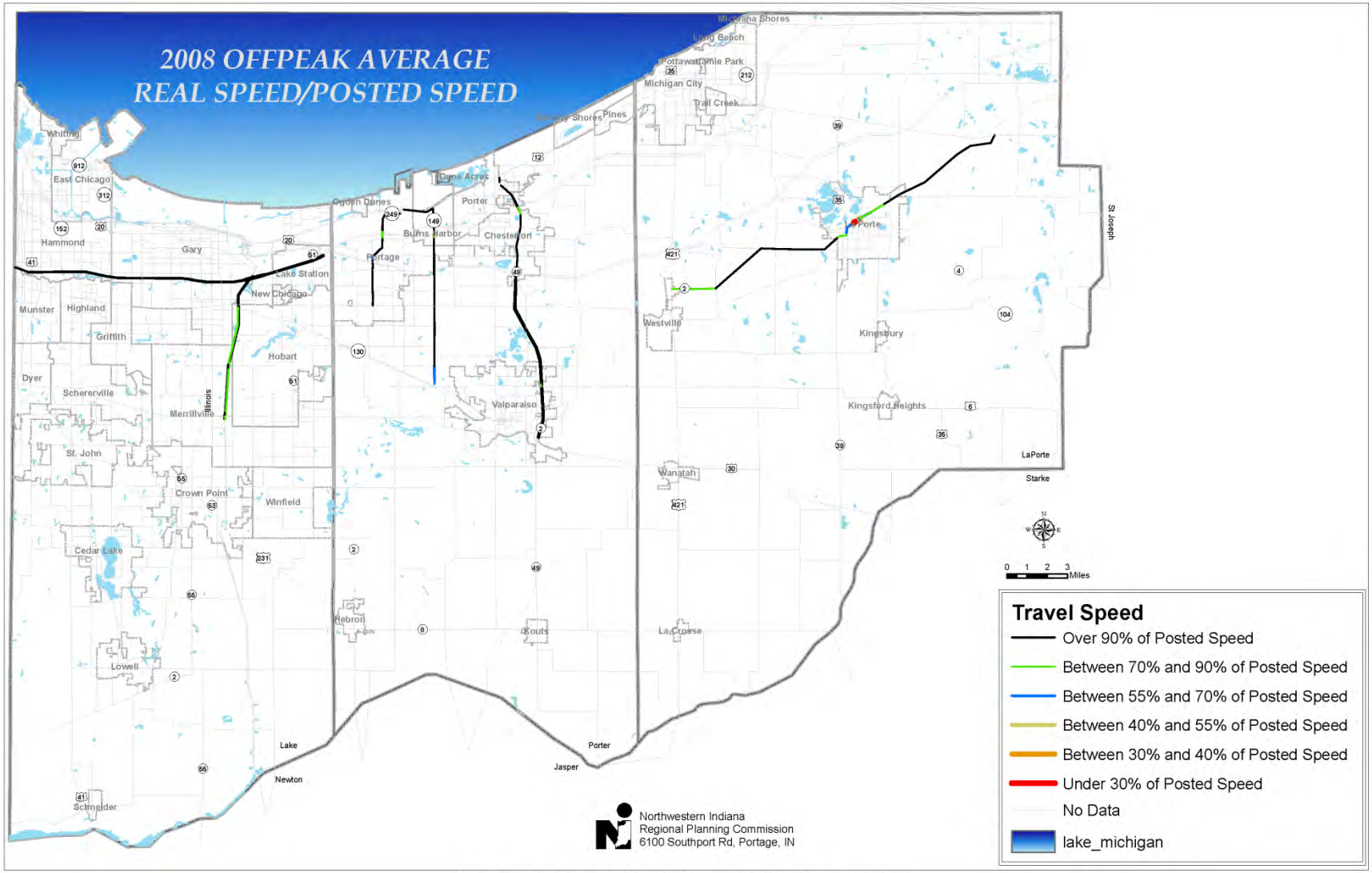
The ARIES (VCRS) site provides source data for the crashes in Northwest Indiana in an Access sheet format. The report sheet includes latitude and longitude data. This data is added as x & y coordinates to a map, then converted to shapefiles. The shapefiles are then projected to the map coordinate system and displayed as points of crash locations. The points are indicated as the location of the crashes. Red points indicate a fatality has occurred in the incident. From this data output, the crash rate of a corridor can be calculated.



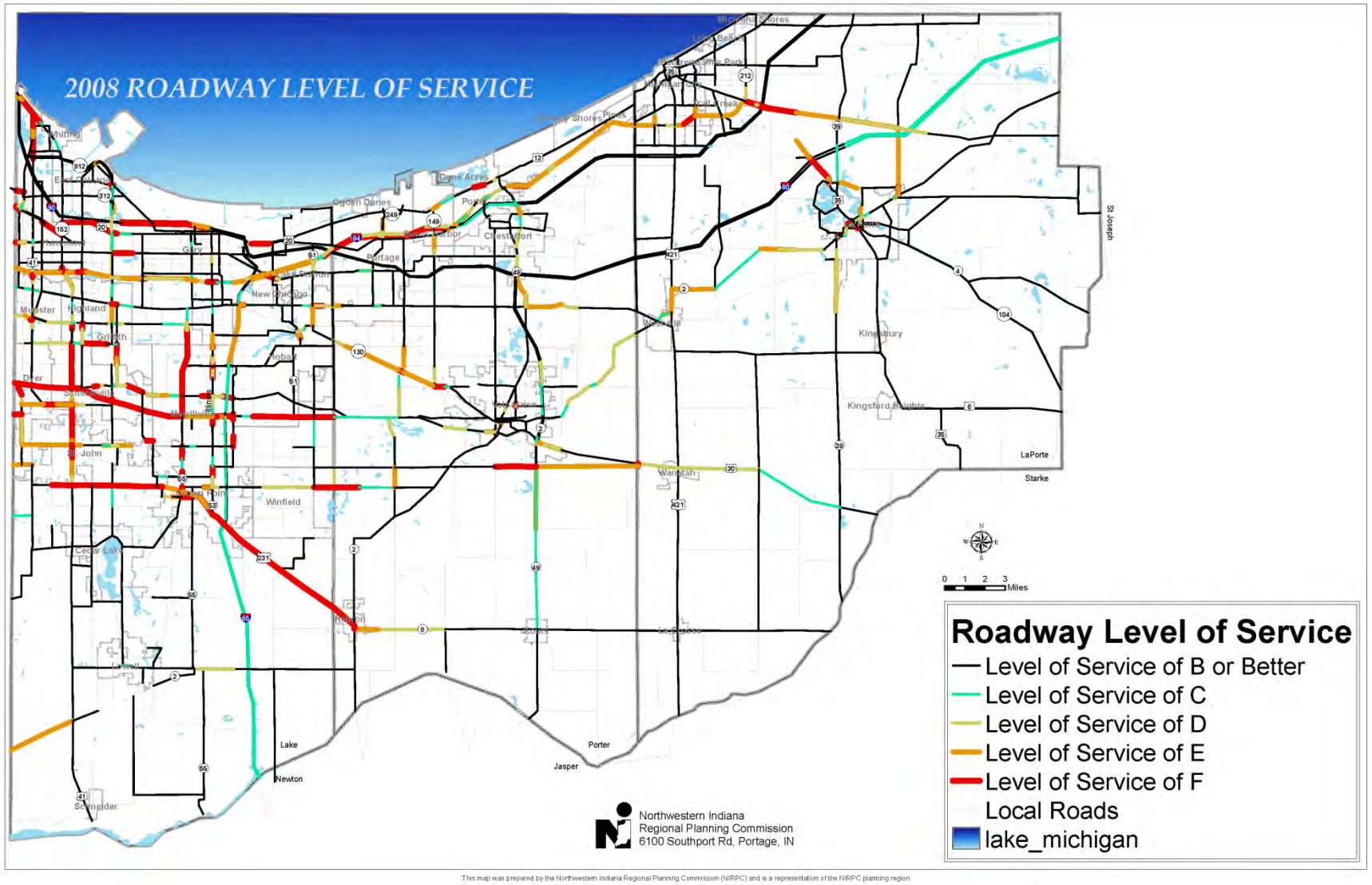
This map shows where NIRPC currently has travel time data. Expressways that have travel time data are indicated in green. Arterials where NIRPC has data are in teal.

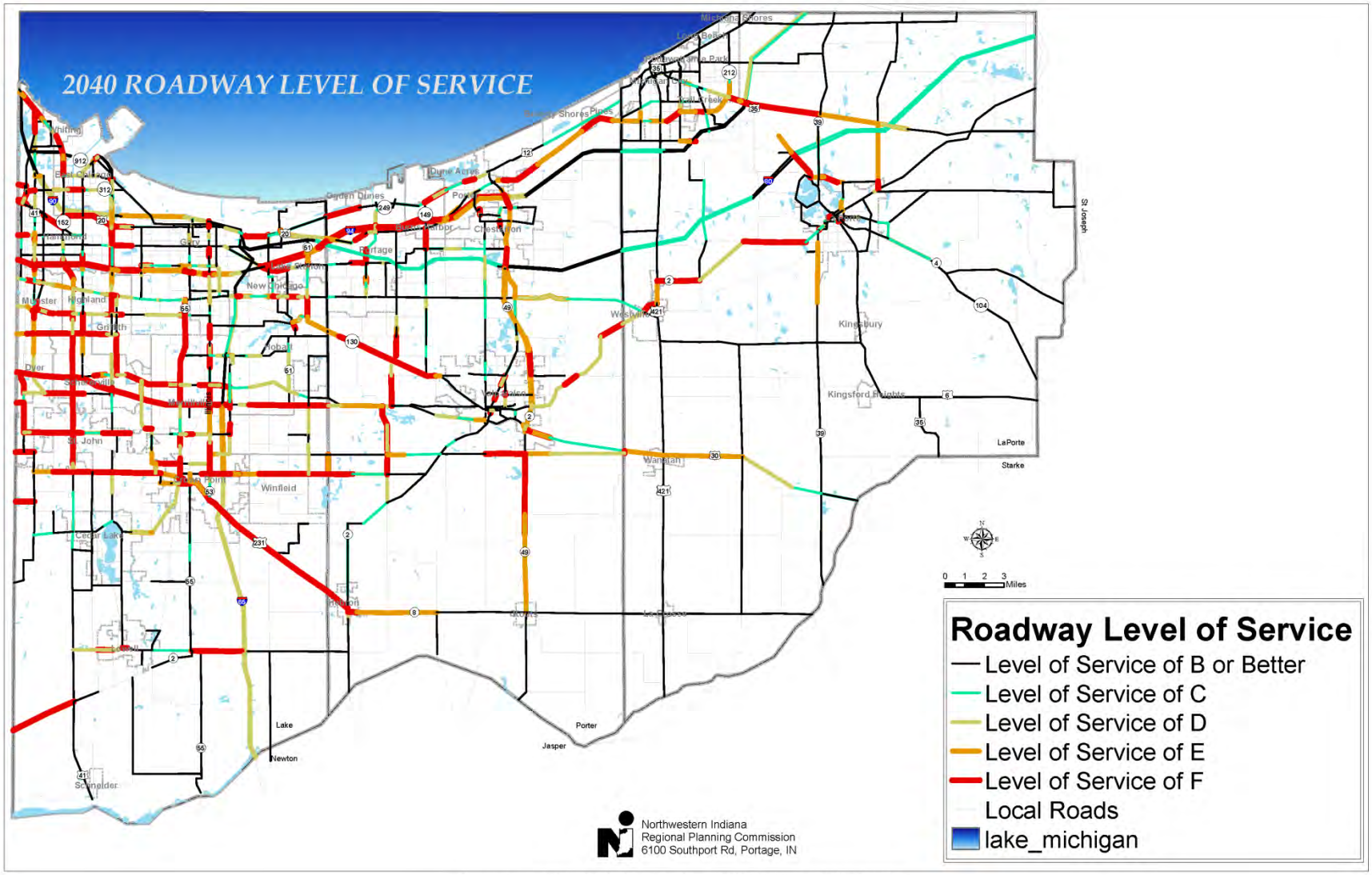

2008 AM AVERAGE REAL SPEED/POSTED SPEED
Michiana Shores
Long Beach
Pottawattamie Park
Michigan City
Trail Creek
Pines
Whiting
East Chicago
Dune Acres
Ogden Dunes
Porter
Burns Harbor
Chesterton
Portage
Hammond
Gary
Lake Station
New Chicago
Munster
Highland
Griffith
Hobart
Dyer
Schererville
Merrillville
Illinois
Valparaiso
St. John
Crown Point
Winfield
Cedar Lake
Lowell
Hebron
Kouts
La Crosse
Lake
Porter
Jasper
Newton
Schneider
Westville
Kingsbury
Kingsford Heights
LaPorte
Starke
Wanatah
St Joseph
0 1 2 3 Miles
Travel Speed
Over 90% of Posted Speed
Between 70% and 90% of Posted Speed
Between 55% and 70% of Posted Speed
Between 40% and 55% of Posted Speed
Between 30% and 40% of Posted Speed
Under 30% of Posted Speed
No Data
lake_michigan
Northwestern Indiana
Regional Planning Commission
6100 Southport Rd, Portage, IN
This map was prepared by the Northwestern Indiana Regional Planning Commission (NIRPC) and is a representation of the NIRPC planning region


2008 PM AVERAGE REAL SPEED/POSTED SPEED
Travel Speed
Over 90% of Posted Speed
Between 70% and 90% of Posted Speed
Between 55% and 70% of Posted Speed
Between 40% and 55% of Posted Speed
Between 30% and 40% of Posted Speed
Under 30% of Posted Speed
No Data
lake_michigan
0 1 2 3 Miles
Northwestern Indiana
Regional Planning Commission
6100 Southport Rd, Portage, IN
This map was prepared by the Northwestern Indiana Regional Planning Commission (NIRPC) and is a representation of the NIRPC planning region
Whiting
East Chicago
Hammond
Gary
Lake Station
New Chicago
Munster
Highland
Griffith
Hobart
Dyer
Schererville
Merrillville
St. John
Crown Point
Winfield
Cedar Lake
Lowell
Schneider
Lake
Newton
Porter
Jasper
Hebron
Kouts
La Crosse
Wanatah
LaPorte
Starke
Kingsford Heights
Kingsbury
Westville
Porter
Chesterton
Burns Harbor
Portage
Ogden Dunes
Dune Acres
Beverly Shores
Pines
Michigan City
Trail Creek
Long Beach
Michiana Shores
St Joseph


2008 OFFPEAK AVERAGE
REAL SPEED/POSTED SPEED
Michiana Shores
Long Beach
Pottawattamie Park
Michigan City
Trail Creek
Beverly Shores
Pines
Whiting
East Chicago
Dune Acres
Ogden Dunes
Porter
Burns Harbor
Chesterton
Hammond
Gary
Portage
Lake Station
New Chicago
Munster
Highland
Griffith
Hobart
Dyer
Schererville
Merrillville
Illinois
Valparaiso
St. John
Crown Point
Winfield
Cedar Lake
Lowell
Hebron
Kouts
La Crosse
Lake
Newton
Jasper
Porter
Schneider
Westville
Kingsbury
Kingsford Heights
Wanatah
LaPorte
Starke
St Joseph
0 1 2 3 Miles
Travel Speed
Over 90% of Posted Speed
Between 70% and 90% of Posted Speed
Between 55% and 70% of Posted Speed
Between 40% and 55% of Posted Speed
Between 30% and 40% of Posted Speed
Under 30% of Posted Speed
No Data
lake_michigan
Northwestern Indiana
Regional Planning Commission
6100 Southport Rd, Portage, IN
This map was prepared by the Northwestern Indiana Regional Planning Commission (NIRPC) and is a representation of the NIRPC planning region

VIII. Congestion in Northwest Indiana




2040 ROADWAY LEVEL OF SERVICE
Roadway Level of Service
Level of Service of B or Better
Level of Service of C
Level of Service of D
Level of Service of E
Level of Service of F
Local Roads
lake_michigan
0 1 2 3 Miles
Northwestern Indiana
Regional Planning Commission
6100 Southport Rd, Portage, IN
This map was prepared by the Northwestern Indiana Regional Planning Commission (NIRPC) and is a representation of the NIRPC planning region
Lake
Porter
Jasper
Newton
LaPorte
Starke
St Joseph
Kingsbury
Kingsford Heights
Winfield
St John
Dyer
Munster
Highland
Griffith
Hobart
Portage
Chesterton
Dune Acres
Ogden Dunes
Whiting
Schneider

Roadway congestion within the region is displayed with the level of service maps displayed on the next two pages. The base years that are used for congestion management are 2008 and 2040. The red, orange and gold roadways indicate the worst congestion, and are represented by the grades of F, E and D, respectively. The level of service that is used for creating these maps, as well as evaluating projects was determined by special function class system that classified roadways based on what data was available. From there, performance measures were used based on a weighting system that is indicated in APPENDIX Section 2.

The worst current roadway congestion in the region is located on east-west expressways and arterials, mainly in Lake County. There is a dense concentration of population located in Lake County north of U.S. 30, and that also is where the most congestion is located. These locations in the region are landlocked with little room for roadway expansion. Other alternatives will need to be considered to relieve congestion. In 2040, roadway congestion is expected to be spread throughout southern Lake County and central Porter County, in addition to the urban core communities in Lake County. The cause of the congestion spreading to other central and southern parts of the region is due to the current rapid growth of the municipalities in these areas.

Lake County Congested Corridors

Corridor	From	To	Direction	Length	LOS
U.S. 20, 12, 41	State line	119th St.	E/W	2.05	F
101St. Ave.	State line	White Oak	E/W	2	E
109th Ave.	Colorado St.	Porter County Line	E/W	5.26	F
109th Ave.	State line	U.S. 41	E/W	2	F
173Rd.Ave.	Calumet Ave.	Indianapolis Blvd	E/W	2.13	F
45th Ave.	Calumet Ave.	U.S. 41	N/S	2	D
77th Ave.	Sheffield Ave.	Robinhood Blvd	E/W	3.04	F
93Rd.Ave.	Sheffield Ave.	Cline Ave.	E/W	2.91	E
93Rd.Ave.	Marquette Ave.	Chase St.	E/W	3.42	F
Broad St.	Main St.	Joliet Rd.	N/S	2	F
Calumet Ave.	Indianapolis Blvd	Cline Ave.	N/S	2.25	F
Chicago Ave.	Hohman Ave.	White Oak Ave.	E/W	1.4	F
Cline Ave.	U.S. 12	I-80/94	N/S	4.5	D
Cline Ave.	I-80/94	45th Ave.	N/S	3.25	D
Colfax St.	29th Ave.	41St. Ave.	N/S	1.5	F
Dickey St.	129th St.	Michigan Ave.	N/S	1.11	E
Gostlin St.	State line	Columbia Ave.	E/W	1.3	F
Grand Ave.	U.S. 12	Hemlock Ave.	N/S	1.3	F
HWY Ave.	Ridge Rd.	Cline Ave.	E/W	1.86	F
I-80/94	St.ate Line	I-65	E/W	11.72	F
I-80/94	I-65	I-90	E/W	4.3	E
Indianapolis Blvd	173rd St.	Martha St.	N/S	2.38	E
Klienman Rd.	Ridge Rd.	Main St.	N/S	1	D
Merrillville Rd.	86th Ave.	101St. Ave.	N/S	2.94	F
Michigan St.	Calumet Ave.	Colfax Ave.	E/W	4.5	F
Mississippi St.	SR 330	93rd.Ave.	N/S	2.38	F
Sheffield/Hart St.	213th St.	77th Ave.	N/S	2.14	F
South St.	Whitcomb Ave.	Grant St.	E/W	1.5	F
Southeastern Ave.	Columbia Ave.	175th St.	N/S	1.35	F
SR 330	Junction Ave.	Mississippi St.	E/W	7.14	F
SR 55	Ridge Rd.	U.S. 30	N/S	5.38	F
SR 55	U.S. 30	U.S. 231	N/S	3.72	F
Summer St.	Columbia Ave.	Indianapolis Blvd	E/W	1.2	F
U.S. 20-12 (Dunes hwy)	I-65	Clay St	E/W	1.18	F
U.S. 30	U.S. 41	Mississippi St.	E/W	8.23	F
U.S. 30	St.ate Line	U.S. 41	E/W	2.85	F
U.S. 30	Colorado St.	Porter County Line	E/W	4.01	F
U.S. 41	45th Ave.	U.S. 30	N/S	3.23	F
U.S. 41	U.S. 30	U.S. 231	N/S	4.82	F
U.S.231	U.S. 41	SR 55	E/W	5.5	F
U.S.231	SR 55	E of I-65	E/W	2.83	F
U.S.231	E fo I-65	SR 2	E/W	8	F

Porter County Congested Corridors

Corridor	From	To	Direction	Length	LOS
SR 249	U.S. 12	U.S. 20	N/S	1.91	E
U.S. 6	SR 51	Swanson Rd.	E/W	2.25	E
U.S. 6	Calumet Rd.	400 E	E/W	2.75	D
U.S. 20	I-94	SR 49	E/W	3.25	E
U.S. 20	SR 49	LaPorte County Line	E/W	7.31	E
SR 8	U.S. 231	250 W	E/W	2.81	E
SR 49	600 N	U.S. 30	N/S	5.89	D
SR 49	Division St.	300 S	N/S	3	E
SR 2	SR 49	U.S. 421	E/W	8.7	E
SR 149	U.S.20	875 N	N/S	2.78	E
SR 130	County Line Rd.	250 W	E/W	10.19	E
Meridian Ave.	SR 2	Division St.	N/S	1.5	F
I-94	Lake County Line	U.S. 20	E/W	6.15	F
Division St.	Median rd.	U.S. 30	E/W	7.03	F
Calumet Rd.	U.S. 6	I-90	N/S	1.62	E
500 W	U.S. 30	100 S	N/S	3.55	E
475 W	SR 130	U.S. 30	N/S	2.34	F
450 W	600 N	U.S. 130	N/S	1.3	E

LaPorte County Congested Corridors

Corridor	From	To	Direction	Length	LOS
Fail Rd.	U.S. 20	SR 2	N/S	3.34	E
SR 2	U.S. 421	SR 39	E/W	9.08	E
SR 2	6th Ave.	Boston St.	E/W	1.71	F
SR 39	18th St.	400 S	N/S	3	E
U.S. 20	U.S. 421	U.S. 35	E/W	3.93	F
U.S. 20	SR 212	Fail Rd.	E/W	7.79	F
U.S. 35	U.S. 20	Severs rd.	N/S	4.84	E

IX. Public Transportation

Public Transportation is a strategy that should be considered in some form in any transportation network. Public transportation enables people to move in moderate to massive numbers from residential districts to jobs, services, shopping and entertainment centers, among other uses. Public transportation is environmentally cleaner and more cost effective than single-occupancy vehicle travel. Current public transit in Northwest Indiana mainly consists of the Northern Indian Commuter Transportation District (NICTD), which operates commuter rail from the Northwest Indiana region to Chicago, and several bus operators, including the Regional Bus Authority (RBA), East Chicago Public Transit (ECPT), Gary Public Transportation Corp. (GPTC), Michigan City Municipal Coach, Valparaiso's V-Line and LaPorte Transport. Most of the transit in Northwest Indiana is located within the urban core of the region. Public demand response transit also is available in Lake and Porter counties, where fixed-route service is not provided. The RBA and Valparaiso also offer commuter bus service to Chicago.

Obstacles for transit in Northwest Indiana

The availability of public transportation is a key element of the 2040 CRP and is, in fact, integral to the success of the region. Currently, the people of Northwest Indiana are served by intercity and commuter rail, local bus, demand response and paratransit service. However, the current services can neither be taken for granted, nor considered sufficient to achieve the goals of the 2040 CRP. Only portions of the region are served by fixed route buses while many important centers of activity and employment are un-served. An already deficient system lacks multi-modal transportation connectivity. Further, while there are multiple providers of public-demand response service, the overall capacity of the system is inadequate to meet the needs of the transit-dependent population in the region. To make matters even worse, declining funding subsidies have resulted in service cuts that make regional transit travel an option that is even less convenient, attractive and viable for riders. Compounding these service and subsidy issues is the fact that all of the public transit service providers are hampered by the lack of a dedicated regional or county-wide source of funding that provides stable annual support and can be used as a match for federal and state transit grants. Consequently, expanding services to create a truly regional system that supports Livable Centers is more challenging in Northwest Indiana than many other regions.

Other persistent obstacles that threaten not only current public transportation but also any proposed new transit service include the political climate. The political climate changed with the advent of the property tax cap. Many elected officials believe that because of the difficulties of the economy today, it is best not to propose anything radically new that requires a funding source. Another obstacle is the national affinity Americans have for their cars. Cars have increasingly dominated the transportation landscape since they were invented. The reality is that single occupancy vehicle travel is no longer sustainable or cost effective. Transportation stakeholders in Northwest Indiana will have to work together with elected officials to come up with innovative ways to create funding for transit and other alternatives to expanding roadways.

Another obstacle for public transportation in Northwest Indiana is the lack of centers that are densely populated with residents or jobs. Northwest Indiana is more suburban and rural than the Chicago region. The three-county region lacks a central municipality, which is unusual compared to many regions in the United States. Without a certain amount of density of population or employment, it is very difficult for ridership for a transit system to be at a practical level. As displayed by the map below, there are very few areas within Northwest Indiana that can support bus systems with 60-minute headways, let alone rapid transit.

Analysis of Transit Needs

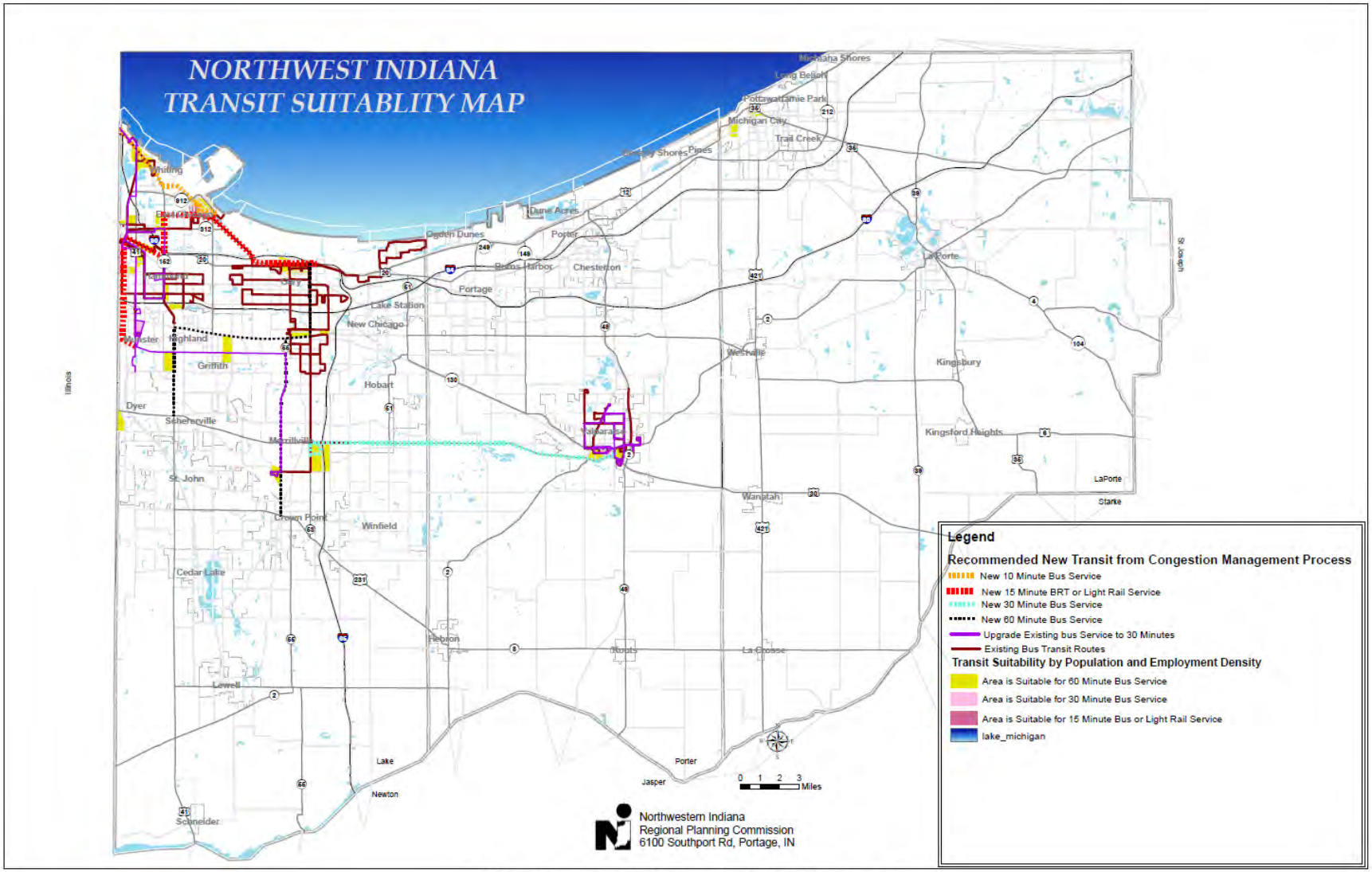
An analysis of the region was conducted to see where transit exists, where transit is needed and how frequently the recommended transit services should operate. The analysis looked at population and employment densities around the region and determined what areas are suitable for public transportation. Then existing public transit routes are overlaid to see what areas have adequate public transit for their density and what area need more or new service. Displayed in the table below are the minimum densities that a specific area should have in order for a mode of transit as a viable strategy. Without the recommended density, a transit system may run the risk of losing a substantial amount of public funds to operating a transit system that may have low ridership. The map below shows areas that are suitable for public transportation. No area within the region is currently suitable for rapid transit or 10 minute headway bus systems. The analysis was conducted by Traffic Analysis Zones.

Minimum Thresholds for Public Transportation*		
Mode	Minimum Pop. Density	Minimum Emp. Density
Bus Service with 60 Minute Headway	6,912 persons/sq mile	6 jobs/acre
Bus Service with 30 Minute Headway	12,096 persons/sq. mile	11 jobs/acre
Light Rail with 15 Minute Headway	15,552 persons/sq. mile	25 jobs/acre
Rapid Transit with 15 Minute Headway	20,736 persons/sq. mile	50 jobs/acre
Bus Service under 10 Minute Headway	25,920 persons/sq. mile	66 jobs/acre
Source: (based on Pushkarev and Zupan 1977)*		

Results of the Transit Analysis

The results of this analysis show that, in order for the entire region to have adequate service, 10 new changes to the transit system will be needed. Five changes included additional service on existing bus routes. Four new bus routes also are recommended. The biggest transit project that would be recommended from this analysis would be the addition of a new rapid-transit system connecting the central portion of Lake County with the urban centers in Hammond, East Chicago and Gary, and should be in the form of either 10-minute bus service, 10 minute-light rail service or bus rapid transit. This map is consistent with NIRPC's transit vision with Livable Centers as it connects the regions densest areas by public transportation. There are, however, many areas within the Northwest Indiana region that do not have the minimum appropriate density to support public transportation. Therefore, in these areas, public transit is not a viable alternative for these locations at this time.

Recommended New Transit Routes from Congestion Management Process					
Route	Mode	Headway	Terminus 1	Terminus 2	Jurisdiction
Gary-East Chicago-Hammond Rapid Transit	Light Rail or BU.S. Rapid Transit	10-15 Minutes	Downtown Hammond	Downtown Gary	RBA, Hammond, East Chicago, Gary
Valparaiso- Merrillville Regional Bus Service	Bus Service	30 Minutes	Valparaiso University	Broadway & U.S. 30	RBA, Valparaiso ,Hobart, Merrillville
State Line- East Chicago Bus Service	Bus Service	10-15 Minutes	State Line	Gary Marina	RBA, Hammond, Whiting, East Chicago, Gary
SR 55 Bus Service	Bus Service	60 Minutes	Downtown Gary	Crown Point	RBA, Gary, Merrillville, Crown Point
Ridge Road/U.S. 41 Bus Service	Bus Service	60 Minutes	Downtown Gary	U.S. 30 & U.S. 41	RBA. Gary, Griffith, Highland, Schererville
RBA Easy Go Red Line	Increase Bus Frequency	30 Minutes (from 60 Minutes)	106th & Ewing	Calumet & Main	RBA, Hammond, Munster, Dyer
RBA Easy Go Brown Line	Increase Bus Frequency, add Weekend Service	30 Minutes (from 90 Minutes)	Community Hospital in Munster	Lake County Government Center Crown Point	RBA, Munster, Highland, Griffith, Merrillville, Crown Point
RBA Easy Go Orange Line	Increase Bus Frequency, add Weekend Service	30 Minutes (From 60 Minutes)	East Chicago Walmart	East Chicago Walmart	RBA, East Chicago
V Line Red Line	Increase Bus Frequency	30 Minutes (From 120 Minutes)	VU Student Union	VU Student Union	Valparaiso
V Line Green Line	Increase Bus Frequency	30 Minutes (From 60 Minutes)	Indiana & Michigan	Indiana & Michigan	Valparaiso



This map was prepared by the Northwestern Indiana Regional Planning Commission (NIRPC) and is a representation of the NIRPC planning region.

X. Congestion Management Strategies Analysis for Congested Corridors

Roadway segments that had a low level of service were grouped into congested corridors. These corridors are determined to be regionally significant and are of at least an arterial functional class. Improvements to congested corridors are identified by the adjustment of the Volume/Capacity Ratio of the corridor as a result of potential strategies. From here, based on public input and staff recommendations, the contributing factors of congestion are determined. The contributing factors are presumed causes of congestion within the roadway corridor.

The first attempt (Step 2 below) to relieve congestion is to look at demand management strategies. The possible demand management solutions for a corridor are telecommuting promotion, carpool promotion, school pool promotion and flextime promotion. The viable strategies in each corridor are indicated in yellow. It is assumed that each demand management highlighted can reduce volume by 1.5 percent with 6 percent being the maximum reduction. This change is applied to each corridor if level of service rises significantly for each corridor. If congestion is relieved by demand management strategies, demand management promotion will be employed for the corridor. If demand management strategies alone do not relieve congestion in this corridor, then additional Transportation Systems strategies are considered.

Transportation systems, intelligent transportation, transit and growth management strategies are reviewed if demand management strategies do not relieve congestion. Refer to Step 3 below. The strategies that are suitable for each corridor are indicated in green. It is assumed that each strategy will add to the capacity that the roadway can handle. These strategies would not however add to the actual roadway capacity. Signal timing, traffic operations improvements and driveway controls strategies would add 5 percent each. Intersection turn lanes would add 7 percent. Median controls, ITS, railroad grade separation, transit and growth management solutions would add 10 percent. The total maximum capacity that can be added by these strategies is 72%. If all recommended strategies do not relieve congestion in a corridor, then adding roadway capacity maybe considered.

Step 1 (Contributing Factors):

Contributing Factors for Congested Corridors											
Roadway	Corridor	S	IT	T	A	M	I	W	RR	D	C
109th Ave.	State Line to U.S. 41										
109th Ave.	Colorado St. to Porter County Line										
15th Ave.	Cline Ave. to Colifax Ave.										
45th Ave.	State Line to U.S. 41										
77th Ave.	Sheffield Ave. to Austin Ave.										
93rd Ave.	Sheffield Ave. to U.S. 41										
93rd Ave./91st Ave.	Cline Ave. to Clark Rd.										
Broad St.	Main St. to Joliet Rd.										
Calumet Ave.	Indianapolis Blvd to SR 912										
Cline Ave.	U.S. 12 to 80/94										
CR 400 N	Woodland Ave. to 600 W										
CR 400 N	Schultz Rd.										
CR 450 W	600 N to SR 130										
Dunes Hwy	I-65 to Clay St.										
Fail Rd.	U.S. 20 to SR 2										
Gostlin St.	State Line to I-90										
Grand St.	Hemlock Ave. to Miller St.										
I-80/94	State Line to I-65										
I-94	Lake County to U.S. 20										
Indianapolis Blvd	173rd Ave. to Ridge Rd.										
Joliet Rd.	Junction Ave. to SR 55										
Joliet Rd.	Merrillville Rd. to Mississippi St.										
Merrillville Rd.	87th Ave. to Summit Ave.										
Michigan St.	Indianapolis Blvd to SR 912										
Severs Rd./200N	SR 39 to 50 W										
Sheffield Ave./Hart St.	U.S. 30 to 93rd Ave.										
South St.	Whitcomb St. to Indiana St.										
SR 130	County Line Rd. to CR 250 W										

Contributing Factor	Abbreviation
Signal Timing	S
Intersection Turns	IT
Traffic Operations	T
Access Points	A
Median Turns	M
Incidents	I
Water/Flooding	W
Railroad Crossings	RR
Development Patterns	D
Lack of Connectivity	C

Contributing Factors for Congested Corridors											
Roadway	Corridor	S	IT	T	A	M	I	W	RR	D	C
SR 149	U.S. 20 to 1050 N										
SR 2	300 N to 400 E										
SR 2	400 E to Old SR 2										
SR 2	Old SR 2 to U.S. 6										
SR 2	U.S. 6 to U.S. 421										
SR 249	Midwest Steel to U.S. 20										
SR 39	18th St. to CR 400 S										
SR 49	Division Rd. to CR 300 S										
SR 53	93rd Ave. to 109th Ave.										
SR 53	57th Ave. to 68th Pl.										
SR 55	Ridge Rd. to U.S. 30										
SR 55	93rd Ave. to Summit St.										
SR 8	SR 2 to 250 W										
SR2	U.S. 421 to 100 S										
SR2	100 S to 18th St.										
SR2	18th St. to SR 39										
Summer St.	Columbia Ave. to Indianapolis Blvd										
U.S. 12/20/41	State Line to 119th St.										
U.S. 20	SR 212 to I-94										
U.S. 20	I-94 to SR 39										
U.S. 20	SR 39 to Fail Rd.										
U.S. 20	I-94 to SR 49										
U.S. 20	SR 49 to LaPorte County										
U.S. 20	U.S. 421 to U.S. 35										
U.S. 231	U.S. 41 to SR 55										
U.S. 231	SR 55 to E of I-65										
U.S. 231	E of I-65 to SR 2										
U.S. 30	State Line to U.S. 41										
U.S. 30	U.S. 41 to Mississippi St.										
U.S. 30	Colorado St. to Porter County Line										
U.S. 35	U.S. 20 to 400 N										
U.S. 35	400 N to Schultz Rd.										
U.S. 35	Schultz Rd. to Severs Rd.										
U.S. 41	U.S. 30 to U.S. 231										
U.S. 6	Calumet Rd. to 400 E										

Contributing Factor	Abbreviation
Signal Timing	S
Intersection Turns	IT
Traffic Operations	T
Access Points	A
Median Turns	M
Incidents	I
Water/Flooding	W
Railroad Crossings	RR
Development Patterns	D
Lack of Connectivity	C

Step 2

Viable Demand Management Strategies for Congested Corridors						
	Factors for demand management strategies:		-1.50%	-1.50%	-1.50%	-1.50%
Roadway	Corridor	Demand Adjustment Factor	Telecommuting	Carpooling	School Pool	Flextime
109th Ave.	State Line to U.S. 41	100%				
109th Ave.	Colorado St. to Porter County Line	100%				
15th Ave.	Cline Ave. to Colifax Ave.	100%				
45th Ave.	State Line to U.S. 41	95.5%				
77th Ave.	Sheffield Ave. to Austin Ave.	98.50%				
93rd Ave.	Sheffield Ave. to U.S. 41	98.50%				
93rd Ave./91st Ave.	Cline Ave. to Clark Rd.	100%				
Broad St.	Main St. to Joliet Rd.	100%				
Calumet Ave.	Indianapolis Blvd to SR 912	97%				
Cline Ave.	U.S. 12 to I-80/94	97%				
CR 400 N	Woodland Ave. to 600 W	100%				
CR 400 N	600 W. to Schultz Rd.	100%				
CR 450 W	600 N to SR 130	100%				
Dunes Hwy	I-65 to Clay St.	97%				
Fail Rd.	U.S. 20 to SR 2	100%				
Gostlin St.	State Line to I-90	98.50%				
Grand St.	Hemlock Ave. to Miller St.	98.50%				
I-80/94	State Line to I-65	95.5%				
I-94	Lake County to U.S. 20	95.5%				
Indianapolis Blvd	173rd Ave. to Ridge Rd.	100%				
joilet Rd.	Junction Ave. to SR 55	98.50%				
Merrillville Rd.	87th Ave. to Summit Ave.	97%				
Michigan St.	Indianapolis Blvd to SR 912	98.50%				
Severs Rd./200N	SR 39 to 50 W	100%				
Sheffield Ave./Hart St.	U.S. 30 to 93rd Ave.	98.50%				
South St.	Whitcomb St. to Indiana St.	98.50%				
SR 130	County Line Rd. to CR 250 W	100%				

Viable Demand Management Strategies for Congested Corridors

	Factors for demand management strategies:		-1.50%	-1.50%	-1.50%	-1.50%
Roadway	Corridor	Demand Adjustment Factor	Telecommuting	Carpooling	School Pool	Flextime
SR 149	U.S. 20 to 1050 N	100%				
SR 2	SR 49 to U.S. 421	100%				
SR 2	300 N to 400 E	100%				
SR 2	400 E to Old SR 2	100%				
SR 2	Old SR 2 to U.S. 6	100%				
SR 2	U.S. 6 to U.S. 421	100%				
SR 249	Midwest Steel to U.S. 20	95.5%				
SR 39	18th St. to CR 400 S	100%				
SR 49	Division Rd. to CR 300 S	98.50%				
SR 53	93rd Ave. to 109th Ave.	97%				
SR 53	57th Ave. to 68th Pl.	97%				
SR 55	Ridge Rd. to U.S. 30	98.50%				
SR 55	93rd Ave. to Summit St.	100%				
SR 8	SR 2 to 250 W	100%				
SR2	U.S. 421 to 100 S	100%				
SR2	100 S to 18th St.	100%				
SR2	18th St. to SR 39	100%				
Summer St.	Columbia Ave. to Indianapolis Blvd	98.50%				
U.S. 12/20/41	State Line to 119th St.	98.50%				
U.S. 20	SR 212 to Fail Rd.	100%				
U.S. 20	I-94 to SR 39	100%				
U.S. 20	SR 39 to Fail Rd.	100%				
U.S. 20	I-94 to SR 49	100%				
U.S. 20	SR 49 to Laporte County	100%				
U.S. 20	U.S. 421 to U.S. 35	100%				
U.S. 231	U.S. 41 to SR 55	100%				
U.S. 231	SR 55 to E of I-65	98.50%				
U.S. 231	E of I-65 to SR 2	100%				
U.S. 30	State Line to U.S. 41	98.50%				
U.S. 30	U.S. 41 to Mississippi St.	94%				
U.S. 30	Colorado St. to Porter County Line	95.5%				
U.S. 35	U.S. 20 to 400 N	100%				
U.S. 35	400 N to Schultz Rd.	100%				
U.S. 35	Schultz Rd. to Severs Rd.	100%				
U.S. 41	U.S. 30 to U.S. 231	98.50%				
U.S. 6	Calumet Rd. to 400 E	100%				

Step 3

Improvements (Includes, Access Management, Intelligent Transportation Systems, Transit, and Growth Management Strategies)											
Roadway	Corridor	CAF	S	IT	T	D	M	ITS	RR	TR	GM
		CAF	*1.05*	*1.07*	*1.05*	*1.05*	*1.1*	*1.1*	*1.1*	*1.1*	*1.1*
109th Ave.	State Line to U.S. 41	117%	⊖		⇆	‡	⟲	⟲	RR	Đ	
109th Ave.	Colorado St. to Porter County Line	122%	⊖			‡	⟲	⟲	RR	Đ	
15th Ave.	Cline Ave. to Colifax	127%				🚶	⟲	$$		Đ	€
45th Ave.	State Line to U.S. 41	135%		⇂↾			⟲	$$			€
77th Ave.	Sheffield Ave. to Austin Ave.	122%				🚶	⟲	⟲			€
93rd Ave.	Sheffield Ave. to U.S. 41	120%		⇂↾				⟲	RR	Đ	€
93rd Ave./91st. Ave.	Cline Ave. to Clark Rd	122%	⊖		⇆		⟲	⟲		Đ	
Broad St.	Main St. to Joliet Rd.	132%	⊖			🚶	⟲	⟲		Đ	€
Calumet Ave.	Indianapolis Blvd to SR 912	115%		⇂↾		‡	⟲	⟲	RR		€
Cline Ave.	U.S. 12 to 80/94	110%	⊖	⟲	⇆	‡	Ⅱ		RR	Đ	€
CR 450 W	600 N to SR 130	117%				‡	⟲	⟲	RR	Đ	&
Dunes Hwy	I-65 to Clay St.	115%		⇂↾		‡	Ⅱ		RR		€
Fail Rd.	U.S. 20 to SR 2	117%				🚶	⟲	⟲	RR	Đ	&
Gostlin St.	State Line to I-90	115%		⇂↾		‡	⟲	⟲	RR		€
Grand St.	Hemlock Ave. to Miller St.	122%			⇆	‡	⟲		RR	Đ	€
I-80/94	State Line to I-65	100%	⊖	⟲	⇆	‡	Ⅱ	⟲	RR		€
I-94	Lake County to U.S. 20	110%	⊖	⟲	⇆	‡	Ⅱ		RR	Đ	&
Indianapolis Blvd	173rd Ave. to Ridge Rd.	110%		⇂↾		‡	Ⅱ		RR		€
joilet Rd.	Junction Ave. to SR 55	112%				🚶	⟲	⟲	RR	Đ	€
joilet Rd.	Merrillville Rd. to Mississippi St.	110%		⇂↾	⇆		⟲	⟲	RR	Đ	€
Merrillville Rd.	87th Ave. to Summit Ave.	127%				🚶	⟲	⟲	RR	Đ	
Michigan St.	Indianapolis Blvd to SR 912	132%				‡			RR		€
Severs Rd./200 N	SR 39 to 50 W	132%					⟲	⟲		Đ	
Sheffield Ave./Hart St.	U.S. 30 to 93rd Ave.	105%		⇂↾		🚶	⟲	⟲	RR	Đ	€
South St.	Whitcomb St. to Indiana St.	127%	⊖	⇂↾		🚶	⟲	$$	RR	Đ	
SR 130	County Line Rd. to CR 250 W	112%				‡	⟲	⟲	RR	Đ	&
SR 149	U.S. 20 to 1050 N	125%		⇂↾		‡	⟲	⟲			&

Reason Alternative is not Viable	
⊖	No Signals Present or Needed
⇆	No Traffic Operations Issues
‡	No Driveways Present
Ⅱ	Median Controls are Perfect
$$	Alternative Not Finiancially Feasible
RR	Railroad Not Present
Đ	Density Too low to Support Alternative
€	Growth Management is Satisfactory
💻	Intelligent Transportation Systems is Satisfactory
⇂↾	Intersection Turn Lanes Present
⟲	Alternative will not affect congestion
&	Rural area growth not anticipated
🚶	Shoulder is Adequate for driveways
◘	No Room for Alternative

Improvement	Abbreviation
CAF	Capacity Adjustment Factor
S	Signal Timing
IT	Intersection Turn Lanes
T	Traffic Operations Improvements
D	Driveway Controls
M	Median Controls
ITS	Incident Mgmt/ITS
RR	Railroad grade seperation
TR	Transit
GM	Growth Management

Improvements (Includes, Access Management, Intelligent Transportation Systems, Transit, and Growth Management Strategies)

Roadway	Corridor	CAF	S	IT	T	D	M	ITS	RR	TR	GM
		CAF	*1.05*	*1.07*	*1.05*	*1.05*	*1.1*	*1.1*	*1.1*	*1.1*	*1.1*
SR 149	U.S. 20 to 1050 N	125%		↴↱		ǂ	⟲	⟲			&
SR 2	300 N to 400 E	107%	⊖		⇆	ǂ	][	$$	~~RR~~	~~🚇~~	&
SR 2	400 E to Old SR 2	107%	⊖		⇆	ǂ	][	$$	~~RR~~	~~🚇~~	&
SR 2	Old SR 2 to U.S. 6	107%			⇆	ǂ	][	$$	~~RR~~	~~🚇~~	&
SR 2	U.S. 6 to U.S. 421	117%			⇆		][	$$	~~RR~~	~~🚇~~	€
SR 249	Midwest Steel to U.S. 20	130%		↴↱		ǂ		⟲	~~RR~~	~~🚇~~	
SR 39	18th St. to CR 400 S	112%			⇆	🚶	⟲	⟲	~~RR~~	~~🚇~~	&
SR 49	Division Rd. to CR 300 S	122%				🚶	⟲	⟲	~~RR~~	~~🚇~~	
SR 53	93rd Ave. to 109th Ave.	127%			⇆	🚶		⟲	~~RR~~		
SR 53	57th Ave. to 68th Pl.	125%		↴↱	⇆	🚶	⟲	⟲			€
SR 55	Ridge Rd. to U.S. 30	122%				🚶	][	⟲	~~RR~~		€
SR 55	93rd Ave. to Summit St.	115%		↴↱		🚶	][	⟲	~~RR~~		
SR 8	SR 2 to 250 W	107%			⇆	🚶	⟲	⟲	~~RR~~	~~🚇~~	&
SR 2	U.S. 421 to 100 S	122%					⟲	⟲	~~RR~~	~~🚇~~	&
SR 2	100 S to 18th St.	112%	⊖			ǂ	⟲	⟲	~~RR~~	~~🚇~~	&
SR 2	18th St. to SR 39	122%	⊖		⇆			⟲	~~RR~~	~~🚇~~	€
Summer St.	Columbia Ave. to Indianapolis Blvd	122%	⊖			ǂ	⟲	$$	~~RR~~		€
U.S. 12/20/41	State Line to 119th St.	125%		■		ǂ		⟲	~~RR~~		€
U.S. 20	SR 212 to Fail Rd.	105%	⊖	↴↱		ǂ	][	💻	~~RR~~	~~🚇~~	€
U.S. 20	I-94 to SR 39	127%			⇆			⟲	~~RR~~	~~🚇~~	&
U.S. 20	SR 39 to Fail Rd.	112%			⇆	ǂ	][	⟲	~~RR~~	~~🚇~~	&
U.S. 20	I-94 to SR 49	117%	⊖				⟲		~~RR~~	~~🚇~~	&
U.S. 20	SR 49 to LaPorte County	122%	⊖			🚶	⟲	⟲		~~🚇~~	&
U.S. 20	U.S. 421 to U.S. 35	127%			⇆	🚶		⟲	~~RR~~	~~🚇~~	
U.S. 231	U.S. 41 to SR 55	122%				🚶	⟲	⟲	~~RR~~	~~🚇~~	
U.S. 231	SR 55 to E of I-65	122%				🚶	⟲	⟲	~~RR~~	~~🚇~~	
U.S. 231	E of I-65 to SR 2	122%				ǂ	⟲	⟲	~~RR~~	~~🚇~~	
U.S. 30	State Line to U.S. 41	130%		↴↱		ǂ	][		~~RR~~		€
U.S. 30	U.S. 41 to Mississippi St.	140%		↴↱	⇆				~~RR~~		€
U.S. 30	Colorado St. to Porter County Line	145%		↴↱					~~RR~~	~~🚇~~	
U.S. 35	U.S. 20 to 400 N	132%					⟲	⟲		~~🚇~~	&
U.S. 35	400 N to Schultz Rd.	117%	⊖				⟲	⟲	~~RR~~	~~🚇~~	&
U.S. 35	Schultz Rd. to Severs Rd.	120%		↴↱		ǂ		⟲	~~RR~~	~~🚇~~	&
U.S. 41	U.S. 30 to U.S. 231	120%		↴↱		🚶			~~RR~~	~~🚇~~	&
U.S. 6	Calumet Rd. to 400 E	107%			⇆	🚶	⟲	⟲	~~RR~~	~~🚇~~	&

Reason Alternative is not Viable	
⊖	No Signals Present or Needed
⇆	No Traffic Operations Issues
ǂ	No Driveways Present
][	Median Controls are Perfect
$$	Alternative Not Finiancially Feasible
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↴↱	Intersection Turn Lanes Present
⟲	Alternative will not affect congestion
&	Rural area growth not anticipated
🚶	Shoulder is Adequate for driveways
■	No Room for Alternative

Improvement	Abbreviation
CAF	Capacity Adjustment Factor
S	Signal Timing
IT	Intersection Turn Lanes
T	Traffic Operations Improvements
D	Driveway Controls
M	Median Controls
ITS	Incident Mgmt/ITS
RR	Railroad grade seperation
TR	Transit
GM	Growth Management

The last step if no other strategies relieve congestion is to add roadway capacity. As stated in the table below (Step 4), the amount of capacity added depends on the amount of lanes of the original roadway. Adding capacity in most cases is not encouraged and only should be added in the worst instances of congestion where there is no other viable solution.

Step 4:

Adding Capacity		
From	To	Capacity Increase
2 lane roadway	4 lane roadway	100%
4 lane roadway	6 lane roadway	50%
6 lane roadway	8 lane roadway	33%
8 lane roadway	10 lane roadway	25%

The table below shows level of service improvement from strategies implementation. The first column is the level of service from NIRPC's model. The second column shows the improved level of service from demand management. The third column shows the level of service improvement from incorporating viable Transportation Systems, ITS, Transit and Growth Management strategies into the corridor. The fourth column shows the improved level of service with added travel lanes and demand management strategies. The last column shows the improved level of service if capacity is added and all strategies are incorporated.

Impacts:

Potential Impacts of Congested Corridors						
Roadway	Corridor	LOS 2008	LOS With Demand Management	LOS with Demand Management & Improvements	With DM and Added Travel Lanes	With Added Travel lanes , Demand Management & Improvements
SR 2	300 N to 400 E	D	D	C	B	A
109th Ave.	State Line to U.S. 41	F	F	E	B	B
109th Ave.	Colorado St. to Porter County Line	F	F	E	D	D
20/12/41	State Line to 119th St.	F	F	E	E	D
45th Ave.	State Line to U.S. 41	E	E	D	N/A	N/A
77th Ave.	Sheffield Ave. to Austin Ave.	F	E	E	B	B
93rd Ave.	Sheffield Ave. to U.S. 41	E	E	D	B	B
93rd Ave./91st Ave.	Cline Ave. to Clark Rd	E	E	D	B	B
Broad St.	Main St. to Joliet rd.	F	F	D	B	B
Calumet Ave.	Indianapolis Blvd to SR 912	F	F	D	D	C
Cline Ave.	U.S. 12 to 80/94	D	D	D	B	B
CR 450 W	600 N to SR 130	F	F	D	B	B
Fail Rd.	U.S. 20 to SR 2	F	F	D	B	B
Gostlin St.	State Line to I-90	F	F	F	E	C
I-80/94	State Line to I-65	F	F	N/A	N/A	N/A
I-94	Lake County to U.S. 20	F	D	D	C	B
Indianapolis Blvd	173rd Ave. to Ridge Rd.	E	E	D	B	B
Joliet Rd.	Junction Ave. to SR 55	F	E	E	B	B
Joliet Rd.	Merrillville Rd. to Mississippi St.	F	F	D	B	B
Michigan St.	Indianapolis Blvd to SR 912	F	E	D	B	B
Sheffield Ave./Hart St.	U.S. 30 to 93rd Ave.	F	E	E	B	B
SR 130	County Line Rd. to CR 250 W	F	F	F	B	B
SR 149	U.S. 20 to 1050 N	E	E	B	B	A
SR 2	U.S. 421 to 100 S	E	E	C	B	B
SR 2	100 S to 18th Ave.	E	E	A	A	A
SR 249	Midwest Steel to U.S. 20	E	D	B	B	B
SR 39	18th St. to CR 400 S	E	E	C	B	B
SR 49	Division Rd. to CR 300 S	E	C	B	B	B
SR 53	57th Ave. to 68th Place	F	E	D	B	B
SR 55	Ridge to U.S. 30	F	F	E	D	B
SR 55	93rd Ave. to Summit St.	F	F	F	D	D
SR 8	SR 2 to 250 W	E	E	D	B	B
SR2	Old SR 2 to U.S. 6	D	D	D	B	B
SR2	400 E to Old SR 2	D	D	D	B	B
SR2	U.S.6 to U.S. 421	E	E	B	B	A
Summer St.	Columbia Ave. to Indianapolis Blvd	F	F	D	B	B
U.S. 20	SR 212 to I-94	F	F	F	E	E
U.S. 20	I-94 to SR 39	F	F	C	B	B
U.S. 20	SR 39 to Fail Rd.	E	E	C	B	B
U.S. 20	I-94 to SR 49	E	E	C	B	B
U.S. 20	SR 49 to Laporte County	F	F	D	B	B
U.S. 20	U.S. 421 to U.S. 35	F	F	C	B	B
U.S. 30	State Line to U.S. 41	F	F	F	E	D
U.S. 30	U.S. 41 to Mississippi St.	F	F	F	E	C
U.S. 30	Colorado st. to Porter County Line	F	F	E	E	B
U.S. 41	U.S. 30 to U.S. 231	F	E	D	D	C
U.S. 6	Calumet Rd. to 400 E	E	E	C	B	B

As a result of this analysis, NIRPC is able to recommend projects to stakeholders into the region. In these corridors, there has been significant congestion identified and the recommended projects below would help relieve congestion.

Results:

Recommended Projects for Congested Corridors

Corridor	From	To	Capacity Expansion	Nature of Work	Old LOS	New LOS
U.S. 231	U.S. 41	SR 55	Yes	Added Travel Lanes, Intersection Improvements, Relocation of Utilities, School Pool Promotion, Signal Improvements	F	C
U.S. 231	SR 55	I-65	Yes	Added Travel Lanes, Intersection Improvements, Relocation of Utilities, School Pool Promotion, Signal Improvements	F	C
Merrillville Rd.	87th Ave.	Summit Ave.	No	Intersection Improvements, New Traffic Signal, Removal of parking, School Pool Promotion, Carpool Promotion	F	D
SR 53	93rd Ave.	109th Ave.	Yes	Intersection Improvements, Added Center Turn Lane, School Pool Promotion, Carpool Promotion	F	D
South St.	Whitcomb Ave.	Indiana St.	Yes	Added Travel Lanes, Added Sidewalks, School Pool Promotion	F	B
Grand St.	Miller St.	Hemlock Ave.	No	Signal Improvements, ITS Improvements, Intersection Improvements, School Pool Promotion	F	D
U.S. 20/12	I-65	Clay St.	No	More Bus Service, Repavement	F	E
15th Ave.	SR 912	Colifax Ave.	No	Signal Improvements, New Pavement, Intersection Improvements, Railroad Grade Seperation	F	D
SR 2	300 N	U.S. 6	No	Intersection Improvements	F	C/D
SR 2	U.S. 6	U.S. 421	No	Intersection Improvements, Signal Synchronization, Shoulder Improvements	F	B
U.S. 20	SR 212	I-94	Yes	Add One Travel Lane in each directon, fix geometorics in corridor	F	E
U.S. 20	I-94	Fail Rd.	No	Intersection Improvements, Signal Synchroization, New Median, Shoulder Improvements	F/E	C/C
SR 2	U.S. 421	18th Ave.	No	Intersection Improvements, Signal Synchroization , Shoulder Improvements, Added Lane Width	E/E	C/A
U.S. 35	U.S. 20	Severs Rd.	Yes	Added Travel Lanes, Shoulder Improvements, Intersection Improvements	F/F	E/B
U.S. 20/12/41	State Line	119th st.	Yes	Carpool Promotion, Remove Parking, Add Center Turn Lane, Sidewalk Improvements, Striping, More Bus Service	F	E
Calumet Ave.	U.S. 20/12/41	Cline Ave.	No	More Bus Service, Carpool Promotion, School PoolPromotion, Striping, Complete Streets	F	D
Gostin Ave.	State Line	I-90	No	New Bus Service, Carpool Promotion, New Sidewalks, ADA Improvements, Striping	F	F
Michigan St.	Indianapolis Blvd	Cline Ave.	Yes	Intersection Improvements, Added Center Turn Lanes, Restriping, Complete Streets, Signal Timing, ITS Improvements	F	D
Summer St.	Columbia Ave.	Indianapolis Blvd	NO	Intersection Improvements, Removal of Parking, New Sidewalks, New Bus Service	F	D
Indianapolis Blvd	173rd Ave.	Ridge Rd.	NO	Roadway Improvements, New Striping	E	D
SR 249	Midwest Steel	U.S. 20	NO	Carpool Promotion, Flextime Promotion, Telecommuting Promotion, Increased Law Enforcement, Sidewalks, Complete Streets, Smart Growth Promotion	E	B
SR 149	U.S. 20	1050 N	NO	Railroad Grade Seperation	E	B
SR 55	Ridge Rd.	U.S. 30	Yes	Added Travel Lanes, Signal Synchronization, Carpool Promotion, Intersection Improvements, Sidewalks, Striping	F	B
SR 55	93rd Ave.	Summit Ave.	No	Complete Streets	F	F

Recommended Projects for Congested Corridors

Corridor	From	To	Capacity Expansion	Nature of Work	Old LOS	New LOS
U.S. 41	U.S. 30	U.S. 231	Yes	Added Center Turn Lane, Signal Synchronization, New Sidewalks, School Pool Promotion	F	D
109th Ave.	State Line	U.S. 41	No	Intersection Improvements, Smart Growth	F	E
109th Ave.	Colorado Ave.	Porter Co. Line	No	Lane widening, Intersection Improvements	F	E
Broad St.	Main St.	Joliet Rd.	No	Railroad Grade Seperation	F	D
SR 53	57TH Ave.	68th Pl.	No	School Pool Promotion, Carpool Promotion, Railroad Grade Seperation, New Transit Service	F	D
Joliet Rd.	Junction Ave.	SR 55	Yes	Added Travel Lanes, Carpool Promotion, Intersection Improvements, New Sidewalks, Signal Timing	F	B
Joliet Rd.	Merrillville Rd.	Mississippi St.	No	Signal Timing, Shoulder Improvements	F	D
Cline Ave.	U.S. 12	I-80/94	Yes	Add One Travel Lane, ITS Improvements	D	B
I-80/94	State Line	I-90	No	Carpool Promoton, Telecommuting Promotion, Flextime Promotion	F	F
U.S. 30	State Line	U.S. 41	Yes	Added Travel Lanes, New Sidewalks, New Transit Line, ITS Improvements, Carpool Promotion	F	D
U.S. 30	U.S. 41	Mississippi St.	Yes	Upgrade entire corridor to six thru lanes, removal of access points, Signal Timing, Median Improvements, ITS Improvements, New Transit Line, Carpool Promotion, School Pool Promotion, Flextime Promotion, Telecommuting Promotion, Complete Streets	F	C
U.S. 30	Colorado Ave.	Porter Co. Line	No	Removal of access points, Signal Timing Median Improvements, ITS Improvements, Carpool Promotion, Flextime Promotion, Telecomuting Promotion, Compete Streets, Smart Growth	F	E
93rd Ave.	Sheffield Ave.	U.S. 41	Yes	New Center Turn Lane, Shoulder Improvements, Carpool Promotion, Signal Timing	E	D
Sheffield Ave./Hart St.	U.S. 30	93rd Ave.	No	Complete Streets, Carpool Promotion	F	E
77th Ave.	Sheffield Ave.	Austin Ave.	Yes	Added Travel Lanes, Intersection Improvements, Carpool Promotion, Complete Streets, Signal Improvements	F	B
45th Ave.	State Line	U.S. 41	No	Railroad Grade Seperation, New Sidewalks, Signal Timing, Shoulder Improvements, Carpool Promotion, Telecommuting Promotion, Flextime Promotion	E	D
I-94	Lake County	U.S. 20	No	Carpool Promotion, Telecommuting Promotion, Flextime Promotion, ITS Improvements	F	D
SR 130	Lake County	CR 250 W	Yes	Added Travel Lanes, Intersection Improvements, Signal Improvements	F	B
SR 8	SR 2	CR 250 W	No	Intersection Improvements	E	D
U.S. 20	I-94	SR 49	No	Shoulder Improvements, Intersection Improvements	E	C
U.S. 20	SR 49	LaPorte County	No	Intersection Improvements, Railroad Grade Seperation	F	D
U.S. 6	Calumet Rd.	400 E	No	Intersection Improvements	E	C
CR 450 W	600 N	SR 130	Yes	Add One Travel Lane, Signal Improvements, Intersection Improvements	F	B
SR 49	Division Rd.	CR 300 S	No	School Pool Promotion, Intersection Improvements, Smart Growth	E	C
U.S. 20	U.S. 421	U.S. 35	Yes	Added Center Turn Lane, Intersection Improvements, Smart Growth	F	C
SR 39	18th Ave.	CR 400 N	No	Signal Improvements, Intersection Improvements	E	C
Fail Rd.	U.S. 20	SR 2	No	Signal Timing, Intersection Improvements, Lane widening	F	C

Traffic Operations Project Recommendations		
Roadway	Corridor	Traffic Operations Recommendations
U.S. 20	SR 212 to Fail Rd.	Shoulder Improvements
SR 2	U.S. 421 to 100 S	Shoulder Improvements, Lane Widening
SR 2	100 S to 18th St.	Shoulder Improvements, Lane Widening
U.S. 35	U.S. 20 to 400 N	Shoulder Improvements
U.S. 35	400 N to Schultz Rd.	Shoulder Improvements
U.S. 35	Schultz Rd. to Severs Rd.	Shoulder Improvements, fix Intersection geometry with Severs Road
U.S. 231	U.S. 41 to SR 55	Utilities Relocation, Vegatation Relocation, fix Geometry
U.S. 231	SR 55 to E of I-65	Utilities Relocation, Vegatation Relocation, fix Geometry
U.S. 231	E of I-65 to SR 2	Utilities Relocation, Vegatation Relocation, fix Geometry
Merrillville Rd.	87th Ave. to Summit Ave.	Parking Removal
South St.	Whitcomb Ave. to Indiana St.	Vegatation Relocation, New Sidewalks
U.S. 12/Dunes Hwy	I-65 to Clay St.	Repavement
15th Ave.	Cline Ave. to Colifax St.	Repavement
U.S. 12/20/41	State Line to 119th St.	Parking Removal, Striping, Complete Streets
Calumet Ave.	Indianapolis Blvd to SR 912	Striping, Complete Streets
Gostlin St.	State Line to I-90	New Sidewalks, ADA Compliance, Paint Markings, fix geometry
Michigan St.	Indianapolis Blvd to SR 912	Complete streets, Utilities relocation, Striping
Summer St.	Columbia Ave. to Indianapolis Blvd	New Sidewalks, Parking Removal, Fix Geometry
Indianapolis Blvd	173rd Ave. to Ridge Rd.	Pavement Markings, Fix geometry of overpass
SR 55	Ridge Rd. to U.S. 30	Striping, New Sidewalks
SR 55	93rd Ave. to Summit St.	Complete Streets
U.S. 41	U.S. 30 to U.S. 231	Sidewalks
109th Ave.	Colorado St. to Porter County Line	Lane Widening
Broad St.	Main st. to Joliet rd.	Lane Widening
joilet Rd.	Junction Ave. . to SR 55	New sidewalks
U.S. 30	State Line to U.S. 41	New sidewalks
U.S. 30	Colorado st. to Porter County Line	Complete Streets
93rd Ave.	Sheffield Ave. to U.S. 41	Vegatation Relocation, Fix intersection geometry, Shoulder Improvements
Sheffield Ave./Hart St.	U.S. 30 to 93rd Ave.	Complete Streets
77th Ave.	Sheffield Ave. to Austin Ave.	Complete Streets, Remove Vegetation
45th Ave.	State Line to U.S. 41	New Sidewalks, Shoulder Improvements
SR 249	Midwest Steel to U.S. 20	Complete Streets, Law Enforcement
SR 149	U.S. 20 to 1050 N	Lane Widening
SR 130	County Line Rd. to CR 250 W	Fix Intersection Geometry
U.S. 20	I-94 to SR 49	Shoulder Improvements
U.S. 20	SR 49 to Laporte County	Intersection Geometry

XI. Project Evaluation Process

This section explains how submitted expansion projects are evaluated for the Comprehensive Regional Plan and the Transportation Improvement Program. A Congestion Management evaluation form is filled out for every expansion project with information about the project, the project's corridor's level of service and the possible alternatives that were considered. This form determines if the project passes the congestion management process and is eligible to be included in the CRP, the TIP and eventually eligible for federal funding. **The following is an example of a completed form of a project in the town of Merrillville.**

Explanation of Evaluation Forms for Capacity Adding TIP Projects

Project Title: The Name of the project with the type of construction performed indicated.

Sponsor Name: Stakeholder who submitted the project of funding

Funding Fiscal Year: Year funding is requested for.

Estimated Total Funding Cost: Total cost of project

Federal Funding Share: Total amount of federal funds requested

Local Funding Share: Amount of the local funds to match federal funds

Project Scope: Type of construction work being performed

Number of lanes added to roadway: Added Roadway Capacity

Project Title:

Mississippi St Reconstruction (83rd Ave to 101st Ave): Added Travel Lanes

Sponsor Name	*Merrillville*
Funding Fiscal Year	*2011-2015*
Total Funding Cost	*$4,302,941*
Federal Funding Share	*$3,442,353*
Local Funding Share	*$860,588*
Project Scope	*Added Travel Lanes, Reconstruction*
Number of Lanes Added to Roadway	*Two Added Travel Lanes*

Project Location Description: A description of the physical project boundaries.

Description of the project: Background on the project and explanation of why the project is needed.

Project Location Description:

This project will be located on Mississippi Street between US-30 and 101st avenue.

Description of Project:

The intent of this project is to reconstruct Mississippi Street and add one travel lane in each direction, bringing up the total amount of travel lanes to four. Intersection turn lanes will be provided as needed. The intersection on 83rd Avenue and Mississippi Street will be redesigned as well. A new signal will be introduced at 89th Avenue.

Congestion Analysis for Project Corridor: The following table provides a quantitative analysis of the corridor of the project in Merrillville. The corridor will be determined to be congested or not based on the level of service grade from this table. The Level of Service grade must be a C or lower within the project corridor to pass the congestion management process unless there is an identified safety issue.

		Level of Service
Project length	2.50	
Total V/C Ratio for Corridor	1.56	F
AM V/C Ratio	1.28	F
PM V/C Ratio	1.81	F
OP V/C Ratio	1.60	F
Projected Total V/C Ratio for 2040	1.78	F
Projected AM V/C Ratio for 2040	1.50	F
Projected PM V/C Ratio for 2040	1.96	F
Projected OP V/C Ratio for 2040	1.88	F
Average Speed/Posted Speed 2008	26%	F
Average Speed/Posted Speed 2040	28%	F
Crash Rate (2007) Fatalities (2005-2009)	2.15 0	B
Total VMT Change for Network	+15820	
Total Level of Service		F

Is capacity expansion project located within any of the following?: Is this project physically located within the part of the region that is determined to have a transportation importance priority over the rest of the region, as determined by the Comprehensive Regional Plan. The choices are revitalization area, Livable Center, Economic Center, or Growth Area.

Does this project align with the goals and the preferred scenario of the Comprehensive plan?: The preferred scenario is the direction that the region elects to take between now and 2040. Does this project agree with the comprehensive plans goals and scenario?

Is capacity expansion project located within the any of the following?

☐Revitalization Area ☐Livable Center ☒Economic Center ☐ Growth Area ☐None of the Above

Does this project align with the goals and the preferred scenario of the Comprehensive plan? Please explain.

☒Yes ☐No

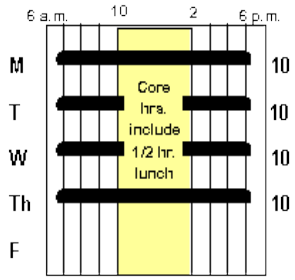
Yes because it relieves congestion in an area where other alternatives would not improve traffic conditions

Recommendation and alternatives that should be considered: This is the alternative analysis section of the form. This determines if enough alternatives were reviewed other than expanding capacity. Based on research from documents such as local plans, design studies, etc. it will be determined if the project sponsor reviews an adequate number of alternatives. The sections are as follows:

Demand Management Strategies: Telecommuting promotion, flex work schedule promotion, carpool and vanpool promotion, school pool promotion, alternative travel mode incentives and alternative travel mode events.

Telecommuting Promotion

This encourages employers to implement a program or policies that encourage an employee to work from home or other remote location. For example, the employee would be allowed to work from home via his or her computer.



Flex Work Schedule Promotion

Encouraging employers to implement a program or policies whereby employees can work a compressed work week and take a day off. For example, employees could work 40 hours in four days, thereby eliminating a trip to and from work one day each week.

Carpool and Vanpool Promotion

Carpool and vanpool programs can be used to promote two or more people sharing a ride. These can be operated by both public (agency set up to provide vanpool service) and private sector entities (individual workplaces, office parks, and/or residential areas).

School Pool Promotion

This is the same idea as carpools/vanpools, meant to serve areas with large numbers of students not served by school busses.

Alternative Travel Mode Incentives

Entities, both public and private, can provide incentives to employees to start or continue using alternative forms of transportation for their commutes.

Alternative Travel Mode Events

This can include any number of events that promote and educate people on the use of alternative travel modes. These can be annual one-day events such as Bike to Work Day, or events that promote transit services and other available incentives.

Transportation Management/ Access Management Strategies: Courtesy patrols, roadway signage improvements, added bike lanes, ramp meters, intersection turn lanes, acceleration/deceleration lanes, railroad crossing grade separation, HOV/HOT managed lanes, roundabouts, separation of truck traffic, continuous turn lanes, intersection grade separation, new stop signs, new sidewalks, added travel lanes to parallel roadways, new interchange and lane widening.

Courtesy Patrols

Courtesy patrols are a service that is provided in heavily traveled expressways, as well as corridors with narrow shoulders or major construction zones. These patrols assist with vehicle breakdowns, and crashes in order to minimize traffic disruptions, especially in congested areas. The INDOT Hoosier Helper is an invaluable example of aid to stranded motorists and assistance with incidents, such as crashes. This service is available on I-80/94 from the Illinois state line to mile marker number 19, which is the Port of Indiana exit in Porter County, plus I-65 from its northern terminus in Gary south to Crown Point.

Roadway Signage Improvements

Roadway signage improvements can include additional signage that facilitates way-finding and enhances decision-making by roadway users as well as signs that are made clearer and more legible from greater distances.

Add Bike Lanes

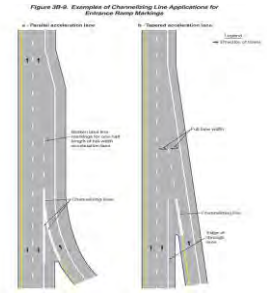
Bike lanes allow for a safer, more comfortable way for people to use bicycles as an alternative form of transportation, helping to alleviate congestion by removing cars from the same routes.

Ramp Meters

Ramp meters are traffic signal devices that regulate the flow of traffic entering an expressway. Meters help regulate the impact of large volumes of traffic entering highways that already are heavily traveled. They have been used in Northwest Indiana during Borman Expressway reconstruction.

Intersection Turn Lanes

Intersection turn lanes provide additional lanes to separate traffic that is turning left or right from through traffic.



Acceleration/Deceleration Lanes

An acceleration lane provides an opportunity on expressways and arterial streets for vehicles to gain speed to more easily and safely merge into the flow of traffic. Deceleration lanes are on expressways just before exit ramps to allow for traffic to decelerate before exiting safely removed from the flow of through traffic.

Railroad Crossing Grade Separation

Railroad crossing grade separation is when a road overpass or underpass is used at intersections with railroad lines.

HOV, HOT Managed Lanes

High-occupancy vehicle (HOV) and high-occupancy/toll (HOT) lanes are ways to encourage carpooling as well as bus usage by requiring a minimum number of people in vehicles that use the lane. Allowed users of

HOT lanes can expand to those who are willing to pay a toll to use them with less than the minimum number of riders. HOV/HOT lane usage also can be used to incentivize the usage of low-emission and hybrid vehicles.

Roundabouts

Roundabouts are a type of intersection that do not use traffic signals or stop sign traffic controls. Instead, cars continuously move around a circular roadway, using specific lanes to enter and exit.

Separation of Truck Traffic

Separation of truck traffic involves separating semi-truck and other commercial traffic from light-duty automobile traffic. This can include grade separation, dedicated lanes and roads for truck traffic, and truck-only ramps.

New Stop Signs

New stop signs can make intersections safer and operate more efficiently when the intersection becomes congested due to one direction not having to stop. Intersections also can be made safer as stopped drivers do not have to pull out into moving traffic.

Sidewalks

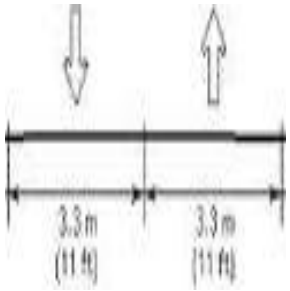
Sidewalks allows for pedestrians to safely travel along a roadway, separate from other traffic.

New Interchange

The construction of a new interchange and provision of additional entry/exit points along a highway. Additionally, it can help alleviate congestion at existing interchanges by providing more options for traffic entering or exiting the highway.

Add Travel Lanes to Parallel Road

Instead of adding lanes to a smaller road nearby or to an already large and congested roadway, additional travel lanes can be added to a road that runs parallel to the existing larger roadway.



Lane Widening

Lane widening can help increase the safety of a roadway by allowing more room, especially at bends in the road where vehicles will use more of the travel lane to negotiate the bend and increase the chance of a head-on collision. On straight road sections, wider lanes reduce the chances of a sideswipe crash by allowing more room for vehicles to navigate

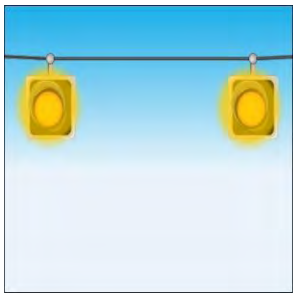
Intelligent Transportation Systems: New traffic signal, traffic signal timing and coordination, traffic signal equipment modernization, incident management plans, dynamic messaging system.

New Traffic Signal

A new traffic signal can help an intersection to function more efficiently than signage alone. It also can improve the safety of an intersection by helping the traffic flow more smoothly.

Traffic Signal Timing and Coordination

Traffic flow can be improved and the number of vehicle stops decreased if traffic signal timing and coordination and equipment at intersections are enhanced.



Traffic Signal Equipment Modernization

Modernization of traffic signal equipment can allow for a more efficient flow of traffic by providing the opportunity to use signals that can immediately respond to real-time traffic needs at the intersection, as opposed to pre-timed intervals. Modern signals also can provide immediate notification of signal malfunctions and can be used to extend a green light and give priority to bus transit that is approaching the intersection.

Incident Management Plans

Incident management plans (IMPs) are operational plans for agencies and personnel defining the roles, rules, procedures, traffic diversion routes, and protocols to be followed in the event of a traffic incident.

Dynamic Messaging System

A dynamic messaging system is a system of electronic signs placed on heavily traveled corridors that provide real-time information to roadway users regarding traffic movements, accident and alternative route information, and other types of pertinent information to allow for a more informed driving decisions.

Potential Transit Strategies: New Public Transit Guideway System, Public Transit Capacity Expansion, Public Transit Route Extension, New Transit Route Transit Signal Priority.

New Public Transit Guideway System

These systems involve guideways for light rail and commuter rail systems and on-street travelways for bus rapid transit (BRT) systems. These systems increase the amount of people who can travel a congested corridor at a given time while reducing the number of vehicles necessary to move them.

Public Transit Capacity Expansion, Public Transit Route Extension or New Transit Route

Public transit capacity expansion involves the creation of new bus routes, extension of existing bus routes, and/or increase of the frequency (headways) of buses-on existing routes.

Transit Signal Priority

Transit signal priority provides a separate signal that gives busses a head start in order to merge into traffic or reach a stop, especially when lanes for general traffic must be crossed in order to do so.

Potential Growth Management Strategies: Promote more high density, promote more transit-oriented development (TOD), promote more cargo-oriented development, improve land use patterns, urban growth boundary, tax incentive policies.

Promote More High density

Promoting greater density allows for the creation of more transit- and pedestrian-friendly communities. With proper density and walkability, people will need to drive less, thereby reducing dependence on automobiles and the congestion resulting from their use.

Cargo Oriented Development

Cargo oriented development (COD) is a similar concept to TOD. It concentrates manufacturing and distribution businesses at a location where they have easy and quick access to multiple modes of freight transportation. Other key elements to a successful COD are access to complimentary businesses and an industrial workforce.

Promote More Transit Oriented Development

Transit oriented development provides for more compact, livable, and walkable communities that are based around mass transit. Generally, densities are higher the closer to the transit stop the development is.

Improvement of Land Use Patterns

Better land use patterns are ones that don't create uncontrolled development and decrease the need for, and dependence on, automobiles, while making transit a more viable option.

Urban Growth Boundary

Urban growth boundaries set a limit for where higher density urban growth can take place. Within the boundary, urban development can occur, while outside the boundary land is meant to have lower density and less development. Urban growth boundaries are a tool that can be used to combat urban sprawl.

Tax Incentive Policies

Tax incentive policies apply, in this case, to the revitalization of urban centers. Tax incentives could be used to encourage infill development and redevelopment of urban centers while discouraging development on the urban fringe.

Other Strategies: Implementation of Bikeways and Pedways, Traffic Calming Techniques, Complete Streets, Congestion and Parking Pricing.

Implementation of Bikeways and Pedways

Implementation of bikeways and pedways would expand the number of viable transportation options, enabling people to get to their destination with alternative forms of transportation. This would reduce the number of vehicles and amount of congestion on roadways.

Traffic Calming Techniques

Traffic calming techniques help to create travel corridors that are more inviting and safer for other forms of transportation, especially bicyclists and pedestrians. By making travel corridors more comfortable and safer, people will be more encouraged to utilize alternative forms of transportation.

Complete Streets

Complete streets is a concept that encourages the use of various methods to create roadways that are safer, more livable, and welcoming for all users, not just motorists.

Congestion and Parking Pricing

Congestion pricing involves designating a specific congested area and then charging those who drive into it, either at certain times of day or when congestion conditions warrant a charge. This discourages driving at times of high congestion, encouraging people to seek out other forms of transportation. Parking pricing can be used to discourage automobile usage by making the cost to park in congested areas unappealingly high.

Recommendations and Alternatives that should be considered

Potential Demand Management Strategies:

Sponsors Considerations for project		NIRPC's recommended solutions
☐	Telecommuting Promotion	☒
☐	Flex Work Schedule Promotion	☒
☐	Carpool and Vanpool Promotion	☒
☐	School Pool Promotion	☐
☐	Alternative Travel Mode Incentives	☐
☐	Alternative Travel Mode Events	☐

Score: 0/6

Potential Transportation Management/ Access Management Strategies:

Sponsors Considerations for project		NIRPC's recommended solutions
☐	Courtesy Patrols	☐
☐	Roadway Signage Improvements	☐
☐	Add bike lanes	☐
☐	Ramp Meters	☐
☒	Intersection Turn Lanes	☐
☐	Acceleration/Deceleration lanes	☐
☐	Railroad crossing grade separation	☐
☐	HOV, HOT managed lanes	☐

☐	Roundabout	☐
☐	Separation of Truck Traffic	☐
☐	Continuous turn lanes	☐
☐	Intersection grade separation	☐
☐	New stop sign	☐
☐	Sidewalks	☐
☐	Add Travel Lanes to parallel road	☐
☐	New Interchange	☐
☐	Lane widening	☐

Score: 2/2

Potential Intelligent Transportation Systems Strategies:

Sponsors Considerations for project		NIRPC's recommended solutions
☒	New Traffic signal	☐
☒	Traffic Signal Timing and Coordination	☐
☐	Traffic Signal Equipment Modernization	☐
☐	Incident Management Plans	☐
☐	Dynamic Messaging System	☐
☐	Wildlife Alert Signal	☐

Score: 4/4

Potential Transit Strategies:

Sponsors Considerations for project NIRPC's recommended solutions

☐	New Transit Route	☐
☐	Transit Signal Priority	☐

Score: 2/2

Potential Growth Management Strategies:

Sponsors Considerations for project		NIRPC's recommended solutions
☐	Promote More High Density	☐
☐	Promote more transit oriented development	☐
☐	Promote more Cargo Oriented Development	☐
☐	Improvement of land use patterns	☒
☐	Urban Growth boundary	☐
☐	Tax incentive policies	☐

Score: 0/2

Other Strategies:

Sponsors Considerations for project		NIRPC's recommended solutions
☐	Implementation of Bikeways and Pedways	☐
☐	Traffic calming techniques	☐
☒	Complete Streets	☒
☐	Congestion and parking pricing	☐
☐	Increased law enforcement	☐

Alternatives Analysis scoring: There is a maximum score for each that is based on the amount of alternatives that are offered. Two points are awarded for each alternative that the sponsor considers and/or each alternative that already exists within the corridor of the project. However, 1 point is subtracted if no consideration has been made for each alternative that was recommended by NIRPC. The minimum score for each category is 0 if no alternatives are considered and 1 if any alternative is considered within the category. If there are no recommendations or considerations for a category, then the category is not considered for the final score. The alternatives analysis score will be based on a percentage.

Mississippi St.	
LOS 2008	F
LOS With Demand Management	F
LOS with Demand Management & Improvements	F
With DM and Added Travel Lanes	E
With Added Travel lanes , Demand Management and Improvements	B

Alternative Analysis LOS Improvement Evaluation: The above table only applies to projects that wish to add capacity to existing roadways. LOS 2008 is the current level of service for the project corridor. LOS with demand management shows the improved level of service if viable demand management strategies are implemented to the project corridor. LOS with Demand Management & Improvements shows improvement of level of service that if every viable strategy that doesn't add capacity is incorporated. DM with Added Travel Lane show the improved level of service if Demand Management is implemented and capacity also is added. Added

Travel Lanes, Demand Management and Improvements looks at the improved level of service if all strategies are incorporated and capacity is added.

Does capacity expansion project pass congestion management evaluation? If the project does not pass the congestion management evaluation, then it may be denied federal funding until any discrepancies are resolved.

XII. Project Evaluation Results

The following chart displays the contributing factors of congestion for the project corridors. If the projects purpose is to build a new roadway, then the strategies analysis would be conducted on the nearest parallel arterial roadway.

Contributing Factors For Project Locations

Project Location	From-To	Signal Timing	Intersection Turns	Traffic Operations	Access Points	Median Turns	Incidents	Water/Flooding	Railroad Crossings	Development Patterns	Lack of Connectivity
Mississippi St.	83rd Ave. to 101st Ave.	■	■	■		■				■	
101st Ave.	SR 53 to Mississippi St.			■							
Division Rd.	SR 2 to U.S. 30		■	■						■	
U.S. 20	Woodland Ave. to Johnson Rd.					■	■		■		
18th Ave.	SR 39 to U.S. 35	■	■	■			■				
45th Ave.	Colfax Ave. to Cleveland St.		■	■		■					
61st Ave.	Arizona St. to SR 51					■	■				
Boyd Blvd	SR 2 to U.S. 35					■	■				
Boyd North (Park St.)	SR 2 to Severs Rd.		■	■							■
133rd Ave.	U.S. 41 to Parrish Ave.					■	■				
County Line Rd.	U.S. 12 to U.S. 20	■	■	■			■		■		
County Line Rd.	37th Ave. to SR 130			■		■	■				
Cline Ave. Realignment	Along Riley Rd. and Dickey Rd.	■	■	■					■		
Severs Rd. (For ED Corridor)	SR 39 to Fail Rd			■					■		■
Main St. Ext.	State Line to Columbia Rd.						■				■
Kennedy Ave.	Main St. to U.S. 30		■				■		■		■
Marina Access Rd.									■		■
Willowcreek Rd.	700 N to U.S. 30			■							■
Springland Ave.	Karwick Ave. to SR 212								■		■
SR 2	At I-65	■	■	■		■					
SR 49	At Vale Park Rd.						■				
U.S. 421	F SR 2 S to SR 2 N					■					
Vale Park Rd.	Calumet Rd. to Silhavy Rd.		■	■			■				
SR 149	SR 130 to U.S. 30						■			■	
Airport Rd.	E of Porter County Airport									■	

The following chart displays the viable demand management strategies in the corridors for which regionally significant projects were submitted. Within this region, there are few options for demand management strategies. In the corridors where demand management is possible, there was not a significant change in congestion to warrant implementing the strategies by themselves. However, there are some corridors where demand management strategies would work well in combination with other strategies.

Viable Demand Management Strategies for Project Locations					
Project Location	From-To	Telecommuting	Carpooling	School Pool	Flextime
Mississippi St.	83rd Ave. to 101st Ave.				
101st Ave.	SR 53 to Mississippi St.				
Division Rd.	SR 2 to U.S. 30				
U.S. 20	Woodland Ave. to Johnson Rd.				
18th Ave.	SR 39 to U.S. 35				
45th Ave.	Colfax Ave. to Cleveland St.				
61st Ave.	Arizona St. to SR 51				
Boyd Blvd	SR 2 to U.S. 35				
Boyd North (Park St.)	SR 2 to Severs Rd.				
133rd Ave.	U.S. 41 to Parrish Ave.				
County Line Rd.	U.S. 12 to U.S. 20				
County Line Rd.	37th Ave. to SR 130				
Cline Ave. Realignment	Along Riley Rd. and Dickey Rd.				
Severs Rd. (For ED Corridor)	SR 39 to Fail Rd				
Main St. Ext.	State Line to Columbia Rd.				
Kennedy Ave.	Main St. to U.S. 30				
Marina Access Rd.					
Willowcreek Rd.	700 N to U.S. 30				
Springland Ave.	Karwick Ave. to SR 212				
SR 2	At I-65				
SR 49	At Vale Park Rd.				
U.S. 421	F SR 2 S to SR 2 N				
Vale Park Rd.	Calumet Rd. to Silhavy Rd.				
SR 149	SR 130 to U.S. 30				
Airport Rd.	E of Porter County Airport				

The viable strategies are indicated in green. If the cell is not highlighted, then the strategy is not feasible for that project corridor.

Viable Transportation Systems Management Strategies for Project Locations

Project Location	From-To	Signal Timing	Intersection Turn Lanes	Traffic Operations Imp	Driveway Controls	Median Controls	Incident Mgmt/ITS	Railroad grade seperation	Transit	Growth Management
Mississippi St.	83rd Ave. to 101st Ave.			⇆	‡	⟲	$$	~~RR~~		
101st Ave.	SR 53 to Mississippi St.		⟲		‡	⟲	$$	~~RR~~	~~D~~	
Division Rd.	SR 2 to U.S. 30			⇆	‡	⟲	$$	~~RR~~	~~D~~	
U.S. 20	Woodland Ave. to Johnson Rd.	⌯	⟲	⇆	▮				~~D~~	€
18th Ave.	SR 39 to U.S. 35			⇆	◘			~~RR~~	~~D~~	€
45th Ave.	Colfax Ave. to Cleveland St.				‡		$$	~~RR~~		€
61st Ave.	Arizona St. to SR 51	⌯	⅂⅂		‡			~~RR~~	~~D~~	€
Boyd Blvd	SR 2 to U.S. 35	⌯	⅂⅂		‡		$$	~~RR~~	~~D~~	~~&~~r
Boyd North (Park St.)	SR 2 to Severs Rd.	⌯			‡	⟲	$$	~~RR~~	~~D~~	~~&~~r
133rd Ave.	U.S. 41 to Parrish Ave.				▮		$$	$$	~~D~~	€
County Line Rd.	U.S. 12 to U.S. 20				‡	⟲	$$		~~D~~	€
County Line Rd.	37th Ave. to SR 130	⌯			▮		$$	~~RR~~	~~D~~	~~&~~r
Cline Ave. Realignment	Along Riley Rd. and Dickey Rd.				‡	⟲	$$			€
Severs Rd. (For ED Corridor)	SR 39 to Fail Rd	⌯	⅂⅂		‡	⟲	$$		~~D~~	~~&~~r
Main St. Ext.	State Line to Columbia Rd.	⌯	⅂⅂	⇆	‡	⟲	$$		~~D~~	
Kennedy Ave.	Main St. to U.S. 30	⌯		⇆	▮	ⅡⅠ	$$	~~RR~~		€
Marina Access Rd.		⌯	⅂⅂	⇆	‡	ⅡⅠ	$$			
Willowcreek Rd.	700 N to U.S. 30	⌯	⅂⅂		‡	⟲	$$	~~RR~~	~~D~~	
Springland Ave.	Karwick Ave. to SR 212	⌯	⅂⅂	⇆	▮	⟲	$$		~~D~~	€
SR 2	At I-65			⇆	▮		⟲	~~RR~~	~~D~~	
SR 49	At Vale Park Rd.	⟲	⅂⅂		▮	ⅡⅠ	⟲	~~RR~~	~~D~~	€
U.S. 421	F SR 2 S to SR 2 N	⟲	⅂⅂	⇆	▮		⟲	~~RR~~	~~D~~	~~&~~r
Vale Park Rd.	Calumet Rd. to Silhavy Rd.				▮	ⅡⅠ	$$	~~RR~~		
SR 149	SR 130 to U.S. 30	⌯			‡	⟲	$$	~~RR~~	~~D~~	
Airport Rd.	E of Porter County Airport	⌯			‡	⟲	$$	~~RR~~	~~D~~	

Reason Alternative is not Viable	
⌯	No Signals Present or Needed
⇆	No Traffic Operations Issues
‡	No Driveways Present
ⅡⅠ	Median Controls are Perfect
$$	Alternative Not Finiancially Feasible
~~RR~~	Railroad Not Present
~~D~~	Density Too low to Support Alternative
€	Growth Management is Satisfactory
💻	Intelligent Transportation Systems is Satisfactory
⅂⅂	Intersection Turn Lanes Present
⟲	Alternative will not affect congestion
~~&~~r	Rural area growth not anticipated
▮	Shoulder is Adequate for driveways
◘	No Room for Alternative

Alternatives Analysis Results & Impacts for Submitted Projects					
Project Location	LOS 2008	LOS With Demand Management	LOS with Demand Management & Improvements	With DM and Added Travel Lanes or New Roadway	With Added Travel lanes or New Roadway, Demand Management and Improvements
Mississippi St.	F	F	F	E	B
101st Ave.	C	C	C	B	B
Division Rd.	F	F	E	C	A
U.S. 20	E	E	C	N/A	N/A
18th Ave.	C	C	A	A	A
45th Ave.	E	E	C	N/A	N/A
61st Ave.	A	A	A	A	A
Boyd Blvd Exp.	B	B	A	A	A
Boyd North (Park St.)	E	E	D	C	B
133rd Ave.	B	B	A	N/A	N/A
County Line Rd. Gary	B	B	A	A	A
County Line Rd. Hobart	D	D	C	N/A	N/A
Cline Ave. Realignment	E	E	C	N/A	N/A
LED Corridor	E	E	E	D	D
Main st./Joe Orr Rd.	C	C	C	A	A
Kennedy Ave.	C	C	C	A	A
Marina Access Rd.	A	A	A	A	A
Willowcreek Rd.	E	E	E	E	B
Springland Ave.	C	C	C	A	A
SR 2	E	E	E	B	A
SR 49	C	C	C	N/A	N/A
U.S. 421	E	E	D	N/A	N/A
Vale Park Rd.	D	D	D	B	A
SR 149	C	C	A	A	A
Airport Rd.	C	C	B	A	A

The following table indicates the results of the evaluation and selection of regionally significant expansion projects. Projects for the 2040 CRP were solicited in December, 2010. The evaluation was completed in April, 2011 and approved by the Congestion Management Subcommmittee on March 31, 2011.

Projects That Passed NIRPC's Congestion Management Process

	Sponsor	Name	Improvement Type	Functional Class (FC)	From	To	Length	Lanes Before	Lanes After	Regionally Significant?	OTT Year	LOS Grade	LOS Pass	Alt. Analysis Grade	Alt. Analysis Pass?	Reduction of Scope?/Comments	Does this project agree with the goals and objectives of the 2040 CRP?
1	Cook County, IL/Munster, IN	Joe Orr Rd Extension/Main St	New Roadway and Added Travel Lanes on Existing Roadway	Minor Arterial	IN/IL State Line	Calumet Ave	0.8 in IN	0	3	Yes	2016	C	Yes	50%	Yes	No	Yes because it is a bi-state project that will provide a better connection to Chicago's south suburbs
2	Gary	Marina Access Rd, Phase II, Segment 3	New Roadway Segment w/ Pre-existing Segment(s)	Minor Arterial	About 800' E of SR 912	About 920' SW of Parking Garage	0.5	0	4	Yes	2015	A	No	100%	Yes	No	This project has economic development potential. This project is also underway. This project is also a part of the Marquette Plan.
3	Gary	Marina Access Rd, Phase III	New Roadway	Collector	About 940' E of Parking Garage	About 600' NE of Parking Garage	0.4	0	2	Yes	2014	A	No	100%	Yes	No	This project has economic development potential. This project is also underway. This project is also a part of the Marquette Plan.
4	Lake County	45th Ave	Added Travel Lanes on Existing Roadway	Minor Arterial	Cleveland St	Colfax St	2.75	2	3	Yes	2012-2018	E	Yes	100%	Yes	No	Yes as it provides a connection between two communities.
5	LaPorte	Economic Development Corridor (NE Quadrant)	New Roadway	Minor Arterial	SR 2	SR 39 North	4.5	0	2	Yes	2020	E	Yes	75%	Yes	No	No, as this project does demand too much major greenfield development
6	Merrillville	101st Ave	Added Travel Lanes on Existing Roadway	Minor Arterial	Broadway (SR 53)	Mississippi St	1	2	4	Yes	2014	C	Yes	60%	Yes	No	No, as it involves adding lanes to a roadway that is surrounded by a greenfield.
7	Merrillville	Mississippi St	Added Travel Lanes on Existing Roadway	Minor Arterial	83rd Ave	101st Ave	1	2	4	Yes	2011-2015	F	Yes	56%	Yes	No	Yes because it relieves congestion in an area where other alternatives would not improve traffic conditions
8	Porter County	Willowcreek Rd Extension	New Roadway	Minor Arterial	US 30	Porter CR 700N	4.5	0	2	Yes	2013-2017	E	Yes	100%	Yes	No	Yes, as it facilitates growth contiguous to existing development, and improves north-south connectivity in Porter County, and it should relieve congestion on US 30 from Valparaiso to I-65.
9	Schererville	Kennedy Ave Reconstruction	Added Travel Lanes on Existing Roadway	Minor Arterial	Main St	US 30	2.25	2	4	Yes	2013-2018	C	Yes	100%	Yes	No	Yes, as it supports redevelopment and infill of existing community. This project also provides a valuable missing connection in Northwest Indiana's roadway network.
10	Valparaiso	Division Rd	Added Travel Lanes on Existing Roadway	FC Change from Collector to Minor Arterial	SR 2	US 30	6.95	2	4	Yes (Conditional)	2011	F	Yes	100%	Yes	No	No as it promotes sprawl and greenfield development.

Projects That Passed NIRPC's Congestion Management Process

	Sponsor	Name	Improvement Type	Functional Class (FC)	From	To	Length	Lanes Before	Lanes After	Regionally Significant?	OTT Year	LOS Grade	LOS Pass	Alt. Analysis Grade	Alt. Analysis Pass?	Reduction of Scope?/Comments	Does this project agree with the goals and objectives of the 2040 CRP?
11	Valparaiso	Vale Park East	Added Travel Lanes on Existing Roadway	Minor Arterial (Needs FC Map Change from Collector)	Calumet Ave	Silhavy Rd	1	2	4	Yes	2015	D	Yes	100%	Yes	No	Yes as it relieves congestion and improves connectivity in an existing community
12	INDOT	US 421 Added CFL (Westville)	Added Travel Lane (Aux)	Principal Arterial	SR 2 West	SR 2 East	1.1	2	3	Yes	2012	E	Yes	50%	Yes	No	Yes because it improves connection by relieving an congested roadway.
13	INDOT	SR 49 at I-94 400N (Valpo)	New Interchange	Collector	n/a	n/a	n/a	n/a	n/a	Yes	2013	E	Yes	75%	Yes	Project will pass due to safety issues as stated in Indiana's 5% report	Yes as it improves access management and safety in a major transportation corridor.
14	INDOT	US 20 E FL (Mich City)	Added Travel Lane (Aux)	Principal Arterial	Woodland Ave	1,500' W of Johnson Rd	1.1	4	5	Yes	2015	E	Yes	50%	Yes	No	Yes, as it improves accessibility within an urban community. This project will also improve safety as well
15	INDOT	Cline Ave Realignment*	Road Reconstruction with Interchange Modifications	Expressway	SR 912 at Dickey Rd	Riley Rd at Existing SR 912	n/a	n/a	n/a	Yes	2011-2013	F	Yes	72%	Yes	No	Yes as it fixes a missing connection within the transportation network
16	Hobart	61st Ave	Added Travel Lanes on Existing Roadway	Principal Arterial	Colorado St	SR 51	1.75	2	3	Yes	2014	A	No	100%	Yes	Passed due to safety concerns	Yes as it will provide a connection to Merrillville and I-65 from Hobart
17	INDOT	SR 2 at I-65 (DES 9706420)	Intersection Improvements with Added Travel Lanes	Minor Arterial	From 0.8 mile W of I-65	To 0.9 mile E of I-65	1.7	2	4	Yes	2015	E	Yes	50%	Yes	No	No as it contributes to development outside the urbanized area. There are also environmental concerns as there is a lot of green space and agricultural land near the project site.
18	Cedar Lake	133rd Ave	Added Travel Lanes on Existing Roadway	Principal Arterial	US 41	Industrial Rd	0.46	2	3	No	2013	B	No	80%	Yes	Not Regionally Significant. Congestion Management evalution not needed.	Yes as this project considers both NIRPC's and the town of Cedar Lake's comprehensive plans into consideration. This project will improve connections and accessibility along a major corridor in Cedar Lake. This project is located in a livable center

*Preferred route has not been identified as the NEPA process is not yet complete. INDOT is reviewing two solutions for Cline Ave: the ground route alternative utilizing Riley and Dickey roads, and a four-lane bridge alternative.

Projects that Passed NIRPC's Congestion Management Process Pending a Reduction in Scope

	Sponsor	Name	Improvement Type	Functional Class (FC)	From	To	Length	Lanes Before	Lanes After	Regionally Significant?	OTT Year	LOS Grade	LOS Pass	Alt. Analysis Grade	Alt. Analysis Pass?	Reduction of Scope?/Comments	Does this project agree with the goals and objectives of the 2040 CRP?
1	Gary	Lake-Porter County Line Rd	Added Travel Lanes on Existing Roadway	Minor Arterial	US 20	Nat Lakeshore Entrance	1.4	2	4	Yes	2014	B	No	56%	Yes	Intersection improvements, Signal improvements. No added travel lanes is necessary	Yes, as this project provides access to the Lakefront. This project also corresponds with the Marquette Plan too.
2	LaPorte	18th St	Added Travel Lanes on Existing Roadway	FC Change from Collector to Minor Arterial	SR 39	US 15	1.8	2	4	Yes	2016	C	Yes	75%	Yes	No added travel lanes or center turn lane. Intersection improvements, new Traffic signals are recommended instead.	No, as this project consists of potentially overbuilding a roadway
3	LaPorte	Boyd Blvd North Extension	New Roadway	Minor Arterial	SR 2	Severs Rd	0.8	0	4	Yes	2020	D	Yes	50%	Yes	Two travel lanes is recommended rather than four	No as it consists mainly of greenfield development
4	LaPorte	Boyd Blvd Expansion	Added Travel Lanes on Existing Roadway	Minor Arterial	SR 2	US 35	3.25	2	4	Yes	2016	B	NO	50%	Yes	Center Turn Lane is recommended instead of added travel lanes	Yes because it utilizes infrastructure that already exists and improves connections.
5	Michigan City	Springland Ave Extension	New Roadway	Minor Arterial	Kenwick Rd	Royal Rd	0.8	0	4	Yes	2015	C	Yes	82%	Yes	Should be built as a two lane road only	No, as it potentially includes greenfield development. This project does provide a new connection between neighborhoods.

Projects Not Selected

	Sponsor	Name	Improvement Type	Functional Class (FC)	From	To	Length	Lanes Before	Lanes After	Regionally Significant?	OTT Year	LOS Grade	LOS Pass	Alt. Analysis Grade	Alt. Analysis Pass?	Reduction of Scope?/Comments	Does this project agree with the goals and objectives of the 2040 CRP?
1	Crown Point	Mississippi Parkway	New Roadway	Minor Arterial	101st	109th	1	0	2	Yes	2020	A	NO	0%	No	Project did not relieve congestion off surrounding roadways	No, as this project promotes sprawl and greenfield development
2	Hobart	Lake-Porter County Line Rd	Added Travel Lanes on Existing Roadway	Minor Arterial	SR 130	37th Ave	1.75	2	4	Yes	2030	D	Yes	0%	No	Sponsor withdrew project because the project is in early stages and alternatives haven't been considered yet	Yes, as it improves access and safety to driveways along County Line road. This project will also provide access to County Line Orchard as well
3	Valparaiso	Airport Pkwy	New Roadway	FC Change from Collector to Minor Arterial	SR 2	US 30	2.63	0	2	Yes (Conditional)	2015	C	Yes	100%	Yes	Project will not appear in plan until airport study is completed.	No, it promotes sprawl into prime agricultural land
4	Valparaiso	SR 149 Extension	Construct New Roadway (1.6m)	Minor Arterial	SR 130	US 30	2.3	0	2	Yes	2014	E	Yes	100%	Yes	There isnt that much congestion in this area. A better solution would be to improve CR 250 W and even resign it as SR 149 if necessary. Corridor should be protected. The Willowcreek road Extension is determined to be a more viable project	No, it promotes sprawl into unincorporated Porter County.

APPENDIX

APPENDIX: Section 1 Congestion Management Variable Function Class Discription

See section VIII for Function Class Map

Group-A Expressways

Group-A designated expressways are expressways that have Real-Time Travel Time Data available.

Examples:

- Interstate 65 from Interstate 80/94 to US 30
- I-80/94 from state line to the Indiana Toll Road (I-90)

Group-A Expressway Performance Measures

- Travel Time Index
- Average Speed
- Delay
- Volume to Capacity Ratio
- Crash Rate
- Average Incident Clearance Time*

Group-B Expressways

Group-B expressways are expressways that do not have real time travel data available, but have been selected for limited travel time data collection. Less sample data will be available for Travel Time Index, Average Speed and Delay than Group-A Expressways.

Examples:

To be determined

Group-B Expressway Performance Measures

- Travel Time Index
- Average Speed
- Delay
- Volume to Capacity Ratio
- Crash Rate
- Average Incident Clearance Time*

Group-C Expressways

Group-C Expressways are expressways that will not have travel time data available. Its level of service will be monitored based on NIRPC's existing performance measures.

Examples:

To be determined

Group-C Expressway Performance Measures

- Volume to Capacity Ratio
- Crash Rate
- Average Incident Clearance Time*

Group-A Arterials

Group-A Arterials are arterial roadways that have been selected for travel time data collection. There will be five to 10 collection runs for each of the three major commuting times.

Group-A Arterials Performance Measures

- Travel Time Index
- Average Speed
- Crash Rate
- Volume to Capacity Ratio
- Signal Delay

Group-B Arterials

Arterials that were not chosen to have travel time data collected on. NIRPC's existing performance measures would be used for the Level of Service.

Group-B Arterials Performance Measures

- Crash Rate
- Volume to Capacity Ratio

APPENDIX Section 2: Level of Service Weights

Weights for Level of Service

These are the weights to determine the final Level of Service of a specific corridor. The weights will vary by function class.

Volume/Capacity Ratio Level of Service Rating		
V/C Ratio	LOS	Description
0.0-0.2	A	Free Flow
0.2-0.4	B	Reasonably Free Flow
0.4-0.7	C	Stable Flow
0.7-0.8	D	Approaching Unstable Flow
0.8-1.0	E	Unstable Flow
> 1.0	F	Forced or Breakdown Flow

Travel Time Index Level of Service Rating	
TTI	LOS
< 1.3	A
1.3-1.4	B
1.4-1.5	C
1.5-1.6	D
1.6-1.7	E
> 1.7	F

Average Speed/Posted Speed Level of Service Rating (Expressways)	
AS/PS (% Under Speed Limit)	LOS
0-14%	A
14-18%	B
18-20%	C
20-30%	D
30-50%	E
> 50%	F

Average Speed/Posted Speed Level of Service Rating (Arterials, Collectors)	
AS/PS (% Under Speed Limit)	LOS
0-10%	A
10-30%	B
30-45%	C
45-60%	D
60-70%	E
> 70%	F

Crash Rate (Crashes per million vehicle miles traveled)	
Crash Rate	LOS
< 1.25	A
1.25-2.25	B
2.25-2.75	C
2.75-4.35	D
4.35-7.45	E
> 7.45	F

Weights by function class

Group A Expressways	
Performance Measure	Weight
V/C Ratio	**3**
Projected V/C Ratio	1
2040 Model Average Speed/Posted Speed	1
Crash Rate*	1
Average Speed/Posted Speed	**5**
Travel Time Index	1
Total Weight Points	12

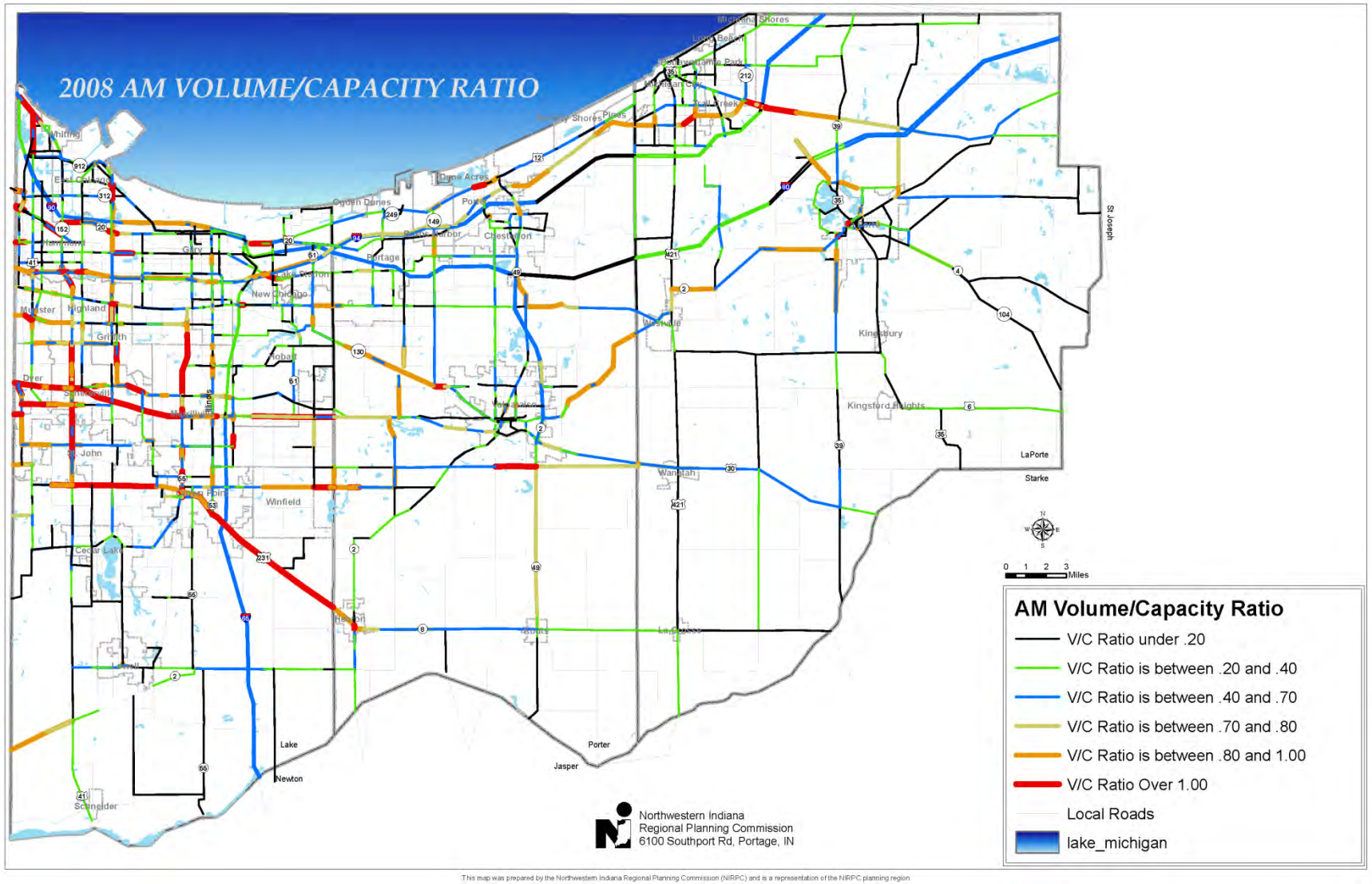
Group B Expressways	
Performance Measure	Weight
V/C Ratio	**3**
Projected V/C Ratio	1
2040 Model Average Speed/Posted Speed	1
Crash Rate*	1
Average Speed/Posted Speed	**5**
Travel Time Index	1
Total Weight Points	12

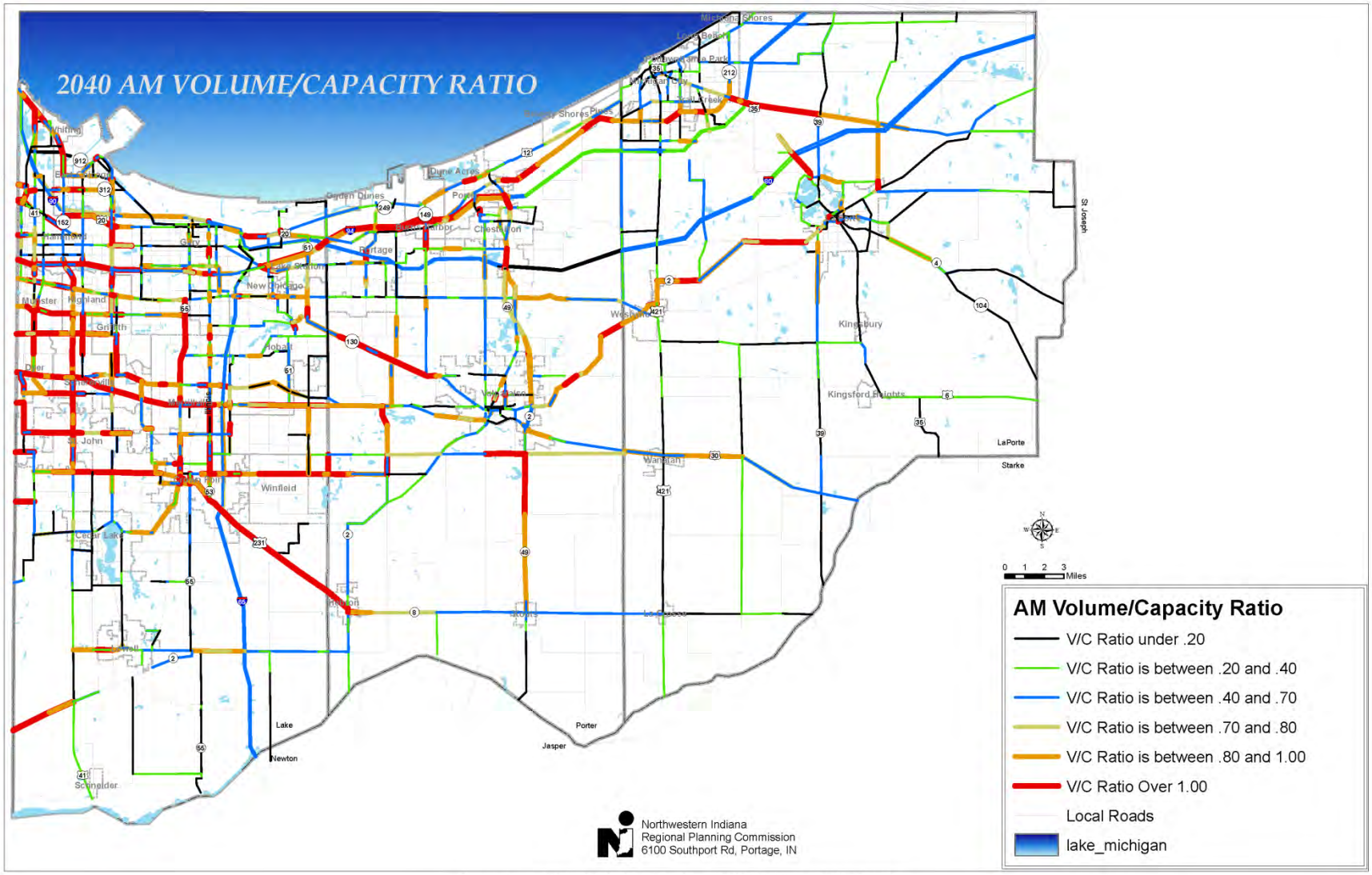
Group C Expressways	
Performance Measure	Weight
V/C Ratio	**6**
Projected V/C Ratio	1
2040 Model Average Speed/Posted Speed	1
Crash Rate*	1
Model Average Speed/Posted Speed	1
Total Weight Points	10

Group A Arterials	
Performance Measure	Weight
V/C Ratio	**3**
Projected V/C Ratio	1
2040 Model Average Speed/Posted Speed	1
Crash Rate*	1
Average Speed/Posted Speed	**5**
Intersection Delay	**2**
Travel Time Index	1
Total Weight Points	14

Group B Arterials	
Performance Measure	Weight
V/C Ratio	**6**
Projected V/C Ratio	1
2040 Model Average Speed/Posted Speed	1
Crash Rate*	1
Model Average Speed/Posted Speed	1
Total Weight Points	*10*

APPENDIX Section 3: Performance Measures Maps





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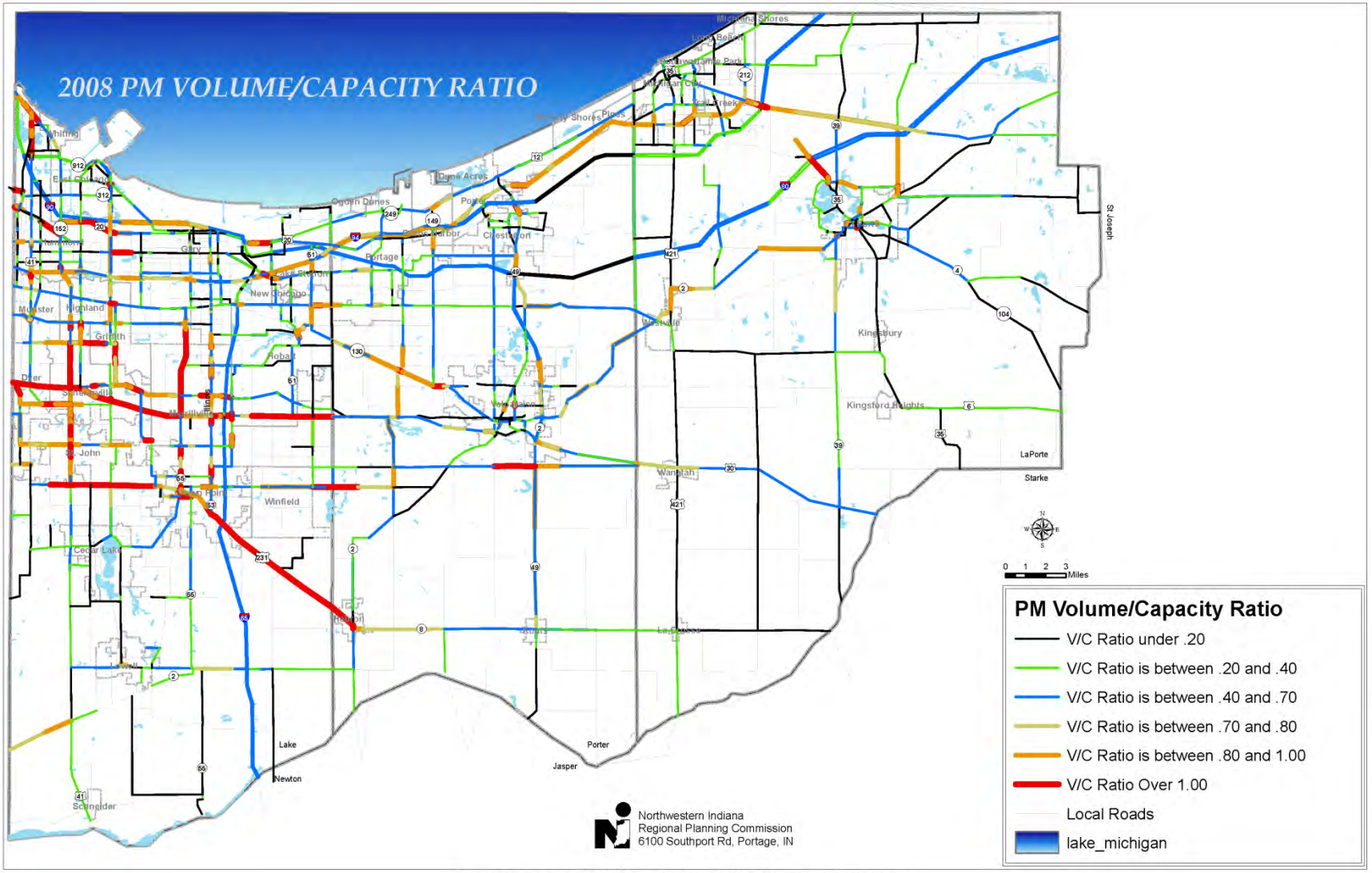

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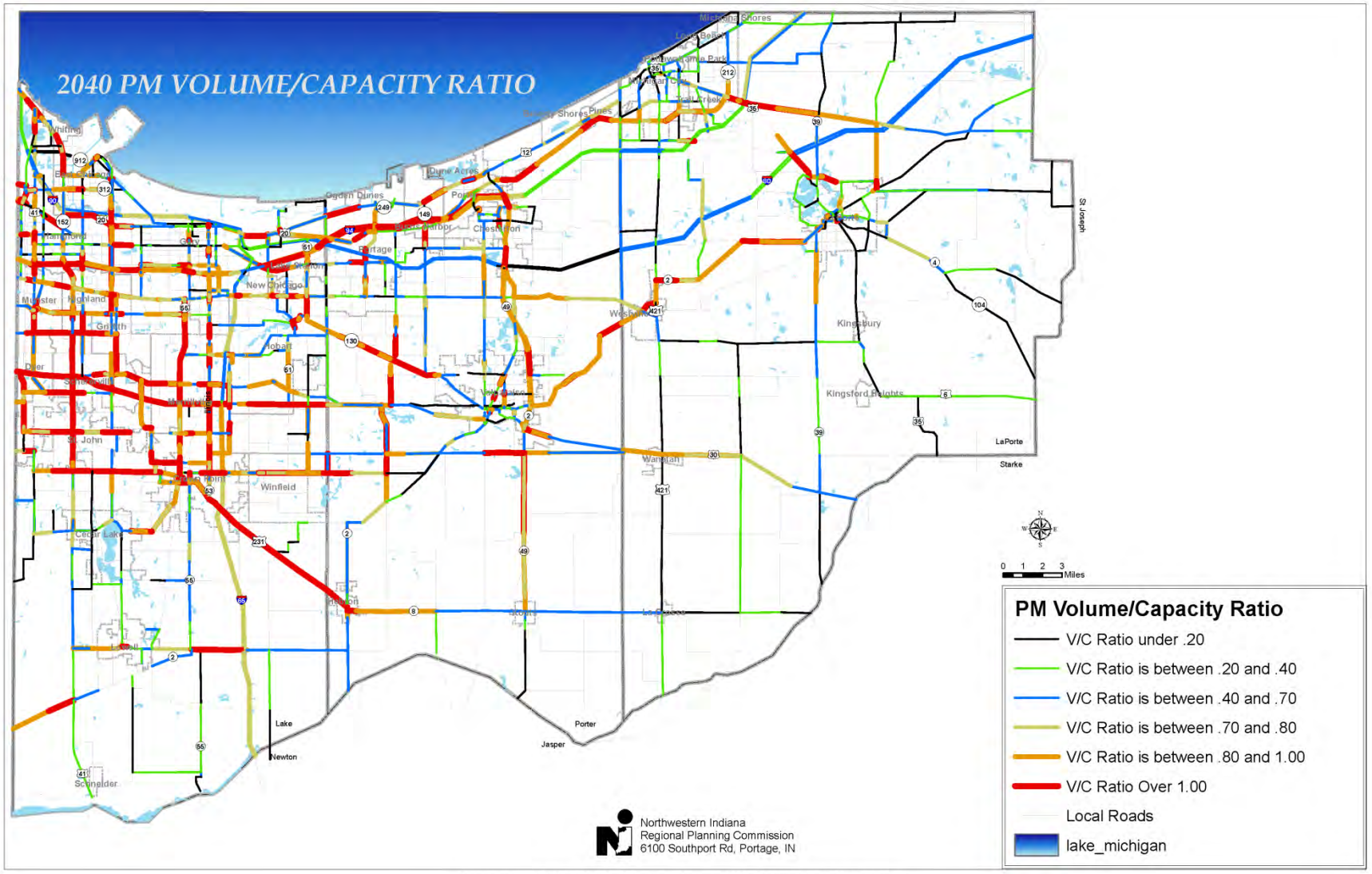

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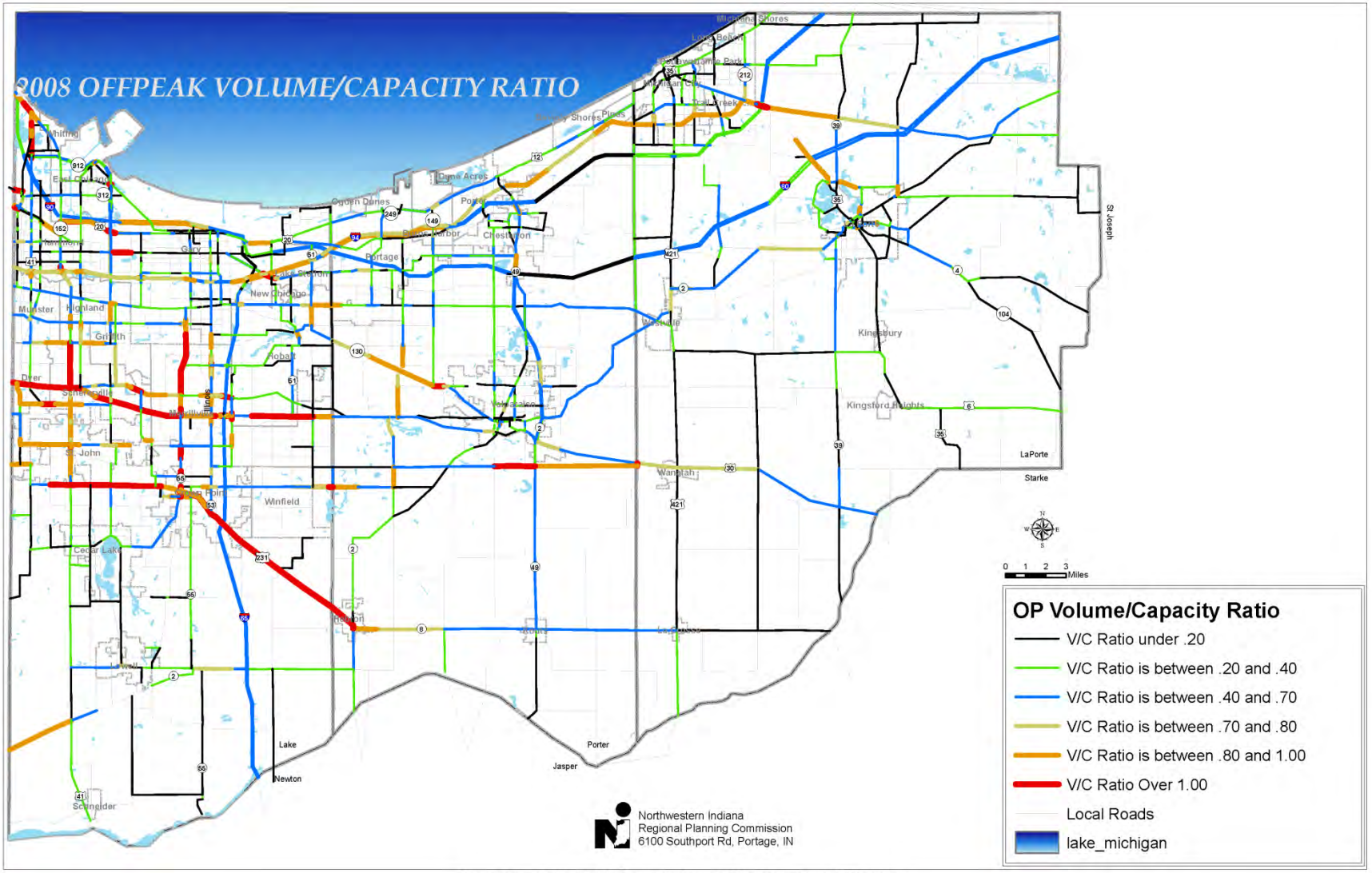
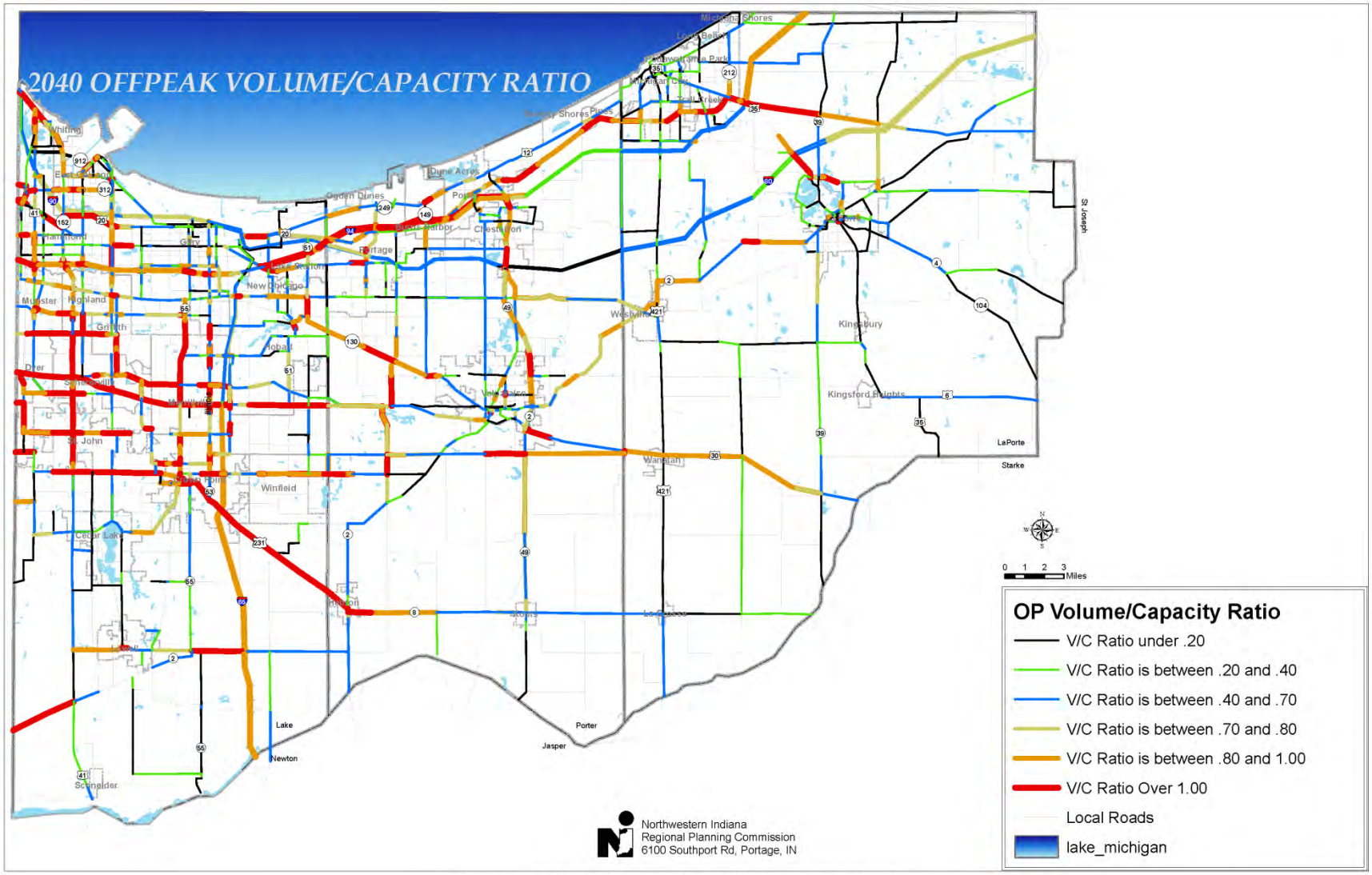

2008 OFFPEAK VOLUME/CAPACITY RATIO
Northwestern Indiana
Regional Planning Commission
6100 Southport Rd, Portage, IN
0 1 2 3
Miles
OP Volume/Capacity Ratio
V/C Ratio under .20
V/C Ratio is between .20 and .40
V/C Ratio is between .40 and .70
V/C Ratio is between .70 and .80
V/C Ratio is between .80 and 1.00
V/C Ratio Over 1.00
Local Roads
lake_michigan
This map was prepared by the Northwestern Indiana Regional Planning Commission (NIRPC) and is a representation of the NIRPC planning region



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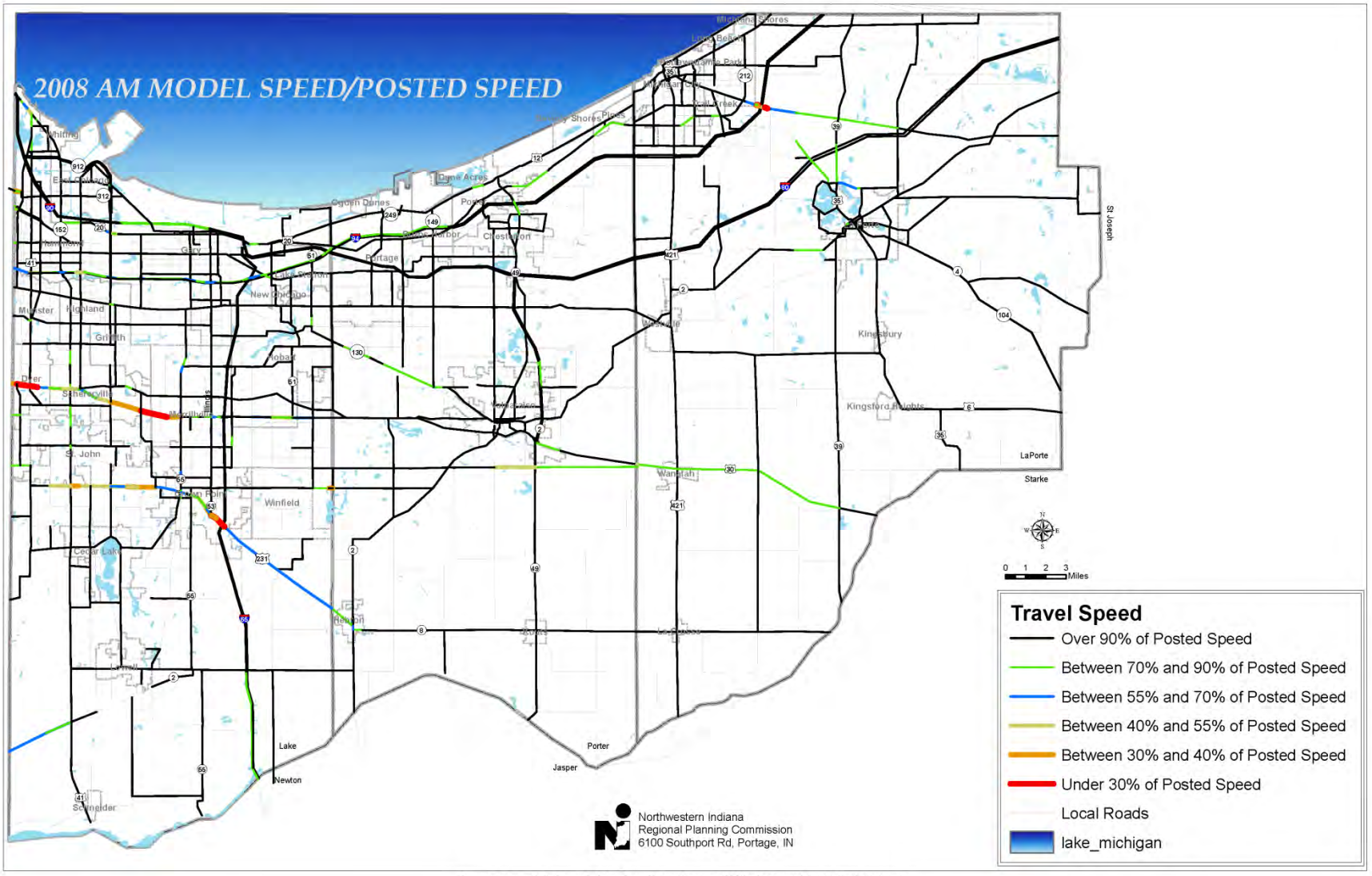
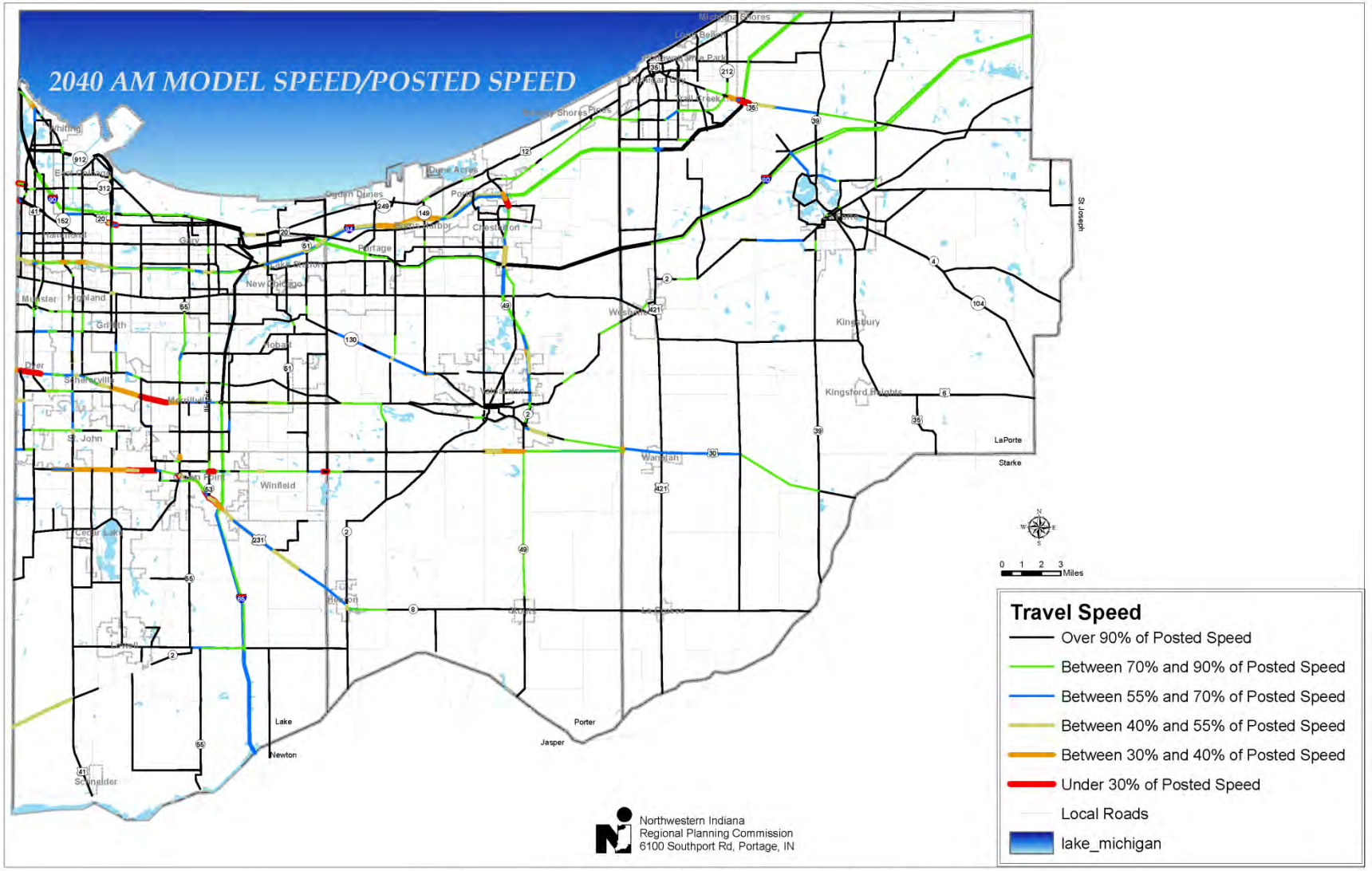
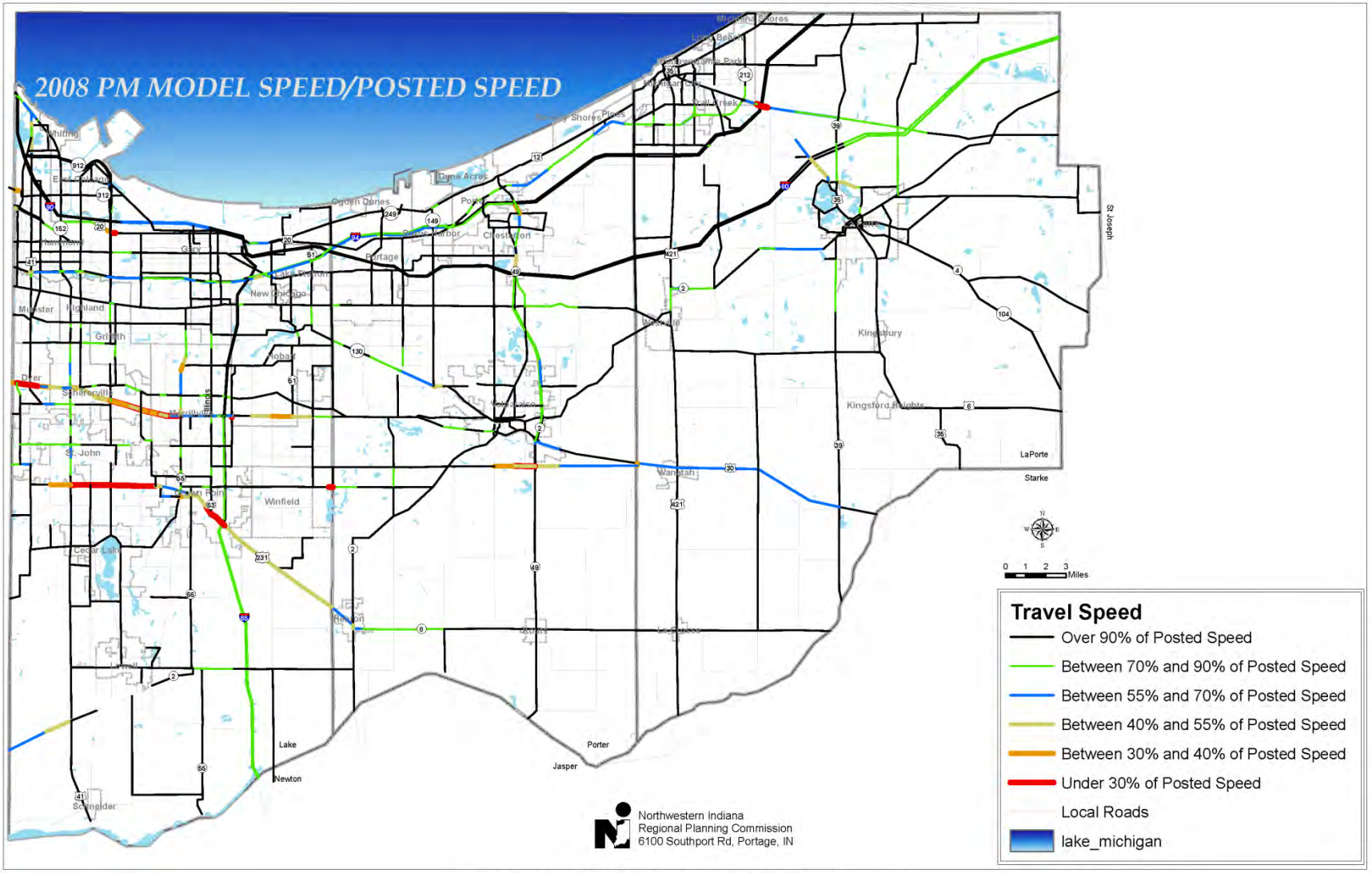

2008 AM MODEL SPEED/POSTED SPEED
Travel Speed
Over 90% of Posted Speed
Between 70% and 90% of Posted Speed
Between 55% and 70% of Posted Speed
Between 40% and 55% of Posted Speed
Between 30% and 40% of Posted Speed
Under 30% of Posted Speed
Local Roads
lake_michigan
0 1 2 3 Miles
Northwestern Indiana
Regional Planning Commission
6100 Southport Rd, Portage, IN
This map was prepared by the Northwestern Indiana Regional Planning Commission (NIRPC) and is a representation of the NIRPC planning region
Lake
Porter
Jasper
Newton
LaPorte
Starke
Winfield
St. John
Dyer
Schererville
Munster
Highland
Griffith
Hobart
Portage
Chesterton
Gary
Hammond
Whiting
Michigan City
Kingsbury
Kingsford Heights
Wanatah
Cedar Lake
Lowell
Schneider
St. Joseph


2040 AM MODEL SPEED/POSTED SPEED
Travel Speed
Over 90% of Posted Speed
Between 70% and 90% of Posted Speed
Between 55% and 70% of Posted Speed
Between 40% and 55% of Posted Speed
Between 30% and 40% of Posted Speed
Under 30% of Posted Speed
Local Roads
lake_michigan
0 1 2 3 Miles
Northwestern Indiana
Regional Planning Commission
6100 Southport Rd, Portage, IN
Lake
Porter
Jasper
Newton
LaPorte
Starke
St. Joseph
Kingsbury
Kingsford Heights
Winfield
St. John
Dyer
Schererville
Munster
Highland
Griffith
Hobart
Gary
Portage
Chesterton
Valparaiso
Wanatah
Westville
Michigan City
Dune Acres
Ogden Dunes
Beverly Shores
Long Beach
Michiana Shores
Whiting
Cedar Lake
Lowell
Schneider
This map was prepared by the Northwestern Indiana Regional Planning Commission (NIRPC) and is a representation of the NIRPC planning region



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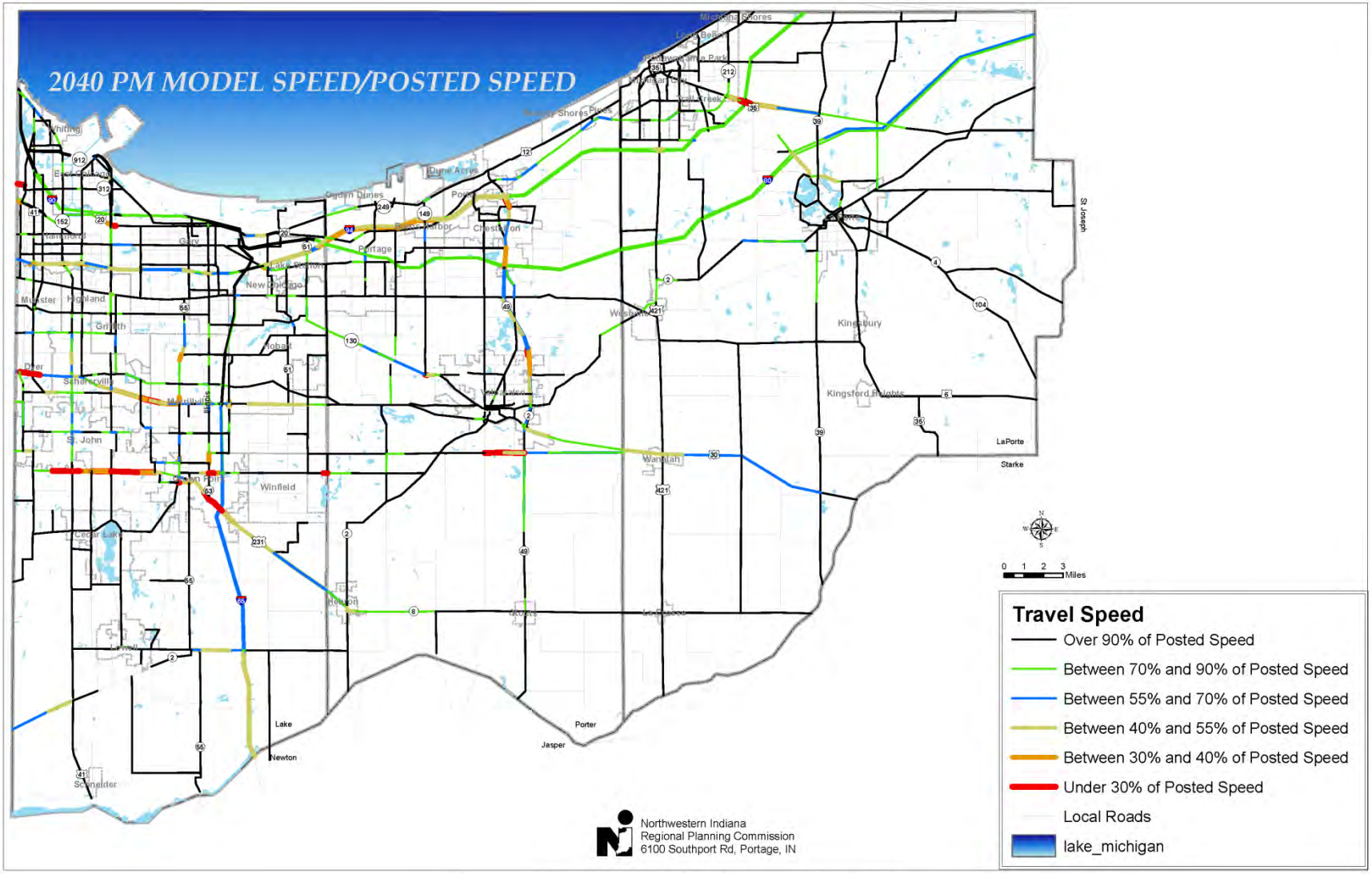
2040 PM MODEL SPEED/POSTED SPEED
Travel Speed
Over 90% of Posted Speed
Between 70% and 90% of Posted Speed
Between 55% and 70% of Posted Speed
Between 40% and 55% of Posted Speed
Between 30% and 40% of Posted Speed
Under 30% of Posted Speed
Local Roads
lake_michigan
0 1 2 3 Miles
Northwestern Indiana
Regional Planning Commission
6100 Southport Rd, Portage, IN
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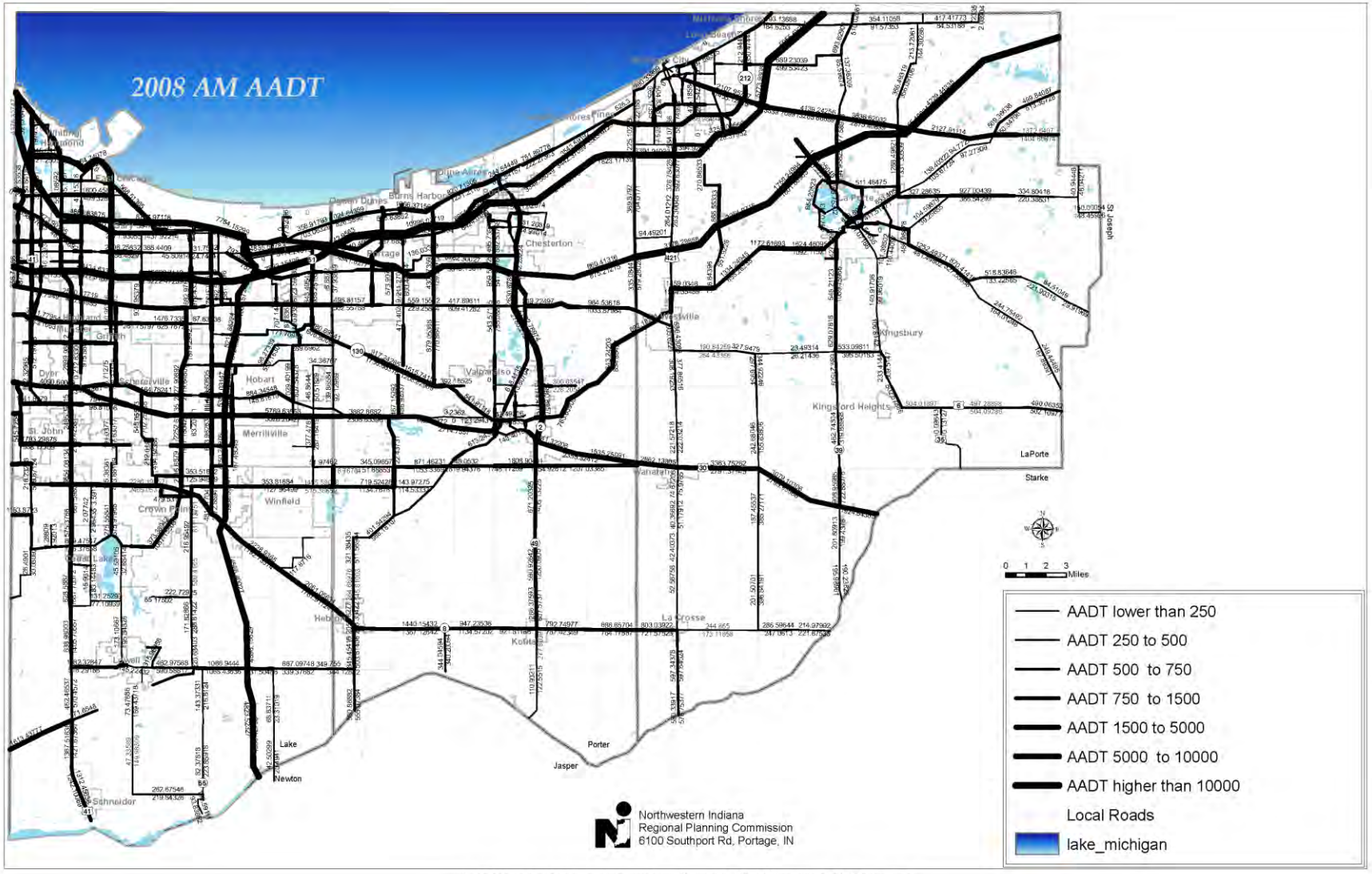

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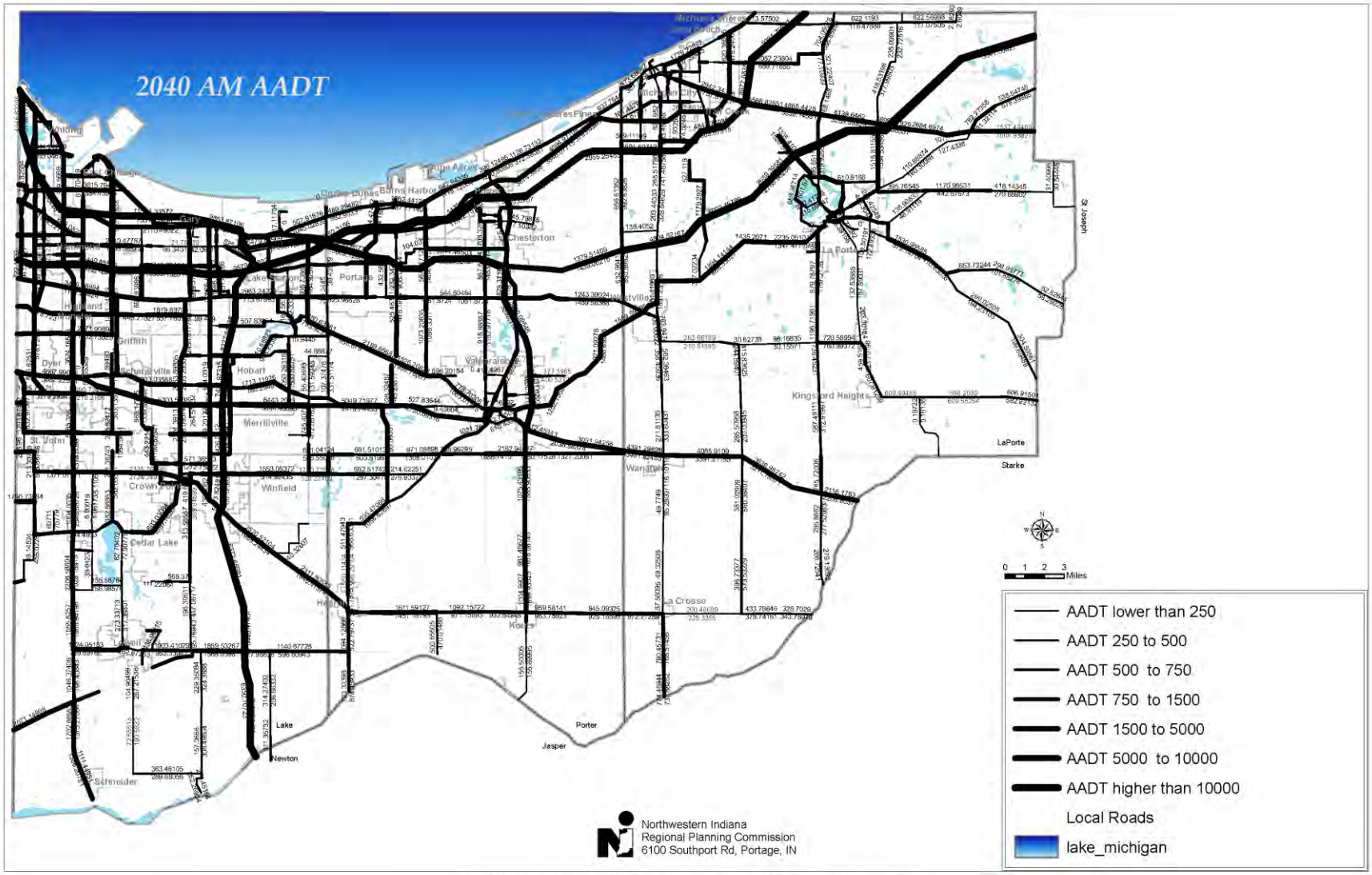
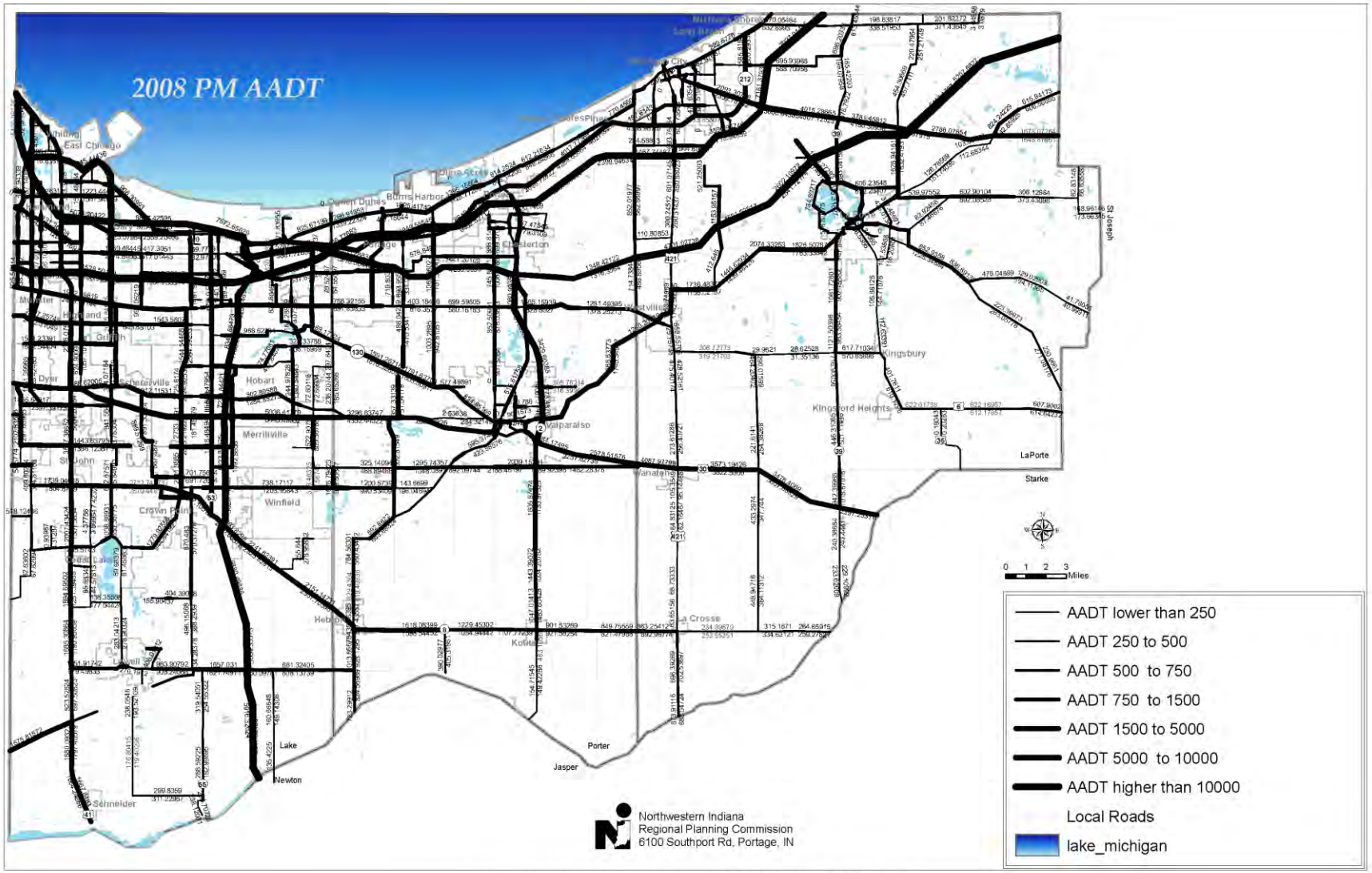
Appendices


2040 AM AADT
Northwestern Indiana
Regional Planning Commission
6100 Southport Rd, Portage, IN
0 1 2 3 Miles
AADT lower than 250
AADT 250 to 500
AADT 500 to 750
AADT 750 to 1500
AADT 1500 to 5000
AADT 5000 to 10000
AADT higher than 10000
Local Roads
lake_michigan



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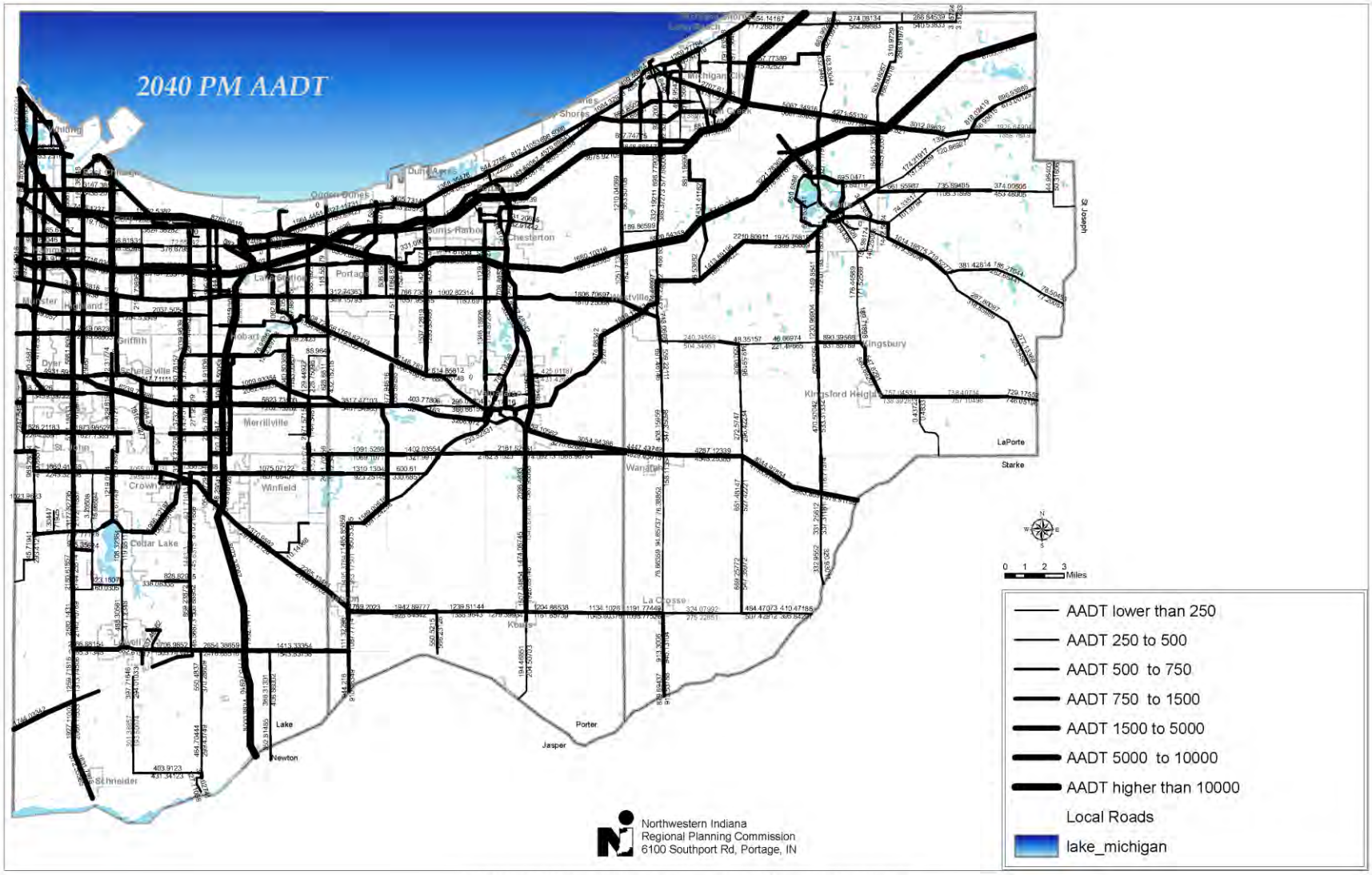
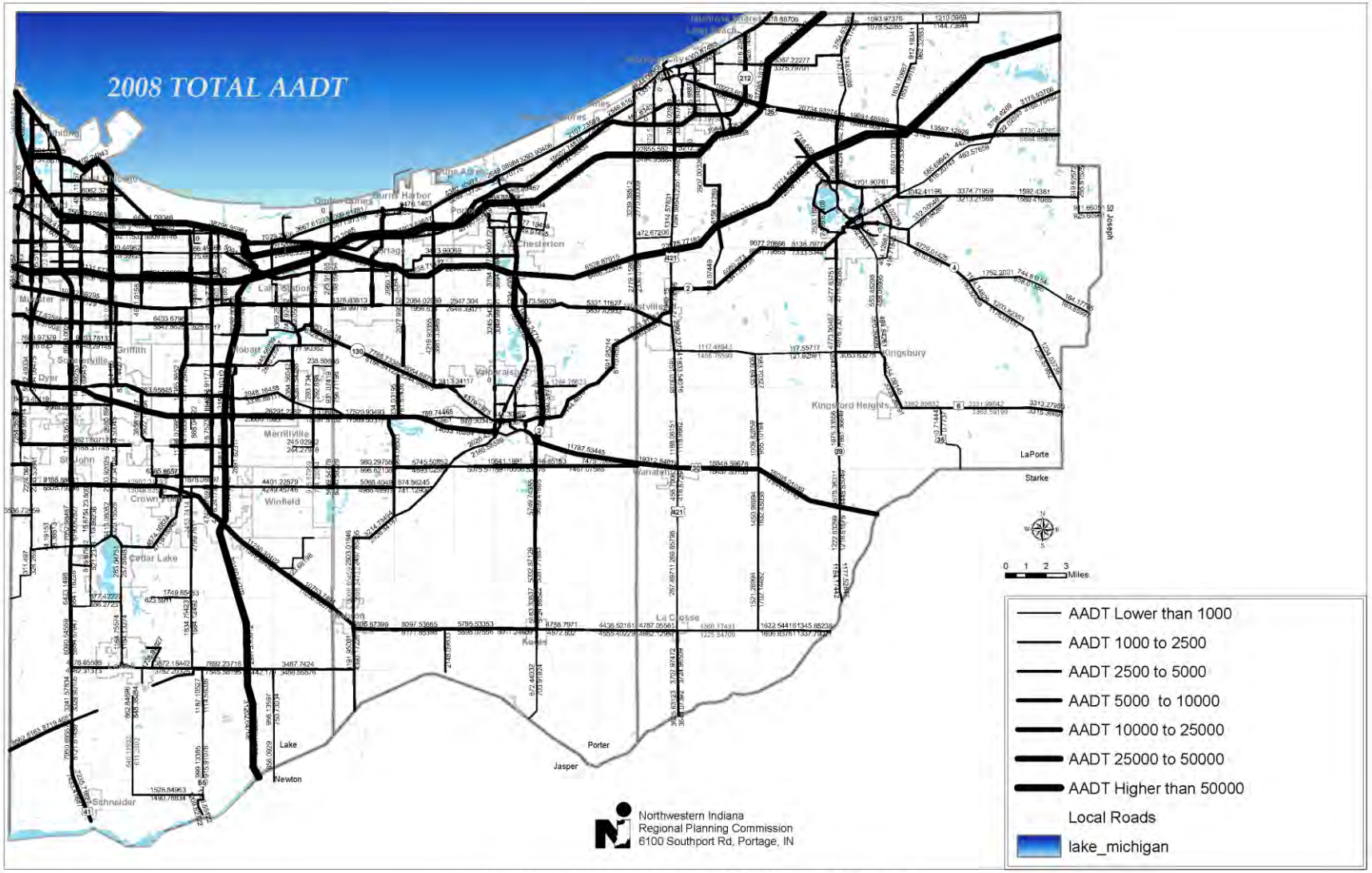
Appendices


2040 PM AADT
Northwestern Indiana
Regional Planning Commission
6100 Southport Rd, Portage, IN
0 1 2 3
Miles
AADT lower than 250
AADT 250 to 500
AADT 500 to 750
AADT 750 to 1500
AADT 1500 to 5000
AADT 5000 to 10000
AADT higher than 10000
Local Roads
lake_michigan



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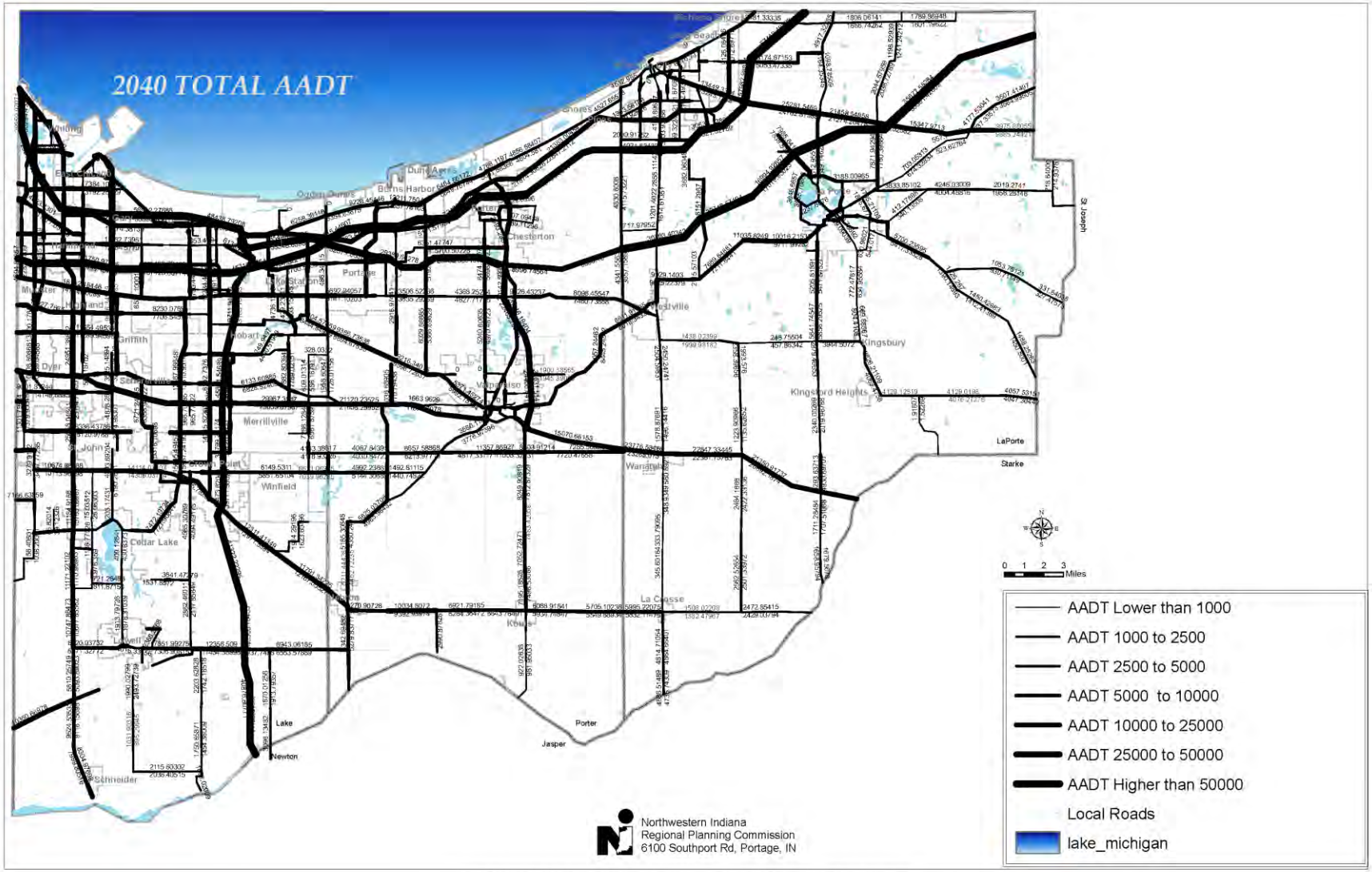

2040 TOTAL AADT
Northwestern Indiana
Regional Planning Commission
6100 Southport Rd, Portage, IN
0 1 2 3
Miles
AADT Lower than 1000
AADT 1000 to 2500
AADT 2500 to 5000
AADT 5000 to 10000
AADT 10000 to 25000
AADT 25000 to 50000
AADT Higher than 50000
Local Roads
lake_michigan

APPENDIX Section 4: Corridors Selected for Data Collection

Final Corridor Prioritization for Travel Time Data Collection

Ranking	Corridor	Function	From	To	Direction	Length (Miles)	County	AADT	AADT Rank	AADT Points	V/C Ratio	V/C Rank	V/C Points	Survey responses	Survey Points	Survey Rank	Avg Rank	Final Score
1	Calumet Ave.	Principal Arterial	77th Ave.	Indianapolis Blvd	N/S	14.75	Lake	20320	10	3	0.988	18	3	20	4	4	10.7	13
2	Indianapolis Blvd	Principal Arterial	Lake Co. Line	Illinois State Line	N/S	37.25	Lake	26752	6	3	0.983	20	3	44	4	1	9.0	13
3	Ridge Rd. /U.S. 6	Principal Arterial	Illinois State Line	U.S. 421	E/W	33	Lake, Porter, LaPorte	25912	9	3	1.26	6	3	22	4	3	6.0	13
4	U.S. 30	Principal Arterial	Illinois State Line	County Line	E/W	44.25	Lake, Porter, LaPorte	45516	2	3	1.386	1	3	41	4	2	1.7	13
5	U.S. 35	Principal Arterial	Starke County Line	Johnson Rd.	N/S	18.25	LaPorte	18729	11	3	1.039	13	3	6	3	9	11.0	12
6	SR 2	Principal Arterial	U.S. 421	U.S. 20	E/W	18.75	LaPorte	17818	12	3	1.381	2	3	6	3	8	7.3	12
7	SR 312/Chicago Ave.	Principal Arterial	Hohman Ave.	U.S. 12	E/W	5	Lake	14411	20	3	0.96	21	3	2	2	21	20.7	11
8	SR 130/Lincolnway	Principal Arterial	250 W	Washington St.	E/W	3.5	Porter	12426	28	2	1.209	8	3	7	3	7	14.3	11
9	Broadway Ave.	Principal Arterial	U.S. 231	Indiana Toll Rd./I-80/I-90	N/S	14.26	Lake	16756	14	3	1.342	3	3	5	2	10	9.0	11
10	Central Ave.	Minor Arterial	Willowdale Rd.	McCool Rd.	E/W	3.26	Porter	11016	35	2	1.006	16	3	5	2	11	20.7	10
11	U.S. 12	Principal Arterial	Indianapolis Blvd	U.S. 20	E/W	6.5	Lake	11456	30	2	1.116	10	3	3	2	17	19.0	10
12	Central Ave.	Minor Arterial	15th Ave.	Willowdale Rd.	E/W	9.5	Lake, Porter	13748	22	3	1.33	4	3	1	1	28	19.0	10
13	SR 55	Principal Arterial	133rd Ave.	Ridge Rd.	N/S	12.25	Lake	11988	29	2	1.166	9	3	4	2	12	16.7	10
14	Michigan Rd./U.S. 20	Principal Arterial	U.S. 12	SR 2	E/W	16.75	LaPorte	26734	7	3	1.084	12	3	1	1	27	15.3	10
15	SR 149	Principal Arterial	SR 130	U.S. 12	N/S	8.75	Porter	9787	43	2	0.952	23	3	1	1	31	32.3	9
16	Airport Rd./500 W	Minor Arterial	600 N	Central Ave.	N/S	3.75	Porter	10114	40	2	0.984	19	3	1	1	30	29.7	9
17	U.S. 20	Principal Arterial	U.S. 12	U.S. 35	E/W	26.25	Lake, Porter, LaPorte	13102	23	3	0.637	45	2	3	2	19	29.0	9
18	Crisman Rd /Willowcreek Rd./SR 249	Minor Arterial	U.S. 6	U.S. 12	N/S	5.75	Porter	16354	16	3	0.795	32	2	2	2	22	23.3	9
19	I-65	Expressway	Lake County Line	U.S. 30	E/W	18.25	Lake	31998	4	3	0.631	46	2	3	2	18	22.7	9
20	Kennedy Ave./Hush St.	Minor Arterial	Junction Ave.	Chicago Ave.	N/S	9	Lake	15862	17	3	0.77	34	2	4	2	14	21.7	9
21	U.S. 421	Principal Arterial	County Line	8th St.	N/S	31.5	LaPorte	12652	24	2	1.234	7	3	1	1	29	20.0	9
22	45th Ave.	Minor Arterial	Calumet Ave.	Broadway Ave.	E/W	9.5	Lake	15147	18	3	0.908	24	2	4	2	13	18.3	9
23	Mississippi st.	Minor Arterial	101st Ave.	61st Ave.	N/S	5	Lake	26319	8	3	1.28	5	3	0	0	38	17.0	9
24	400 N	Minor Arterial	Porter/LaPorte Co. Line	I-94	E/W	3.5	LaPorte	9799	42	2	0.953	22	3	0	0	43	35.7	8
25	Joliet Rd./SR 330	Minor Arterial	U.S. 30	U.S. 30	E/W	14	Lake, Porter	10212	39	2	0.993	17	3	0	0	42	32.7	8
26	Burr St.	Minor Arterial	Ridge Rd	U.S. 20	N/S	3.75	Lake	12496	26	2	0.643	42	2	2	2	23	30.3	8
27	SR 2	Principal Arterial	SR 130	U.S. 421	E/W	11.25	Porter, LaPorte	11177	34	2	1.035	14	3	0	0	41	29.7	8
28	U.S. 12	Principal Arterial	U.S. 20	Tremont Rd.	E/W	13	Lake, Porter	11295	31	2	1.014	15	3	0	0	40	28.7	8
29	Broad St.	Minor Arterial	Joliet Rd.	Ridge Rd.	N/S	4	Lake	11205	33	2	1.09	11	3	0	0	39	27.7	8
30	Grant St.	Minor Arterial	Ridge Rd.	U.S. 20	N/S	4	Lake	16530	15	3	0.86	28	2	1	1	32	26.0	8
31	Cline Ave./SR 912	Expressway	I-80/I-94	Indiana Toll Rd./I-80/I-90	N/S	N/A	Lake	39888	3	3	0.61	48	1	10	3	5	18.7	8
32	I-94	Expressway	Lake/Porter Co. Line	Michigan State Line	E/W	29.26	Porter, LaPorte	45708	1	3	0.631	47	1	8	3	6	18.0	8
33	Campbell St./Meridian Rd.	Minor Arterial	Lincolnway	600 N	N/S	3.75	Porter	6771	53	1	0.658	41	2	2	2	24	39.3	7
34	U.S. 20/U.S. 12	Principal Arterial	U.S.12/4th Ave.	U.S. 12/Melton Rd	E/W	5	Lake	17003	13	3	0.64	44	2	0	0	46	34.3	7
35	Hobart Rd./Ripley St.	Principal Arterial	Lake/Porter Co line.	U.S. 20	N/S	5.5	Lake	10244	38	2	0.798	30	2	1	1	33	33.7	7
36	15th Ave	Minor Arterial	Calumet Ave	Central Ave.	E/W	9.75	Lake	14305	21	3	0.797	31	2	0	0	45	32.3	7
37	61st Ave.	Principal Arterial	SR 55	SR 51	E/W	5.5	Lake	15144	19	3	0.88	26	2	0	0	44	29.7	7
38	U.S. 231	Principal Arterial	U.S. 41	Delaware St.	E/W	8	Lake	9421	44	2	0.764	35	2	0	0	50	43.0	6
39	165th Ave.	Minor Arterial	Hohman Ave.	Kennedy Ave.	E/W	3.25	Lake	10410	37	2	0.758	36	2	0	0	49	40.7	6
40	U.S. 12	Principal Arterial	Porter/LaPorte Co Line	Michigan State Line	E/W	8.5	LaPorte	9879	41	2	0.558	54	1	2	2	26	40.3	6
41	U.S. 20	Principal Arterial	Indianapolis Blvd	U.S. 12	E/W	5.5	Lake	8900	46	2	0.866	27	2	0	0	48	40.3	6
42	93rd Ave./91st Ave.	Minor Arterial	Sheffield Ave.	Chase St.	E/W	7.75	Lake	9104	45	2	0.886	25	2	0	0	47	39.0	6
43	SR 49	Principal Arterial	U.S. 30	Dunes State Park	N/S	15.5	Porter	12430	27	2	0.604	49	1	2	2	25	33.7	6
44	Indiana Toll Rd./I-80/I-90	Expressway	State Line	St. Josephs County Line	E/W		Lake, Porter, LaPorte	30660	5	3	0.602	50	1	1	1	34	29.7	6
45	Georgia Ave./ Virginia Ave.	Minor Arterial	Ridge Rd	U.S. 20	N/S	3.75	Lake	6589	54	1	0.641	43	2	0	0	57	51.3	5
46	Lake Shore Drive	Minor Arterial	Franklin St.	Michigan State Line	E/W	4.75	LaPorte	6912	52	1	0.672	40	2	0	0	56	49.3	5
47	Lenburg Rd./1050 N	Minor Arterial	McCool Rd.	100 E	E/W	5.25	Porter	7051	51	1	0.686	39	2	0	0	55	48.3	5
48	County Line Rd.	Minor Arterial	Joliet Rd.	Central Ave.	N/S	6.75	Lake	4495	64	1	0.437	64	1	4	2	16	48.0	5
49	77th Ave	Minor Arterial	Hart St	Cline Ave	E/W	4.5	Lake	7265	50	1	0.707	38	2	0	0	54	47.3	5
50	SR 2	Principal Arterial	U.S. 41	U.S. 231	E/W	14	Lake, Porter	7862	49	1	0.747	37	2	0	0	53	46.3	5
51	Earl Rd./Coolspring Ave.	Minor Arterial	Porter/LaPorte Co Line	Johnson Rd.	E/W	4.5	LaPorte	5588	59	1	0.548	57	1	3	2	20	45.3	5
52	Morse St./Clark St.	Minor Arterial	SR 2	165th Ave.	N/S	4.25	Lake	7990	48	1	0.777	33	2	0	0	52	44.3	5
53	Columbia Ave.	Minor Arterial	Calumet Ave.	Chicago Ave.	N/S	6.25	Lake	10756	36	2	0.523	61	1	1	1	35	44.0	5
54	Hitchcock St./Willard Ave.	Minor Arterial	400 N	Michigan St.	N/S	3.5	LaPorte	8267	47	1	0.604	29	2	0	0	51	42.3	5
55	SR 39	Minor Arterial	U.S. 35	Michigan State Line	N/S	9	LaPorte	6097	55	1	0.556	55	1	4	2	15	41.7	5
56	25th Ave.	Minor Arterial	Burr St.	SR-53	E/W	3.5	Lake	4947	62	1	0.481	62	1	1	1	37	53.7	4
57	U.S. 6	Minor Arterial	U.S. 421	St. Joseph County Line	E/W	21.25	LaPorte	5985	56	1	0.546	58	1	1	1	36	50.0	4
58	93rd Ave.	Minor Arterial	Chase St.	Mississippi St.	E/W	3	Lake	11268	32	2	0.549	56	1	0	0	59	49.0	4
59	Sheffield Ave./Hohman Ave	Minor Arterial	Ridge Rd	Calumet Ave	N/S	7.5	Lake	12587	25	2	0.536	59	1	0	0	58	47.3	4
60	Parrish St.	Minor Arterial	151st Ave.	117th Ave.	N/S	4.5	Lake	2054	69	1	0.2	69	1	0	0	69	69.0	3
61	Grand Blvd	Principal Arterial	U.S. 30	10th St.	N/S	3.5	Lake	2063	68	1	0.202	68	1	0	0	68	68.0	3
62	Joliet Rd.	Minor Arterial	U.S. 30	U.S. 130	E/W	3.75	Porter	2527	67	1	0.251	67	1	0	0	67	67.0	3
63	Boyd Blvd	Minor Arterial	U.S. 35	SR 2	N/S	3.25	LaPorte	3064	66	1	0.298	65	1	0	0	66	65.7	3
64	SR 212	Principal Arterial	U.S. 20/U.S. 35	U.S. 12	N/S	3.25	LaPorte	5295	61	1	0.257	66	1	0	0	65	64.0	3
65	133rd Ave./ Lake Shore Drive	Principal Arterial	White Oak Ave.	Morse St.	E/W	4	Lake	4758	63	1	0.463	63	1	0	0	64	63.3	3
66	SR 4	Principal Arterial	U.S. 35	200 E	E/W	3.25	LaPorte	5431	60	1	0.528	60	1	0	0	63	61.0	3
67	SR 8	Minor Arterial	575 W	U.S. 421	E/W	16	Porter, LaPorte	4028	65	1	0.579	51	1	0	0	62	59.3	3
68	173rd Ave	Minor Arterial	Hohman Ave.	Kennedy Ave.	E/W	3.25	Lake	5890	58	1	0.573	53	1	0	0	61	57.3	3
69	Sheffield Ave./Hart st.	Minor Arterial	101st Ave.	U.S. 30	N/S	4.25	Lake	5935	57	1	0.577	52	1	0	0	60	56.3	3

ENVIRONMENTAL MITIGATION

Background

Roads, highways and bridges can have a wide variety of environmental impacts. The best way to avoid these impacts is to first identify and understand what environmental resources and issues exist in a proposed project area. This information can then be incorporated into the planning and design phases to minimize or all together avoid foreseeable negative impacts.

The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) requires metropolitan transportation plans to include a discussion of potential environmental mitigation activities in consultation with federal, state, and tribal wildlife, land management and regulatory agencies. The mitigation activities identified in the plan are to be at the policy and/or strategic level and not project specific.

Typically mitigating project impacts focuses on replacing similar resources as close to the impact site as feasible. This approach generally focuses on meeting regulatory requirements while not necessarily serving the highest ecological needs in a given area. To help address this, the U.S. Department of Transportation Federal Highway Administration and its project partners released Eco-Logical: An Ecosystem Approach to Developing Infrastructure Projects. The purpose of this document was to guide agencies and partners to work proactively in developing and implementing and ecosystem approach for mitigating the effects of transportation infrastructure projects. www.environment.fhwa.dot.gov/ecological/eco_index.asp

An ecosystem approach can help agencies move from project boundary confinements and regulatory checklists to habitat conservation on broader ecosystem scales. This approach can also lead to more cost effective and efficient ways to avoid and minimize impacts while identifying and seizing conservation and mitigation opportunities that are quickly disappearing with development pressures.

The benefits to this approach include:

- Safer, improved infrastructure
- Improved watershed and ecosystem health
- Increased connectivity and conservation
- Efficient project development
- Increased transparency

While this approach will not necessarily eliminate all conflict, it does provide a mechanism to develop acceptable solutions that compliment multiple agency missions.

To address the requirements of SAFETEA-LU while also realizing the benefits of incorporating the ecosystem approach to transportation planning in Northwest Indiana, NIRPC has included this chapter on environmental mitigation and a plan for ongoing consultation with environmental and natural resource agencies as part of the Long Term Transportation Plan.

State and Regional Conservation and Restoration Plans

The following state and regional plans are included here as a beginning discussion point for identifying critical areas for conservation and/or restoration in Northwest Indiana. In some cases a plan may not specifically identify critical areas (spatially) but in most cases they do include priorities.

Indiana Wetlands Conservation Plan

The purpose of the Indiana Wetlands Conservation Plan (IWCP) is to achieve wetland conservation in a manner that is mutually beneficial. The IWCP serves as a framework for discussion and problem solving while establishing common ground on which progress of wetland conservation can be made. It also sets specific actions to achieve progress. While the IWCP does not specifically identify priority areas it does provide the following recommendations regarding prioritization.

1. Given that 85% of Indiana's wetlands have been lost, all remaining wetlands are important and should be considered important for conservation. However, a system for prioritizing wetlands for conservation must be developed.
2. Priorities for conserving wetlands based on water quality, flood control, and groundwater benefits should be made at the watershed or sub-watershed level.
3. Special concerns for water quality, flood control, and groundwater should be identified for each watershed.
4. Statewide priorities for conserving wetlands based on biological and ecological functions should be developed based on the following criteria:
    a. Rarity of wetland type
    b. Presence of endangered, threatened, or rare species
    c. Presence of endangered, threatened, or rare species habitat, but species not yet identified at the site
    d. Diversity of native species
    e. Diversity of wetland community types

f. Proximity of other valued ecosystem types
g. Natural quality (amount of disturbance/degradation)
h. Irreplaceability (can the wetland type be re-created)
i. Recoverability (can the wetland type recover from disturbance it has experienced)
j. Size
k. Location

The priorities should be identified based on the natural regions currently used by the Indiana Department of Natural Resources, Division of Nature Preserves and many other agencies and organizations.

5. Historical and recreational benefits of wetlands should be considered in identifying priorities.
6. Based on the statewide biological and ecological priorities, a process should be developed to assist in identifying wetland priorities at the watershed or subwatershed level.
7. Better information on Indiana's wetland resources is needed to more effectively identify scientifically based priorities described in Appendix G.

For more information about the IWCP please visit www.in.gov/dnr/fishwild/3350.htm.

Indiana Comprehensive Wildlife Strategy

The Indiana Comprehensive Wildlife Strategy (CWS) was developed by the Indiana Department of Natural Resources (IDNR) in coordination with conservation partners across the state to protect and conserve habitats and associated wildlife at a landscape scale. It provides a comprehensive overview of conservation in Indiana and identifies needs and opportunities for helping prevent species from becoming threatened or endangered in the future. Species of greatest conservation need (SGCN) were identified utilizing the most current published list of federally endangered, threatened or candidate species and Indiana's list of endangered species and species of special concern. The Indiana CWS was developed using an information system designed to link SGCN to all wildlife species and the habitats on which they depend. This was done by using a set of representative species as surrogates for guilds including the SGCN and which were reflective of habitat needs for all wildlife species. Major habitat categories included agricultural lands, aquatic systems, barren lands, developed lands, forest lands, grasslands, subterranean systems, and wetlands.

The CWP provides implementation guidance organized by habitat focus areas. The possible threats as determined by technical experts to the SGCN and their habitat are listed. Indiana's priority conservation actions and implementation guidance are presented for both the SCGN and their habitats. While too numerous to list here for each habitat category, the following common elements are reoccurring.

- Habitat protection through regulation
- Habitat protection and restoration on public lands
- Habitat protection and restoration incentives
- Exotic/invasive species control
- Protection of adjacent buffer zone
- Pollution reduction
- Corridor development and protection
- Artificial habitat creation
- Cooperative land management agreements
- Adaptive management

For more information about the Indiana Comprehensive Wildlife Strategy please visit www.in.gov/dnr/fishwild/files/CWS_MANUSCRIPT.pdf

Indiana Statewide Forest Assessment & Strategy

The Indiana Statewide Forest Strategy was developed by the IDNR in coordination with natural-resource professionals, landowners, conservationists, land stewards and forest stakeholders. It recognizes the most important issues that increasingly threaten the sustainability and ecological capacity of Indiana's forests to provide the benefits of clean air, carbon sequestration, soil protection, wildlife habitat, wood products and other values, goods and services. The plan addresses a limited forest base being fragmented or converted to other land uses, like subdivision housing, paved surfaces or row crop agriculture. The plan will enhance Indiana forests' ability to conserve soil and water resources by protecting existing targeted forest cover in watersheds and promoting reforestation along key streams and rivers. It will guide and improve efforts to control and combat the economically and ecologically disastrous effects of invasive plants in woodlands and make dramatic strides in the preservation of biological diversity by assuring that increasingly simplified and one-dimensional forests become more diverse and connected with one another.

The following long-term strategies have been identified:

1. Conserve, manage, and protect existing forests. Especially large patches.
2. Restore and connect forests, especially in riparian areas.
3. Expand Best Management Practices, with special attention to invasive species.
4. Coordinate education, training, and technical assistance, especially to develop strategic partnerships.
5. Maintain and expand markets for Indiana hardwoods, especially those that are sustainably certified and are for local use.

Figure 1 was generated as part of the Statewide Forest Assessment to prioritize and reflect the relative importance of Indiana forest issues. The figure was generated by compositing forest issues and assigning a relative weighting score based on stakeholder feedback.

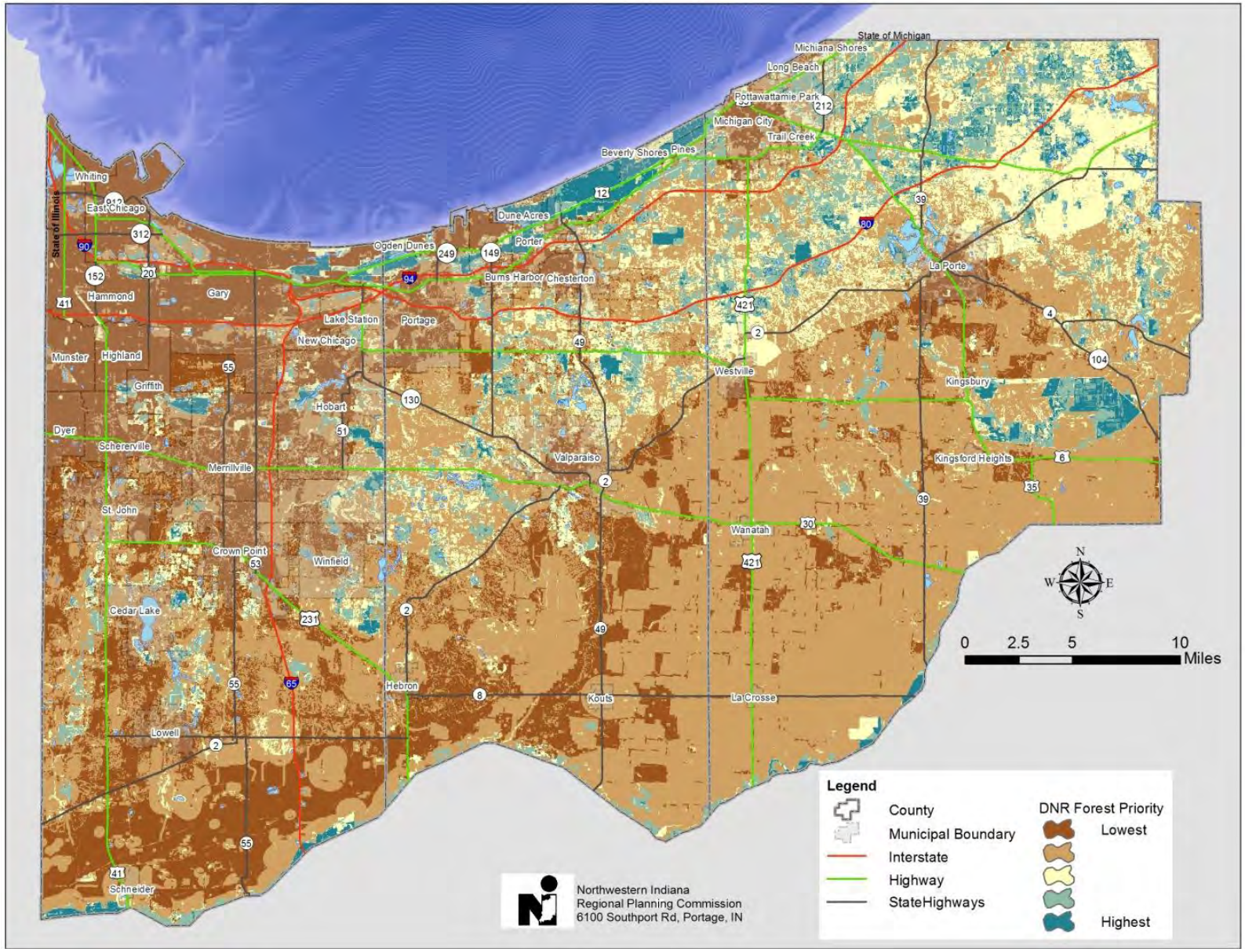


Figure 1. Forest Priority Areas. IDNR.

For additional information about the Indiana Statewide Forest Assessment and Strategy please visit www.in.gov/dnr/forestry/5436.htm.

Coastal & Estuarine Land Conservation Program Plan

The Coastal & Estuarine Land Conservation Program (CELCP) Plan was developed by the IDNR Lake Michigan Coastal Program to prioritize land conservation needs and nominate potential projects for federal funding within Indiana's federally approved coastal program boundary. The purpose of the CELCP is to protect important coastal and estuarine areas that have significant conservation, recreation, ecological, historical, or aesthetic values, or that are threatened by conversion from their natural or recreational state to other uses. The CELCP gives priority to lands that can be effectively managed and protected, provide public access to coastal and estuarine resources, and have significant ecological value.

Indiana's CELCP Plan is based on the Indiana Biodiversity Initiative (IBI) model which identifies areas using Heritage plant occurrences and umbrella animal habitat information. The IBI project spatially identified ecologically sensitive areas critical for preservation. Figure 2 shows priority preservation areas within Indiana's coastal area based on the IBI methodology.

For additional information about the CELCP Plan please visit www.in.gov/dnr/lakemich/6133.htm.

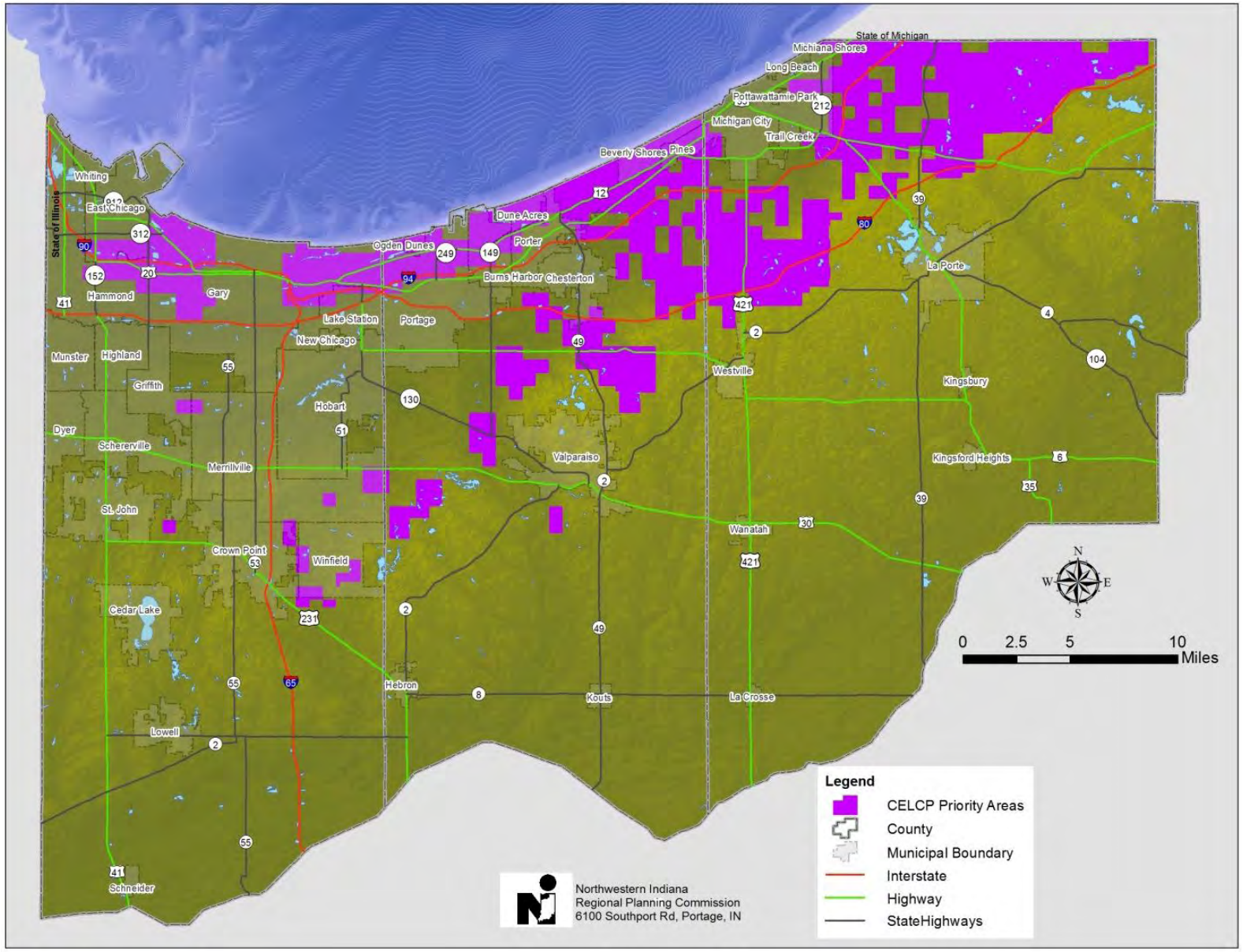


Figure 2. CELCP Plan Priority Areas. IDNR.

Indiana Nonpoint Source Management Plan

The Indiana Nonpoint Source Management Plan, prepared by the Indiana Department of Environmental Management (IDEM) Office of Water, reflects the current goals and direction of Indiana's Nonpoint Source Management Program. It documents the methods the state will use to meet the state's long-term goal of measurable improvements in water quality through education, planning, and implementation while also meeting United States Environmental Protection Agency's (U.S. EPA's) criteria. As required by Section 319(h), each state's Nonpoint Source Management Program Plan describes the state program for nonpoint source management and serves as the basis for how funds are spent. Three activity funding categories have been established by IDEM to provide a cost-effective approach to insuring pollutant load reductions at the local watershed scale (Figure 3). While the plan does not specifically identify critical areas it does identify where IDEM feels the greatest water quality improvements can be realized given limited Section 319 funding.

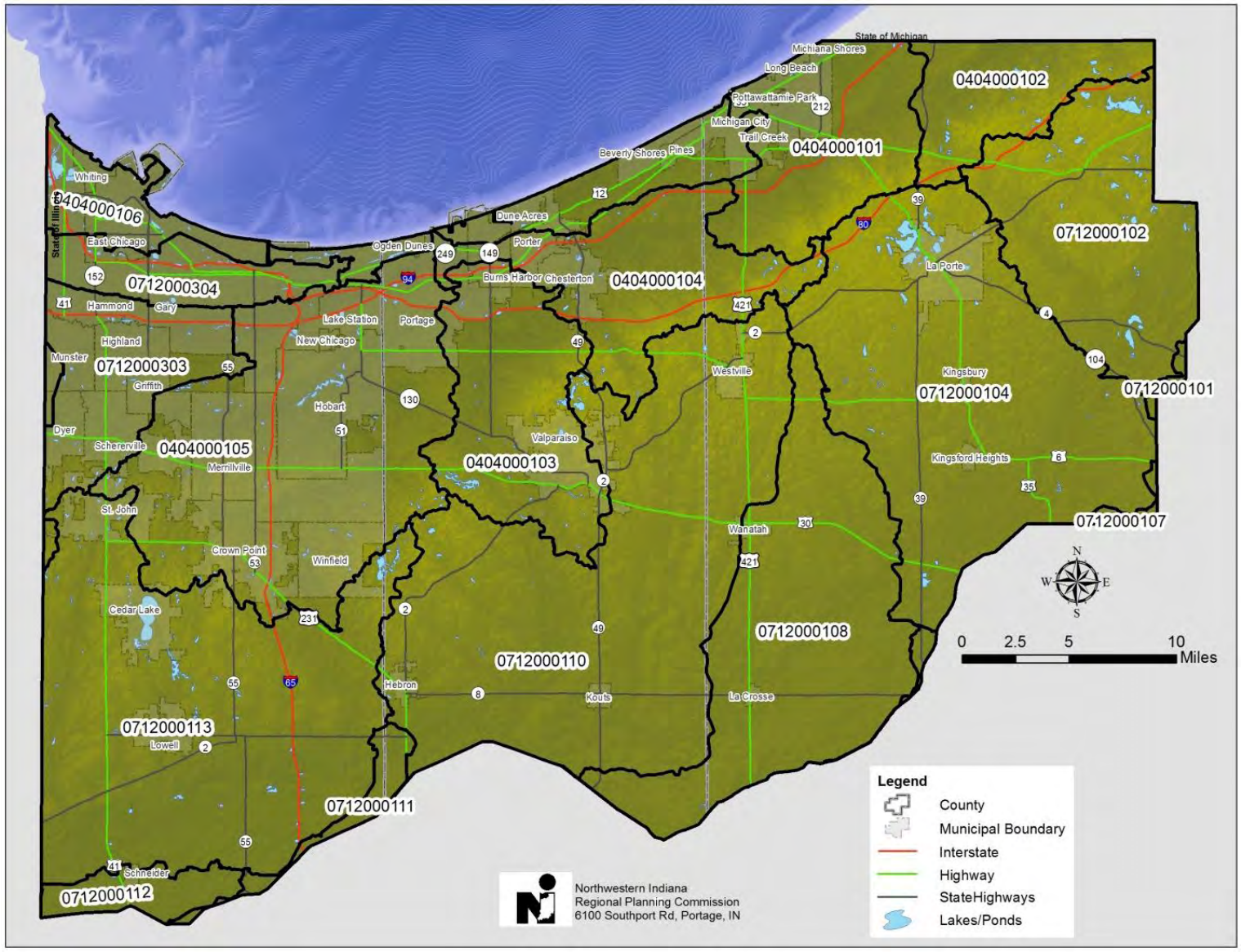


Figure 3. Watershed Boundaries. USGS.

Category 1: Categories with this ranking are eligible for inclusion in Section 319 grant applications as the category historically has produced reliable load reductions, potentially has a high impact on water quality, and can reasonably be addressed at a local watershed level. Activities in the given category would be chosen first to address NPS pollution in critical areas.

Category 2: Categories with this ranking are potentially eligible for inclusion in Section 319 grant applications, provided applicants can demonstrate within a given watershed that all Category 1 priorities have been addressed by previous activities. The high cost of individual projects in these categories, when compared with Category 1 projects, makes these categories less desirable. IDEM will consider funding of these on a case-by-case basis.

Category 3: Categories with this ranking are likely not eligible for inclusion in a Section 319 application, even if applicants can demonstrate within a given watershed that all Category 1 and 2 projects have been addressed by previous activities. Many NPS sources in these categories are the responsibility of other state agencies or programs, or will require statewide solutions or expenditures of funds that far exceed the capacity of the 319 program. These categories could be counted as match towards grant activities, provided load reductions are ensured and a clear link is documented between the activity and the NPS problem that will be addressed.

Project activity categories:

- Agricultural Management (Category 1)
- Atmospheric Deposition (Category 3)
- Closed Landfills and Solid Waste Disposal Sites (Category 3)
- Ground Water (Category 2)
- Land Application of Non-Agricultural Wastes (Category 3)
- Urban Issues (Category 1)
- Natural Resource Extraction (Category 2)
- On-Site Sewage Disposal (Categories 1 & 3)
- Sediment Removal (Category 3)
- Stream Bank/Shoreline Erosion (Category 2)
- Timber Management (Category 2)
- Transportation (Category 2)

For more information about the Indiana Nonpoint Source Management Plan please visit www.in.gov/idem/5970.htm.

Local Watershed Management Plans

To date most watershed management planning and implementation efforts have been focused in the Little Calumet-Galien sub-basin. Figure 4 shows the watershed plans developed and approved by IDEM under Section 319. Each watershed management plan includes a list of stakeholders involved in the project; a watershed characterization inventory, identification of problems and causes on which the stakeholder groups have chosen to focus; identification of potential pollutant sources and calculated loads; water quality improvement or protection goals; identification of critical areas where implementation projects will need to occur; and finally a list of measures and BMP's needed to achieve plan goals.

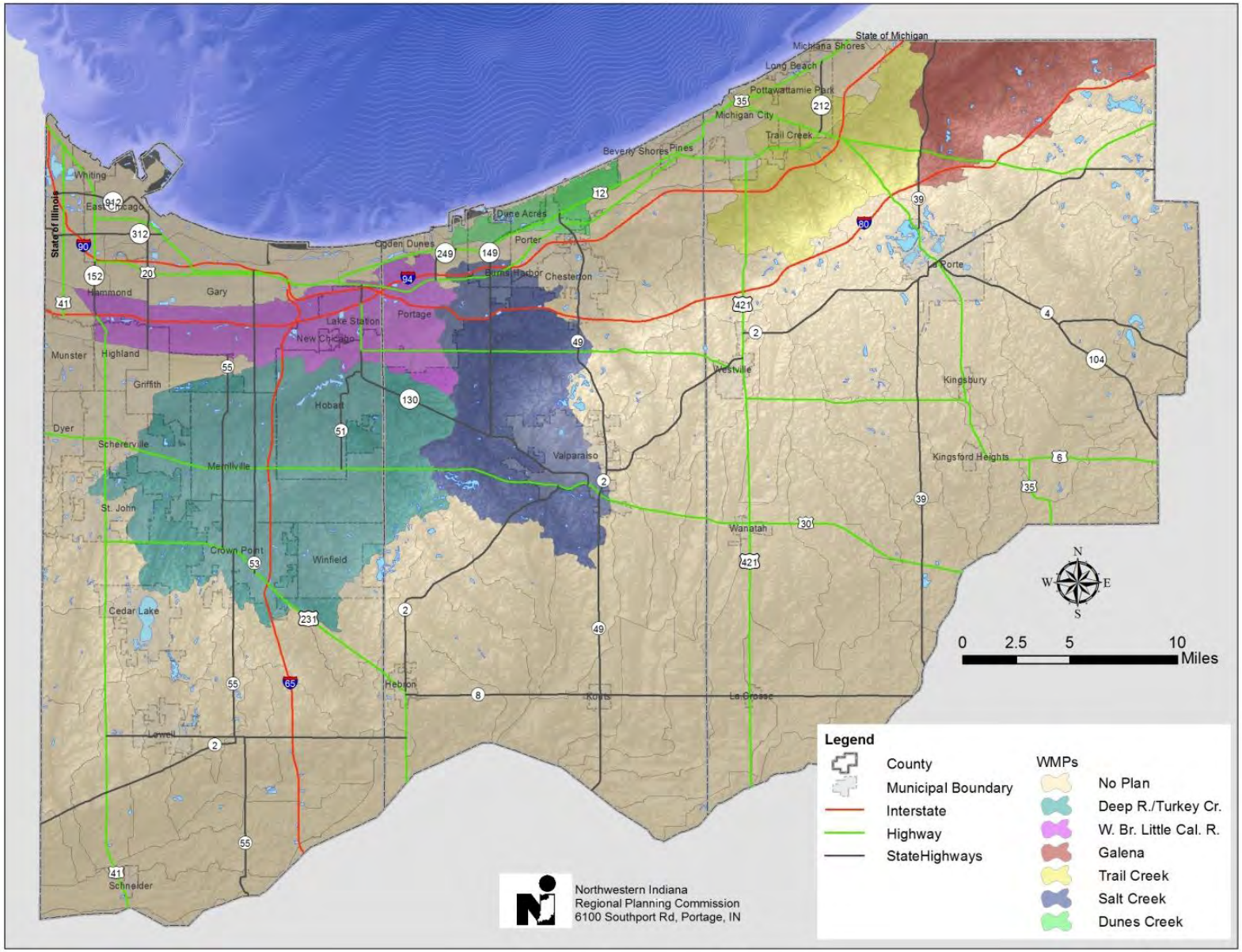


Figure 4. State Approved Watershed Management Plans. IDEM.

Deep River/Turkey Creek

The Deep River/Turkey Creek watershed covers an area of approximately 124 square miles in Lake and Porter Counties. In the Deep River subwatersheds, there appeared to be a strong correlation between pollutant loading (total suspended solids, nutrients, and E. coli), potential soil erodiblity (T factor) ratings, and the presence of highly erodible lands (HEL). In the Turkey Creek subwatersheds, E. coli concentrations and poor in-stream habitat quality showed a correlation with urban land uses and channel modifications. Streambank erosion was also identified as an issue partly due to riparian zone and floodplain modifications.

For the most part this plan does not specifically identify critical areas for implementation. However the plan does encourage the following restoration strategies throughout the watershed where opportunities present themselves:

- Wetland and tree conservation
- Minimizing impervious surfaces
- Linear parks and open space preservation
- Constructed wetlands, bio-filters, catch basin inserts, buffer/ filter strips, etc.
- Shoreline and streambank bioengineering stabilization
- Native shoreline plantings
- Bridge storm water outlet retrofits
- Target BMP's towards highly erodible lands

The Deep River/Turkey Creek watershed management plan is available at http://www.in.gov/idem/nps/3254.htm.

West Branch Little Calumet River/Willow Creek

The West Branch Little Calumet River/Willow Creek watershed management plan covers approximately 54 square miles of Lake and Porter Counties. The primary pollutants of concern identified in the plan include E. coli, total suspended solids, nitrogen and phosphorous.

The following long-term implementation goals were identified for critical areas within the watershed:

- Land acquisition and funding to restore 4,780 acres of wetland
- Install 300 rain gardens in participating communities
- Install 20 green roofs or green parking lots
- Install infiltration BMP's at 10 sites

- Install 2,000 lineal feet of vegetated buffer
- Install 10 retention/detention ponds
- Implement stream and riparian restoration at 5 sites
- Install 5,000 lineal feet of vegetated channel in urban area
- Identify 20 existing priority wetland and riparian restoration areas and mitigate/restore at least 10
- Acquire at least 10 existing priority wetland and riparian areas through purchase or conservation easement
- Design and construct at least five projects that improve connectivity along river
- Install at least three projects that increase navigability along river
- Acquire land and construct at least 3 new public access sites

The West Branch Little Calumet River/Willow Creek watershed management plan is available at http://www.in.gov/idem/nps/3228.htm.

Galena River

The Galena River watershed management plan covers approximately 46 square miles of LaPorte County. The only pollutant of concern identified in the plan was E. coli. All other chemical and nutrient parameters met applicable water quality standards. Because the Galena River segments in Indiana have few measureable water quality problems, it was recognized that the watershed management plan should not focus strictly on improving water quality, but should also have a strong land preservation component, given the undeveloped and sensitive nature of the area.

The following implementation goals were identified for critical areas within the watershed:

- Restore 10% of the potential wetland restoration areas
- Preserve natural areas through government coordination and/or land trusts
- Reduce sediment loads by restoring stream buffers identified in stream buffer analysis
- Complete streambank restoration at Site 6.
- Restore the natural hydrology and hydraulics to extent possible including ability of migratory fish to utilize habitats

The Galena River Watershed Diagnostic Study and Management Plan is available at http://www.in.gov/dnr/fishwild/files/fw-Galena_Watershed_Mgmt_Plan_LaPorte_County_June_2010.pdf.

Trail Creek

The Trail Creek watershed management plan covers an area of approximately 59 square miles in LaPorte County. Four water quality problems were identified in the plan including E. coli, erosion and sedimentation, nutrient loading, and hydromodification.

The follow implementation goals were identified for critical areas within the watershed:

- Preserve existing riparian corridors and buffers
- Protect, enhance and restore riparian corridors and wetlands
- Restore natural hydrology to Trail Creek
- Plan and design any channel modification activities to reduce/eliminate negative physical, chemical, and habitat impacts to Trail Creek
- Reduce discharges from stormwater runoff
- Increase recreational access
- Encourage utilization of Low Impact Development (LID) practices

The Trail Creek watershed management plan is available at http://emichigancity.com/pdf/Trail_Creek_Watershed_Management_Plan.pdf.

Dunes Creek

The Dunes Creek watershed management plan covers an area of approximately 11 square miles in Porter County. The primary concerns identified in the plan were excess nutrient and sediment loading, high pathogen, total dissolved solid, and chloride concentrations, and impaired biotic communities.

The following goals and action items were identified for the Dunes Creek watershed:

- Manage stormwater runoff by conducting targeted wetland restoration
- Implement stormwater BMP's such as vegetated swales, pervious pavement and bioretention
- Restore natual hydrology by daylighting segments of Dunes Creek, pluging ditches, restoring wetlands and promoting two-stage channels
- Restore, manage, and protect streambank habitat and riparian areas

The Dunes Creek waershd management plan is available at http://savedunes.org/water_program/water_program/.

Salt Creek

The Salt Creek watershed management plan covers an area of approximately 77 square miles in Porter County. The primary concerns identified in the plan were excess nutrient and sediment loading, high pathogen concentrations, and impaired biotic communities.

The following activities were identified for critical areas within the Salt Creek watershed:

- Implement LID and other BMPs to address stormwater runoff from development
- Restore and manage streambank and riparian habitat to reduce erosion
- Restore natural hydrology and improve flow dynamics and hydrologic function
- Increase turbulence and reduce water temperatures within stream to increase dissolved oxygen
- Work with DOTs to reduce road salt related impacts
- Implement restoration projects that reduce nutrient and sediment pollution

The Salt Creek watershed management plan is available at http://savedunes.org/water_program/water_program/.

Environmental Consultation

NIRPC began the environmental consultation process with a scoping meeting on December 16th, 2010. The participants at the meeting reviewed the list of federal and state documents, maps, and plans described above that NIRPC suggested for inclusion in the Environmental Mitigation section of the plan. They outlined the environmental consultation process roughly modeled after the air quality conformity consultation process. The group provided feedback on identified types of transportation projects for inclusion in the environmental consultation process. The transportation project categories identified as being appropriate for environmental review include: capacity expansion, intersection improvements, bridges, drainage, roadway preservation projects that include culvert or drainage repair and replacement, and other. Finally they discussed a set of common environmental issues to be addressed in the Environmental Mitigation Plan. These are discussed in detail below.

The Scoping meeting participants included representatives from the following federal, state, and local environmental, natural resource, and land management agencies:

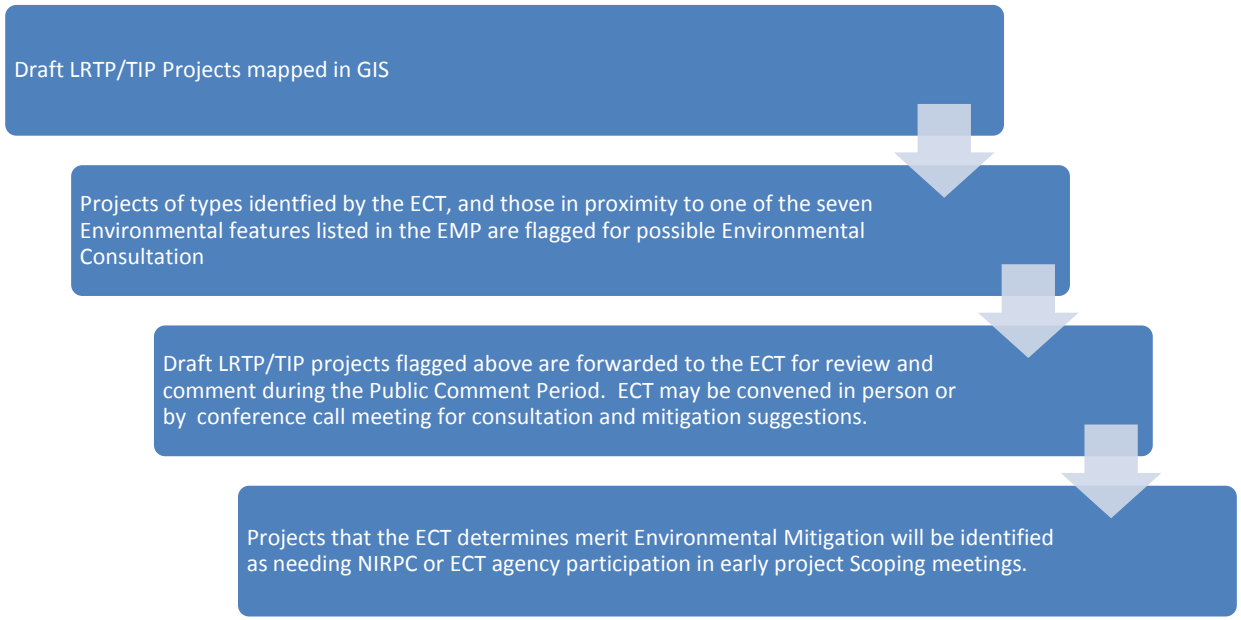
- U.S. Army Corps of Engineers, Chicago District Regulatory Program
- U.S. Federal Highway Administration, Indianapolis District
- U.S. Fish and Wildlife Service
- Indiana Department of Environmental Management
- Indiana Department of Natural Resources

- Indiana Department of Transportation
- Lake County Parks Department

Other federal, state, and local agencies invited and included in email communications:

- U.S. Environmental Protection Agency
- U.S. National Park Service, Indiana Dunes
- U.S. National Resources Conservation Service
- County Surveyors

Representatives of these agencies will make up the Environmental Consultation Team (ECT). The ECT will be convened in Northwest Indiana or via conference call for review of projects when a new Long Range Transportation Plans or new TIP is out for Public Comment. The group will provide feedback to NIRPC on projects for which early permit coordination or environmental mitigation should be sought. Prior to convening the ECT, NIRPC staff will screen proposed projects based on their proximity to environmental assets identified in the below discussion of environmental issues. As additional projects are proposed for amendment into the LRTP and the TIP, NIRPC staff will distribute maps and descriptions of screened projects to the ECT via email. At the request of an ECT member a conference call to discuss environmental mitigation needs for specific projects in greater detail will be held.



Common Environmental Issues

In consultation with the ECT, NIRPC has identified seven common environmental issues for inclusion in the Environmental Mitigation section of the Long Range Transportation Plan. The environmental issues include:

- Wetlands
- Lakes and Streams
- Indiana Waters Designated for Special Protection
- Forestlands
- Endangered, Threated, and Rare Species & High Quality Natural Communities
- Managed Lands
- Cultural Resources

The following sections provide a brief description of each of these issues and map the resources where information is available to do so.

Wetlands

Wetlands have many beneficial functions including floodwater storage, water quality improvement, fish and wildlife habitat, as well as aesthetics. Historically wetlands used to be a prevalent feature in Northwest Indiana covering a little more than 340,000 total acres based on Natural Resource Conservation Service (NRCS) hydric soils data. Hydric soils are a good indicator of where wetlands once existed since they developed under sufficiently wet conditions capable of supporting hydrophytic (water loving) plant species. Today only 72,410 acres or 21% of these wetlands remain (National Wetland Inventory (NWI) Update data- Ducks Unlimited). Much of the historical wetland loss can be attributed to "land reclamation" for development or agricultural purposes. Figure 5 displays approximate wetland locations based on NWI data overlain on hydric soils.

Any project that proposes to place fill materials, excavate, dredge, or use heavy equipment within a wetland must apply to the U.S. Army Corps of Engineers (Corps) for a permit under Section 404 of the federal Clean Water Act. If the Corps determines a 404 Permit is needed, then a Section 401 Water Quality Certification must be obtained first from IDEM. Projects cannot be conducted without a Corps permit, and cannot receive a Corps permit without IDEM 401 Water Quality Certification. The Corps may determine that certain wetlands on a proposed project site are isolated wetlands. Isolated wetlands are regulated by IDEM under Indiana's State Isolated Wetlands law. Any person proposing to impact an isolated wetland must apply for, and obtain, permits under Indiana's State Isolated Wetlands law.

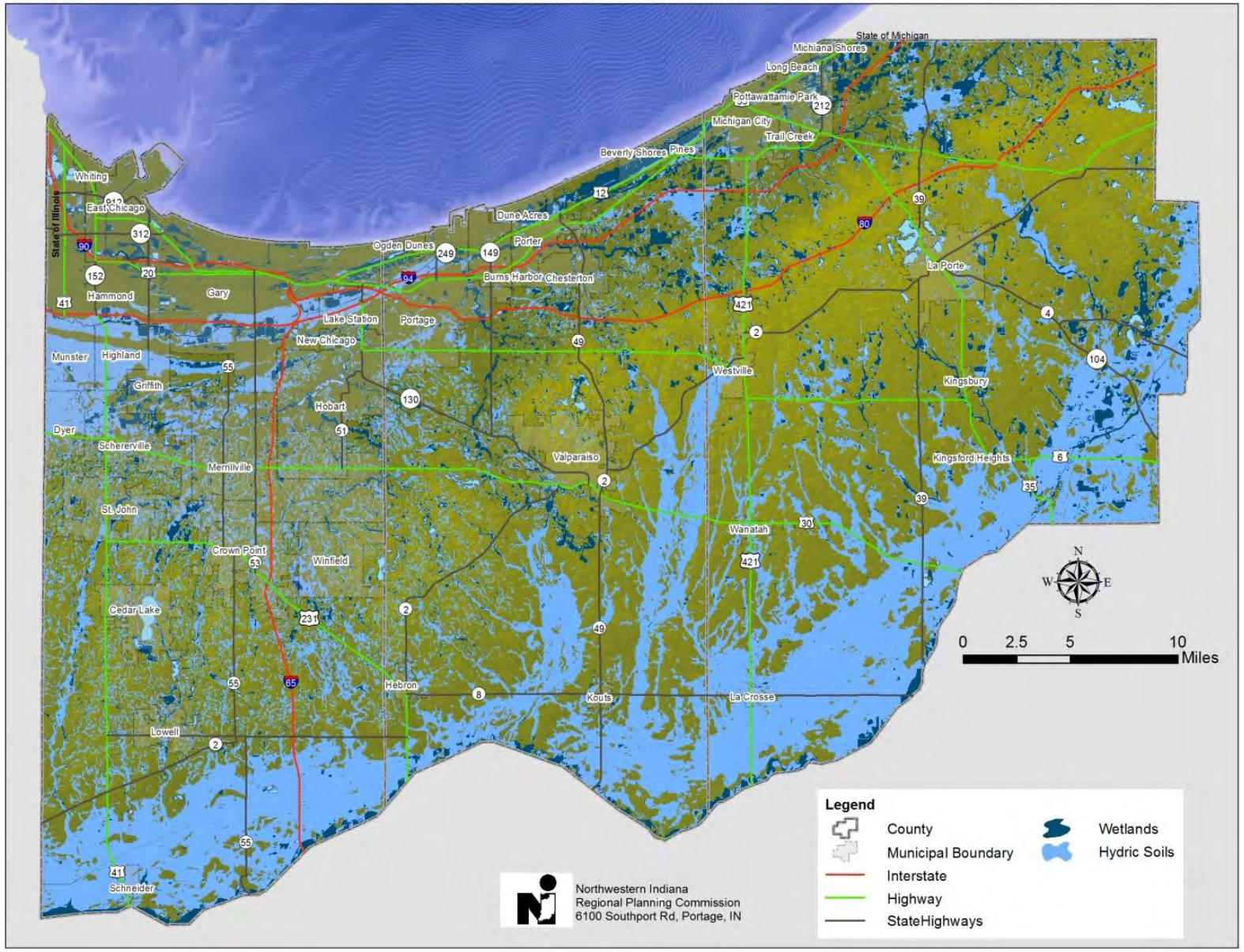


Figure 5. Existing Wetlands & Hydric Soils. NRCS & USFWS.

Lakes & Streams

Lakes and streams are largely defined and influenced by their watersheds and the land uses within those watersheds. Northwest Indiana is divided into three sub-basins including the Little Calumet-Galien, the Kankakee, and the Chicago. The Kankakee sub-basin drains nearly two-thirds of southern Lake, Porter and LaPorte Counties into the Kankakee River. The Little Calumet-Galien, the second largest sub-basin in Northwest Indiana, drains nearly the northern third of Northwest Indiana into Lake Michigan. The Chicago sub-basin, historically once part of the Lake Michigan drainage, drains about five percent of northwestern Lake County towards Illinois through the West Branch of the Little Calumet River.

Figure 6 displays the myriad of streams and lakes in Northwest Indiana. Following the classification of the National Hydrography Dataset (NHD), there are approximately 934 miles of stream/river and another 743 miles of ditch draining Northwest Indiana. There are also approximately 495 ponds/lakes scattered across the landscape totaling some 9,164 acres. Most of the region's ponds/lakes are small surface waterbodies, averaging 18.5 acres.

Poor land use decisions and practices can have negative impacts on water quality and habitats. Road and highway development can be especially disruptive to adjacent waterbodies because they tend to accumulate pollutants which are carried in runoff, alter surface drainage patterns, change subsurface water tables and result in the loss of riparian habitat. Within our region there are nearly 622 miles of stream and 3 square miles of lake that are included on 2008 Indiana 303d List of Impaired Waters (Figure 6). The IDEM Office of Water Quality updates this list every two years, identifying the waters that do not or are not expected to meet water quality standards as required by the Clean Water Act.

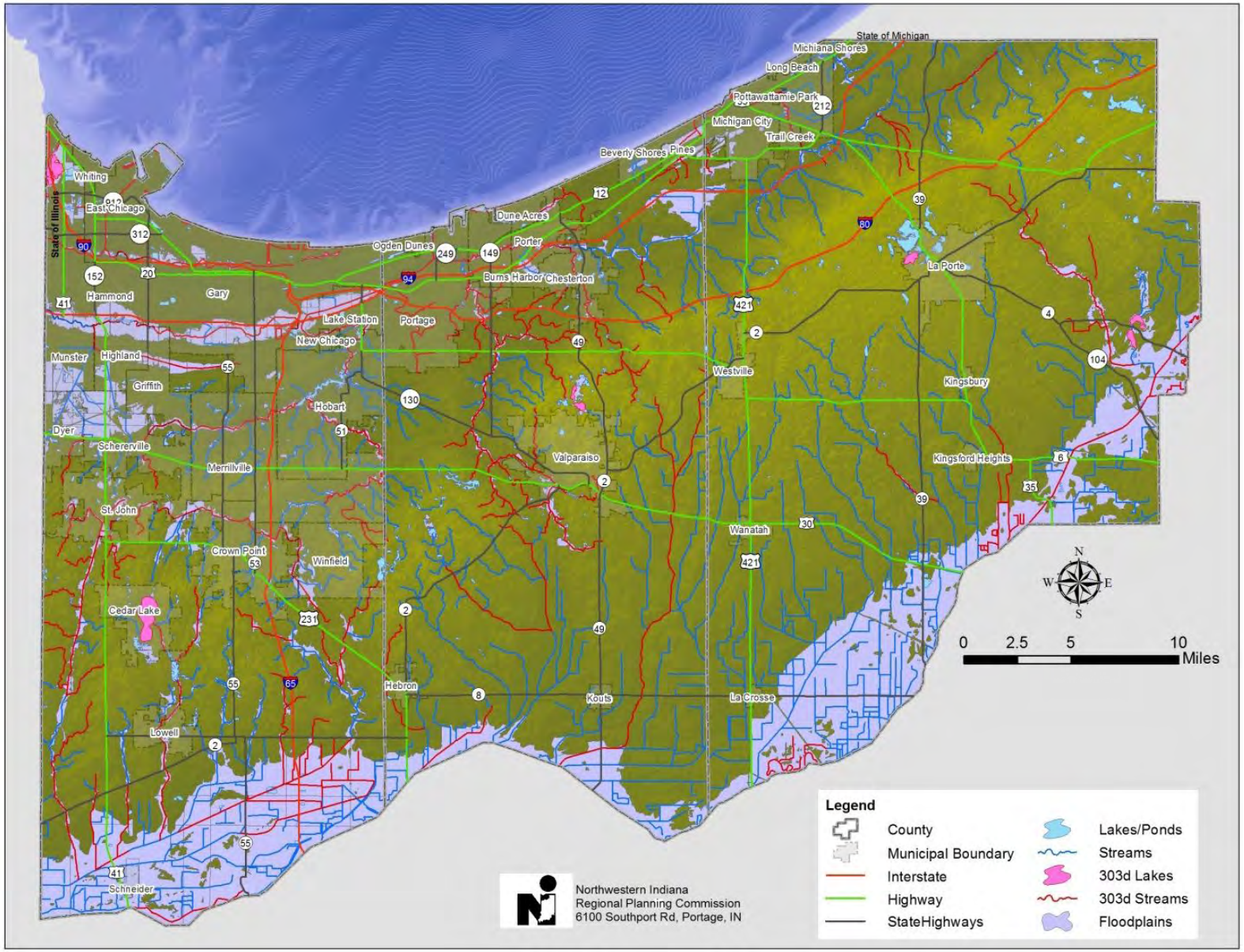


Figure 6. Lakes, Streams, Floodplains, and Impaired Waters. USGS, IDNR, IDEM.

Any project that proposes to place fill materials, excavate, dredge, or use heavy equipment within a lake, stream, river, pond, or other regulated waterbody must apply to the U.S. Army Corps of Engineers (Corps) for a permit under Section 404 of the federal Clean Water Act. If the Corps determines a 404 Permit is needed, then a Section 401 Water Quality Certification must be obtained first from IDEM. Projects cannot be conducted without a Corps permit, and cannot receive a Corps permit without IDEM 401 Water Quality Certification. Additionally permits may be required from the IDNR for construction in a floodway, navigable waters, public freshwater lakes, and tributaries.

Indiana Waters Designated for Special Protection

Projects proposing an impact to any waters designated for special protection tend to be a "red-flag" to IDEM and sometimes require extensive agency coordination. IDEM approvals granted for work in waters designated for special protection generally include special permit conditions that restrict work timeframes or require specific mitigation requirements that may be above and beyond normal compensatory mitigation. Sometimes, proposed impacts to these streams, rivers, and wetlands are not allowed at all due to the inability to compensate for these resources.

Designated Salmonid Waters

A number of tributaries and inland lakes within Northwest Indiana's Lake Michigan drainage are state designated salmonid (trout and salmon) streams (Figure 7). Trout and salmon species tend to be very sensitive to pollution and habitat alterations. In particular, they are sensitive to dissolved oxygen levels, water temperature, and sedimentation. As a result special rules, such as stream closure windows to protect juvenile migrations to Lake Michigan, are in place. The designated salmonid waters include:

- West Branch, Little Calumet River and its tributaries, downstream from the dam at 29th Avenue (Deep River) to Lake Michigan via Burns Waterway, Lake and Porter County.
- Galena River and its Tributaries, LaPorte County.
- Trail Creek and its tributaries, downstream to Lake Michigan, LaPorte County.
- East Branch, Little Calumet River and its tributaries, downstream to Lake Michigan, via Burns Waterway, Porter and LaPorte counties.
- Kintzele Ditch (Black Ditch) from Beverly Drive downstream to Lake Michigan, Porter County
- Salt Creek and its tributaries upstream of its confluence with the Little Calumet River, Porter County.
- Waters designated by IDNR for put-and-take trout fishing (*Note: this list changes annually*) (http://www.in.gov/dnr/fishwild/files/fw-Trout_Stocking_Locations.pdf)

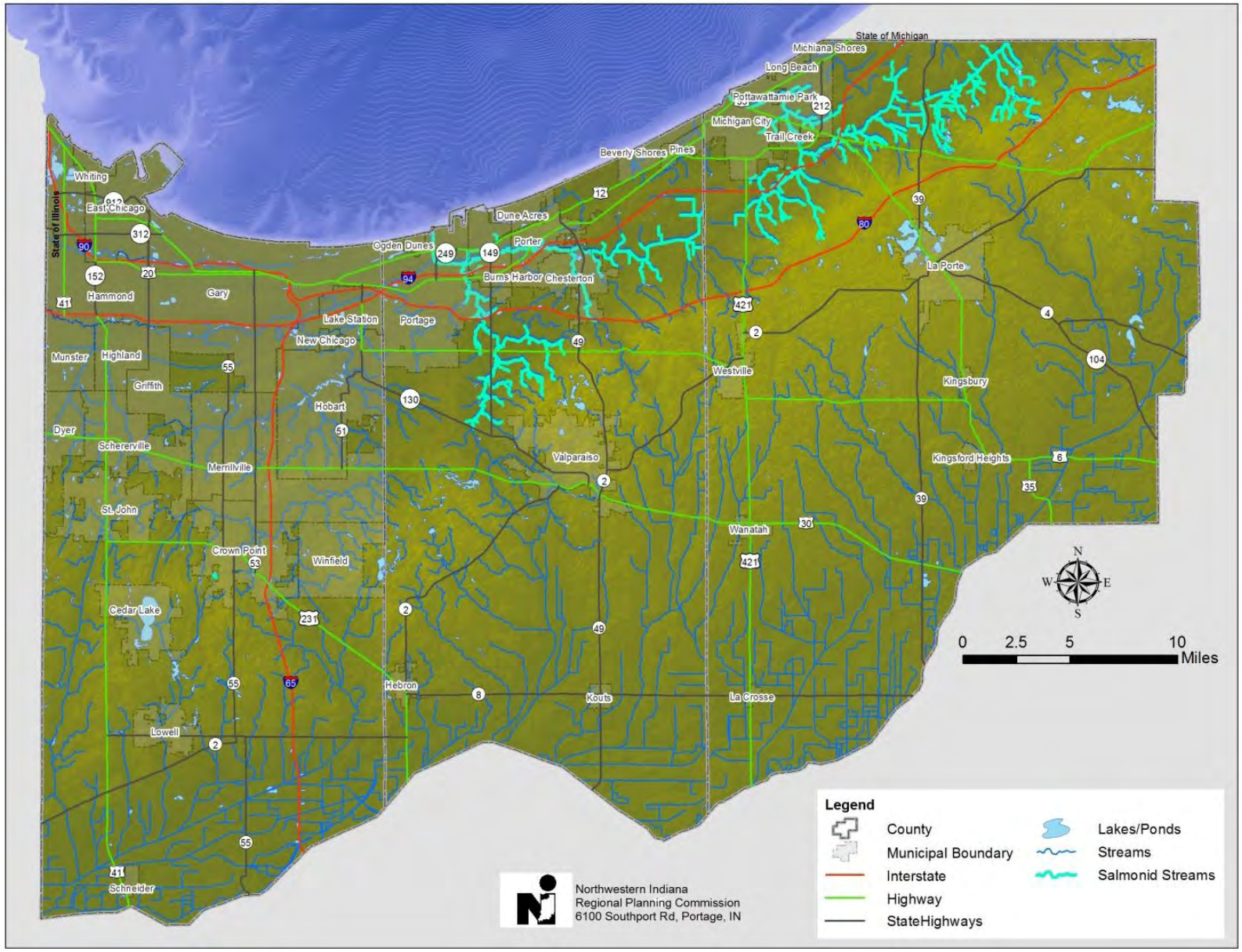


Figure 7. State Designated Salmonid Streams. IDNR.

Waterbodies which have been designated all or partially as Outstanding State Resource Waters:

- The Indiana portion of Lake Michigan.
- All waters incorporated in the Indiana Dunes National Lakeshore.

Critical Wetlands and Critical Special Aquatic Sites

In the interest of maintaining consistency with the State Regulated Wetland program established at 327 IAC 17, IDEM defines Critical Wetlands and Critical Special Aquatic Sites to be synonymous with Rare and Ecologically Important Wetland Types under 327 IAC 17-1-3(3)(B):

- **Acid bog:** Acid bog is an acidic wetland of kettle holes in glacial terrain. Bogs can be graminoid (*Carex* spp. and *Sphagnum* spp.) or low shrub (*Chamaedaphne calyculata* and *Betula pumila*). The graminoid bog can be a floating, quaking mat. The soils in acid bogs are saturated and acidic peat. Bogs have non-flowing or very slow flowing water. The water level fluctuates seasonally. When a sphagnum mat floats, it rises and falls with the water table. Acid bogs can be found in northern Indiana.
- **Circumneutral bog:** Circumneutral bog is a bog-like wetland that receives groundwater. Circumneutral bogs can be a mosaic of tall shrub bog, graminoid bog, and other communities. The graminoid bog often occurs on a quaking or floating mat. Although a few bogs occur in unglaciated regions, most are found in glacial ice-block depressions. The soils in circumneutral bogs are usually peat, or other low nutrient organic substrates, which are saturated and circumneutral to slightly acid. Circumneutral bogs have non-flowing or very slow flowing water. The water level fluctuates seasonally. Circumneutral bogs are usually found in northern Indiana.
- **Circumneutral seep:** The circumneutral seep (or seep-spring) is a groundwater-fed wetland on organic soil. It is primarily herbaceous. Species typically include marsh marigold (*Caltha palustris*) and skunk cabbage (*Symplocarpus foetidus*) with a scattered tree canopy. Circumneutral seep is typically situated on or near the base of a slope. The soil is typically circumneutral muck. This seep community is characterized by slowly flowing water during at least part of the year. Circumneutral seeps can be found scattered throughout Indiana.
- **Dune and swale:** Dune and swale is an ecological system consisting of a mixture of upland (black oak sand savanna, dry to mesic sand prairie) and wetland (pond, panne, sedge meadow, marsh, wet prairie) natural communities. These communities occur in long, narrow, linear complexes, with the dry communities occupying sand ridges, and the wet communities occurring in the intervening swales. Black oak (*Quercus velutina*), paper birch (*Betula papyrifera*), jack pine (*Pinus banksiana*), and prairie vegetation typically occur on the ridges, and sedges, reeds, and marsh/aquatic vegetation line are found in the swales. Water levels are directly influenced by ground water, with the interdunal swales controlled largely by lateral flow through porous beach ridges. Dune and swale is restricted to extreme northwest Indiana, near Lake Michigan.
- **Fen**: Fen is a calcareous, groundwater-fed wetland. Fens are often a mosaic of grassy areas, sedgy areas, graminoid-shrubby cinquefoil, and tall shrub areas. The extent of the tall shrub component of fens may be determined by fire frequency and/or soil moisture. Drying of the soil increases

the growth of shrubs. Fens typically occur in the vicinity of glacial moraines. Fens typically have a muck or peat substrate. The water level fluctuates seasonally and is fed by groundwater. Fens can be found in central and northern Indiana.

- **Forested fen:** Forested fen is a tree-dominated wetland on organic soil which receives groundwater. Forested fens are often a mosaic of treed areas, tall shrub areas, and herbaceous areas. A tall shrub layer is often well developed in forested fens. Indicative species typically include tamarack (*Larix laricina*), black ash (*Fraxinus nigra*), yellow birch (*Betula alleghaniensis*), poison sumac (*Toxicodendron vernix*), and red maple (*Acer rubrum*). Forested fens occur in wet lowlands, where moraines meet outwash features or depressions. Forested fens have saturated, poorly to very poorly drained soils that are often muck, but some seasonal flooding can occur in forested fens that are especially level. This community is a late successional stage of fen or circumneutral bog. Forested fens occur in northern Indiana.
- **Forested swamp:** Forested swamp is a seasonally inundated to intermittently exposed wetland of large river bottoms. Forested swamps do not receive direct flow from river flooding except under exceptional circumstances. Forested swamps occur in depressions, sloughs and large bottomlands, typically dominated by tree species such as swamp cottonwood (*Populus heterophylla*), green ash (*Fraxinus pennsylvanica*), and swamp white oak (*Quercus bicolor*). In northern Indiana important tree species include black ash (*Fraxinus nigra*), yellow birch (*Betula alleghaniensis*), and red maple (*Acer rubrum*). Poorly to very poorly drained and aerated soils characterize the swamp environment. Soils usually are mineral not muck or peat. This community type is found throughout Indiana.
- **Marl beach:** Marl beach is a fen-like community located on the marly muck shorelines of lakes. Marl precipitate is evident. A thin layer of water is present in spring, but dries down in summer. Draw-down of a lake creates additional area for this community to develop on. Marl beaches can be found in extreme northern Indiana, primarily in the northeast.
- **Muck flat:** Muck flat is a shoreline and lake community possessing a unique flora of sedges and annual plants, many of which are also found on the Atlantic and Gulf Coastal Plains. This community is found at the margins of lakes or covering shallow basins. This community has a peat substrate. The muck flats can float on the water surface, but during high water periods are usually inundated. The water level of a basin fluctuates during a season or from year to year in response to the amount of precipitation. This exposes bare substrate needed for germination by species of the community. Muck flats are found in northern Indiana.
- **Panne**: Panne is a groundwater fed herbaceous wetland occupying interdunal swales near Lake Michigan. Pannes are located on the lee side of the first or second line of dunes from the lakeshore. The soil is wet, calcareous sand. Pannes are located in counties bordering Lake Michigan.
- **Sand flat:** Sand flat is a shoreline and lake community possessing a unique flora of sedges and annual plants, many of which are also found on the Atlantic and Gulf Coastal Plains. This community is found at the margins of lakes or covering shallow basins. This community has a sand substrate. During high water periods sand flats at the margins of lakes or ponds are inundated. The water level of a basin fluctuates during a season or from year to year in response to the amount of precipitation. This exposes bare substrate needed for germination by species of the community. Sand flats occur in northern Indiana, and in the Plainville Sand Section of southwest Indiana.
- **Sedge meadow:** Sedge meadow is an herbaceous wetland typically dominated by graminoid species such as flat sedge (*Cyperus* spp.), spike rush (*Eleocharis* spp.), rushes (*Juncus* spp.) and sedges (*Carex* spp.). Sedge meadow is an herbaceous wetland of stream margins and river floodplains,

and lake margins or upland depressions. Streamside sedge meadows are frequently flooded in the spring and early summer. Sedge meadows of lake margins and depressions often contain standing water during wet months and after heavy rains; during dry periods, the water level is at or just below the substrate. Sedge meadow usually occupies the ground between a marsh and the uplands, or a shrub swamp or wet forest. Periodic high water can kill trees and shrubs invading sedge meadows. Sedge meadows can be found in the northern half of the state.

- **Shrub swamp:** Shrub swamp is a shrub-dominated wetland that is seasonally inundated to intermittently exposed. This community occurs in depressions and the substrate in either mineral soils or muck, as opposed to peat which is characteristic of bogs. Shrub swamp is characterized by non-flowing or very slowly flowing water with levels that fluctuate seasonally. Shrub swamps are persistent, though considered successional. Two opportunistic native shrubs, sandbar willow (*Salix exigua*) and gray dogwood (*Cornus racemosa*), by themselves, are not indicative of shrub swamps. This community type is found throughout Indiana.
- **Wet floodplain forest:** Wet floodplain forest is a broadleaf deciduous forest of river floodplains. Wet floodplain forests occur in depressions and flats on narrow to wide floodplains and also on recently exposed substrates that are frequently flooded. Wet floodplain forests are frequently flooded and may have standing water seasonally to permanently present. Wet floodplain forests occur statewide.
- **Wet prairie:** Wet prairie is an herbaceous wetland typically dominated by graminoid species such as prairie cordgrass (*Spartina pectinata*), bluejoint (*Calamagrostis canadensis*), and sedges (*Carex* spp.). Vegetation height is often 2-3 m. The species diversity of wet prairies is lower than that of mesic prairies. Wet prairies occur in deep swales and the substrate ranges from very deep black mineral soils (which are high in organic matter) to muck. Ponding in spring lasts for several weeks prior to drainage. Wet prairies commonly occur in the Grand Prairie Natural Region, the Tipton Till Plain and the Bluffton Till Plain, with a few examples found in the Northern Lakes Natural Region.
- **Wet sand prairie:** Wet sand prairie is an herbaceous wetland typically dominated by graminoid species such as prairie cordgrass (*Spartina pectinata*), bluejoint (*Calamagrostis canadensis*), and sedges (*Carex* spp.). Vegetation height is often 2-3 m. The species diversity of wet prairies is lower than that of mesic prairies. Wet lowland prairies occur in deep swales and the substrate is sand, sometimes mixed with muck. Flooding is a regular springtime occurrence in wet sand prairie and may last several weeks. This community occurs in a mosaic with marsh and other wetlands, and with upland prairies and sand savannas. Fire was frequent occurrence, but more common in the fall when waters had receded. This community occurs in northwest Indiana and in the Plainsville Sands area.

Forestland

There are approximately 235 square miles of deciduous forest, evergreen forest, mixed forest, and palustrine forested wetland within the boundaries of Northwest Indiana (NOAA- Coastal Change Analysis Program, 2006). Between 1996 and 2006, nearly 762 total acres of forestland were converted to other land uses in Lake, Porter, and LaPorte Counties. While there is value in knowing how much forestland remains for conservation purposes it is equally if not more important to understand the quality of that forestland and its future threats.

According to the 2010 Indiana Statewide Forest Assessment, forest fragmentation and/or conversion of forests to other land uses is the most important threat to the sustainability of Indiana's forests. Forest fragmentation occurs when large, contiguous stands of mature forest are divided into smaller isolated patches known as "forest fragments." Forest fragmentation is caused by human activities, such as road construction, agricultural clearing, and urbanization. The degradation of core forest into fragments can cause biological diversity loss of native flora and fauna species, alterations to water cycles, and adverse impacts on air and water quality. Forests weakened by fragmentation become more susceptible to damage from insects and diseases, and this stress often degenerates into a condition of chronic ill health.

Forest fragmentation data from NOAA's 2006 CCAP land cover dataset is displayed below in Figure 8. The most critical areas are the core forests highlighted in dark green. While the figure can be used to identify critical core forest areas for conservation, it can also be used to identify mitigation opportunities through reforestation and corridor restoration practices.

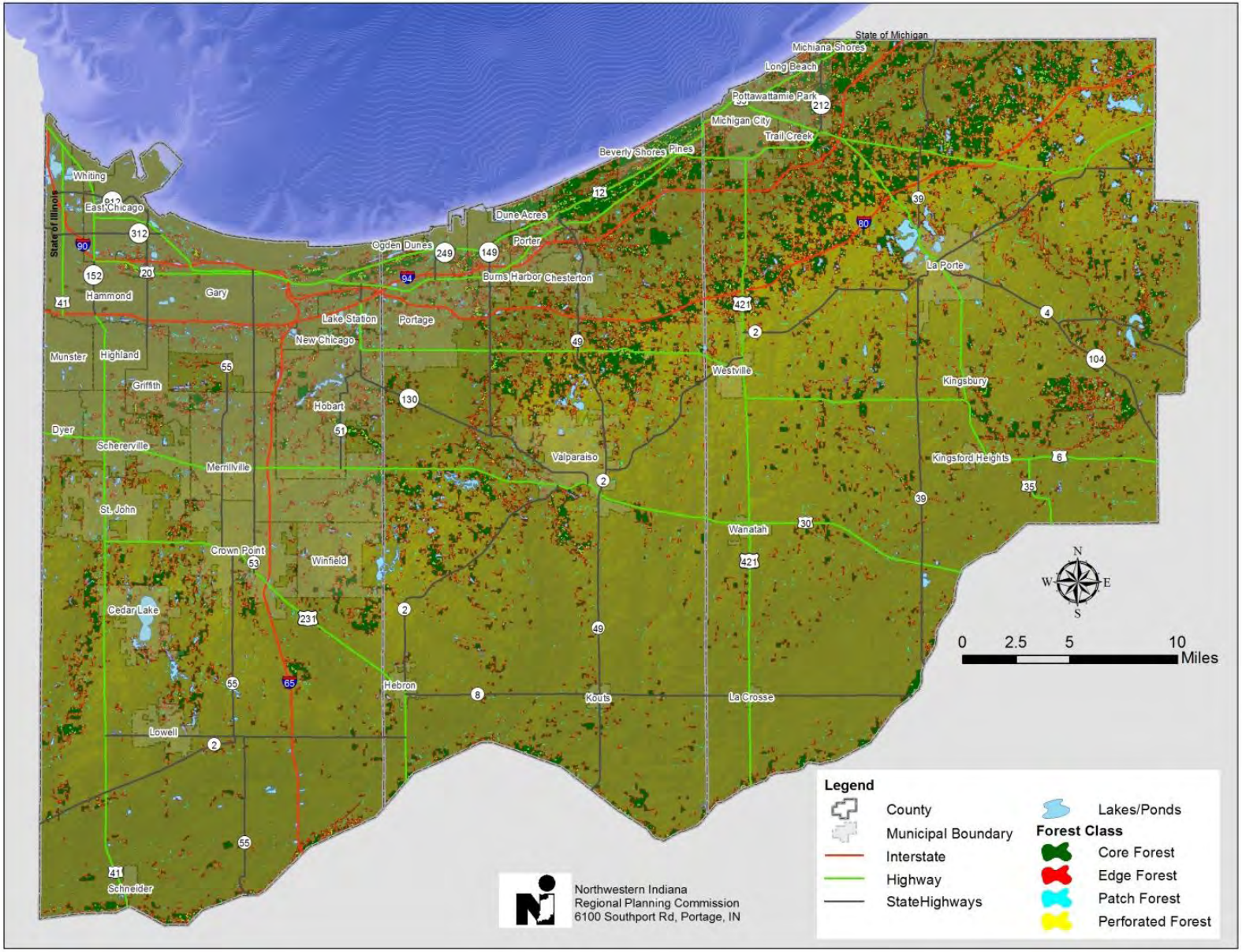


Figure 8. Forest Fragmentation. NOAA.

The area known as the Moraine Forest follows the southern edge of Lake Michigan from northeast LaPorte County to north central Porter County. This forested area still exists today largely due to its high relief and unsuitability, historically, for agricultural purposes. Data presented in Figure 9 was generated by the Shirley Heinze Land Trust to help identify critical forest conservation areas within the Moraine Forest. Prioritization was based on a number of factors including area size, adjacency to managed lands, presence of wetlands and other forest quality indicators.

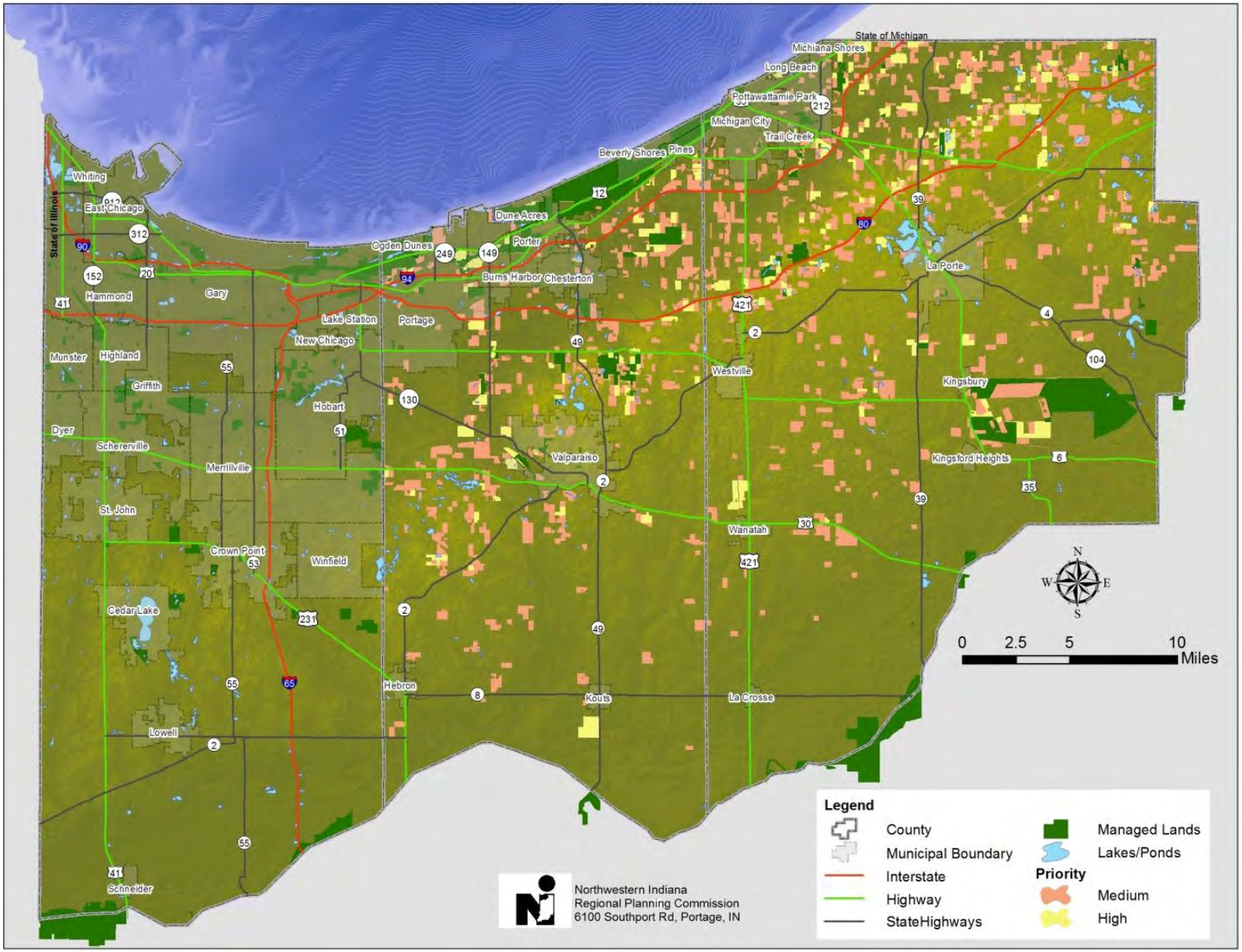


Figure 9. Moraine Forest Priority Areas & Managed Lands. Shirley Heinze Land Trust & IDNR.

Endangered, Threatened, and Rare (ETR) Species & High Quality Natural Communities

Due to the sensitivity of sharing specific locations of ETR occurrences, Figure 10 was generated to identify high concentration areas or "hot spots" within Northwest Indiana. Data used to generate this figure was provided by the IDNR Indiana Natural Data Center. It represents a comprehensive attempt to determine the state's most significant natural areas. Included in the figure are high quality natural areas and endangered, threatened and rare species occurrences for both state and federally listed species. Locations depicted in the figure are somewhat generalized due to the sensitivity of the data. Further information about the program and a list of ETR species by county is available at http://www.in.gov/dnr/naturepreserve/4746.htm.

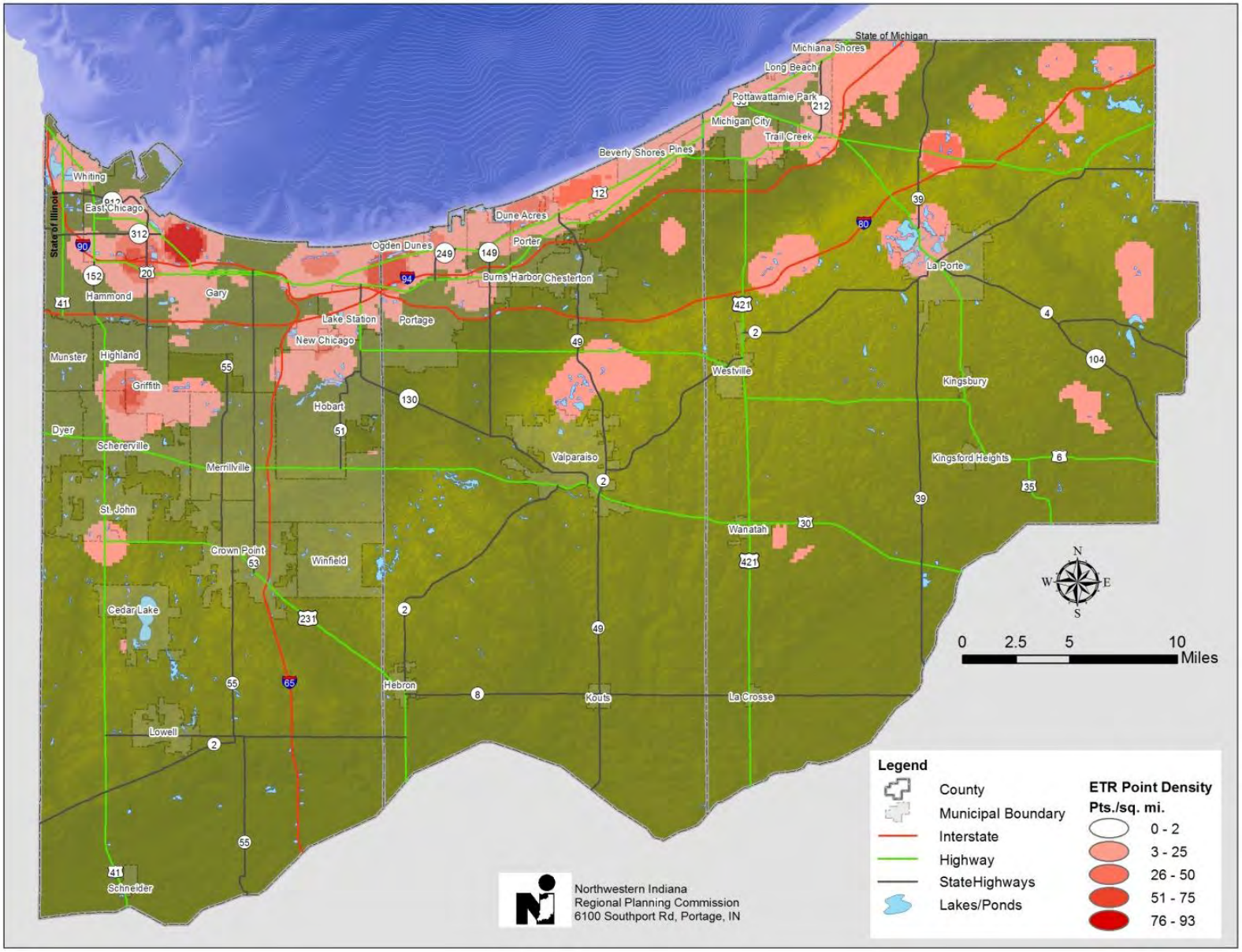


Figure 10. ETR Occurrences Point Density. IDNR.

Managed Lands

Section 4(f) of the Department of Transportation Act of 1966 requires that special effort be made to preserve public park and recreation land, wildlife and waterfowl refuges, and historic sites. In general, Section 4(f) specifies that federally-funded transportation projects requiring the use of land from a public park, recreation area, wildlife and waterfowl refuge or land of significant historical value can only occur if there is no feasible and prudent alternative. Using Section 4(f) land requires all possible planning to minimize harm.

There are approximately 315 natural or recreational areas within Northwest Indiana that are owned or managed by local, state or federal agencies, and non-profit organizations (Figure 11). In many, but not all, cases these areas correspond with sensitive habitats and recorded ETR occurrences.

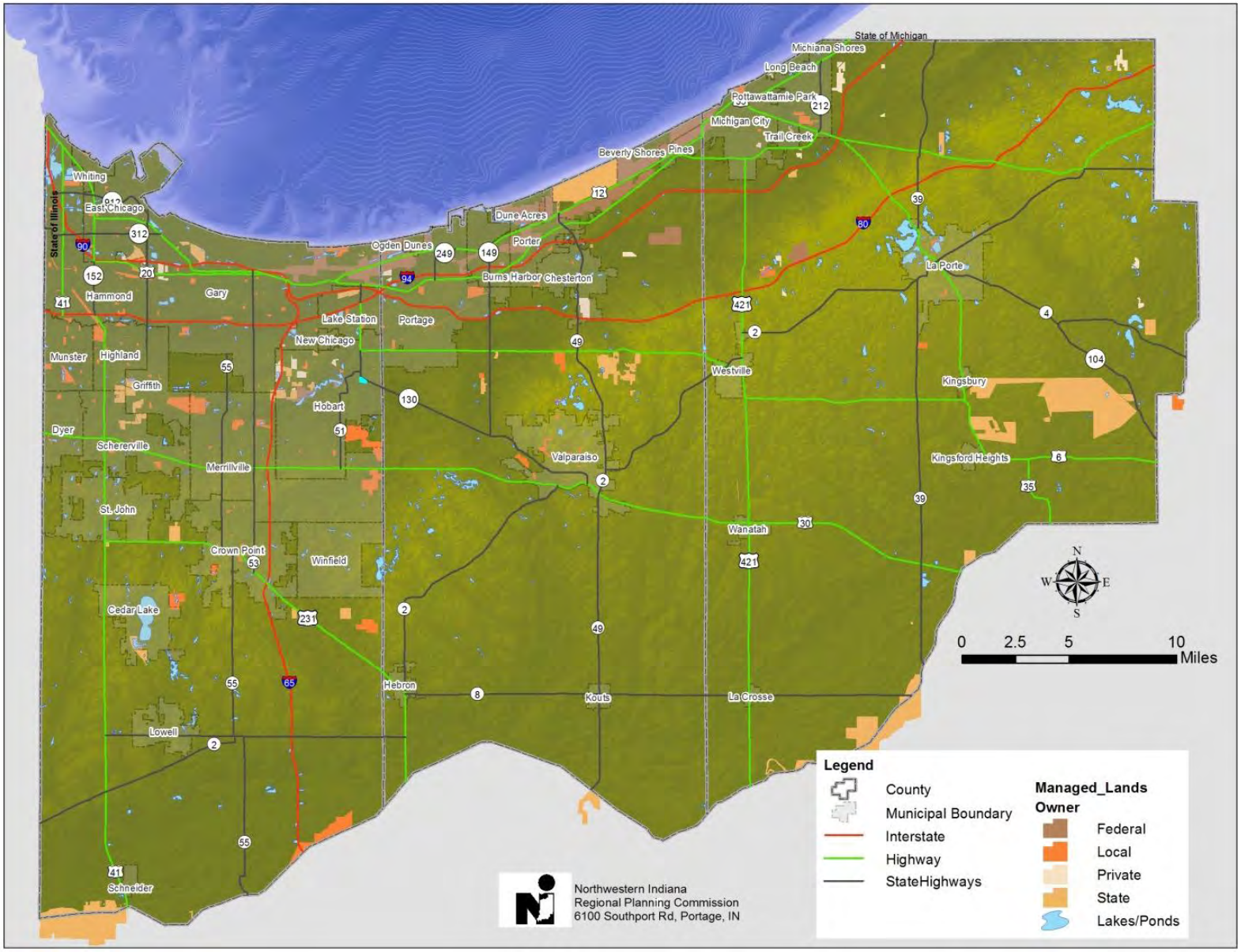


Figure 11. Managed Lands. IDNR.

Cultural Resources

Cultural resources are any prehistoric or historic remains or indicators of past human activities, including artifacts, sites, structures, landscapes, and objects of importance to a culture or community for scientific, traditional, religious, or other reasons.

Section 106 of the National Historic Preservation Act (NHPA) requires all federal agencies to take into consideration the effect of federally assisted, licensed, or permitted projects on cultural resources that are listed, or eligible for listing in the NRHP. In recognition of the fact that not all significant cultural resources may have been identified and recorded within a project area, 36 CFR Part 800.4(b) requires that federal agencies make reasonable and good faith efforts to identify any cultural resources (including unrecorded and previously recorded properties) that may be affected by their undertakings, and evaluate the eligibility of these resources for listing in the NRHP.

Under the National Environmental Policy Act of 1969 (NEPA), agencies have broad responsibilities to be concerned about the impacts of their activities on the environment, including historic properties. FHWA adopted the policy of managing the NEPA project development and decision making process as an "umbrella," under which all applicable environmental laws (including NHPA) and regulations are considered and addressed prior to the final project decision and document approval. The conclusion of the NEPA process results in a decision that addresses multiple concerns and requirements.

Under the provisions of Section 4(f) of the Department of Transportation Act of 1966, the Department of Transportation (DOT) is prohibited from using any historic site of national, state, or local significance (i.e. eligible for listing in the NRHP) for public transportation purposes without first determining that there is no prudent and feasible alternative to the use of such land. If no prudent and feasible alternative exists, then the DOT is required to develop measures to minimize harm to the resource resulting from the transportation project.

Any use of 4(f) property will require INDOT to submit the Section 4(f) documentation to FHWA for review and approval. The NEPA document must show that there is no “feasible and prudent” alternative to the use of the 4(f) property. If there is no feasible and prudent alternative, then the project must include all possible planning to minimize harm to the 4(f) property. A section 4(f) evaluation requires coordination with the U.S. Department of Interior (USDOI), and Housing and Urban Development (HUD) and U.S. Department of Agriculture (USDA) if required, and requires FHWA legal counsel to review the evaluation for legal sufficiency prior to approval.

FHWA will be the lead Federal agency for purposes of Section 106 consultation for all FHWA-IN projects, unless the FHWA Indiana Division Office specifically approves alternative arrangements. The level of involvement by FHWA will reflect the complexity of the historic preservation issues

involved in a project, and will be determined on a case-by-case basis, taking into account any views expressed by the applicant, the SHPO, the ACHP, and/or consulting parties.

Currently there is no GIS spatial data available for Northwest Indiana that shows the location of cultural resources. However, the IDNR maintains a list of properties on the National and State Register. The State and National Registers are an easy way to identify resources that have already been formally recognized for their historic character. Additionally, Indiana's Historic Sites and Structures Inventory (made up of individual County surveys of historic properties and sites) also offer a great way to identify historical properties throughout the state.
This information is available on the IDNR Division of Historic Preservation & Archeology website at www.in.gov/dnr/historic/2823.htm. Further information about cultural resources, including links to additional resources, can also be found on INDOT's Cultural Resources Section website at www.in.gov/indot/3335.htm.

Environmental Mitigation Process

1) NIRPC will prepare a set of environmental mitigation reference documents to be kept online for easy updating. These will include:
    a. Series of GIS maps detailing environmental assets likely to require environmental mitigation both within existing state and federal environmental regulatory programs
        i. Long term goal would be for NIRPC to have on-line interactive GIS delivery capabilities, but initially these might be static maps.
    b. Links to federal and state environmental regulatory guidance documents, procedures, and contact information to request early permit coordination
    c. Links to mitigation guidance documents and best management practices
2) Instructions to review these documents will be provided with STP, TE, and other funding solicitations
3) Applicants will be required to submit GIS shapefiles for proposed projects
4) Specific project categories that will be required to identify proximity to assets identified in the environmental mitigation maps and demonstrate environmental mitigation consideration include:
    a. Capacity Expansion
    b. Intersection Improvements
    c. Bridges
    d. Drainage
    e. Roadway Preservation projects that include culvert or drainage repair and replacement
    f. Other
5) Mitigation priorities:

a. Avoidance
b. Minimization
c. Mitigation

Potential Mitigation Activities

There are a number of existing state and federal guidance and technical documents that can be used to identify potential practices appropriate for a variety of mitigation activities.

Detroit District U.S. Army Corps of Engineers Mitigation Guidelines and Requirements

This document establishes federal compensatory mitigation guidelines for permitted aquatic resource loss or for waters that are adversely affected in the U.S. Army Corps of Engineers' (Corps) Detroit regulatory district comprising Michigan and part of Indiana. Compensatory mitigation is the restoration or creation of areas to replace functions that would be otherwise lost as a result of an activity permitted by the Corps. These guidelines are for permit applicants and others in meeting the requirements of Section 404(b)(1) Guidelines of the Clean Water Act. Compensatory mitigation is required to offset impacts that cannot be avoided and minimized to the extent practicable. The purpose of these Mitigation Guidelines is to identify the types and extent of information that Corps personnel in the Detroit District require to assess a mitigation proposal. Success is generally defined as: a healthy sustainable wetland/water/stream that compensates for the lost functions of the impacted water in an appropriate landscape/watershed position. www.lre.usace.army.mil/functions/rf/html/MitigationGuidelinesDec2008.pdf

eFOTG

The electronic Field Office Technical Guides are the primary scientific references for the Natural Resources Conservation Service (NRCS). Section IV of eFOTG provides practice standards and specifications. www.nrcs.usda.gov/technical/efotg/

Indiana Drainage Handbook

The Handbook is intended to be used by the state and federal regulatory agencies as well as those doing drainage work. Pursuant to its enabling legislation, the Handbook: (1) explains and clarifies federal, state, and local laws and regulations affecting drainage improvement activities within the State of Indiana; (2) provides descriptions of specific "Best Management Practices", which define how work should be performed with a minimum of adverse environmental impact; and (3) explains procedures for timely access to agencies' drainage-related personnel. www.in.gov/dnr/water/4892.htm

Indiana Storm Water Quality Manual

The Indiana Storm Water Quality Manual provides guidelines and specific storm water quality measures for controlling soil erosion; controlling and treating the nonpoint source pollution associated with sediment-laden runoff; and the management and treatment of pollutants associated with post-construction land uses. Adhering to these guidelines and properly applying appropriate storm water quality measures will help minimize the adverse impacts that land disturbance, construction activity, and development can have on soil and water resources, and ultimately, the cost of those impacts to society as a whole. In addition to a variety of storm water quality measures, the manual also discusses the philosophy and planning procedures critical to developing an effective storm water pollution prevention plan. www.in.gov/idem/4899.htm

National Management Measures to Control Nonpoint Source Pollution

The US EPA has issued several guidance documents on measures to control nonpoint source pollution in several categories. The measures can be implemented in either a preventative or restorative mode depending on needs. Of specific relevance will be the documents issued for urban areas, hydromodification, and wetlands and riparian areas. Links to these US EPA documents can are provided by IDEM in the Indiana Nonpoint Source Management plan at www.in.gov/idem/5984.htm.

Transportation Safety

Overview

Of utmost importance in transportation is safety. The Indiana State Department of Transportation (INDOT), with coordination and support from the Federal Highway Administration (FHWA), has outlined a statewide goal to reduce traffic-related fatalities. The goal was to reduce fatalities to .98 per 100 million vehicle miles traveled (HMVMT) in 2008 and .92 HMVMT in 2010. This goal was stated as part of the State Highway Safety Plan (SHSP) that was created in response to federal requirements. The requirements are found in The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), which is periodic, federal authorizing legislation for the nation's Surface Transportation Program. The legislation puts in place a new core federal-aid funding program that began in fiscal year 2006 to achieve a significant reduction in traffic fatalities and serious injuries on all public roads.

In response to federal SAFETEA-LU regulations, INDOT, with coordination and support from FHWA, developed the SHSP. The plan identifies a number of local, regional and statewide initiatives and strategies targeted toward overall traffic safety. It outlines a broad approach that recognizes the need for local collaboration, coordination and better communication between state, regional and local agencies.

In response to the Indiana SHSP, NIRPC took the initiative to localize the plan for Northwest Indiana and conducted a safety assessment for all types of vehicular crashes in the region that take place on the state system. It is necessary to understand the conditions of the transportation network and establish a safe and efficient transportation network that accommodates all users. It also is vital to realizing the vision of the 2040 CRP, which includes establishing livable and safe centers within the region.

The Northwest Indiana plan uses the four building blocks: Engineering, Education, Enforcement and Emergency Services, which are known as the Four E's. These building blocks, in conjunction with INDOT's proposed emphasis areas, have been used to create a safety framework that is compatible with the SHSP and can be used as a catalyst for customizing a sub-state regionalplan. In this direction, NIRPC conducted a safety assessment for all types of crashes in the region that take place on the state system. In this assessment process, NIRPC staff investigated all types of crashes on all public roads within Lake, Porter and LaPorte Counties. This uniform assessment provides the region with a more reliable, more comprehensive understanding of crashes that took place regardless of roadway classification that would effectively lead to more mitigation efforts.

Another tool for local customization of safety planning is the Indiana Five Percent Report. This report is a ranking of roads within the state of Indiana with the most severe safety needs. The report, established under SAFETEA-LU, is a requirement of the federal government and is meant to provide greater transparency in assessing safety on both state and local roads. The locations in the report are narrowed to specific segments and

intersections. In addition to identifying areas of concern, the Indiana Five Percent Report is used to help direct highway funding to the areas that need it most.

Goals and Objectives

In developing the 2040 Comprehensive Regional Plan, a set of goals and objectives wasadopted. The safety-related goalis to have an accessible region with connected people and opportunities and a secure transportation system.

Objectives

- Reduce the number and severity of motor vehicle collisions
- Improve the safety of nonmotorized transportation through education, enforcement, engineering, design and construction
- Reduce emergency response times on the major expressways in the region
- Improve the safety and security of transit facilities, including stations, stops and vehicles

Performance measures should be used to evaluate the objectives. More specific SMART (Specific, Measurable, Accessible, Reliable and Time-Oriented) objectives should be used to provide guidance and motivation to regional stakeholders to achieve regional safety goals. The following are additional safety-related objectives that were determined based on safety data in Northwest Indiana.

- Reduce the crash rate by .34 (10 percent) and death/injury rate by .09 (15 percent) by the year 2020
- Reduce the bike/ped crashes by 17 (5 percent) by the year 2020
- Reduce incident clearance time by 35 percent by the year 2040
- Reduce incidents per 100,000 trips by 40 percent by the year 2040

Performance measures

- Crash rate (per 1,000,000 vehicle miles traveled)
- Traffic crashes injury rate/100,000 licensed drivers
- Traffic crashes fatality rate/100,000 licensed drivers
- Incident clearance response time (when available)

Step 1: Planning Process

- Make safety a priority
- Form a Safety Mitigation Committee

- Develop a safety vision
- Develop a comprehensive approach and performance measures
- Collaborate with the safety community
- Maintain regional safety information and analysis
- Improve data and analytical tools
- Address policies and facilities (behavioral and physical)
- Integrate safety into plans and programs
- Focus investments that address safety
- Use the SHSP
- Monitor safety implementation and analyze effectiveness
- Work to identify and prioritize infrastructure improvements in the LRTP and TIP (spell out these acronyms) regarding safety

Step 2: Area of Focus

- Pedestrians' and bicyclists' safety
- Driving behavior
- Signalized and unsignalized intersections
- Railroad crossings
- Heavy truck collisions
- Signage

Step 3: Evaluation – hot spot – project selection

Step 4: SHSP and the Four E's (Education, Enforcement,Engineering, Emergency Services)

NIRPC's Safety Framework

Development Process

The development process of the safety framework began with gathering data and creating and analyzing information. The purpose of this process is to serve as a guide for long-range improvement and to help community leaders better understand safety issues and trends occurring within the region. This information can help them develop recommendations for any issues raised by the data. To evaluate safety within the region, two

major assessments were performed. First, the number and type of crashes in the region were identified. Second, Geographic Information System-based maps were created to visually identify crash locations.

Data Sources

The primary source for transportation safety data is the crash report. These reports are filled out at the crash scene by a law enforcement officer and are valuable in summarizing the details of a crash. The crash data wasderived from Indiana State Police the Vehicle Crash Records System (VCRS), which provide source data for all road crashes. In Indiana, MPOs (spell out acronym) are allowed access to that relatively new state database. Transportation planners and engineers around the region will find these data useful for analysis, resulting in timely and informed decisions about safety improvement projects. This data play a key role in maintaining and enhancing Northwest Indiana transportation system in the mostefficient way possible. The crash report includes primary factors or driver behaviors that caused the crash, location of the incident, if it is located within a school or construction zone, weather conditions, vehicle types and other information needed to analyze transportation safety. The data were derived on a regional and local level to identify high-crash locations, which types of transportation modes are involved, areas where public education and outreach may be necessary and specific demographics.

Data Analysis

The GIS was usedas one of the analysis tools to assist in highlighting geographic concentrations of crashes. The Automated Reporting Information Exchange System (ARIES) site provides source data in an access sheets format. The report sheet includes latitude and longitude data. This data was added as XandY coordinates to a map and then converted to shapefiles. The shapefiles were projected to the map coordinate system and displayed as points of crash locations. The points are indicated as the location of the crashes, and the red points indicate that a fatality has occurred in the incident.

Some coordinates, however, were off. Some either did not have coordinates or had coordinates that were located off the regional map. The locations of the crashes with inaccurate data were fixed by manually looking up the location and the intersection of the crash.

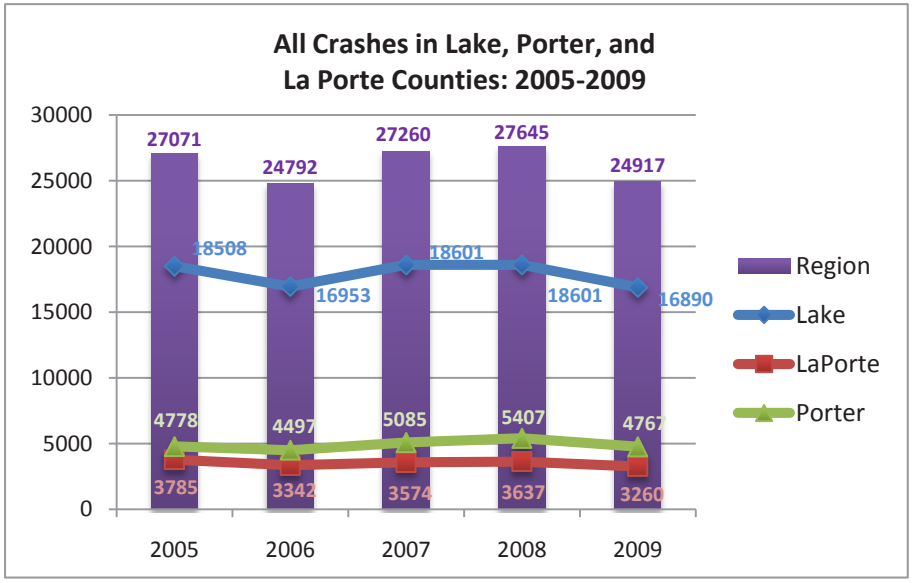
Top Ten Crash Locations		
	Roadway Name	
1	INDIANAPOLIS BLVD	5959
2	I80/I94	5728
3	US30	5248
4	CALUMET AVE	4986
5	I65	3743
6	SR53/Broadway	3240
7	SR912/Cline Avenue	2430
8	SR55/Cleveland st.	2006
9	RIDGE RD	1927
10	US20	1886

All Crashes

The analysis of the 2005-2009 crash data for the three counties of the NIRPC region shows that there was an average of approximately 26,337 crashes per year. In each of the five years studied, crashes occurring in Lake County accounted for approximately two-thirds of all incidents(Figure II.3). To pinpoint what areas and elements of the region's transportation network need improvement and which ones might not, a further examination is needed of the types of crashes in the region. Four categories of crashes are examined:

- Vehicular crashes with nonmotorized transportation
- Crashes involving trucks
- Crashes occurring at railroad crossings
- Crashes involving buses

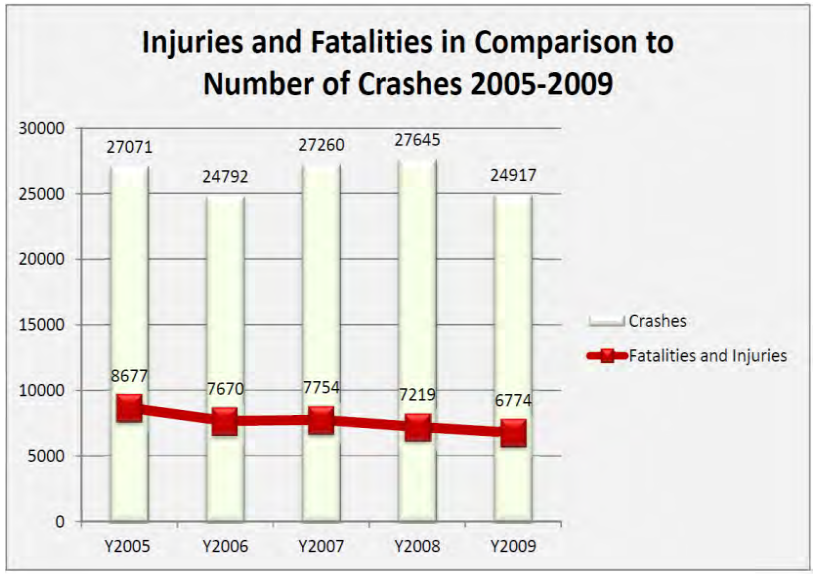
Crashes	Y2005	Y2006	Y2007	Y2008	Y2009	Total
Total Crashes	27071	24792	27260	27645	24917	131685
Fatal Crashes	126	93	128	115	100	562
% of Crashes with Fatality	0.47%	0.38%	0.47%	0.42%	0.40%	0.43%
Crashes with Injury	6031	5416	5508	4559	4927	26441
% of Crashes with Injuries	22%	22%	20%	16%	20%	20%
Total Fatalities	**143**	**103**	**141**	**133**	**111**	**631**
Total Injuries	**8534**	**7567**	**7613**	**7086**	**6663**	**37463**



Traffic crashes from 2005-2009 in Northwest Indiana decreased at roughly the same rate as in the state at 7.9% and 8.1%, respectively. Fatalities fell 26.2% statewide and 22.3% in Northwest Indiana over the same period (from 143 in 2005 to 111 in 2009).

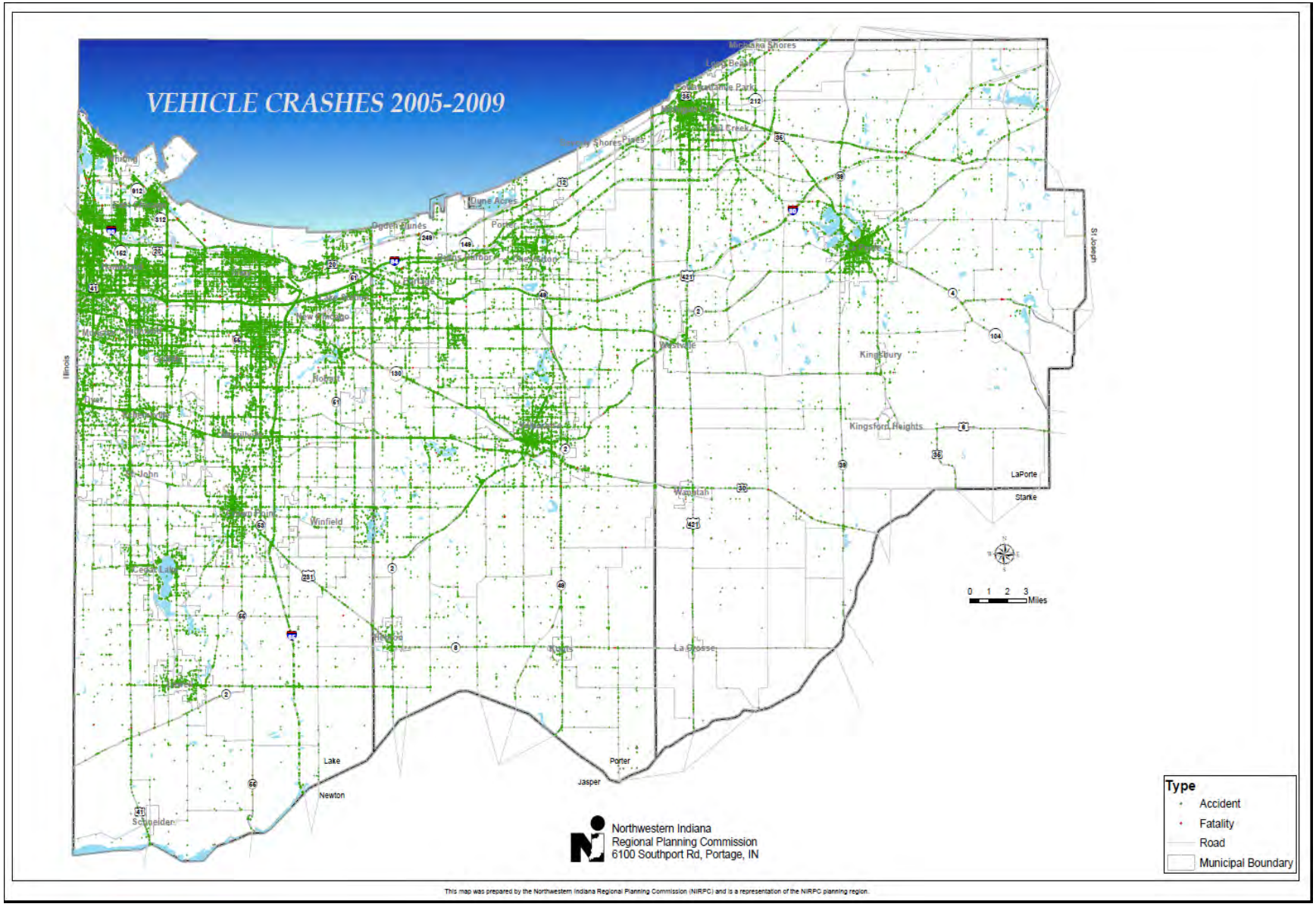
Figure II.3 All Crashes in Lake, Porter, and LaPorte Counties: 2005-2009; NIRPC, Data Source: Indiana State Police, 2010.

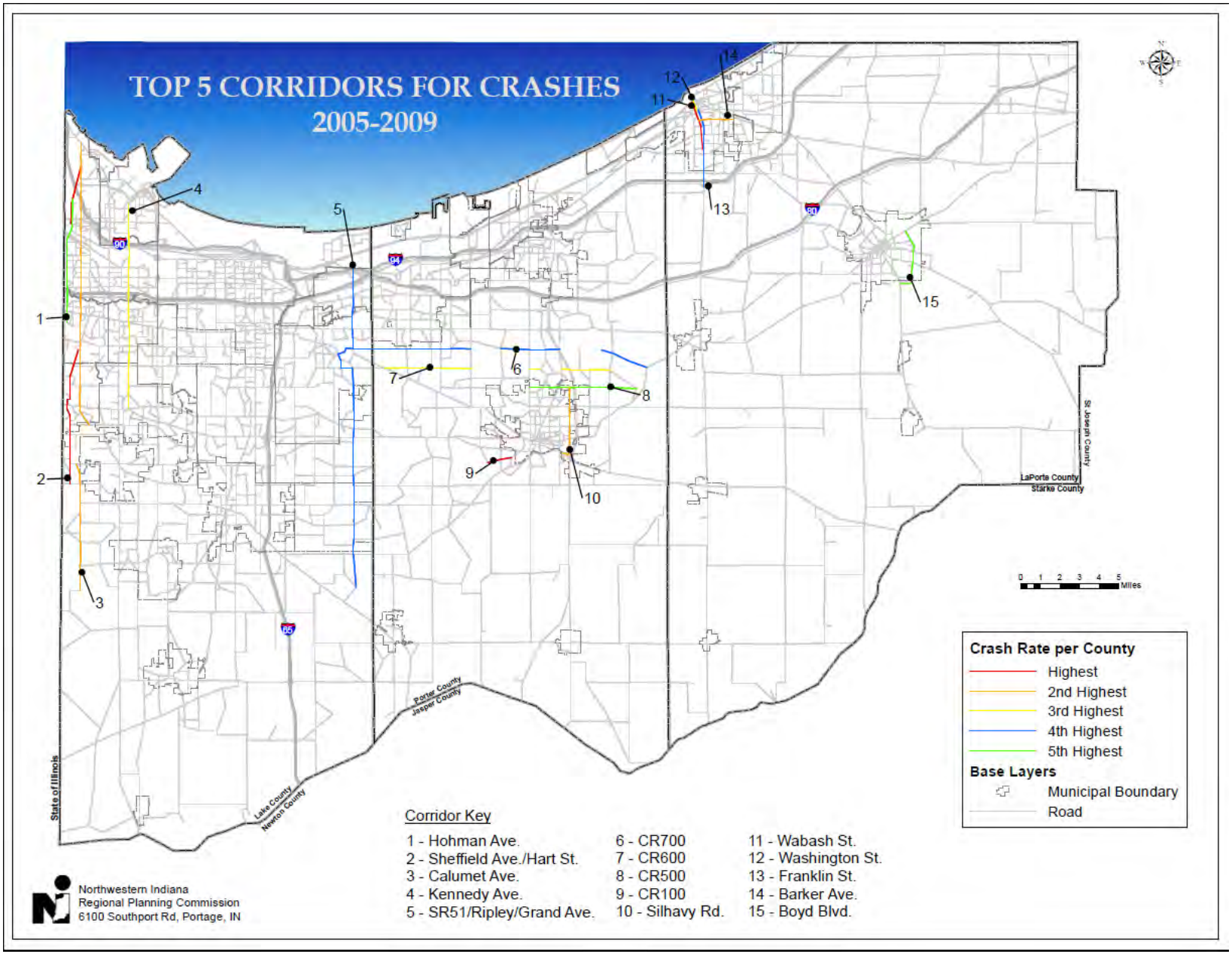
According to the table, the total crashes in the three counties decreased by approximately 7.9% between 2005 and 2009, while the fatality rate peaked in 2005. During 2005, traffic crashes claimed 143 lives (15% of the statewide fatalities) and left 6,031 injured (14.5% of the statewide injuries) in the Northwest Indiana region. The percentage of crashes that resulted in a fatality was .43% for the five-year period from 2005 to 2009. Based on the five years of traffic crash data, there are 72 traffic crashes per day and one fatality crash every three days in Northwest Indiana.



Crash Rate

The crash rate was calculated for each of the 25 corridors for each county that had the most crashes. The five corridors for each county with highest crash rates are indicated in color on the following map. Some local roadways have severely high crash rates. Wabash Street in Michigan City has the highest crash rate at 1,154, which means there will be 1,154 crashes perone million vehicle miles traveled in the project corridor.


VEHICLE CRASHES 2005-2009
Indiana Shores
Long Beach
Michigan City
Trail Creek
Beverly Shores
Pines
Dune Acres
Ogden Dunes
Portage
Chesterton
Burns Harbor
Porter
Valparaiso
New Chicago
Hobart
Merrillville
Kingsbury
Kingsford Heights
LaPorte
Starke
St Joseph
Illinois
St John
Winfield
Cedar Lake
Griffith
Highland
Munster
La Crosse
Wanatah
Lake
Porter
Jasper
Newton
Schneider
0 1 2 3 Miles
Northwestern Indiana
Regional Planning Commission
6100 Southport Rd, Portage, IN
Type
Accident
Fatality
Road
Municipal Boundary
This map was prepared by the Northwestern Indiana Regional Planning Commission (NIRPC) and is a representation of the NIRPC planning region.


TOP 5 CORRIDORS FOR CRASHES
2005-2009
Crash Rate per County
Highest
2nd Highest
3rd Highest
4th Highest
5th Highest
Base Layers
Municipal Boundary
Road
Miles
Corridor Key
1 - Hohman Ave.
2 - Sheffield Ave./Hart St.
3 - Calumet Ave.
4 - Kennedy Ave.
5 - SR51/Ripley/Grand Ave.
6 - CR700
7 - CR600
8 - CR500
9 - CR100
10 - Silhavy Rd.
11 - Wabash St.
12 - Washington St.
13 - Franklin St.
14 - Barker Ave.
15 - Boyd Blvd.
Northwestern Indiana
Regional Planning Commission
6100 Southport Rd, Portage, IN
State of Illinois
Lake County
Newton County
Porter County
Jasper County
LaPorte County
Starke County
St Joseph County

Top 25 Corridors for Crashes in Lake County				
Corridor	Crash Rate Rank	Crash Rate	Number of Crashes	Crash rank
SHEFFIELD AVE/Hart st.	1	46.89211339	734	25
CALUMET AVE	2	44.72443612	4986	4
KENNEDY AVE	3	35.93658916	1699	11
RIPLEY ST/SR 51/Grand Blvd	4	32.95600438	1334	15
HOHMAN AVE	5	30.77899664	1090	17
SR53/Broadway	6	30.52698264	3240	6
COLUMBIA AVE	7	29.48111579	1014	19
MAIN ST	8	29.06298447	1400	14
CHICAGO AVE/SR312	9	25.48582351	736	24
US30	10	23.32815901	5248	3
SR55/Cleveland st.	11	22.78774102	2006	8
165TH ST	12	22.78327884	930	20
169TH ST/15th Ave	13	22.73268143	1168	16
INDIANAPOLIS BLVD	14	18.43592291	5959	1
JOLIET ST/73rd Ave./SR 330/Old Lincoln HWY	15	18.12079579	891	21
45TH AVE	16	17.29522049	1071	18
US20	17	12.61617133	1886	10
RIDGE RD	18	12.295501	1927	9
SR912/Cline Avenue	19	12.26111303	2430	7
GRANT ST	20	12.11904184	828	22
US12	21	11.48757378	1695	12
US 231	22	11.29521253	821	23
I65	23	7.33934529	3743	5
I80/I94	24	6.76924873	5728	2
I90	25	5.010531158	1546	13

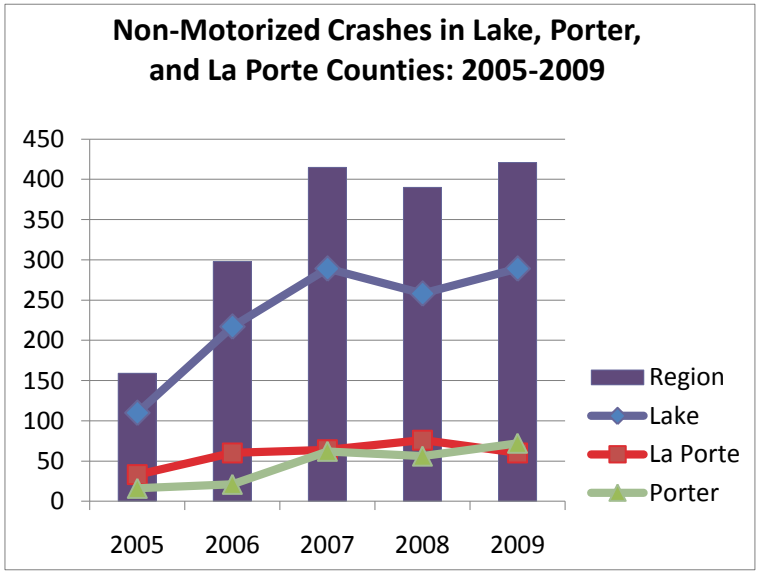
Top 25 Corridors for Crashes in Porter County				
Corridor	Crash Rate Rank	Crash Rate	Number of Crashes	Crash rank
CR100	1	226.6772383	229	19
SILHAVY RD	2	175.6525834	232	18
CR600	3	92.77170266	282	16
CR700	4	91.53850511	299	15
CR500	5	86.29805071	364	14
INDIAN BOUNDARY RD	6	79.35245094	384	13
CALUMET AVE	7	56.04758937	823	8
MERIDIAN RD	8	51.88100593	203	22
DIVIISON RD	9	44.83935991	218	20
CALUMET RD	10	32.79971366	183	26
WILLOWCREEK RD	11	29.32193869	516	9
US6	12	27.49778707	1720	1
CAMPBELL ST	13	19.17976329	251	17
STURDY RD	14	19.11186362	213	21
CENTRAL AVE	15	16.08584401	388	12
US20	16	12.76776627	1090	4
SR130	17	11.89250839	842	7
SR149	18	9.181594593	416	11
CR400	19	8.723041699	202	23
SR2	20	8.581330035	909	6
I80	21	8.550718815	926	5
US30	22	8.487408161	1274	3
SR8	23	7.223630465	187	24
US12	24	6.801890374	469	10
COUNTY LINE RD	25	5.438314877	185	25
I94	26	3.798435305	1424	2

Top 25 Corridors for Crashes in LaPorte County				
Corridor	Crash Rate Rank	Crash Rate	Number of Crashes	Crash rank
WABASH ST	1	1154.097045	184	15
BARKER AVE	2	97.9947186	133	21
WASHINGTON ST	3	60.30267362	158	19
FRANKLIN ST	4	45.50420336	1220	2
BOYD BLVD	5	45.27838533	177	16
11TH ST	6	35.20690926	121	24
COOLSPRING AVE	7	29.98906524	160	18
WOODLAND AVE	8	28.77649745	198	14
SR4	9	26.38752865	226	11
SR212	10	20.6430222	156	20
SR2	11	12.09015889	1385	1
US12	12	9.864000099	360	8
OHIO ST	13	9.854562426	125	23
JOHNSON RD	14	8.097201335	256	10
US421	15	6.825279434	974	5
US20	16	6.567066526	1189	4
US35	17	6.304479669	1196	3
MICHIGAN BLVD	18	4.616605742	171	17
I80	19	4.496870658	890	6
CR400N	20	4.221408017	131	22
US6	21	3.727264849	224	12
I94	22	3.655876429	807	7
US30	23	2.521047409	221	13
LINCOLNWAY	24	2.324331701	109	25
SR39	25	1.667377129	270	9

Top Ten Non-Motorized incident locations		
	Roadway Name	Crash Count
1	BROADWAY AVE	58
2	US 20	39
3	SR 2	35
4	FRANKLIN ST/US 421	35
5	US 41	33
6	US 6	27
7	CENTRAL AVE	21
8	US 35	21
9	US 30	20
10	INDIANAPOLIS BLVD	19

Nonmotorized Transportation

Crashes involving vehicles and nonmotorized transportation (i.e. pedestrians and bicyclists) are of great concern as they directly reflect the livability of our centers and influence the willingness of our residents to use alternative transportation (Figure II.4). As the road network is made more bicycle- and pedestrian-friendly and the region's trail network is expanded, safety for these users becomes an ever-larger concern. While nonmotorized transportation is growing within the region, both as a means of recreation and active transportation, data for nonmotorized crashes for the region show a significant increase in the number of crashes between 2005 and 2009. During that period, the number of crashes per year averaged 337, while the total number of crashes rose 265%, from 159 to 421.



Nonmotorized crashes represent 1.3% of all crashes in Northwest Indiana. This increase could reflect the growing popularity of nonmotorized transportation and the increase in available opportunities to use alternative transportation via paths, trails and sidewalks. More importantly, this trend indicates a need to address safety issues related to nonmotorized transportation within the 2040 CRP and points to the growing importance of NIRPC policies that support the livable centers strategy, such as the recently adopted Complete Streets Policy and programs like Safe Routes to School.

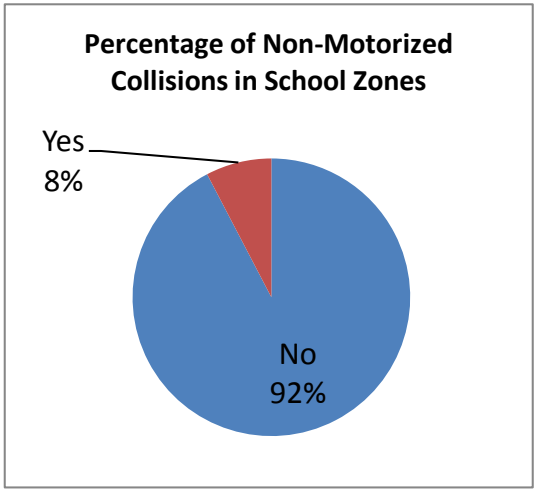
Motor vehicle crashes involving a pedestrian are of regional concern because those hit by a vehicle have a great chance of being seriously injured or killed (I Figure II.4 Crashes in Lake, Porter, and LaPorte Counties Involving Nonmotorized Transportation: 2005-2009; NIRPC, 2010

Data Source: Indiana State Police, 2010.

Bicycle Crashes

As the demand for this mode of transportation increases, Northwest Indiana should continue to collect additional data and monitor changing bicycle safety trends. Introducing rates and risks of bicyclists and their conflicts with other transportation modes are indicators of bicycle safety in

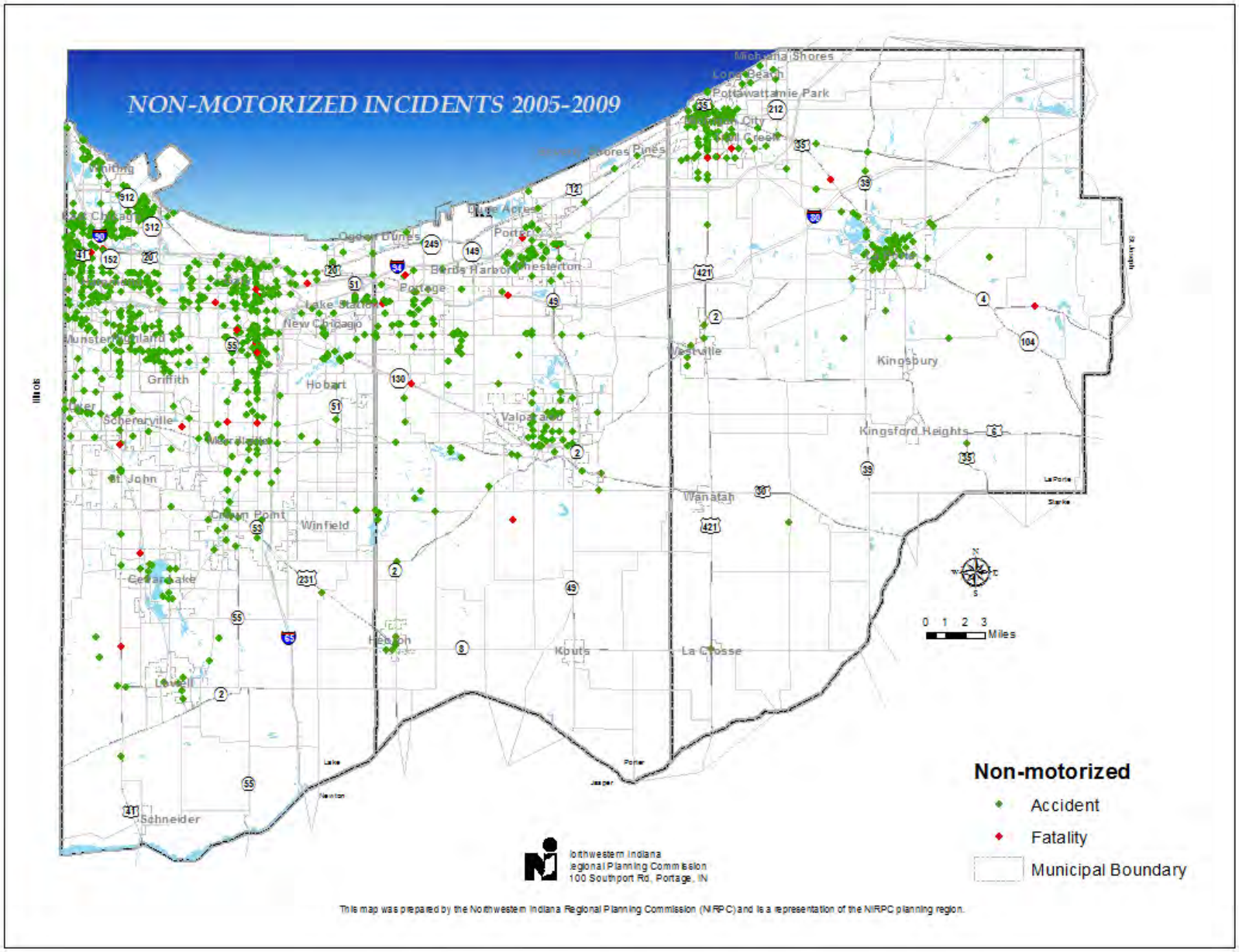
the region. The ARIES database was scaled down since 2007 when the last update of the plan was produced. Currently, it no longer keeps track of bicycle crashes. This mode of travel should be monitored in the near future, as more people use it as an alternative to driving.



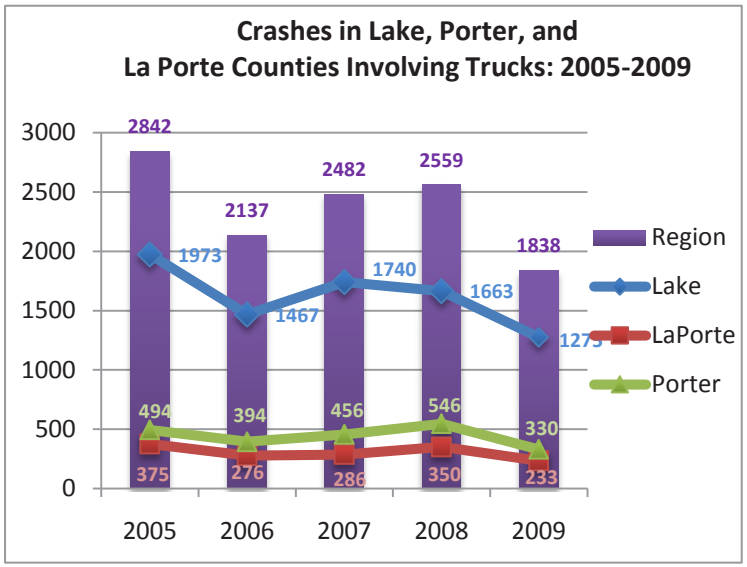
Pedestrian Crashes

Pedestrians were involved in 1.0% of all crashes reported in Northwest Indiana from 2005 to 2009. Pedestrian crashes resulted in 2.37% of all fatalities from crashes from 2005 to 2009 and 2.88% of all injuries in that same period. By comparison, nationally, pedestrian deaths account for 12% of all traffic fatalities and 3% of all traffic injuries. (Source: NHTSA). The reason for the low rate is because the rate of walking in the region is suspected to be low. Statewide, the long-term goal is to reduce the number of fatalities of pedestrians by 5.4% in 2013

Figure II.5 shows the percentage of nonmotorized crashes, which represents 8% of all pedestrian crashes. Safety is a major concern for parents, especially if schools are not providing school bus service for their addresses. NIRPC will incorporate the school zone crash data into the Safe Routes to School (SRTS) Program and classify crash locations as priority locations.


NON-MOTORIZED INCIDENTS 2005-2009
Michiana Shores
Long Beach
Pottawattamie Park
Michigan City
Duneland Beach
Miller Beach
Ogden Dunes
Portage
Lake Station
New Chicago
Griffith
Hobart
Schererville
Valparaiso
St. John
Crown Point
Winfield
Cedar Lake
Hebron
Lowell
Schneider
Kouts
La Crosse
Wanatah
Kingsbury
Kingsford Heights
La Porte
Starke
Porter
Lake
Jasper
Newton
Illinois
0 1 2 3
Miles
Non-motorized
Accident
Fatality
Municipal Boundary
Northwestern Indiana
Regional Planning Commission
100 Southport Rd, Portage, IN
This map was prepared by the Northwestern Indiana Regional Planning Commission (NIRPC) and is a representation of the NIRPC planning region.

Crashes Involving Trucks



Northwest Indiana contains a dense freight network due to the conflux of interstates and the region's port facilities.This network relies largely on trucks for movement of cargo, and because of the larger size and heavier weight of these vehicles, the resulting crashes are usually much more severe.Therefore, this category warrants special attention. Between 2005 and 2009, crashes involving trucks averaged approximately 2,400 incidents per year (Figure II.5). While truck crashes in Porter and LaPortecounties stayed relatively constant, Lake County crashes fluctuated, but generally experienced a downward trend. Unfortunately, this is most likely a function of the economic downturn and the corresponding reduction in container transportation rather than the result of significant improvements in safety. Therefore, it's anticipated that without significant safety enhancements, an improved economy also will bring an increase in the number of crashes involving trucks. Most of the truck crashes in Northwest Indiana occur on interstate highways.

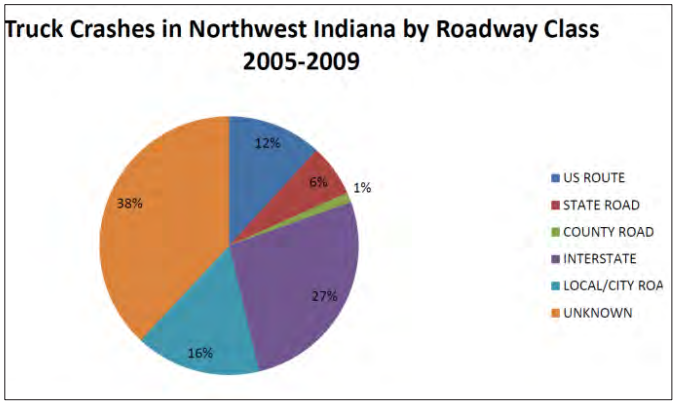
Truck crashes represent 9% of all crashes in Northwest Indiana from 2005-2009. The fatality rate (0.6%) is considered a much lower rate compared to the Indiana fatality rate (11% in 2009). When large trucks are involved in crashes it is more severe than other motor vehicle crashes. Special

Truck High Spot Crash Locations

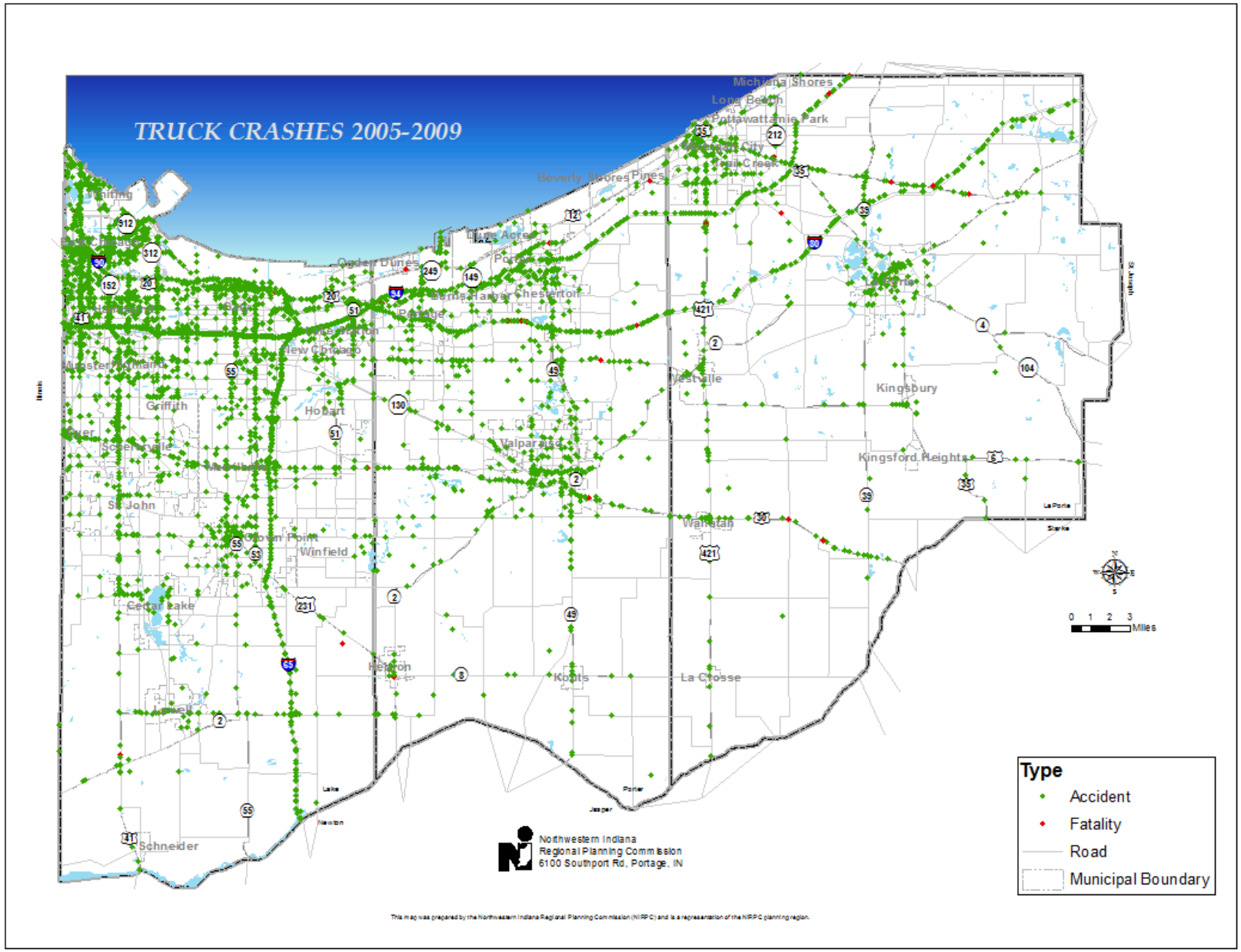
Roadway Name	Crash Count
I-80	1840
I-94	687
I-65	490
US 20	440
US 30	389
US 41	285
I-90	204
SR 51	192
SR 2	177
SR 49	144

Truck Crashes by Roadway Class in Northwest Indiana, 2005-2009

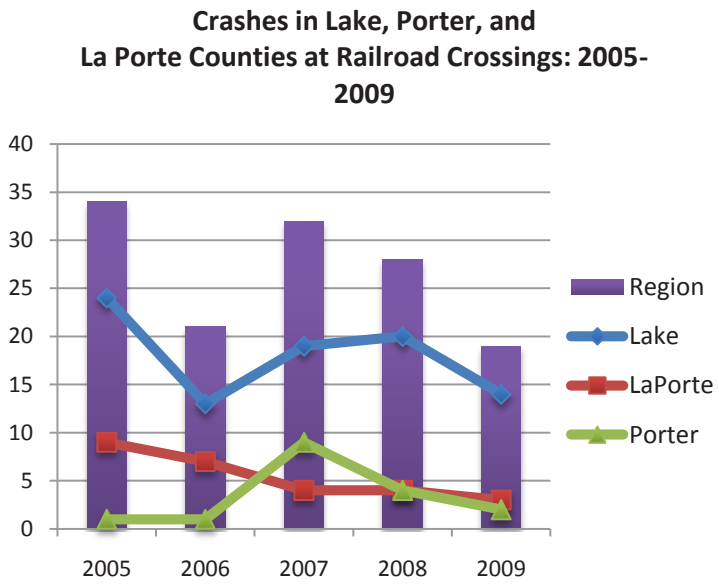
US ROUTE	1398
STATE ROAD	770
COUNTY ROAD	148
INTERSTATE	3172
LOCAL/CITY ROAD	1859
UNKNOWN	4511
Total	11858



attention should be given to commercial motor vehicle crashes particularly as a large number of trucks pass through the region everyday because of a concentration of industrial sites and the amount of freight traffic that goes to Chicago.



Railroad Crossing Crashes



Crashes by Railroad Company	
Company	Number of Crashes
Norfolk Southern	43
CSX	26
Chicago, South Shore and South Bend	11
Elgin Joliet and Eastern (Now CN)	11
CN	8
Chicago, Fort Wayne and Eastern	4
Amtrak	0
Chesapeake and Indiana Rail Co.	0

On average, there are 27 vehicle-train crashes each year (Figure II.6). While the instances of crashes occurring at railroad crossings are considerably lower than other types of crashes in the region, this type of crash has a much greater potential to be fatal due to the weight and speeds of the vehicles involved. Further, the number of rail lines passing through an urbanized area is directly related to the number of crashes. As a result, Lake County, with its more urbanized geography, has the highest number of railroad crossing crashes out of the three counties. In addition to the high fatality rates for crashes of this kind, the 2040 CRP's focus on the revitalization of urban centers and the creation of livable centers makes it necessary to prioritize safety improvements to reduce crashes at railroad crossings.

Railroad crossing crashes in Northwest Indiana represent 0.1% (134) of all crashes (131,685). Although the total number of crashes is significantly low, the fatality rate represents 17.1% (23) of all railroad crossing crashes in the region between 2005 to 2009.

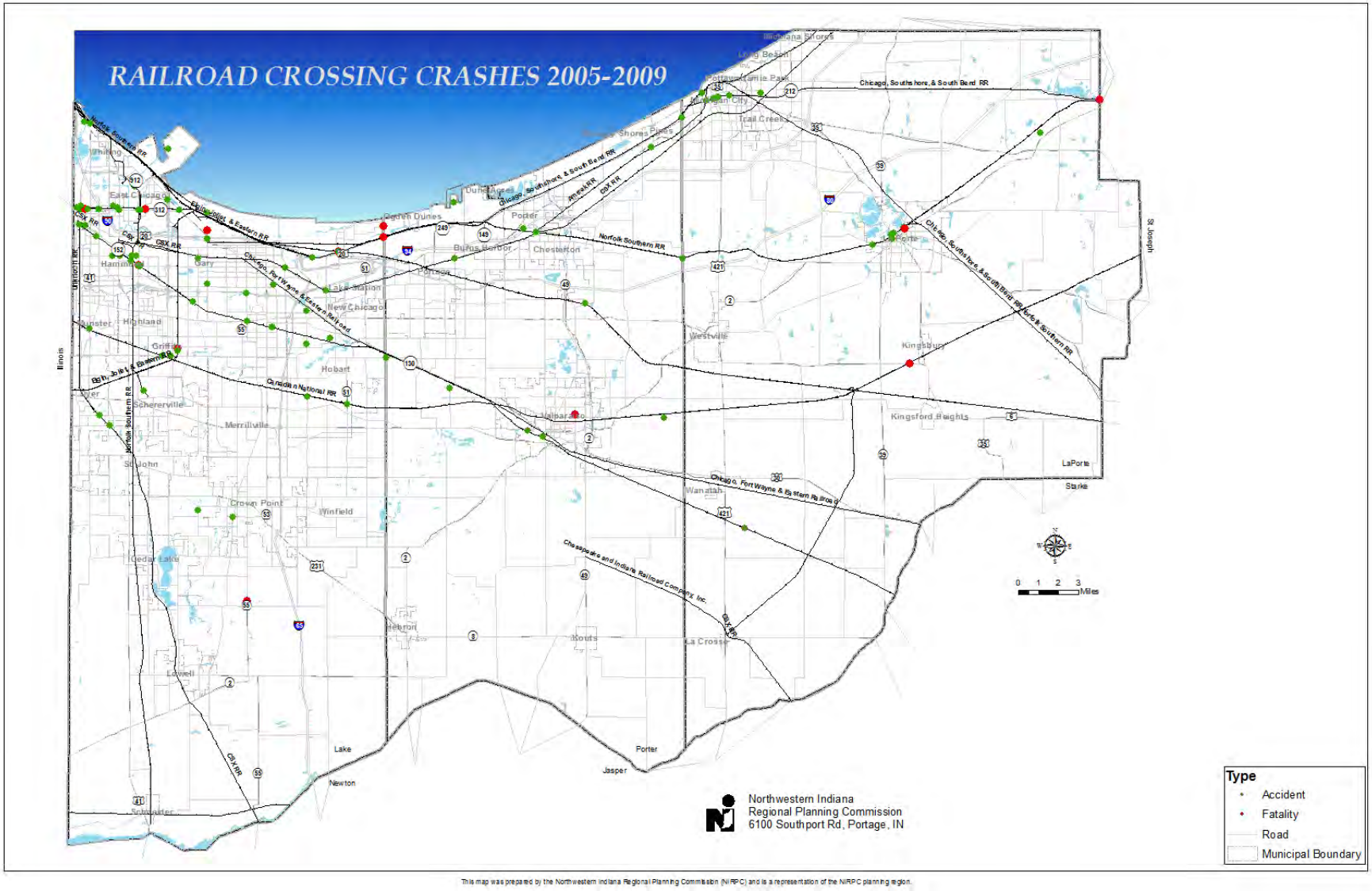


Figure II.6 Crashes in Lake, Porter, and LaPorte Counties at Railroad Crossings: 2005-2009; NIRPC

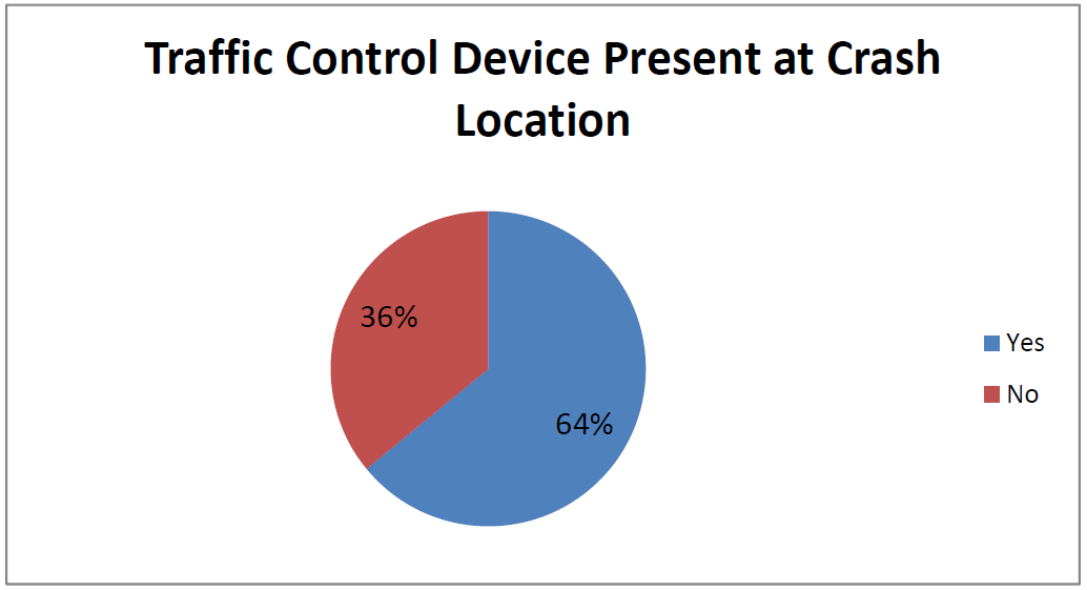
Top Ten Railroad Crash Locations

	Roadway Name	Crash Count
1	165TH ST	6
2	CLARK RD	6
3	COUNTY LINE RD	6
4	11TH ST	5
5	CHICAGO AVE	5
6	LAKE ST	3
7	MILLER AVE	3
8	US 6	3
9	169TH ST/15th Ave	3
10	145TH ST	2
10	41ST AVE	2
10	77TH AVE	2
10	BURR ST	2
10	CALUMET AVE	2
10	COLUMBIA AVE	2
10	FRANKLIN ST	2
10	HOHMAN AVE	2
10	JOHNSON AVE	2
10	KENNEDY AVE	2
10	MAIN ST	2
10	SOHL AVE	2
10	SR 312	2
10	TIPTON ST	2
10	TYLER ST	2
10	US 12	2
10	US 20	2

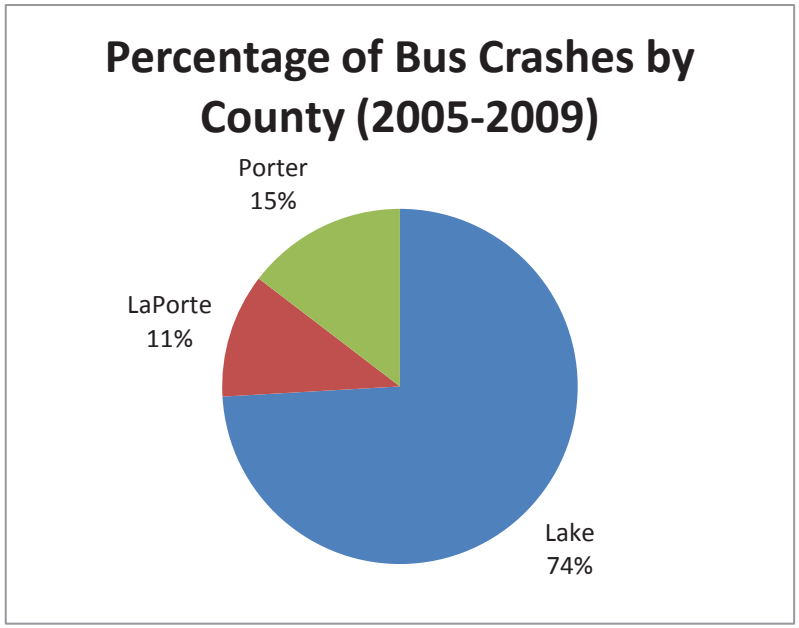
Data Source: Indiana State Police, 2010.

Traffic Control Devices

Crashes that involved traffic control operational devices and signage represent 64% of the total crashes that occurred between 2005 and 2009 in the region. The traffic control crashes include flashing signals, lane control, no passing zone, railroad crossing gate/flagman, railroad crossing sign, traffic control signal, officer/crossing guard/flagman, stop sign and yield sign.



School and Transit Bus Crashes

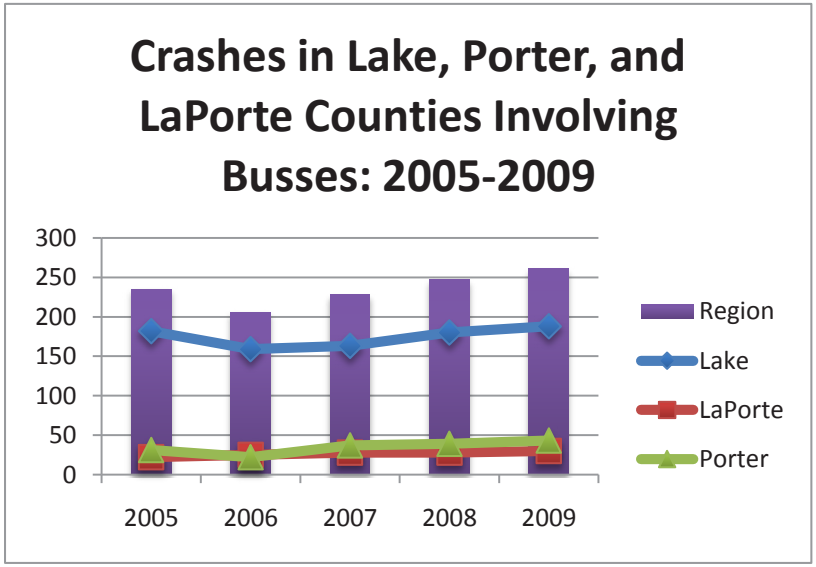


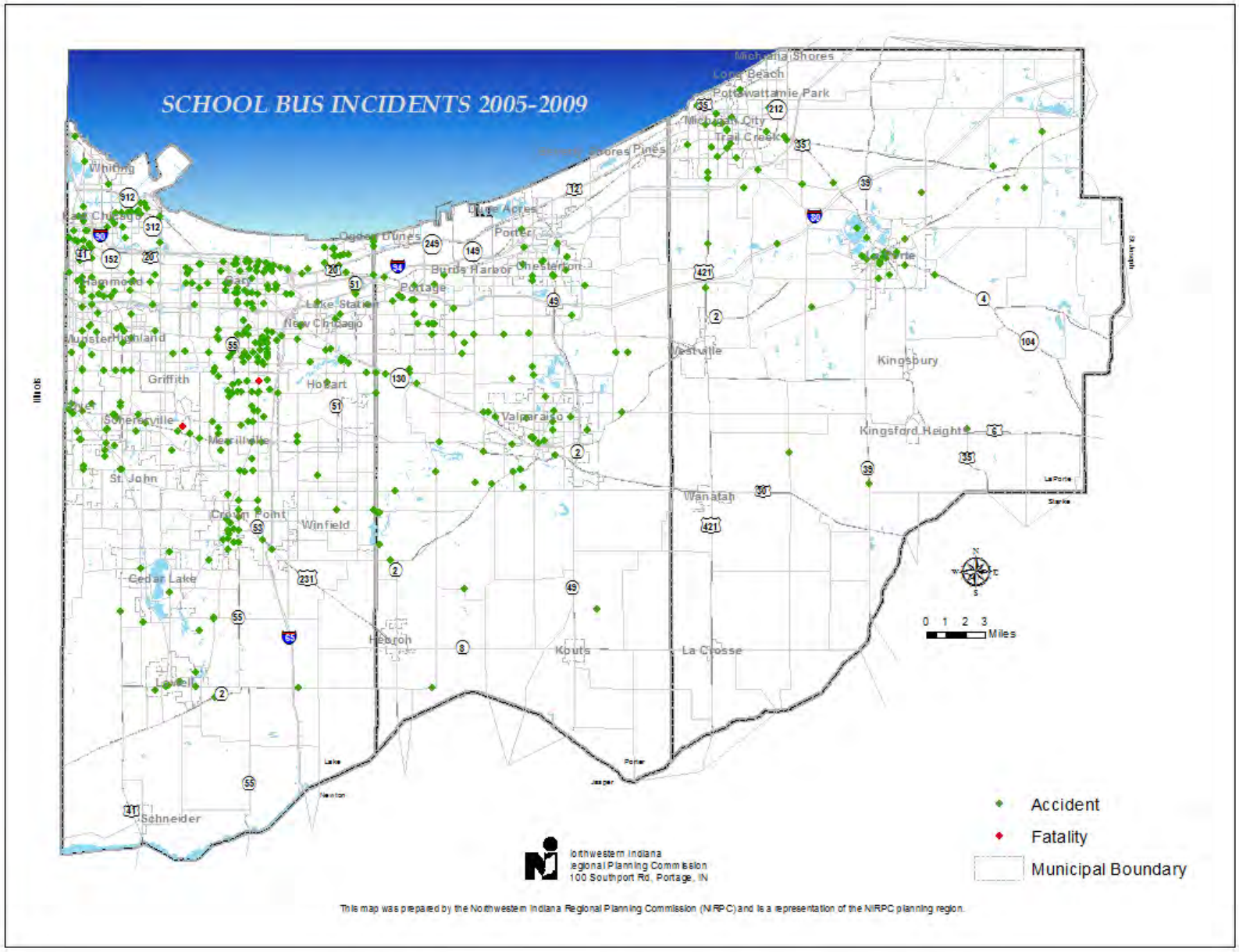
Data Source: Indiana State Police, 2010.

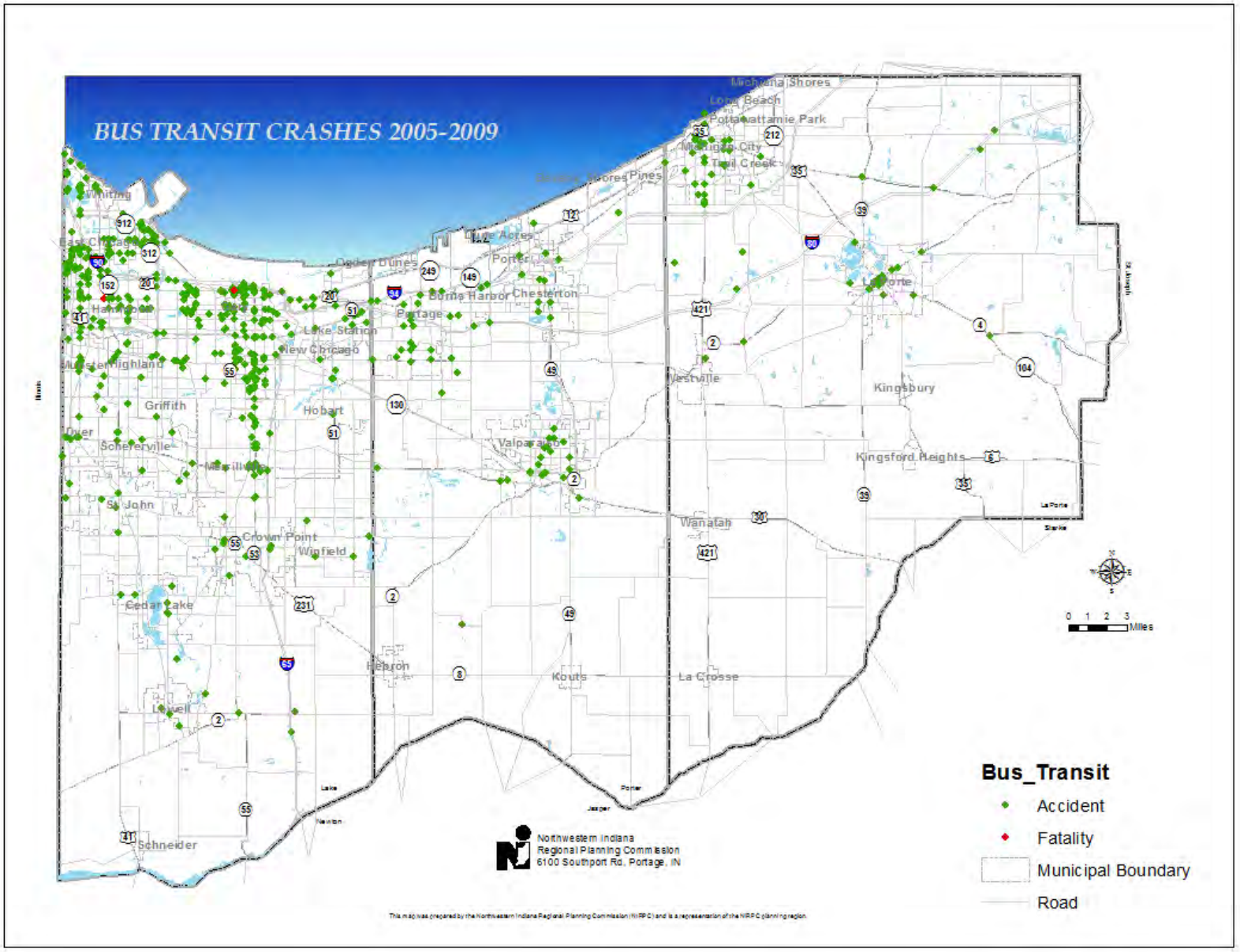
According to the National Safety Council, bus riding is the safest form of surface transportation. Between 2005 and 2009, an average of 236 bus crashes occurred in Northwest Indiana each year (Figure II.7). While this is a relatively low number compared to other crash types, increased user demand and planned service expansions will bring added bus traffic and the potential for even greater safety concerns. In urban areas, the concern for bus safety is even greater: 74% of all bus crashes occurring between 2005 and 2009 took place in Lake County, the most urbanized of the three counties and therefore the one with the most extensive use of both transit and school buses. As the bus and transit system expands in Northwest Indiana, efforts must be taken to ensure the safety of all passengers, especially those in urban centers where bus service is most concentrated.

Figure II.8 Percentage of Bus Crashes by County 2005-2009; NIRPC

Top Ten Bus Crash Locations	
Roadway Name	**Crash Count**
BROADWAY AVE	40
US 41	31
US 20	26
CALUMET AVE	23
I-80	23
US 30	22
15TH AVE/169th ST	19
HOHMAN AVE	17
MAIN ST	15
US 12	15




SCHOOL BUS INCIDENTS 2005-2009
Michiana Shores
Long Beach
Pottawattamie Park
Michigan City
Trail Creek
Beverly Shores
Pines
Whiting
Dune Acres
Porter
Ogden Dunes
Burns Harbor
Chesterton
Portage
Lake Station
New Chicago
Hammond
Gary
Munster
Highland
Griffith
Hobart
Valparaiso
Merrillville
Schererville
St. John
Crown Point
Winfield
Cedar Lake
Hebron
Kouts
La Crosse
Westville
Kingsbury
Kingsford Heights
Wanatah
Michigan City
La Porte
Starke
Lake
Porter
Jasper
Newton
Schneider
0 1 2 3 Miles
Accident
Fatality
Municipal Boundary
Northwestern Indiana
Regional Planning Commission
100 Southport Rd, Portage, IN
This map was prepared by the Northwestern Indiana Regional Planning Commission (NIRPC) and is a representation of the NIRPC planning region.


BUS TRANSIT CRASHES 2005-2009
Michiana Shores
Long Beach
Pottawattamie Park
Trail Creek
Pines
Beverly Shores
Porter
Dunes Acres
Dunes
Burns Harbor
Chesterton
Portage
Lake Station
New Chicago
Hammond
Highland
Griffith
Hobart
Schererville
Dyer
Merrillville
St. John
Crown Point
Winfield
Cedar Lake
Lowell
Schneider
Hebron
Kouts
La Crosse
Westville
Kingsbury
Kingsford Heights
Wanatah
La Porte
0 1 2 3 Miles
Northwestern Indiana
Regional Planning Commission
6100 Southport Rd. Portage, IN
Bus_Transit
Accident
Fatality
Municipal Boundary
Road

Causes of Crashes

In Northwest Indiana, the No. 1 cause of crashes is failure to yield right of way. These types of crashes represent 16% of all crashes in the region between 2005 and 2009. Other leading causes include following too closely and unsafe backing. Animal/object in the roadway was the fifth leading cause of crashes, but it should be noted that it was the No. 1 cause of crashes in Porter County. Many of these crashes occurred on the Indiana Toll Road and Interstate 94. This trend is because these expressways travel through more rural and wooded areas than thosein Lake and LaPortecounties.

Failure to yield right of way

Failure to yield right of way occurs when two or more vehicles attempt to occupy one pathway on a roadway and a driver tries to skip ahead on the driver that has the right of way. Failure to yield right of way occurs mostly on roads. This type of accident does not occur as often on the region's expressways.

Following too closely

Following too closely, or tailgating, is the process of following another driver so close that if there is an interruption or obstruction, the reaction time for the driver will not be enough to prevent a crash. Following too closely most commonly occurs in locations that feature a lot of congestion, such as expressways and business districts.

Unsafe backing

The third leading cause of crashes is unsafe backing. This occurs when drivers back out of their driveways or back up illegally on expressway interchanges. This type of crash also occurs in commercial parking lots. Unsafe backing crashes occur about evenly throughout the region.

Top Ten Causes of Crashes		
1	Other	7649
2	FAILURE TO YIELD RIGHT OF WAY	6756
3	FOLLOWING TOO CLOSELY	5291
4	UNSAFE BACKING	3762
5	SPEED TOO FAST FOR WEATHER CONDITIONS	2458
6	ANIMAL/OBJECT IN ROADWAY	2303
7	Ran off Road	2186
8	IMPROPER LANE USAGE	2017
9	ROADWAY SURFACE CONDITION/HOLES/RUTS IN SURFACE/	1545
10	DISREGARD SIGNAL/REG SIGN	1507

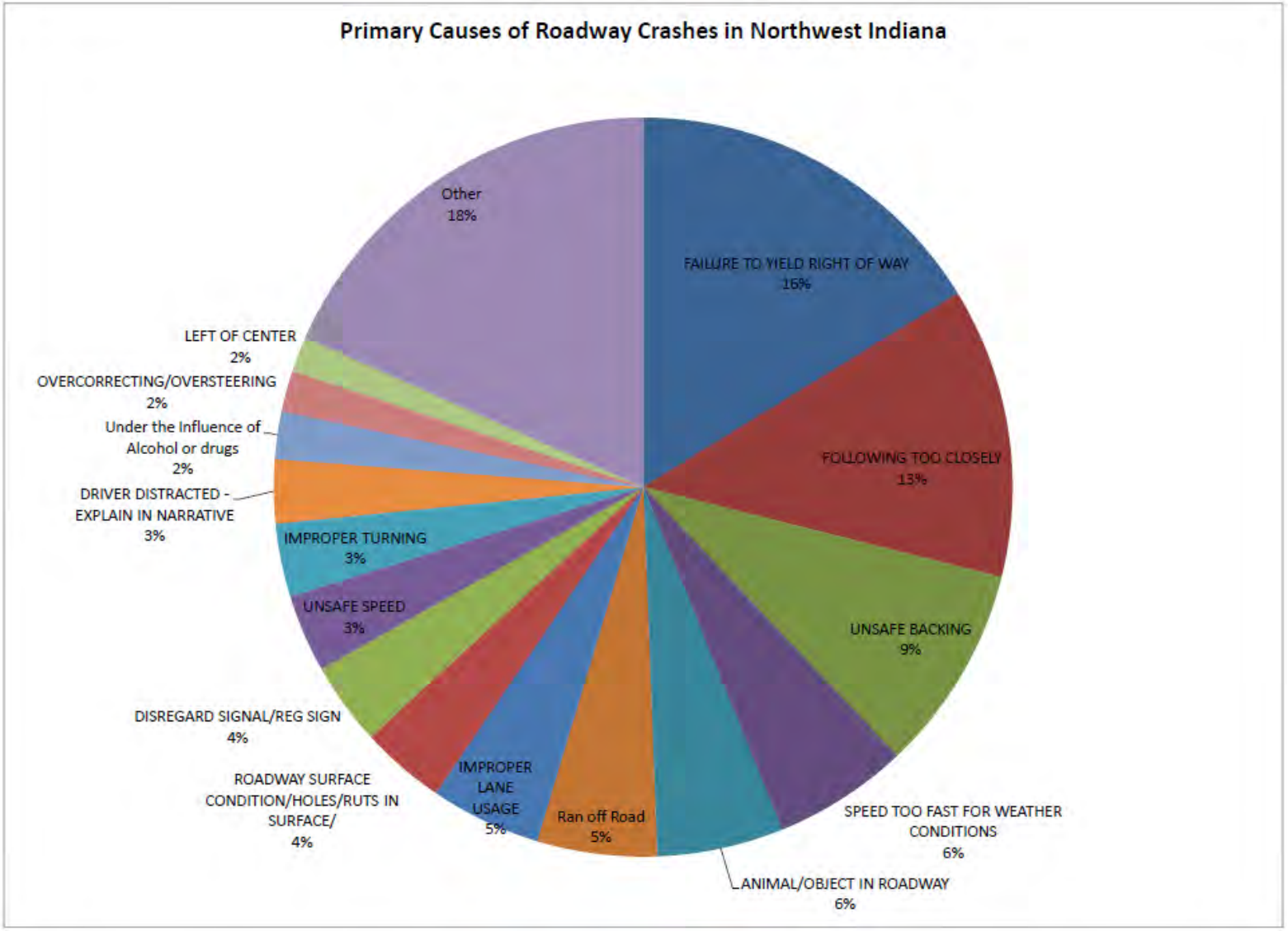
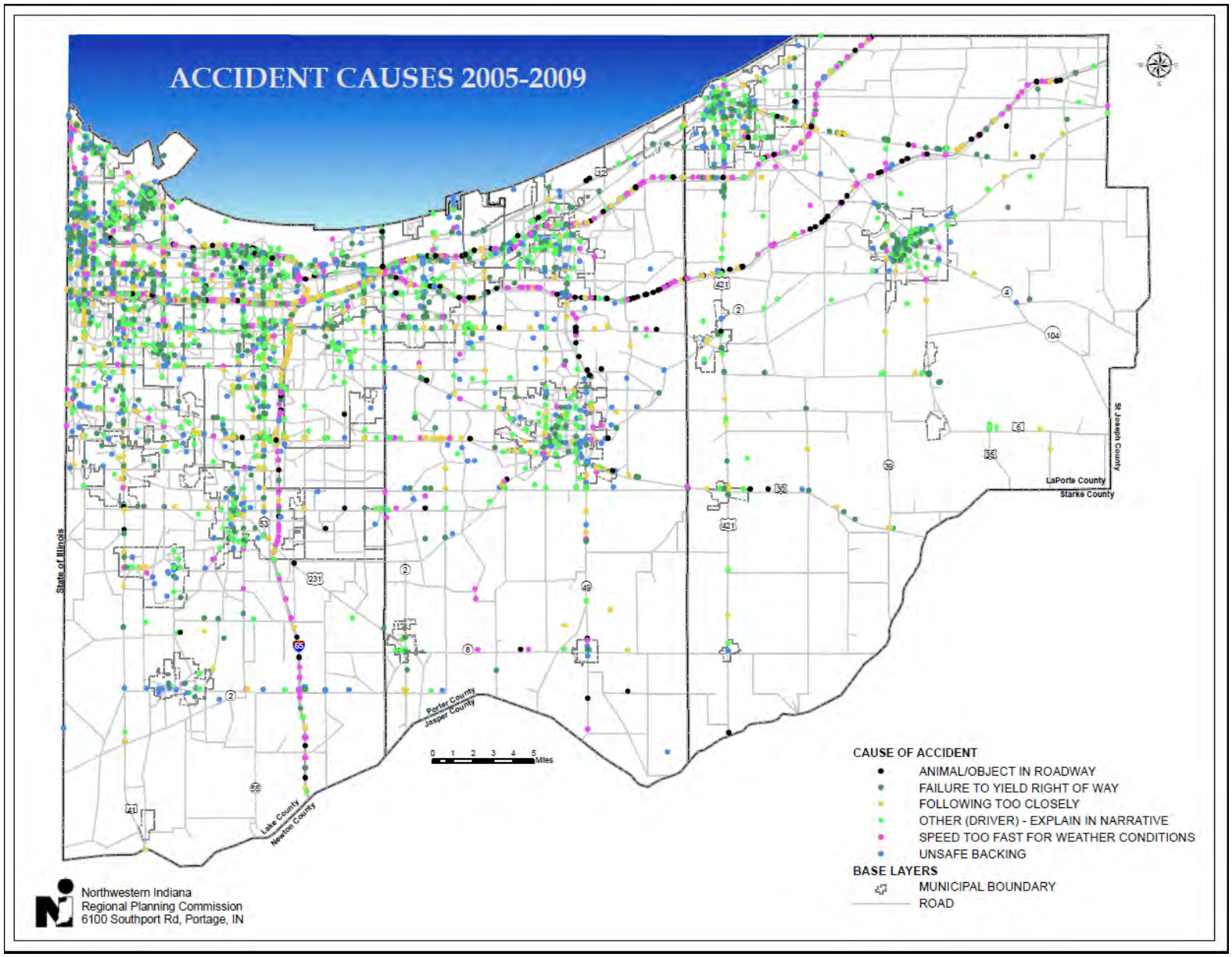


Figure II.2 Primary Causes of Roadway Collisions in Northwest Indiana


ACCIDENT CAUSES 2005-2009
State of Illinois
Lake County
Newton County
Porter County
Jasper County
LaPorte County
Starke County
St Joseph County
0 1 2 3 4 5 Miles
CAUSE OF ACCIDENT
ANIMAL/OBJECT IN ROADWAY
FAILURE TO YIELD RIGHT OF WAY
FOLLOWING TOO CLOSELY
OTHER (DRIVER) - EXPLAIN IN NARRATIVE
SPEED TOO FAST FOR WEATHER CONDITIONS
UNSAFE BACKING
BASE LAYERS
MUNICIPAL BOUNDARY
ROAD
Northwestern Indiana
Regional Planning Commission
6100 Southport Rd, Portage, IN

Education

- Set up an extensive media campaign for Northwest Indiana directed toward issues such as impaired driving, distracted driving, aggressive driving, weather conditions and rural roads. That can be achieved by creating banners, bumper stickers, billboards and other means to promote safety.
- Conduct a safety event that can be targeted toward occupant protection, elimination ofdistractions while driving and elimination ofaggressive driving.
- Participate in training and educational events in rural communities in Northwest Indiana in an effort to maximize communication with the rural areas.

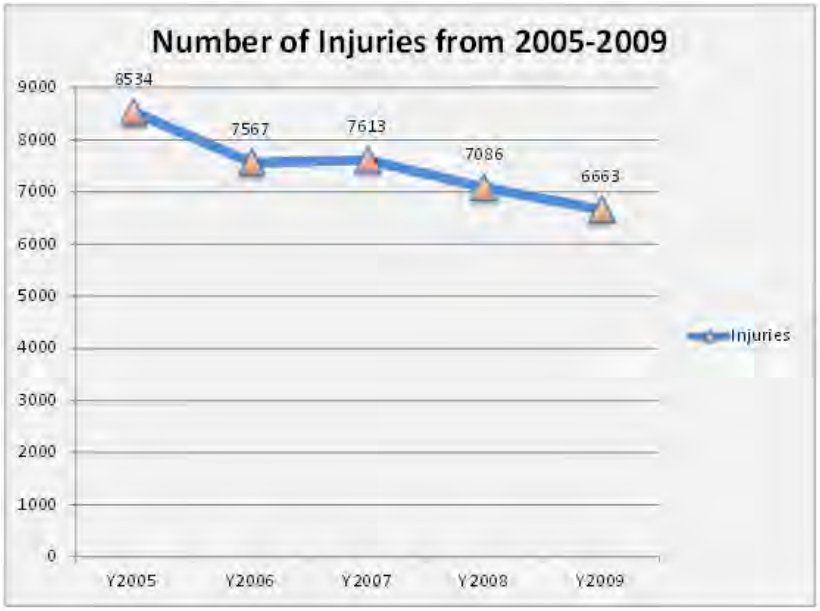
Enforcement

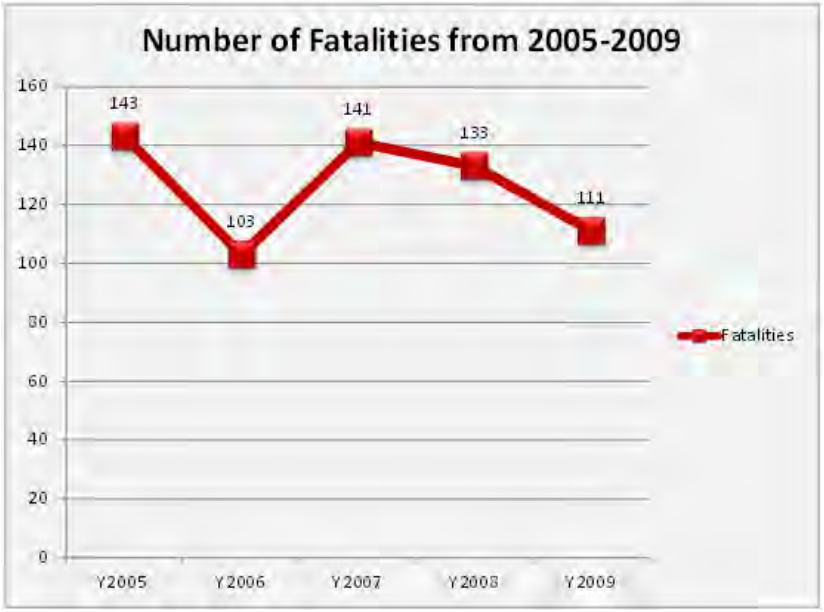
- NIRPC will develop and participate in training courses through the state for local law enforcement responders regarding issues affecting transportation safety and traffic control.
- NIRPC will support law enforcement campaigns targeted to specific locations, driver behaviors and travel seasons.

Emergency Services

- NIRPC will support the region's effort to improve crash management through appropriate enforcement, emergency response, roadside assistance and Intelligent Transportation Systems (ITS) techniques.

Supporting Data





Failure to yield ROW

Lake County		Porter County		Laporte County	
Intersection	Number of Incidents	Intersection	Number of Incidents	Intersection	Number of Incidents
US 30 & US 41	161	US 6 & Willowcreek Road	44	US 421 & US 20	72
Calumet Ave & Ridge Road	107	US 30 & SR 130	41	US 421 & CR 400 N	59
45th Ave & Calumet Ave	90	US 6 &McCool Road	34	SR 2 & SR 35	49
US 30 & SR 53	77	Vale Park rd & Calumet Road	34	SR 2 & Tyler st.	38
SR 51 & Central Ave	76	SR 49 & Indian Boundary Road	30	US 421 & Barker Road	32

Following too Closely

Lake County		Porter County		Laporte County	
Intersection	Number of Incidents	Intersection	Number of Incidents	Intersection	Number of Incidents
Indianapolis Blvd & Main st.	142	US 30 & CR 600 W	39	US 20 & US 421	54
US30 & US 41	141	SR 130 & US 30	39	CR 400 N & US 421	29
SR 53 & US 30	138	US 6 & Willowcreek Road	35	US 35 & SR 2	33
Calumet & 45th Ave	129	US 30 & CR 500 W	35	michigan Road & jackson st.	26
US 30 & Mississippi st.	118	CR 475 & US 30	34	US 421 & Barker Road	26
		SR 49 & Indian Boundary Road	34		

Other (Driver)

Lake County		Porter County		Laporte County	
Intersection	Number of Incidents	Intersection	Number of Incidents	Intersection	Number of Incidents
Ridge & Indianapolis Blvd	54	SR 49 & Indian Boundary Road	54	US 20 & US 421	20
Calumet Ave & US 30	46	US 30 & SR 130	31	US 421 & Village Road	18
US 30 & Mississippi st.	45	Ridge and County Line	29	SR 2 & Audlrey st.	17
912 & I-80/94	41	Calumet Ave & CR 400 N	19	SR 2 & SR 4	16
Coloroado Ave & US 30	40	US 30 & Silhavy Road	18	US 35 & Truesdell st.	13

Unsafe Backing

Lake County		Porter County		Laporte County	
Intersection	Number of Incidents	Intersection	Number of Incidents	Intersection	Number of Incidents
US 20 & SR 51	49	US 20 & Wagner Road	33	SR 2 & Audlrey st.	42
Burr st. & 25th Ave	39	Calumet Road & Broadway	31	US 421 & Meijer Drive	31
US 41 & 67th Ave	37	Indian Boundary Road & SR 49	27	US 421 & US 20	28
SR 55 & Birch St.	35	US 20 & I-94	20	US 421 & Lakespur Road	27
US 30 & Calumet Ave	32	SR 130 & CR 400 N	20	US 421 & Barker Road	26

Unsafe Speed for Weather Conditions

Lake County		Porter County		Laporte County	
Intersection	Number of Incidents	Intersection	Number of Incidents	Intersection	Number of Incidents
SR 912 & I-80/94	55	SR 49 & I-94	25	US 20 & I-94	37
I-65 & US 231	44	I-94 & SR 249	24	I-80/90 at CR 700 N	16
I-80/94 & Calumet Ave	40	I-94 at CR 500 E	23	I-80/90 over US 35	15
SR 53 & I-80/94	38	I-94 at CR 425 E	20	I-80/90 & SR 39	14
I-65 & 61st Ave	33	US 30 & CR 475 W	18	I-94 over Johnson rd.	13
		Calumet Road & US 6	18		

Animal/ Object in Roadway

Lake County		Porter County		Laporte County	
Intersection	Number of Incidents	Intersection	Number of Incidents	Intersection	Number of Incidents
I-94 & I-65	27	US 6 & Calumet Road	33	County Line Road & I-80/90	16
SR 912 & I-94	19	SR 130 & Sturdy Road	22	I-80/90 & Woznak Road	16
US 30 & SR 51	18	CR 400 E & US 6	16	US 20 & Motts PKWY	12
I-94 Over I-80/90	18	Divison Road & Meridian st.	15	US 20 & Meers Road	10
US 231 & I 65	15	US 20 & Waverly Road	15	I-94 & US 421	10
				SR 212 & CR 800 N	10