

PART III

TRANSPORTATION SYSTEM STRATE- GIES

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1 OPERATION MANGEMENT & OPERATIONS

Overview

The transportation system is a significant asset that requires resources for management and operation. Without the continuous management and operation of the system, transportation facilities, equipment and services would tend to deteriorate and provide diminished utility. The management and operation costs are necessary to keep the system in optimal condition to provide the greatest possible utility at the least cost to the users. Part II of this plan includes the documentation of the financial capacity to implement its recommendations. In this section, several of the elements of system management and operation are discussed.

The capital improvements included in the Connections 2030 Regional Transportation Plan are limited to those improvements that would add capacity, such as new road segments, added lanes and some other traffic flow improvements. These projects utilize roughly thirty percent of anticipated federal resources. The Transportation Improvement Program includes these major capital improvements along with several projects to facilitate the management and operation of the

system. Seventy percent of federal resources are reserved for major system preservation projects. Management and operation activities have significant needs for the highway network, public transportation system, trails and related support systems. Significant amounts of state and local resources are devoted to these activities. These funds come from state gas taxes channeled through the Local Road and Street (LRS) fund and Motor Vehicle Highway Account (MVH) to local units of government and to the Indiana Department of Transportation's sub-districts. For transit systems, the fare box revenues are supplemented by the Public Mass Transportation Fund (PMTF) and in the case of the Gary Public Transportation Corporation, a dedicated local property tax. In La Porte County, federal funds are available for operating assistance.

Management and Operation include the following activities:

- Traffic incident management
- Travel information services
- Roadway weather information
- Freeway management
- Automatic vehicle location
- Traffic signal coordination

- Work zone management
- Electronic payment/toll collection
- Transit priority/integration
- Emergency response and homeland security
- Freight management
- Transportation demand management

Transit fleet management and dispatching

Traffic incident management is the full range of activities that state and local emergency response agencies provide when crashes occur on the transportation network. Emergency medical response provides life-sustaining treatment at crash sites and transport to medical facilities. State and Local police control traffic at crash sites and document the crashes. Road crews clean up debris and spilled chemicals, as appropriate.

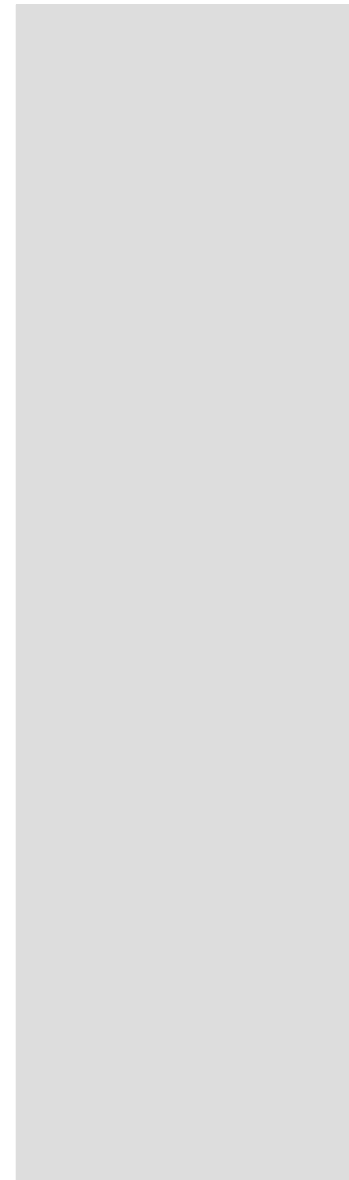
Travel information services include the provision of information to system users. The Borman Expressway Advance Traffic Management System includes a system of traffic surveillance using vehicle motion detection sensors and cameras to monitor traffic. The information is processed on a set of computers and portrayed on variable message signs and on the Borman Traffic Information website <http://pws.indot.org/pws/nw>.

Segments of I-80/94 and I-65 are depicted with a color-coded map, with frequently updated camera images showing traffic conditions to users. Travel information is also broadcast on local radio and television stations, and incident information is provided on INDOT’s Highway Advisory Radio 530 AM.

Roadway weather information is available for state jurisdiction highways on the Indiana State Police website <http://www.state.in.us/isp/roadinfo/weather.html>.

Freeway management is provided by the Indiana Department of Transportation for I-80/94, part of I-94 and part of I-65 through the Borman Advanced Traffic Management System. The system uses state-of-the-art technology to monitor traffic, detect incidents, provide timely response, and get information out to users through the travel information services. The Hoosier Helper program provides an additional layer of on the scene management. The Hoosier Helper vehicles are equipped for motorist service, as well as with video surveillance capabilities and wireless network access to the full set of freeway management capabilities.

The Indiana Toll Road Concessionaire is in the process of installing a freeway management system for the Indiana Toll Road (I-90 and I-80/90).



Automatic vehicle location is a tool for transit agencies to monitor the location of buses. The Northern Indiana Community Action bus system is in the process of installing an AVL system to aid in the management of their demand-responsive bus fleet. This system will help NICA to offer shorter wait times for rides.

Traffic signal coordination has been installed in various locations in Northwestern Indiana. The coordination can be done in two forms, including a localized closed-loop system and a centralized computer-controlled system. The City of Hammond and Town of Highland have installed a centralized computer controlled system. In addition, closed loop systems are being installed on segments of US-41 in Hammond.

Work zone management includes the strategies to maintain traffic flow or provide alternative routes when facilities are being reconstructed. This usually includes lane restrictions, and can include strategies to encourage the use of public transportation and provide information about alternatives available to system users. Often, this also includes the staging of tow trucks in the construction zone to assist vehicles that have breakdowns to quickly move them out of the travel lanes.

Electronic payment/toll collection is being in-

stalled by the Indiana Toll Road Concessionaire on the Indiana Toll Road (I-90 and I-80/90). The IZOOM system includes wireless communication between in-vehicle transponders and the toll collection facilities. When vehicles pass through the facilities, tolls are deducted from the users' accounts. Initially, this will be done in conventional toll booth lanes to allow the vehicles to avoid coming to a complete stop for toll payment. Eventually, the system will be enhanced with "open road tolling". Vehicles that are not equipped with transponders will be required to enter toll lanes and stop to pay the toll, at a higher dollar amount. Vehicles that are equipped will be able to bypass the toll booth facilities and cruise through at highway speeds and have a lower toll amount deducted from their user accounts. A recent issue regarding the amount of the tolls for local residents as opposed to out of state users has been resolved. All users of transponder-equipped vehicles will enjoy the lower toll amounts.

Transit priority/integration can be used on signalized arterials with fixed route bus services to promote time savings and schedule adherence for the buses and their riders. This strategy is being tested by the Gary Public Transportation Corporation on a segment of 35th Avenue near the campuses of Indiana University Northwest and IVY Tech.

Emergency response and homeland security measures are under development in Northwestern Indiana. A task force of emergency response agencies has formed to prepare for major emergency situations, such as a large chemical spill. These agencies perform annual drills to evaluate readiness for such events.

Freight management is the subject of a group of stake-holders, including local and national railroads. The CREATE plan in neighboring Northeastern Illinois is intended to smooth the flow of rail freight through the Chicago region, by building strategic grade separations between railroads and facilitating better movement of freight among the railroads. These railroads are also working on companion freight enhancement projects in Northwestern Indiana. Additionally, the potential for intermodal facilities is being explored as a strategy to enhance the efficient movement of freight from rail to highway and waterborne modes.

Transportation demand management is part of the set of strategies in the Congestion Management Process. TDM strategies include the encouragement of carpools and vanpools, with strategies to make those options more useful to the system users. Northwestern Indiana is covered by the “Share the Drive” carpool match system being offered by the Northeastern Illinois

PACE suburban bus system. The system includes a web-based carpool matching service. Some other national commercial web-based match systems are also available. The strategies being explored include the financial support for users, including a taxi ride for unusual circumstances when unforeseen travel is needed and they don’t have their personal vehicles. Other strategies include the encouragement for employers to provide bus ticket sales and information to employees and flexible work hour options.

Transit fleet management and dispatching is related to automated vehicle location system strategies. This involves the computerized management and dispatching of transit vehicles. The buses can contain data terminals in wireless contact with the administrative center. The system can provide two way data communication, containing vehicle operating parameters and information for bus drivers and passengers, such as arrival times of other buses on connecting routes.

Highway Management and Operation

Asset Management includes the activities of state and local governments to maintain the highway infrastructure. Even a well maintained highway facility has a limited useful life. Northwestern Indiana, like most of the United States is faced with the challenges posed by weather conditions.

The winter weather takes a heavy toll on the condition of pavement. Freeze-thaw cycles tend to cause significant pavement deterioration as water settles into cracks, freezes, expands and displaces pavement material. The result can be a large number of pavement failures that can damage vehicles and adversely affect the safe use of the system.

In order to preserve and extend the life of these facilities, a rigorous program of maintenance is required. Maintenance of highway facilities includes a process to monitor the condition of pavement, spot filling of pot holes and crack sealing. On a periodic basis, roadway facilities require resurfacing. Usually, this includes the grinding and scraping of a layer from road surfaces and the addition of a new layer of asphalt, and application of lane markings and other painted traffic controls at intersections. In some cases in rural areas, a chip and seal process is used, where a new layer of loose gravel is applied and allowed to settle into a hard surface. Each governmental jurisdiction that owns roadway facilities has a budget for these management and maintenance activities, supported by the LRS and MVH accounts.

Maintenance can only extend the useful life of facilities for a limited amount of time. Eventually, replacement is needed. The largest expense

for management of the system is the cost for reconstruction of road and street facilities. This includes the complete replacement of pavement, (usually coupled with minor geometric changes to bring the facility up to current design standards). Examples include reconstruction with minor widening to attain desired lane width, drainage improvements with curb and gutter construction as well as provision of sidewalks where appropriate. These are typically expensive projects that require specific planning and development by the agency in possession of the facility. Often federal funds or special appropriations at the local level are needed for these activities.

Bridges are an important part of the highway infrastructure. Failure of a bridge structure can be a serious concern for safety. The Indiana Department of Transportation and county highway departments are charged with the continuous management of bridges. Each bridge must be inspected every three years. The inspection includes an analysis of the support structure, spans and surface. Where necessary, bridges are painted, rehabilitated or replaced according to the conditions found in these inspections.

Intersections require a degree of attention, because they are often the location of traffic conflicts leading to congestion or crashes. Where

intersection geometries are determined to be inadequate, an intersection channelization project may be warranted. This is often accompanied by geometric improvements to increase turning radii, allowing for more efficient turning movements and turns by large vehicles, such as heavy trucks and buses. Intersection improvements often include provisions for pedestrian crossings in residential and commercial districts.

Traffic signals are common on urban streets and at major rural intersections. Traffic signals include electrical equipment that requires periodic replacement, including light bulbs, controllers, wiring and fixtures. In order to enhance the efficient movement of traffic, periodic attention to the timing of the traffic signal cycles and upgrades to the actuation schemes are necessary. These can include fixed time cycles, demand-actuated cycles and coordinated cycles that are controlled by a centralized computer system with system monitoring and surveillance systems. The systems for vehicle detection and surveillance require maintenance and periodic replacement.

Railroad crossings are usually assets owned by the railroads themselves. This is due to the fact that in most cases, the railroads existed and owned the right of way before the urban development and construction of the street network

occurred. The railroad crossings require periodic maintenance, including the reconstruction of sections of pavement near the rails and keeping the surfaces smooth. Where highway volumes are high or train speeds are high, crossing protection equipment require installation or upgrades. Crossings are protected at a minimum by warning signs and at a maximum by four-quadrant gates, with bells and flashers. This equipment is actuated by electrical equipment including sensors and switches. Where state or local governments own the crossing right of way, the maintenance and operation of these devices are the responsibility of these agencies. In cases where highway volumes are high, grade separation can be necessary. Once built, the bridges require management.

Where safety is identified as a serious problem, highway facilities can be determined to be deficient in other ways, such as with respect to the camber of pavement, the horizontal and vertical curve profiles and the need for guardrails and illumination. In congested areas, the number of traffic conflicts can be related to the number and location of access points. A program of access management can be necessary to improve traffic flow and improve the safe and efficient access to adjacent land.

Highway system operation includes the activities

provided by local and state agencies to keep the system functioning day to day. This includes providing funding for the electrical utilities providing service to traffic signals, controllers and street lights. This also includes the continuous cleaning of the pavement and right of way to remove debris from crashes, tire debris, tree debris from storm damage and road kill, as well as mowing or control of vegetation in the right of way to maintain sight lines and to reduce the chance for animal or child incursions into the travel lanes. This also includes the need to clear snow and ice from the roads. Each jurisdiction provides the financial resources necessary for snow plowing and spreading of salt or other chemicals to melt snow and ice as needed. These costs are variable, depending on weather conditions.

Conflict Caused by Projects

Transportation system maintenance and management activities can have a negative effect on traffic flow. Where the maintenance activities are minor, the local jurisdictions are encouraged to perform the work during the off peak hours with respect to traffic. Where the activities are more significant, a relatively long term lane or facility closure may be required. The road network is then affected and an analysis of the system is necessary to determine the amount of congestion

that could result, and the optimal sequence for projects to minimize the adverse impacts. Where necessary, projects are deferred or accelerated to fit into a schedule that seeks to minimize system disruption. For major projects, a “maintenance of traffic” component is necessary, which can include lane restrictions and strategies to encourage the re-routing of traffic.

Transit Management and Operation

Northwestern Indiana’s transit system includes the Northern Indiana Commuter Transportation District’s South Shore Line as well as a group of fixed route and demand-responsive bus systems. The South Shore railroad was originally built in 1908, and some elements of its infrastructure date to that year. The South Shore consists of a fully electric propulsion system, using electrically driven rail cars. The physical assets of the South Shore include track right of way, track bed, rails, highway crossing pavement, catenary, catenary support structures, electrical substations and distribution systems, rail switches, controllers, signal systems, highway crossing protection equipment, communication systems, rail cars, stations, platforms, parking lots, rail yards, maintenance facilities and administration offices with furniture and equipment. These items are all included in maintenance and repair schedules. During the 1980’s a program to replace passenger cars was

undertaken. All of the old rail cars were then replaced with efficient and durable new rail cars. Many of these cars have reached their mid-life rebuild milestone and are in the process of major rehabilitation. In an effort to enhance the utility of the system, the Northern Indiana Commuter Transportation District has built high-level platforms at three stations and is working to do the same at several others. This will reduce the time need to move passengers in and out of stations and improve the travel time for users.

The operation of the railroad includes the cost for employment of staff to drive trains, collect tickets, maintain facilities and equipment, and provide security for the assets and users. The operation also includes costs for the purchase of electricity and rights to operate on a section of the Metra Electric line in Northeastern Illinois and use of the commuter stations and yards in Chicago.

The bus systems operated by the Gary Public Transportation Corporation, Hammond Transit System, East Chicago Transit, Michigan City Municipal Coach, Northwest Indiana Community Action and La Porte TransPorte, use the local and state highways rather than dedicated busway facilities. The significant assets that these bus systems manage are the rolling stock, including the fleet of buses and support vehicles, and bus

stations in Gary and Hammond. The Gary Public Transportation Corporation also has a large bus maintenance facility, which serves as its base of operations. Bus stop shelters are located in various public right of ways at major intersections. The significant management cost for the bus systems is the maintenance and replacement of vehicles.

The operation of the bus system includes the cost for employment of staff to drive buses, maintain facilities and equipment. The operation also includes the cost of fuel for the transit vehicles.

Trail Management and Operation

Pedestrian and bicycle trails are relatively new assets for the Northwestern Indiana region. These are mainly located on former railroad right of way, but are also located on utility easements and river levees. Like highways, the maintenance and management of pavement is a primary concern for the local governments. Where trails and roads are grade-separated, the integrity of related bridges must be maintained. The

Operational expenses related to trails include the on-going need to control vegetation in the right of way, such as mowing and weed control.

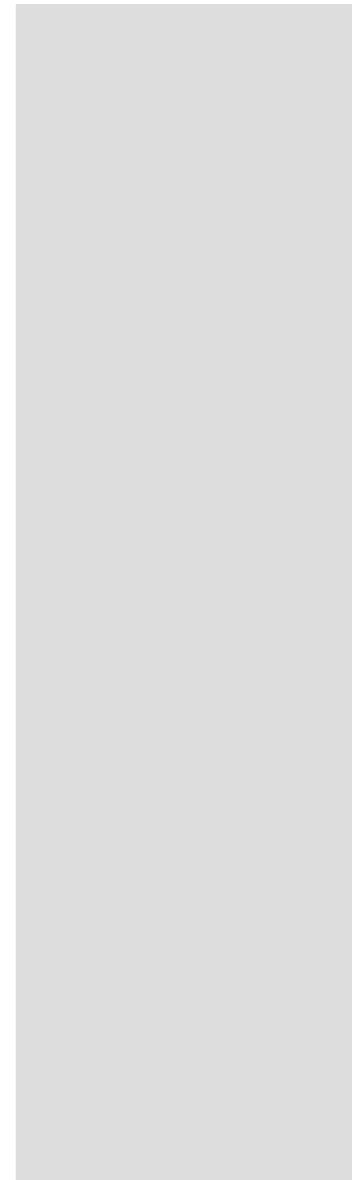
Support Systems

All of the transportation system elements are supported by emergency response services. These include state and local police, local fire departments, and emergency medical services. In the case of the South Shore railroad, this includes transit police. These agencies respond to crashes and other emergency situations of the transportation infrastructure, and enforce laws that are part of the effort to promote the safe and efficient operation of these systems. With the exception of the transit police, these agencies are funded separately from the transportation system management and operation.

Commitment to Continue Management and Operations Planning

The Northwestern Indiana Regional Planning Commission is committed to the comprehensive evaluation of these management and operations strategies. NIRPC will convene meetings of stake-holders, including INDOT, ITR Concessions LLC, local governments, NICTD and bus transit operators to discuss these strategies, gather information on the activities underway and their costs. By July 1, 2008, NIRPC will have established a working group of these stakeholders. The working group will select the operations and management strategies that make sense for Northwestern Indiana. My July 1, 2009,

the costs for the operation and management strategies will be quantified.



2 CONGESTION MANAGEMENT PROCESS



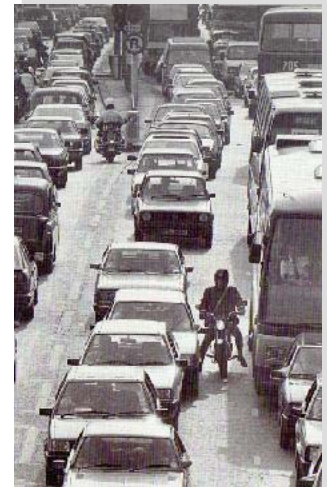
Congestion means the level at which transportation system performance is no longer acceptable due to traffic interference. The level of acceptable system performance may vary by type of transportation facility, geographic location (metropolitan area or sub area, rural area) and/or time of day. A Congestion Management Process (CMP) provides information on transportation system performance and alternative strategies to alleviate congestion and enhance the mobility of persons and goods. A CMP includes methods to monitor and evaluate performance, identify alternative actions, assess and implement cost-effective actions and evaluate the effectiveness of implemented actions.

Regulatory Basis

The Intermodal Surface Transportation Efficiency Act (ISTEA) in 1993 established the congestion management system as a process for selecting strategies to minimize traffic congestion and to improve the efficiency of the transportation system. In 2006, these rules were officially updated with the Congressional adoption of the Safe, Accountable, Flexible, Efficient Transportation Equity Act - A Legacy for Users, or SAFETEA-LU. On February 14, 2007, the Final Rule was published in the Federal Register, with the regulatory basis for congestion management processes noted in 23 CFR 500.109.

Congestion Management Process Committee

The NIRPC Congestion Management Process Committee is a group of local elected officials, transit service providers, municipal and county highway engineers, representatives of federal and state transportation and environmental agencies and environmental advocacy organizations. The committee set the course for scheduling a detailed series of analysis from July of 2007 to March of 2008 through the establishment of performance measures, and several levels of alternatives which aim to provide various levels of congestion relief in the NIRPC region.



Performance Measures

Performance measurement is the use of statistical evidence to determine progress toward specific defined organizational objectives. This includes both evidence of actual fact, such as measurement of pavement surface smoothness, and measurement of customer perception such as would be accomplished through a customer satisfaction survey.

A series of potential performance measures were reviewed by the Committee. Based on NIRPC's ability to successfully accommodate each measure, many were discarded based on either significant updating of the EMME/2 travel demand forecast model, or staffing limitations for those measures that require extensive field work. In the end, the Committee chose two simple measures of performance for the highway system:

- 1) *Ratio of roadway segment volume to capacity* - this measure was chosen due to the availability of data, the ease of computation and consistency with the statewide congestion management system. For transit, the load factor was selected.
- 2) *Travel time per link* - measures the average time to travel from an origin to a destination on a trip that might include multiple modes of travel. This includes travel times on all roadway and mode types under both recurring and non-recurring traffic conditions. The unit of measurement is minutes per trip.

Thresholds

The Congestion Management System Committee has defined the highway congestion thresholds based on geographic location (rural, urban/suburban and the vicinity of major traffic generators). In the rural areas, the system is considered congested when the roadway segment traffic volumes reach 70% of capacity. In the urban and suburban areas, the system is considered congested when the roadway segment traffic volumes reach 80% of capacity. In the vicinity of major traffic generators, the system is considered congested when the roadway segment traffic volumes reach 90% of capacity.

The transit congestion thresholds will be identified by the Congestion Management System Committee based on geographic location (suburban, urban and the vicinity of major traffic generators) as well as the type of transit service. Load factor congestion thresholds have been established for Express, Local Radial, Local Connective, and Circulator type services, with thresholds ranging from 0.30 to 1.00.

Proposed Data Collection and Integration

The data collection for the NIRPC Congestion Management Process will include five phases. For the first phase the CMP will use existing observed traffic information to reflect 2010 congestion. Each subsequent phase will occur in 5-year

increments, with projected traffic information to reflect the congestion anticipated to occur in the subsequent years of 2015, 2020, 2025, and 2030.

Existing traffic information will be provided from the NIRPC and INDOT traffic counting programs. The INDOT traffic count data is seasonally adjusted with one database file for each of the three counties. The NIRPC traffic count data will be factored using the INDOT seasonal adjustment factors to convert raw counts to annual average daily traffic (AADT). Annual adjustment factors were used to adjust the data to a common year. At that point, the databases included annually and seasonally adjusted daily traffic data.

The traffic counts were applied to the database of road segments. The road segment file began as an export of the transportation demand model network. The file, containing 6,400 road segment records, was converted to Paradox database format. Fields were added to include road name, termini descriptions, county, area, functional class, direction, CMS area designation, congestion threshold, lane capacity, and associated traffic count station number. The station number provided the link between the road segment file and the traffic count file. Three types of links were performed. For road segments where actual traffic counts were available, the linkage was direct. For segments on the same road in the vicinity of a traffic count station, the count station identifier was used and the linkage was less di-

rect. For road segments that had no nearby traffic counting stations, an indirect linkage used the identifier for a record in the traffic count database representing the average traffic volume for the same functional class as the road.

Most of the records in these databases included two way traffic count data. Some locations were sampled separately by direction and included in the databases as directional counts. Where non-directional count data as used, morning and evening directional factors were applied. Hourly adjustment factors were used to convert average daily traffic into morning and evening peak hour traffic. The volume to capacity ratios were computed and compared to the thresholds. Three groups of links were formed, based on the severity of congestion and a corresponding severity code was given. The resulting networks were then converted back into EMME/2 format for display purposes.

Future year traffic congestion was identified directly from the EMME/2 model assignments for 2020. The assigned traffic volumes and link capacities were compared using the model network calculator. The same codes were used to group the congested links by severity. Intermediate years were not analyzed because it was assumed that congestion in those years would be a subset of the congestion in 2020 and separate evaluations would represent a time-consuming duplicative effort.

The Northern Indiana Commuter Transportation District (NICTD) and Michigan City Municipal Coach will provide transit system load factors. The data provided will determine a load factor between Chicago and Gary. No other transit system congestion will be identified.

Alternatives

The federal planning regulations call for consideration of various alternative strategies to reduce traffic congestion. The alternatives to be considered include travel demand management (TDM), including growth management, transportation system management (TSM) (including intelligent transportation systems) and public transportation system improvements. Where the alternatives are not able to reduce or eliminate congestion, added highway capacity might be considered. The next alternatives for study will include Public Transportation and Growth Management strategies.

Travel Demand Management

Travel demand management (TDM) is a type of strategy that aims to reduce the number of vehicles on the region's roads during peak travel periods. The strategies can range from providing information and matching service for travelers who are interested in ridesharing to the establishment of regulations to require actions by employ-

ers to limit the vehicle usage for employees traveling to and from work. The Employee Commute Options (ECO) program is an example of such a travel demand management program. These tactics reduce vehicle trips most effectively when they are part of a comprehensive set of related strategies. Where parking for single occupant vehicles is made less convenient or costs are imposed, and where convenient transit service is provided, the efforts to influence workers to use alternatives to single occupant vehicles for work trips are enhanced. Conversely, the availability of convenient free parking at the workplace and inconvenient or nonexistent transit service are factors that impede potential TDM strategies. Since the TDM programs should be evaluated in combined strategies, it is necessary to use a model that can consider the interaction of complementary strategies.

The analysis of travel demand management alternatives used a combination of the regional EMME/2 travel demand forecast model and the COMSIS Travel Demand Management Evaluation Model. The COMSIS TDM Evaluation model provided an opportunity to evaluate comprehensive packages of measures, including employer strategies and area wide strategies. The TDM model uses trip tables from the EMME/2 model as a base and applies modifications based on the TDM programs being tested. The TDM model

provides summary reports as well as modified trip tables that are reinserted into the network model.

The TDM Evaluation Model is a tool for the evaluation of strategies separately or grouped into packages. The TDM Evaluation Model is like an enhanced mode choice model and complements the standard 4-step transportation network modeling process. Area-Wide strategies are primarily suitable for evaluation with the combination of the TDM Evaluation Model and the traditional 4-Step Transportation Network Model. Employer-Based strategies can be evaluated separately using the TDM Evaluation Model to determine the effectiveness of strategies at a single work site or a cluster of work sites. The TDM Evaluation Model can be applied to specific travel markets, including trips whose destination is in a particular area, leaving the remainder of the study area unaffected.

For this updated analysis, three overall TDM scenarios will be tested, each with four variations representing the voluntary through mandatory nature of the potential implementation regulation. The three TDM scenarios will be identified as Minimum, Moderate, and Maximum programs. The following describes each scenario, with various TDM's employed as determined by the Committee members. Each TDM is divided into either Employer-Based Strategies (EMP), or

Area Wide, or Government Applied Strategies (GOV). It is assumed that all strategies at a higher scenario level already incorporate those strategies from previous scenarios.

Minimum Program Scenario:

1. Regional rideshare matching service and a regional transit information center (GOV).
2. In-house carpool and vanpool matching services (EMP).
3. On-site bus pass sales (EMP).
Guaranteed ride home for workers having unexpected travel needs (EMP).

Moderate Program Scenario:

1. Preferential parking for high-occupancy vehicles (EMP).
2. Reduction in transit fares by 50 cents (GOV).
High occupancy vehicles would have access to dedicated expressway lanes to reduce travel times (GOV).

Maximum Program Scenario:

1. Flexible work hours, supported by a quarter/half/full time coordinator (10 percent of the employees would be eligible for flexible work hours

and ten percent would be eligible for staggered work hours) (EMP).

Monetary vanpool development including financial assistance and flexible work hours (EMP).

In an Area-Wide (GOV) analysis, strategies are expressed as changes in four values:

- Savings in Transit Costs representing subsidies to particular users or reductions in fare across the board. Cost savings are dollars and cents savings to the individual user on a one-way trip.
- Savings in Transit Time including Access Time (walking or driving to reach transit service and to reach the destination after using transit), Waiting Time (vehicle headways or scheduled arrival times), Transfer Time (waiting for a connection) and In-Vehicle Time (determined by the directness of the route, number of stops, and whether the vehicle is running in mixed traffic or on an exclusive right of way).
- Time Savings in High Occupancy Vehicle Lanes including the in-vehicle travel time savings for carpool users, specified by the number of occupants that constitute a carpool.
- Parking Costs and Subsidies including the increase or decrease in costs to vehicles at four occupancy levels. This could represent a

tax on parking that would be passed on to users.

The four strategies described above would be applied to each traveler in the analysis the same, without regard to the length of trip. The TDM Evaluation Model can also test these strategies with respect to the differences in the distances traveled among trips. This could represent strategies such as congestion pricing, where the imposed price is linked to the trip length, gasoline taxes, and transit or HOV time savings that would increase for longer trips.

In addition to these motorized strategies, the Committee left open future analysis involving non-motorized TDM methods. These include:

- Developing off-road trails where opportunities exist (GOV).
- Install bike lanes and sign routes where feasible (GOV).
- Installation of adequate bicycle parking at businesses, schools and places of commerce (EMP/GOV).
- Install showers and lockers at places of employment (EMP).
- Establish “bike pooling” system as you would carpooling (EMP).

- Cash payments equivalent to the value of free car parking and/or reimbursement for bicycle repairs or bicycle/bicycle accessory purchase (EMP).
- Work with school corporations on establishing “Safe Routes to School” programs in their districts (GOV).

Establishment of land use ordinances which mandate trails and sidewalks in new residential, commercial and light industrial developments (GOV).

Transportation System Management and Intelligent Transportation Systems

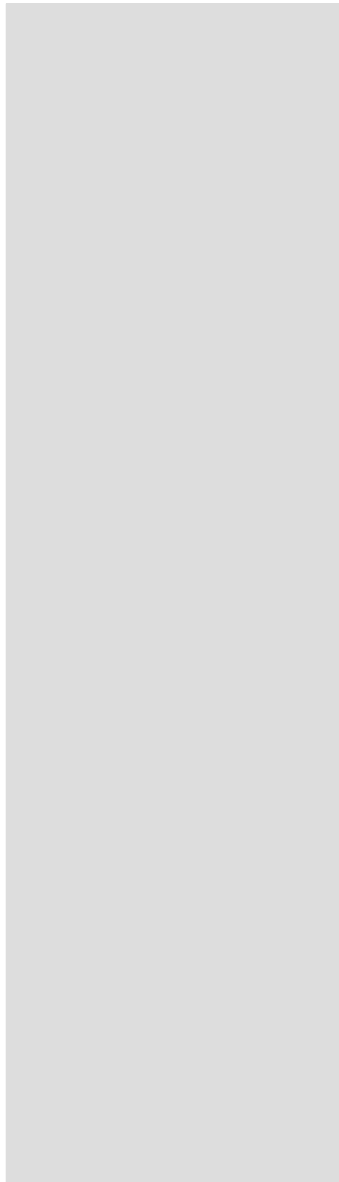
Transportation system management (TSM) is a type of strategy to improve the efficiency of the existing transportation system. TSM strategies use operational improvements to enhance traffic flow without adding to the capacity of the system. Intelligent Transportation Systems (ITS) encompass a broad range of wireless and wire-line communications-based information, control and electronics technologies. When integrated into the transportation system infrastructure, and in vehicles themselves, these technologies help monitor and manage traffic flow, reduce congestion, provide alternate routes to travelers, enhance productivity, and save lives, time and money.

Strategies to be analyzed in NIRPC’s CMP include TSM’s and selected ITS strategies which include:

- 1) Traffic signal timing and coordination (TSM/ITS).
- 2) Intersection channelization and construction of auxiliary lanes (TSM).
- 3) Access controls (TSM). These standards would help to maintain traffic flow by reducing friction between through traffic and turning movements for access to adjacent land. This would be accomplished by providing adequate spacing between access points and restricting median openings.
- 4) Deployment of intelligent transportation system (ITS) technology (ITS). Surveillance information and emergency response.

An Example: Gary-Chicago-Milwaukee Corridor

Started in 1994, the Gary-Chicago-Milwaukee (GCM) Corridor encompasses the greater metropolitan areas of the cities of Gary, Chicago and Milwaukee and includes contiguous portions of Northwest Indiana, Northeast Illinois and Southeast Wisconsin. The 130-mile long corridor encompasses 16 counties in the three-state region with a combined population of over 10 million.



This extensive corridor has been defined to allow for a wide range of solutions for improving mobility through the greater GCM region.

The GCM Corridor project is overseen by a Corridor Coalition managed by constituting representatives of participating federal and state transportation agencies. Various private consulting firms have been contracted to coordinate project tasks. The intent of the project is to improve mobility within the corridor by better managing the existing transportation system using Intelligent Transportation Systems (ITS) rather than expanding highway facilities. ITS infrastructure is comprised of nine integrated components including freeway management, incident management, emergency management services and multimodal traveler information. Bringing together this broad range of diverse technologies has helped reduce incidents, allows better response to emergencies, reduces congestion and increases efficiency.

In Northwest Indiana, INDOT has the lead role for implementing recommendations of the GCM Corridor project. The creation of the “*Hoosier Helpers*” roadside assistance program in July 1996 is a component of this effort. The Hoosier Helpers continually patrol Interstate 80/94 (Borman Expressway) from the State Line to S.R. 249, and the northern most ten miles of Interstate 65 to provide emergency assistance to immobile or

damaged vehicles. This rapid assistance helps reduce congestion and has cut secondary accidents by more than 1/3 since its inception. The Hoosier Helpers communicate roadway incident and traffic condition information to the INDOT Borman Traffic Management Center in Gary. This information is then able to be reported on the GCM Corridor internet site (www.gcmtravel.com) and can be relayed to electronic media for regular traffic reporting, as well as police and news media outlets.

Future GCM endeavors include linking to the national 511 caller network, which provides traffic information for travelers. The entities involved with the GCM project has identified the 511 program as a top priority, and has moved forward on its eventual implementation regionally. Another project includes enhancing the flow of commercial goods through the three states with the creation of a virtual weight station that would screen and identify only those vehicles that may be overweight. This process in turn would help extend the life of road pavement by only focusing on those problem vehicles. Finally, all three states in the GCM Corridor are working together on a “*Smart Corridors*” program that will aim to coordinate traffic signalization throughout the region.

Public Transportation System Improvements

and Growth Management

Where public transportation projects or growth management are found to have an impact on relieving congestion, highway capacity expansion may not be warranted. The Northwestern Indiana Regional Planning Commission has demonstrated their commitment to improving the transit network through the release of the *Regional Transit Needs Analysis* in 2000, which looked primarily at bus service and demand response coverage. In 2001, the Northern Indiana Commuter Transportation District (NICTD) analyzed a significant expansion of their South Shore Line service with the release of the *West Lake County Major Investment Study*. This report researched potential expansion lines to Lowell and Valparaiso.

Growth management encompasses the community development approaches and strategies that address the economic, social and environmental considerations and challenges that arise out of growth. The concept of smart growth takes on different meanings in different communities, but generally, it is a growth management tool used to assist communities in planning for and accommodating growth. The key to successful growth management is recognizing that there is no one approach. No two communities are identical; therefore growth management strategies and initiatives should be developed and decided by

each individual community. It is the local government officials, economic planners, and members of the business community who best understand the underpinnings of their local economies, their community needs and the cultural environment.

Growth management strategies embody the following principles:

- Local control over land use planning
- Integration of land uses
- Infill development and reuse of brownfields
- Long-term planning that takes into account future growth needs of a community
- Public/private partnerships

Diversity of shopping opportunities which will reduce required travel distances for a community
Open public hearings during local decision-making process.

Implementation Strategies: The *Vision 2020 & Connections 2030* plans have established target amounts of Surface Transportation Program (STP) Group funds to be programmed for capacity expansion (30%), bridge preservation (7%), roadway preservation (35%), signalization (5%), intersection improvements and auxiliary lanes (20%) and other (3%) projects. Review and ranking of STP and CMAQ projects should strongly consider the installation of adequate non-

motorized facilities in all new applications.

Schedule of CMP Completion

NIRPC is committed to regularly analyzing strategies to improve congestion. The CMP Committee decided upon a five-level series of review stages that take into account all strategies identified in this section. The following details the Year One schedule of completion for NIRPC’s initial CMP analysis. The Committee has designated NIRPC staff to execute a CMP in each subsequent year starting in July. Each subsequent CMP analysis will be buttressed by increased performance measures as dictated by the technical ability, and manpower, of NIRPC at the time of initiation. For Year One, the two performance measures will be *Ratio of roadway segment volume to capacity* and *Travel time per link*.

Year One CMP Schedule (subject to change):

- | | |
|---|---|
| LEVEL 1 - July 1 to September 1, 2007: | Establishment of base year (2010) for congestion, and for future congestion outlooks in years 2015, 2020, 2025 and 2030. |
| LEVEL 2 - Sept 1 to October 1: | Model congestion using TSM and ITS strategies. |
| LEVEL 3 - Oct. 1 to December 15: | Model congestion using TDM strategies as outlined in the three scenarios. |
| LEVEL 4 - Dec. 15 to Feb 1: | Model congestion using Transit Improvement strategies. Committee recommends establishment of sub-committee of transit operators to define new service routes. |
| LEVEL 5 - Feb. 1 to March 1: | Model congestion using Growth Management strategies. |

3 FRIGHT OPERATIONS



The Northwest Indiana Intermodal Task Force

The Northwest Indiana Intermodal Task Force (ITF), a public/private partnership, was formed in late 2006 to provide a venue to discuss and address public and private infrastructure and economic development issues relating to the movement of freight within, from and into the region. The ITF is jointly sponsored by the Northwestern Indiana Regional Planning Commission (NIRPC) and the regional partnership of private industry and businesses – the Northwest Indiana Forum. The ITF meets monthly and its members include Board members from both NIRPC and the Forum and representatives of the railroads, the trucking industry, the Gary-Chicago International Airport,

the Port of Indiana at Portage/Ogden Dunes, state and regional economic development and transportation planning organizations, and the regional workforce development agency. A mission statement was adopted at the first meeting in December, 2006:

The mission is to engage leaders in the northwest Indiana and northeast Illinois region in a public-private partnership to support the economic competitiveness of the region and the global economy and to advance the region's freight movement by promoting safe and efficient freight transport as an integrated element of the region's long-range transportation planning and programming processes.

Measures of ITF Effectiveness

The Intermodal Task Force intends to regularly assess its effectiveness in fulfilling its mission. The measures of effectiveness chosen by the ITF are to

- Understand key strengths and vulnerabilities in freight movement and identify the priorities to address as we move forward.
- Foster a better relationship with INDOT, especially in terms of receiving relevant data and information for freight planning.
- Identify potential intermodal sites in northwest Indiana, and

- Identify, with the help of industry and community experts, key regional projects that would foster economic development.

Short-term Freight Study

Chapter 1 identifies the existing public and private infrastructure which is used to carry most of the freight in, from and through the region. The next step is to identify the locations of impediments to the efficient movement of freight, i.e. the bottlenecks, choke-points, modal conflicts and other hazards that lead to chronic or incidental congestion and crashes. Safety data has recently become available through INDOT and which is currently being analyzed to identify locations of the most hazardous locations of vehicle crashes involving trucks and trains (see section 3 of this chapter).

NIRPC and the ITF recognize the need to conduct a formal freight study to collect valid data, such as weight, units and value of freight carried by each mode (railroad, trucks, air and maritime), to identify the locations of congestion and delays, and to plan for future increases in freight movement. The locations of the most frequent congestion and crashes would be further analyzed to identify the infrastructure or operational improvements necessary to alleviate the impediments to efficient and safe movement of freight.

ments to efficient and safe movement of freight.

NIRPC currently does not have the staff or monetary resources to conduct a formal freight study but hopes such resources would be available during the next fiscal year. During the current year, the ITF agreed that NIRPC staff would concentrate on conducting an informal survey of ITF members and other selected freight shippers to identify some bottlenecks and choke points that they experience during their operations and their suggestions for improving the infrastructure and operations of the transportation network.. The ITF would then determine which improvements could be implemented within in the short-term, say the next 5-10 years, especially those that would foster economic development in the region. Funding for these improvements would be identified and pursued.

Intermodal Readiness and Economic Development

Several sites in northwest Indiana have been identified as potential intermodal facilities: La Porte County, Gibson Yards in Hammond, I-65 and 15th Avenue in Gary. Negotiations are being conducted privately and it is apparent that within the next year or two enormous changes could occur that would affect the infrastructure and operations of freight movement in the re-

gion. The ITF realizes the region needs to anticipate and prepare for such infrastructure and operational changes and be ready to reassess and take advantage of the economic development opportunities that would arise.

Local land-use and master plans are being catalogued and reviewed in preparation for changes to the freight network. In planning for intermodal facilities, local plans that are current (less than 10 years old) will be added to the NIRPC GIS map and they will be analyzed to determine the municipality’s readiness to respond to changes in intermodal freight movements and willingness to take advantage of intermodal and logistics related economic development opportunities. Communities whose master and land use plans are either non-existent or older than 10 years have been notified that NIRPC and the ITF encourages local communities to update their plans and to consider future changes to freight movement.

The Northwest Indiana Forum is working to understand the intermodal and logistics industry better and to understand how the northwest Indiana region can respond to their needs and attract them to locate and develop their facilities in the region. A focus group of about 10 logistic firms already located in the region has been scheduled to begin the process of better under-

Mode	Volume Measure	Velocity Measure	Possible Source
Highway (per corridor and aggregate)	AADT	Average MPH	INDOT
Railroad (per corridor and/or aggregate)	Number of Cars	Average MPH	Railroads
Intermodal Facility or Terminal	Lift count by terminal	Average Number of Lifts per day	Not yet applicable
Air - Gary-Chicago International Airport (GYG)	Number of tons of freight through GYG	On time performance	GYG, FAA
Port of IN - Portage	Tons	Time waiting in port to be unloaded	Port of Indiana, Army Corps of Engineers
Air Quality Indicator	Ozone, NOx, CO2		Transportation Model

standing their needs and the region’s preparedness to welcome them. Based on the information gathered from the focus group, survey questions will be developed and a more complete survey of other logistics and intermodal firms will be conducted.

Table 3.1

Coordination with CMAP, SSMMA and INDOT

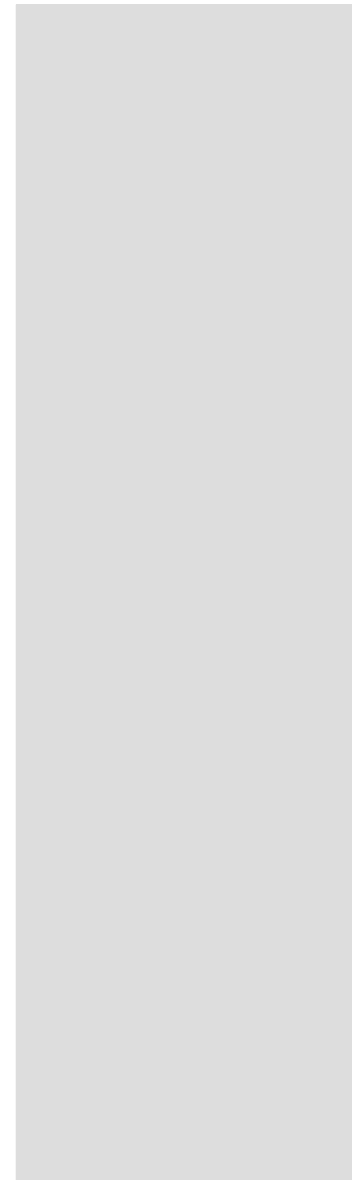
NIRPC and the Chicago Metropolitan Planning Agency (CMAP) are sharing and coordinating their intermodal task force activities. CMAP was recently formed through the consolidation of the two agencies - the Northeastern Illinois Planning Commission (NIPC) and the Chicago Area Transportation Study (CATS). The Intermodal Advisory Task Force was a standing committee under CATS for about a decade and it has been expanded under CMAP. Since freight movement is a supra-regional issue, NIRPC and CMAP staffs attend each other's meetings and share information. NIRPC staff also works with the South Suburban Mayors and Managers Association (SSMMA) staff by sharing information and attending each other's meetings on freight. SSMMA recently contracted with a consultant to conduct a freight study which will yield valuable information for northwest Indiana.

INDOT may also conduct a Freight Study within the next year and its information will provide further context for a NIRPC Freight Study.

Freight Operations Performance Measures

Since the Northwest Indiana Intermodal Task Force is relatively new, it has not developed original performance measures for freight move-

ment. However, CMAP has a proposed list of performance measures these could be proposed to the ITF and then modified to reflect the region's conditions. A NIRPC Freight Study can further modify these performance measures, since it would become more clear which are available from public sources and which would be only available through expensive or otherwise unattainable sources. These performance measures would be used before and after operational improvements to analyze the effectiveness of the improvements. The proposed performance measures that will be introduced to the ITF for a first review are summarized as follows:



4 INTELLIGENT TRANSPORTATION SYSTEM (ITS)

The Process

The Northwestern Indiana Regional Planning Commission (NIRPC), in cooperation with the Indiana Department of Transportation (INDOT) initiated the development of the Northwestern Indiana Regional Intelligent Transportation System (ITS) Architecture in 2000. A regional ITS Task Force of stakeholders from the region was formed in 2000 to develop the regional ITS Architecture. The Task Force met a number of times over two years to select the ITS elements to be deployed in the region and to develop information flow tables to illustrate the exchange of data and functionality over a 20-year horizon. NIRPC developed the Regional ITS Architecture database, utilizing the Turbo Architecture Version 2.0 software, from the functional flow tables created by the regional stakeholders. The regional ITS data from the Turbo Architecture was submitted to the Indiana Division of the Federal Highway Administration (FHWA).

The Regional Intelligent Transportation Systems (ITS) Architecture

The Northwest Indiana ITS Architecture text document and appendix of information flow ta-

bles was adopted by NIRPC on July 21, 2005 in Resolution 05-21. It was submitted to the FHWA Indiana Division and it was subsequently approved.



5 TRANSPORTATION SAFETY

Consideration of Safety in the Connections 2030 Plan



SAFETEA-LU Requirements for Safety

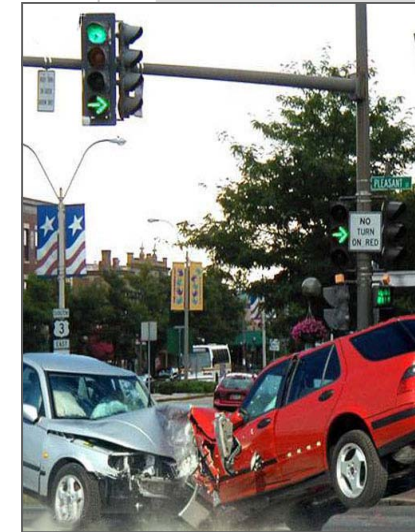
The Safe, Accountable, Flexible, Efficient Transportation Act: a Legacy for Users (SAFETEA-LU), which was passed by Congress and signed by the President in August of 2005, established new requirements for the preparation of Long Range Transportation Plans. One of these new requirements is that Northwestern Indiana Regional Planning Commission (NIRPC), as the Metropolitan Planning Organization for the region, clearly addresses safety in updating its Metropolitan Transportation Plan, *Connections 2030* (which was

adopted in 2006).

Safety - SAFETEA-LU establishes a new core Highway Safety Improvement Program that is structured and funded to make significant progress in reducing highway fatalities. It creates a positive plan for increased safety on our highways by almost doubling the funds for infrastructure safety and requiring strategic highway safety planning, focusing on results. Other programs target specific areas of concern, such as work zones, older drivers, and pedestrians, including children walking to school, further reflect SAFETEA-LU's focus on safety.

Overview

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 from .98 per 100 Million Vehicle Traveled (HMVMT) in 2008 and .92 HMVMT in 2010. In response to this goal and the requirements in SAFETEA-LU, INDOT has created the Indiana Strategic Highway Safety Plan (SHSP). This plan identifies a number of local, regional, and statewide initiatives and strategies targeted towards the overall traffic safety. The plan outlines a



broad approach which 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 plan for Northwest Indiana using the four building blocks (Four E's); Engineering, Education, Enforcement, and Emergency services. These building blocks, in conjunction with INDOT's proposed emphasis areas, will be used to create a safety framework that is completely compatible with the State's SHSP and can be used as a catalyst for local customization and implementation. In this direction, NIRPC conducted a safety assessment for all type of crashes in the region that take place on the state system. In this assessment process, NIRPC staff investigated all type of crashes on all public roads within the three Counties Lake, Porter and La-Porte. This uniform assessment provide 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.

NIRPC's Safety Framework

NIRPC's Safety Framework includes data gathering and analysis, development of goals and objectives, and a safety initiative leading to an over-

all safety planning process.

The 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, GIS-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 was all derived from Indiana State Police the Vehicle Crash Records System (VCRS), which provide source data for all roads crashes. In Indiana, MPOs are allowed access to that relatively new state database. Trans-

portation planners and engineers around the region will find these data useful for analysis, resulting in timely and informed decisions about safety improvement projects. These data play a key role in maintaining and enhancing Northwest Indiana transportation system in the most efficient way possible.

The crash report includes primary factors or driver behaviors that caused the crash, location of the incident and if it is located within school or construction zone, weather condition, driver characteristics, 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 identifying specific demographics level to collisions.

Geographic Information Systems (GIS)

The Geographic Information system (GIS) was utilized as one of the analysis tools to assist in highlighting geographic concentrations of the crashes. The (VCRS) site provides source data in an Access sheets format. The report sheet includes latitude and longitude data. This data was added as x & y coordinates to a map then was converted to shapefiles. The shapefiles were pro-

jected to the map coordinate system and displayed as points of crash location.

Data Analysis

All Crashes

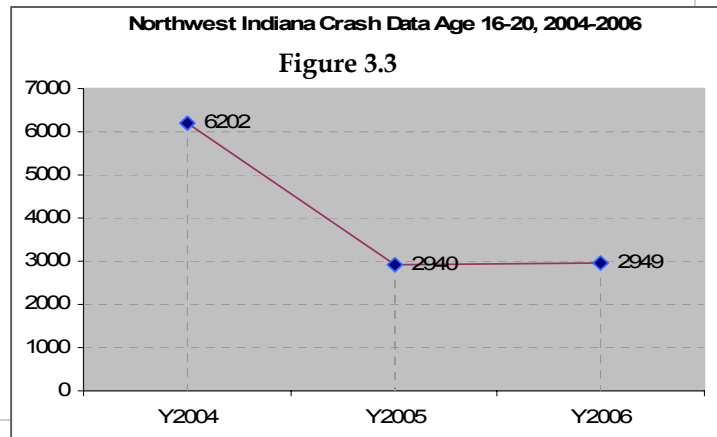
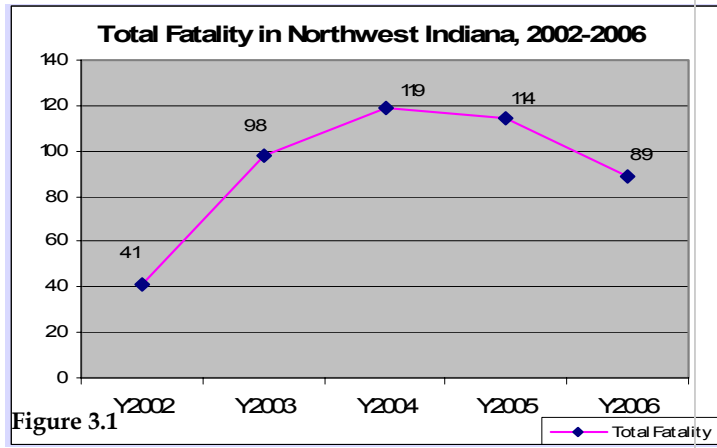
The analysis of the crash data examines the three counties composing the NIRPC region, Lake, Porter, and LaPorte counties from 2002 to 2006. While traffic crashes statewide decreased by (7%) between 2002 and 2006, from (207,586) to (192,678) respectively, fatalities grew by 150% statewide and 117% in Northwest Indiana over the same period (41 fatalities in 2002 to 89 fatalities in 2006 (see figure 3.1).

According to table 3.2, the total crashes in the three counties decreased by approximately 7% between 2002 and 2006 while the fatality rate hit the highest in 2004. During 2004 traffic crashes

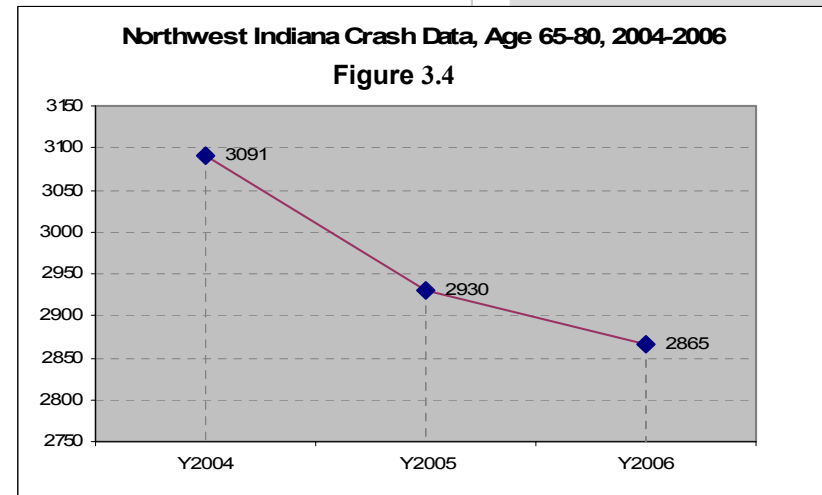
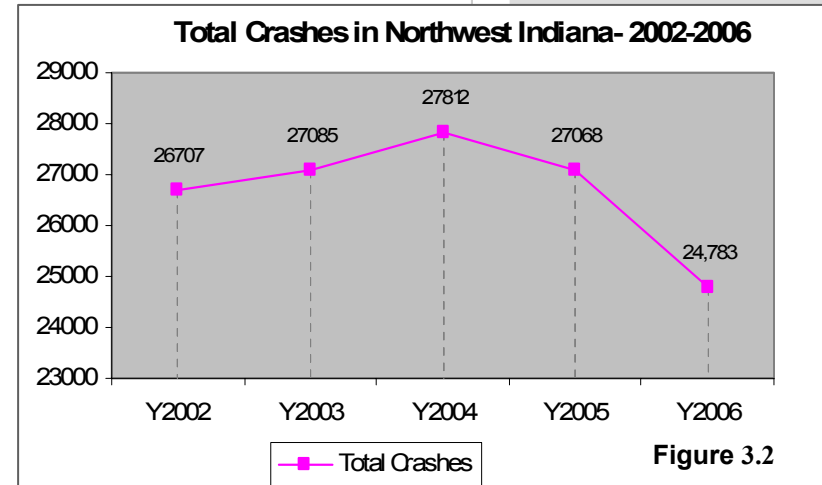
Table 3.2 : Five-Year Crash Data for Northwest Indiana Region

Crashes	Y2002	Y2003	Y2004	Y2005	Y2006	Total
Total Crashes	26707	27085	27812	27068	24783	1334
Fatal Crashes	32	93	105	101	80	411
% of Crashes with Fatality	0.12%	0.34%	0.38%	0.37%	0.32%	0.31
Injury Crashes	6099	5860	5761	5479	5017	2821
% of Crashes with Injuries	23%	22%	21%	20%	20%	21%
Total Fatality	41	98	119	114	89	461
Total Injury	9103	8453	8270	7811	7074	4071

claimed 119 lives (13% of total State fatality) and left 8,270 injured (14% of State injures) in the Northwest Indiana region. The fatality crashes represent about 0.35% of total crashes for five years data 2002 to 2006. Based on the five years traffic crash data, there are 72 traffic crashes a day and one fatality crash every four days in Northwest Indiana.



As shown in figure 3.6, 55% of the crashes are occurred by men and 44% by women. Based on three years data (2004-2006), 15 % of total crashes in Northwest Indiana represent age group 16-20 (figure 3.3), and 11% for age group 65-80 (figure 3.4).



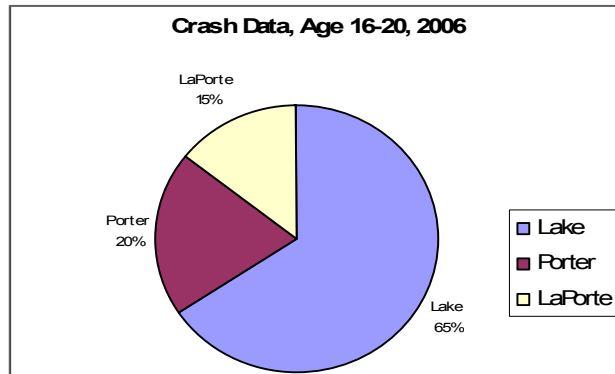


Figure 3.5

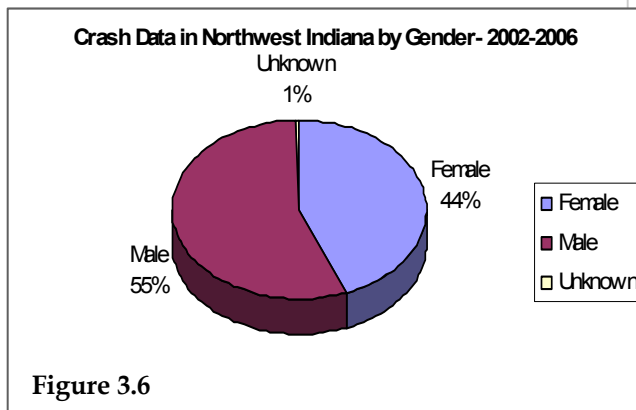


Figure 3.6

Non-Motorized Crashes

Bicycle Crashes

Bicycle crashes represent 0.1% of all total crashes from 2002 to 2006 in Northwest Indiana. Nationally, bicyclists account for 1.6 percent of injuries and 1.5 percent of fatalities in collisions involving motor vehicles (Source: NHTSA). Although this bicycle crash rate (0.1%) is much lower than the National rate (1% in 2003), the safety of a bicyclist is an important factor in choosing this form of transportation and should be considered.

As the demand for this mode of transportation increases, the Northwest Indiana region 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.

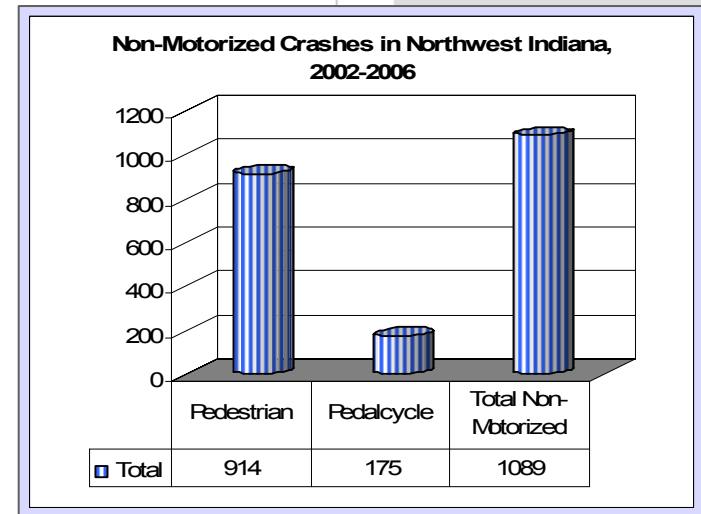


Figure 3.7

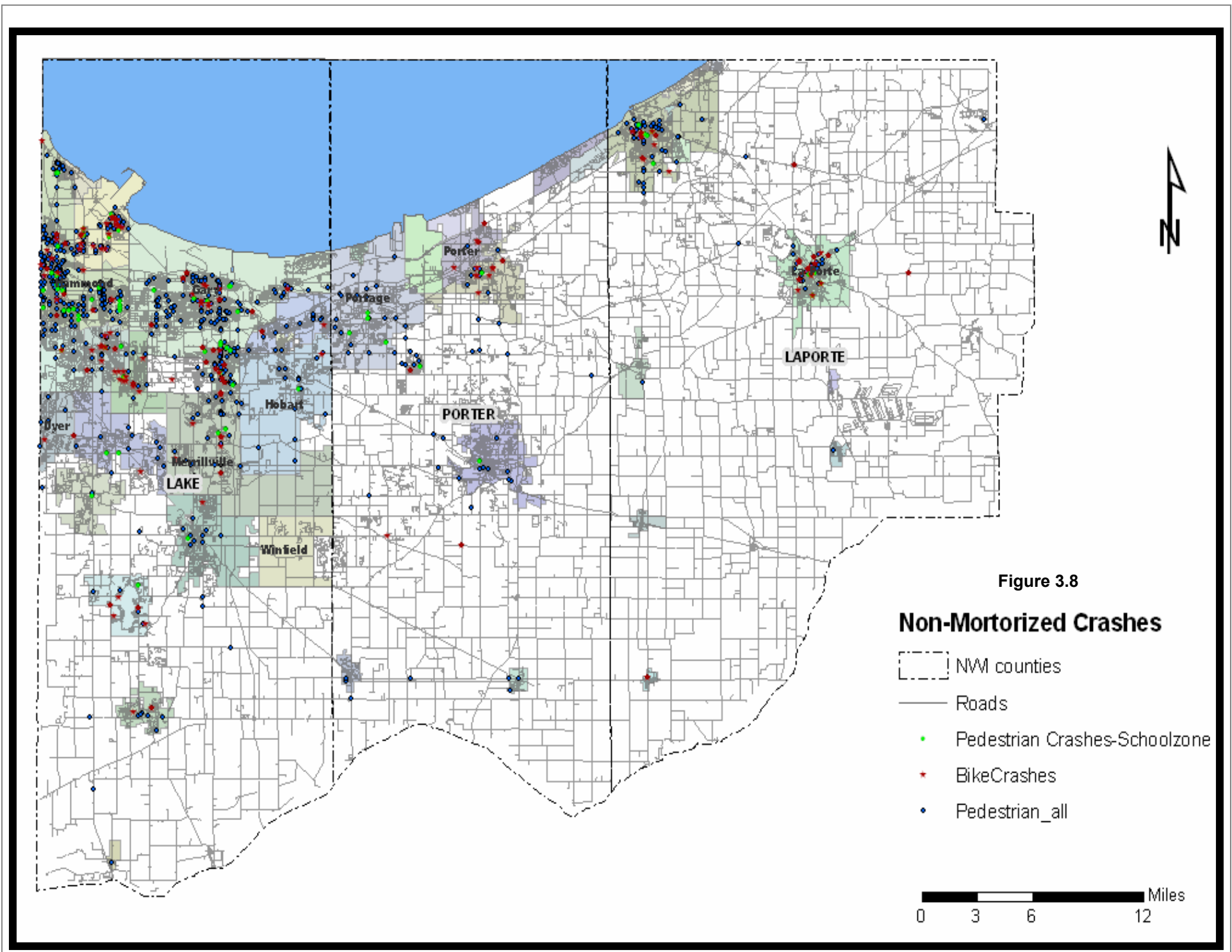


Figure 3.8

Non-Motorized Crashes

- NWI counties
- Roads
- Pedestrian Crashes-Schoolzone
- ★ BikeCrashes
- Pedestrian_all

0 3 6 12 Miles

Pedestrian Crashes

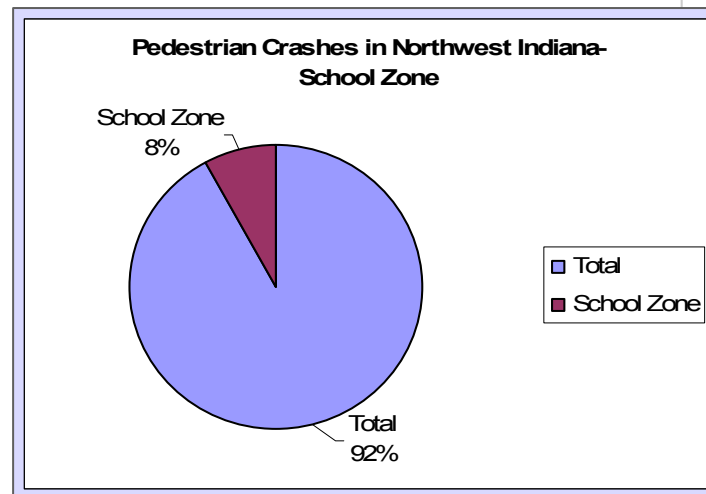


Motor vehicle crashes involving a pedestrian are a regional concern because those hit by a vehicle have a great chance of being seriously injured or killed.

Pedestrians were involved in 0.7% of all crashes reported in the Northwest Indiana region from 2002 to 2006. Similar to bicycle safety, the regional pedestrian crash rates are much lower than the national rates (11% of total fatalities and 2.4% of injuries are pedestrians) because the rate of walking in the region is suspected to be low.

In the State of Indiana 9.3% of fatalities involved non-motorists as of 2004. The state objective is to reduce the number of crashes involving bicycles and pedestrians 10% by 2008.

Figure 3.9 shows the percentage of pedestrian crashes occurred in a school zone area, 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. Figure (3.8) shows the location and concentration of these crashes for all non-motorized crashes in the region.



Roadway Name	Crash Count
US41	23
BROADWAY	20
COLUMBIA AVE	14
HOHMAN AVE	14
SR53	13
INDIANAPOLIS BLVD	12
FRANKLIN ST	11
CALUMET AVE	10
KENNEDY AVE	10
RIDGE RD	8
21ST AVE	7
5TH AVE	7
BURR ST	7
MAIN ST	7
US20	7
US6	7
15TH AVE	6
169TH ST	6
173RD ST	6
CENTRAL AVE	6
MICHIGAN ST	6
TAFT ST	6
WILLOWCREEK RD	6
165TH ST	5
175TH ST	5
GEORGIA ST	5
GRANT ST	5
PARRISH AVE	5
SIBLEY ST	5
SR2	5
SR2E	5
SR53N	5
36TH AVE	4
BARKER AVE	4

Table 3.2 Pedestrian Crashes - Top-Down, High Spot Crash Location, 2002-2006

ROADWAY Name	Crash Count
SR53	4
INDIANAPOLIS BLVD	3
PORTER AVE	3
SR2E	3
US35N	3
169TH ST	2
21ST AVE	2
45TH ST	2
ARBOGAST ST	2
BARING AVE	2
BARKER AVE	2
BROAD ST	2
BROADWAY AVE	2
COLUMBIA AVE	2
FRANKLIN ST	2
GRAND BLVD	2
GRANT ST	2
HIGHWAY AVE	2
INDIAN BOUNDARY RD	2
KENNEDY AVE	2
LINCOLN ST	2
MAIN ST	2
PENNSYLVANIA ST	2
RIDGE RD	2
TAFT ST	2
US41	2

Table 3.3 Bicycle Crashes - Top-Down, High Spot Crash Location, 2002-2006

Truck Crashes



Truck crashes represent 3.4 % of all crashes in Northwest Indiana from 2002-2006. The fatality rate (0.3 %) is considered a much lower rate compare to Indiana fatality rate (17% in 2004). However, when large

Truck Crashes by Roadway Class in Northwest Indiana, 2002-2006	
US Route	650
State Road	378
County Road	261
Interstate	619
City/Local Rd.	1854
Unknown	711
Total	4473

Truck Crash Data, 2002-2006	
Total	4473
Lake	3135
Porter	764
LaPorte	574

trucks are involved in crashes it is severe than other motor vehicles crashes. Special attention should be given to commercial motor vehicles crashes particularly as large number of trucks pass through the region everyday because of the concentration of industrial sites.

41% of truck crashes occurred in city and local roads as shown in figure 3.10.

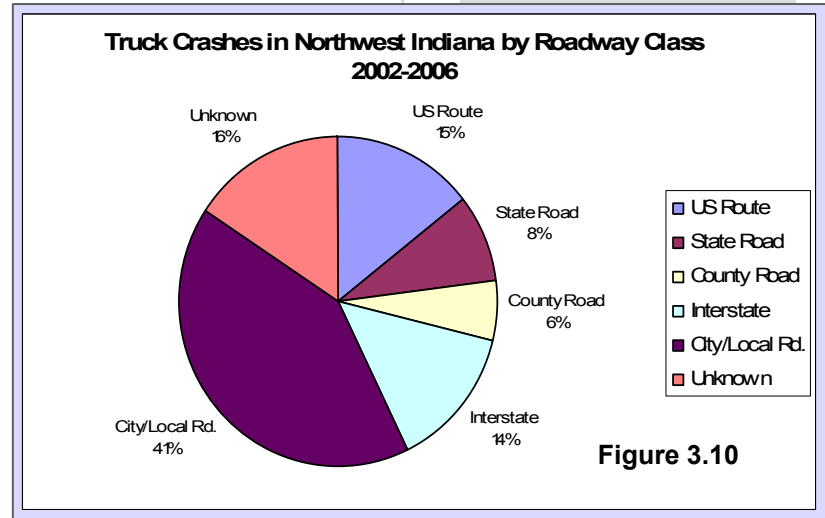


Figure 3.10

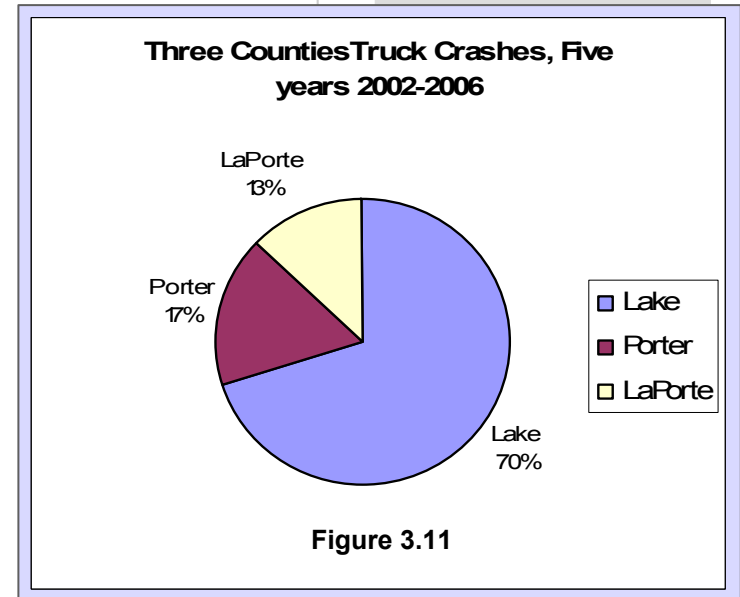


Figure 3.11

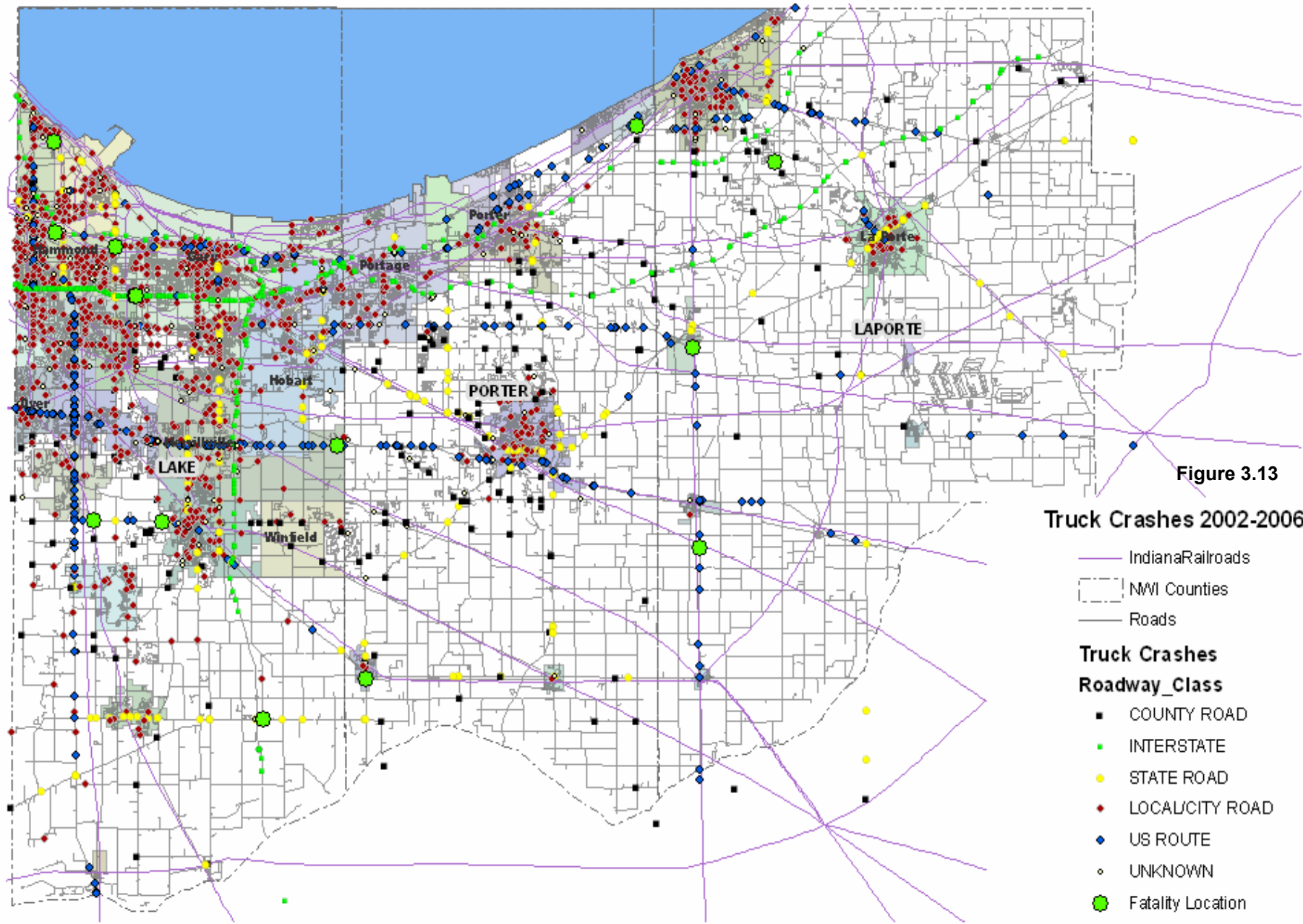
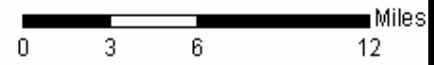


Figure 3.13

Truck Crashes 2002-2006

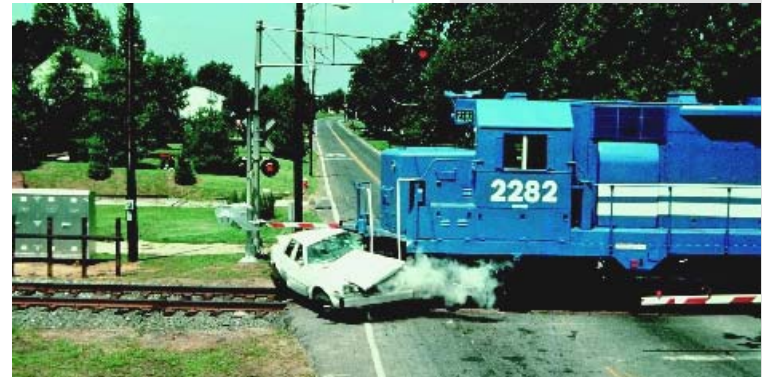
- Indiana Railroads
 - NWI Counties
 - Roads
- Truck Crashes**
- Roadway_Class**
- COUNTY ROAD
 - INTERSTATE
 - STATE ROAD
 - LOCAL/CITY ROAD
 - ◆ US ROUTE
 - UNKNOWN
 - Fatality Location



Truck Crashes - Top-Down High Spot Crash Location	
Roadway Name	Crash Count
I80	342
US41	160
US30	149
US20	101
I65	89
CALUMET AVE	85
RIDGE RD	60
SR2	60
INDIANAPOLIS BLVD	59
I90	57
KENNEDY AVE	47
GRANT ST	46
US6	43
I94	40
BROADWAY	39
SR49	37
165TH ST	36
MAIN ST	35
US 30	32
US421	32
US 41	31
CLINE AVE	30
US12	30
5TH AVE	27
HOHMAN AVE	27
RIPLEY ST	27
CHICAGO AVE	26
I 80	26
CALUMET	25
169TH ST	24
COLUMBIA AVE	23
SR53	23
LINCOLNWAY	22
I80W	20

Railroad Crossing Crashes

Figure 3.14 shows the locations of railroad crossing crashes in Northwest Indiana, which represent 0.1 % (155) of all crashes (133,455). Although the total number of crashes is significantly low, the fatality rate represents 10% (15) of all railroad crossing crashes in the region between 2002 and 2006.



Traffic Control Operational Devices & Signage Crashes

Crashes involved traffic control operational devices and signage represent 43% of the total crashes occurred between 2002 and 2006 in the region. The traffic control crashes include flashing signal, lane control, no passing zone, railroad crossing gate/flagman, railroad crossing sign, traffic control signal, officer/crossing guard/flagman, stop sign, and yield sign.

Traffic Control Devices & Signage Crashes, 2002-2006

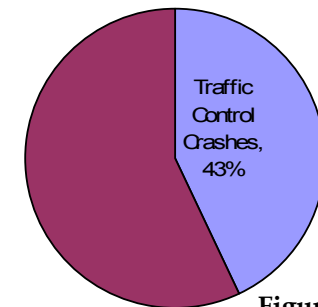


Figure 3.12

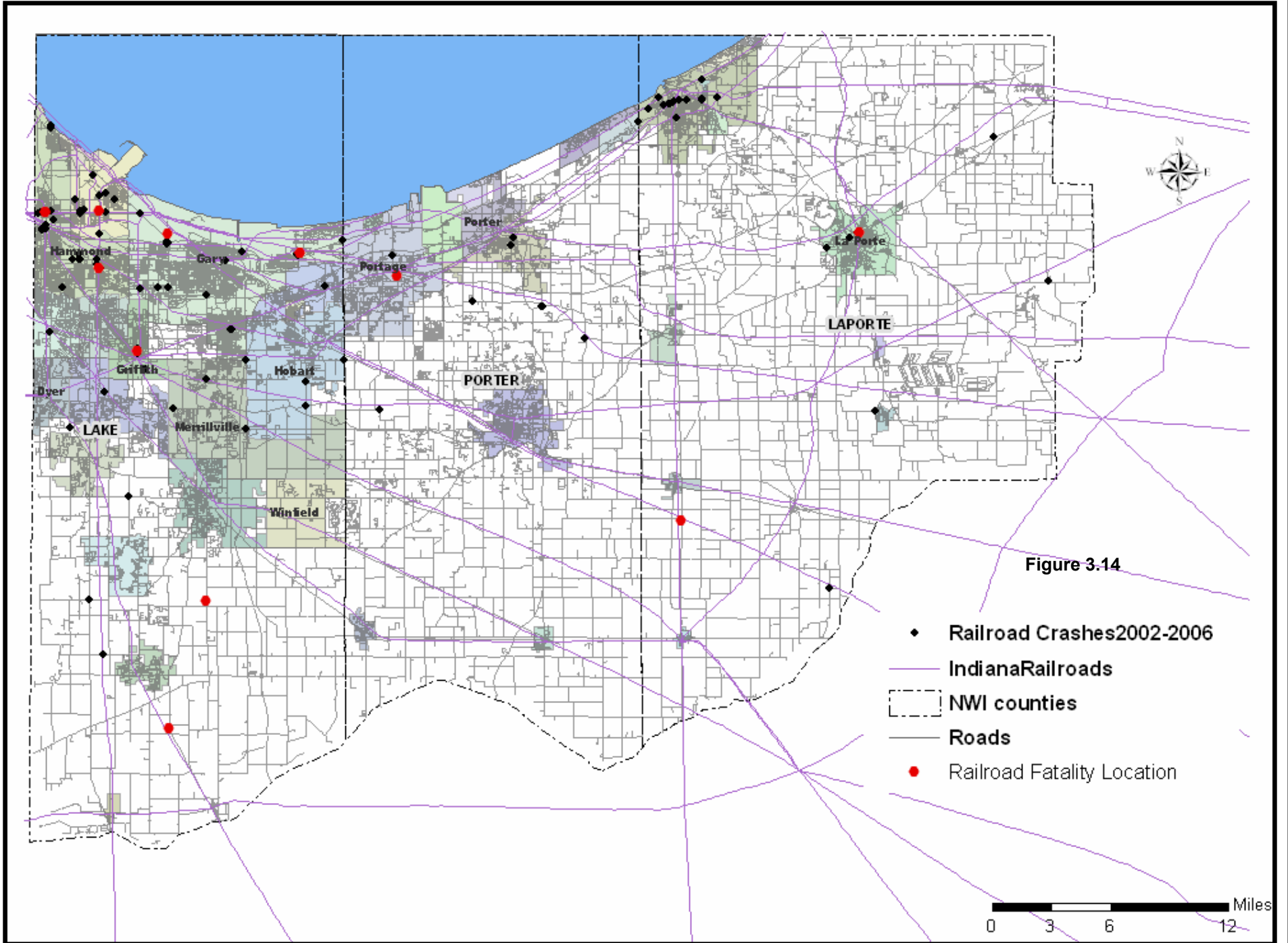


Table 3.5 Railroad Crashes - Top-Down, High Spot Crash Location, 2002-2006

Roadway Name	Crash Count
KENNEDY AVE	5
LAKE ST	5
11TH ST	4
165TH ST	4
CLARK RD	4
TRATEBAS RD	4
CHICAGO AVE	3
CR400	3
CR600	3
JOHNSON AVE	3
SOHL AVE	3
TIPTON ST	3
US421	3
169TH ST	2
41ST AVE	2
CALUMET AVE	2
COLUMBUS DR	2
CR150	2
EMERY RD	2
FRANKLIN ST	2
HOHMAN AVE	2
INDIANAPOLIS BLVD	2
US41	2

Bus Crashes



According to the National Safety Council, bus riding is the safest form of surface transportation. Crashes involving buses in the Northwest Indiana region represents 0.4% of total crashes in the region. It is relatively low compared to motor vehicle crashes and collisions involving a pedestrian. However, the percentage of injuries is representing 51% of all bus crashes between 2002 and 2006 in the region.



Roadway Name	Crash Count
I80	22
US41	20
CALUMET AVE	16
BROADWAY	15
GRANT ST	13
I90	10
CASINO CENTER DR	9
INDIANAPOLIS BLVD	9
35TH AVE	7
HOHMAN AVE	7
RIDGE RD	6
US20	6
119TH ST	5
21ST AVE	5
5TH AVE	5
I94	5
SR53	5
US30	5
WILLOW CT	5
15TH AVE	4
25TH AVE	4
BURR ST	4
COLUMBIA AVE	4
COLUMBUS DR	4
GOSTLIN ST	4
SIBLEY ST	4
TAFT ST	4
US6	4

Table 3.6 Bus Crashes- Top-Down List, High Crash Location

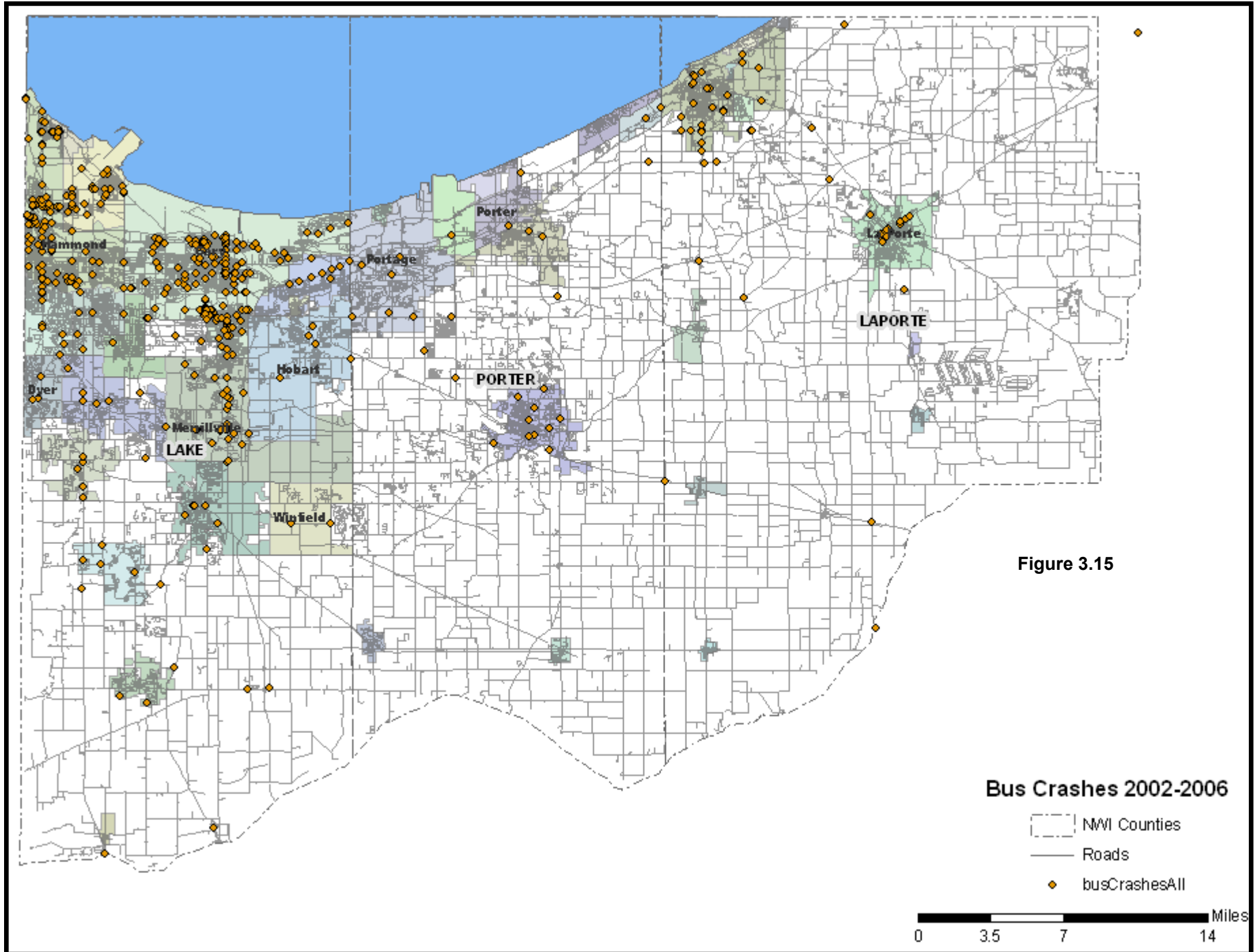


Figure 3.15

Bus Crashes 2002-2006

- NWI Counties
- Roads
- ◆ busCrashesAll

0 3.5 7 14 Miles

Goals & Objectives

In developing the Connections 2030, a set of goals and objectives were adopted, which include a vision, 12 goals, and 59 objectives. The safety related goal is *To Improve Safety and Efficiency*: improve the safety and efficiency of the system through better management and operation of existing transportation facilities.

Objectives:

- ◆ Encourage pedestrian and bicycle friendly communities and roadways.
- ◆ Encourage local communities to define safety needs and strategies.
- ◆ Consider when planning transportation projects if the proposed action will improve personal safety.
- ◆ Consider when planning transportation projects if the proposed action will affect emergency response time.



- ◆ Consider when planning transportation projects if the proposed action will increase personal safety for non-motorist.

These objectives should be evaluated regularly using performance measures. More specific safety-related objectives are needed to provide guidance and motivation to engineers and planners to achieve regional safety goals. The following are additional objectives developed based on Northwest Indiana safety data.

- ◆ Reduce fatal and serious injury accidents by drivers aged 16 to 20 and 65 and up.
- ◆ Reduce pedestrian- and bicycle-related injuries and fatalities.
- ◆ Reduce school-zone-related crashes.
- ◆ Reduce fatalities in the region by 10% over the next three years.

Performance measures should be established based on the crash data of the region. The following are examples of performance measures to monitor safety:

- ◆ Traffic crashes injury rate/100,000 licensed driver
- ◆ Traffic crashes fatality rate/100,000 licensed driver

- ◆ Non-motorized traffic crashes rate/100,000 licensed driver

NIRPC Roadway Safety Initiative

It is clear now from the crash data that teenagers and elderly people are more likely to be involved in deadly crashes, that alcohol may contribute to the likelihood of crashes, and that certain locations are more likely to have crashes. It is understandable that transit riders, pedestrians, and bicyclists are equally important users of the roadways, and we need to understand how the transportation network operates as a system, not as independent modes. The Northwest Indiana region will need to collaborate, coordinate comprehensively effort with the state to engage transportation safety stakeholders to improve safety in the region.

Currently, the NIRPC Safety Initiative is limited to problem identification, data analysis and evaluation. NIRPC uses advanced data analysis and data merging techniques using GIS to identify problem locations and conditions and to provide critical planning, management, and evaluation of priority traffic safety initiatives. However, NIRPC’s next step as a continuation of safety analysis and evaluation is to formulate safety-related performance measures set that reflect the goals and objectives in the long range

planning effort. This set will be designed to only those measures that provide critical information on safety performance of the transportation system in Northwest Indiana. Before developing the performance measures, the ongoing safety committee should review safety-related performance measures used by the state, similar agencies and nationwide. NIRPC also will discuss the proposed set of performance measures with transportation modelers at NIRPC, in the region and/or state to determine if the measures can be predicted in future years.

The following is a potential safety planning process:

1- Planning process

- Make Safety a priority
- 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 State’s SHSP



- Monitor safety implementation and analyze effectiveness
- Work to identify and prioritize infrastructure improvements in the LRTP and TIP regarding safety.

2- Focused area

- Older and younger persons’ safe mobility
- Pedestrians and bicyclists safety
- Aggressive driving
- Signalized and unsignalized intersections
- Horizontal and vertical curves
- Railroad crossing
- Heavy truck collisions
- Signage

3- Evaluation - hot spot - project selection

4- SHSP and the 4 Es (Education- Enforcement- Engineering- Emergency Services)

Engineering Element

The Northwestern Indiana Regional Planning Commission will initiate an engineering element through a Safety Task Force (STF). NIRPC will review its committee composition and structure to deter-



mine the most effective mechanism to engage safety stakeholders in the metropolitan transportation planning process. Using current members of NIRPC Safety and Congestion Management Committee, NIRPC will add new members that include local engineers and traffic safety engineers. The STF will act as an ongoing mechanism for evaluating localized crash data for Northwest Indiana. It will provide safety assessments and review as requested by local project sponsors, and may propose safety recommendations as they are identified. The STF will coordinate efforts with the other three elements (education, enforcement, emergency services). The State of Indiana had formed in consultation with key highway safety a stakeholder group named the *Leadership Team for Surface Transportation Safety*. The STF will collaborate with the State team on the development of a comprehensive approach to highway safety.

The STF will evaluate the compatibility of local crash reporting data in an effort to identify opportunities for improving the quality and quantity of local crash data. The following are proposed activities of the STF:

- Act as a review board for local jurisdictions, evaluating safety issue on current basis as they are identified and presented.
- Develop safety goals and objectives.



- Develop performance measures, which monitor progress towards the established safety goals and objectives
- Assist in providing recommendations and guidance to INDOT Highway Improvement Safety Program (HISP) funding, so the most effective safety projects are selected.
- Assist in providing recommendations and guidance to Safe Routes to School (SRTS) program.
- Provide recommendations regarding roadway design and improvements as requested by local entities.
- Investigate and perform crash location field visits for specific locations, when necessary on federal, State and Local roads.
- Research best safety management practices and share information with local representatives.
- Formulate with NIRPC localized process for the use, presentation, and access of crash data.

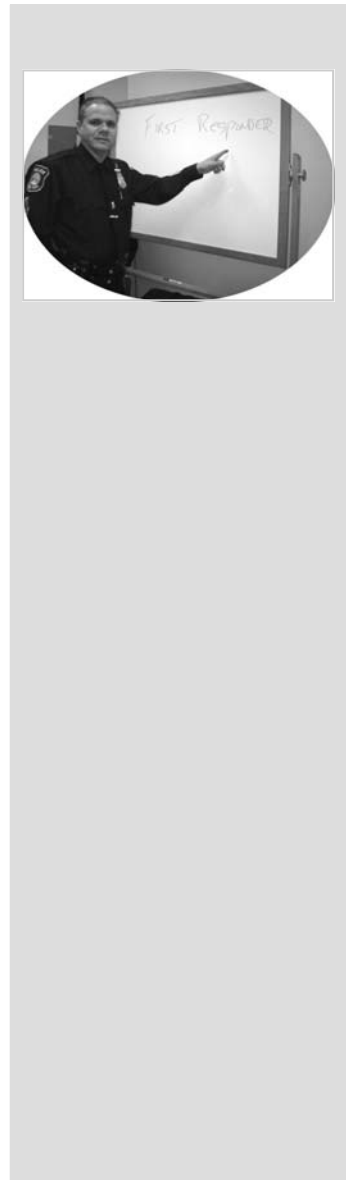
Education Element

NIRPC will follow the State direction in attempt to re-



duce the number and severity of crashes involving teenaged drivers to 6.43 crashes per 10,000-licensed drivers by 2008. Special attention will be paid to establishing and creating the partnerships with the rural communities to maximize the potential local impact of media campaigns as well as other positive traffic safety messages. The following are proposed tasks for the education element, which the STF will review to determine which are durable with the available resources:

- Set up an extensive media campaign for the Northwest Indiana Region directed towards issues such as impaired 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 Safety event, which it can be targeted towards occupant protection, avoid distractions while driving, and avoid aggressive 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 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.

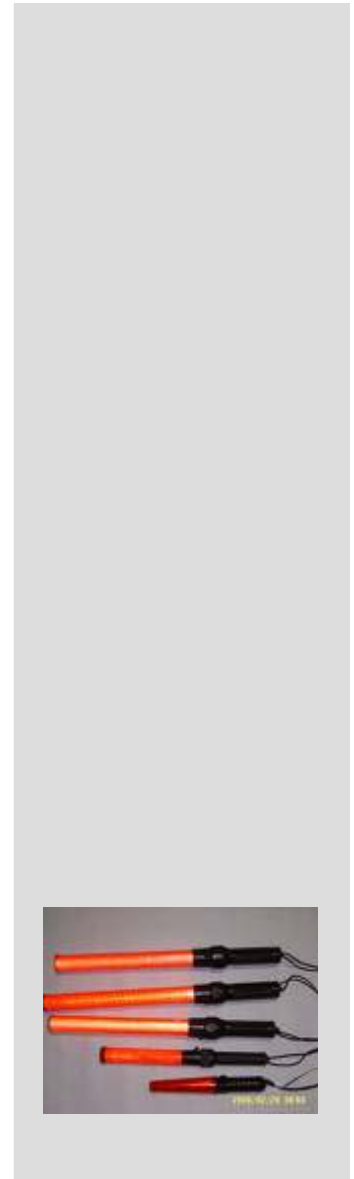


6 TRANSPORTATION SECURITY

Because the surface transportation system alone is so diverse and expansive, security risks are inherent in both the supporting infrastructure and the people and products moving through it. The Transportation Systems Sector has significant interdependencies with the majority of the other critical infrastructure sectors. For instance, the Transportation Systems and Energy sectors directly depend on each other to move vast quantities of fuel to a broad range of users and to supply the fuel for all types of transportation. In addition to cross-sector interdependencies, the Transportation Systems Sector must also deal with interdependencies among modes.

U.S. Department of Homeland Security

For the highway system, the U.S. Department of Homeland Security (DHS) has established a National Infrastructure Protection Plan (NIPP). This Plan provides a coordinated approach to critical infrastructure and key resource protection roles and responsibilities for federal, state, local, tribal, and private sector security partners. The NIPP sets national priorities, goals, and requirements for effective distribution of funding and resources which will help ensure that our government, economy, and public services continue in the event of a terrorist attack or other disaster.



For the surface transportation sector as a whole, the emphasis at the U.S. DHS is on training programs (both on-line and on-site) focused on increasing the transportation sector preparation, response and recovery measures, and awareness of terrorists' intentions. For transit properties, DHS and FTA recommend a list of 17 security action items including, among others, the employment of written system security and emergency management plans, training programs and drills, a strong security and emergency awareness program, pre-established coordination arrangements with emergency responders, enhanced security at transit facilities, background checks on employees and contractors, and risk management, and threat intelligence information sharing.

Indiana Department of Homeland Security

In 2005, the State of Indiana consolidated all of its emergency management and homeland security efforts into one department by creating the Indiana Department of Homeland Security (IDHS). The five divisions of IDHS are Planning, Training, Emergency Response, Fire & Building Safety, and the Indiana Intelligence Fusion Center. These divisions intertwine to accomplish the central mission of IDHS: safeguarding the lives and property of the citizens of Indiana.

The IDHS prepared and the Governor promulgated the Indiana Comprehensive Emergency Management Plan in 2005. This plan assigns a coordination role to IDHS in handling multiple types of situations, including, among others, acts of terrorism, chemical and biological incidents, avian (bird) flu, fires, floods, tornadoes, and other types of disasters, natural and man-made. The Plan identifies roles for all public and many private organizations in the event of a catastrophic situation. There is a public information component and continuity of government provisions. The overall thrust of the document and key to its success is the pre-planned coordination of resources. The Plan also includes separate section on Terrorism Consequence Management.

INDOT's Role in State Transportation Security

As a state department, INDOT follows the State Plan developed by IDHS. It is required to develop and keep current a continuity of operations plan to ensure that its essential functions are performed during any emergency or situation that may disrupt normal operation. INDOT is also responsible for developing written Standard Operating Procedures to support its role in the comprehensive state plan. Its primary assigned responsibilities are in the category of infrastructure support. Infrastructure support consists of transportation, public works and engineering, energy,

and damage assessment. Key tasks include access management and traffic control in disaster areas, evacuation of citizens, conducting post-incident highway and bridge inspections, provision of engineering expertise, acquisition of heavy equipment, and clearing roads. INDOT's long range transportation plan refers to the IDHS plan.

INDOT Strategic Highway Safety Plan

INDOT's Strategic Highway Safety Plan (SHSP) addresses security very marginally. Among the 13 Emphasis Areas identified in the Plan, only two have system security implications. Emphasis Area #12, "Expedite Crash Clearance to Reduce Secondary Crashes and Congestion," contains two relevant components. First, it calls for development of a Highway Incident Management Coordination Plan. Second, it calls for the development of an integrated telecommunications system that links local, state, and federal public safety agencies during emergency responses. Both components involve the use of Intelligent Transportation Systems technology.

Emphasis Area #11, "Enhancing Emergency Service Response to Crashes." The security-related strategy cited here is the installation of traffic signal pre-emption on response routes to the Interstate system.

Regional Homeland Security Planning Efforts

NIRPC established a local Homeland Security Committee for northwest Indiana in 2003. This effort, which predated the creation of the Indiana Department of Homeland Security, led to the creation of a five-county compact (Jasper and Newton Counties, located immediately south of Lake and Porter Counties, asked to be a part of the original three-county planning effort.

The purpose of the agreement is "to provide each of the participating counties, through their mutual cooperation, a predetermined plan by which each might render aid to the other in case of an emergency which demands emergency services, personnel, and/or equipment to a degree beyond the existing capabilities of any one or more of the counties". It is designed to allow, authorize and encourage the counties to share emergency response equipment and personnel in the event of a disaster that cannot be effectively and efficiently handled with the resources available within one county. Times of emergencies are defined as "including but not limited to meteorological, seismic or other natural disaster; technological breakdown; man-made disaster; fires that exceed local control; civil emergencies related to resource shortages; community disorders; insurgency; enemy attack; terrorism or any other occurrence of imminent threat of widespread or

severe damage, injury or loss of life or property...”.

The agreement created a “joint board” to be known as the Northwest Indiana Regional Homeland Security Board. The Board is responsible for carrying out the provisions of the mutual aid agreement. Authority to carry out any arrangements or agreements related to the mutual aid agreement rests with the directors of each county’s Emergency Management Agency. The agreement was adopted by all participating counties in September of 2003. Meetings were held through 2005, at which time the effort was folded into the State’s more encompassing and General Assembly-mandated effort.

Public Transit Operators—Status of Bus and Commuter Rail Security Plans

NICTD and the eight local public bus transit operators developed, between 2003 and 2005, System Safety Program Plans (SSPP). NICTD also developed a stand-alone System Security Plan in 2003. NICTD updated both of their documents in 2006. The bus plans were developed following FTA and American Public Transit Association (APTA) guidance. Several of the plans pre-date SAFETEA-LU enactment, but most have been updated in 2006 and 2007. These plans are heavily oriented toward safety but do contain emer-

gency response provisions dealing with multiple types of disasters.

These plans, several of which are due to be updated in 2007, contain adequate general training, certification, and record-keeping provisions, but some of them are very much out of date and require a major rewrite in order to comply with current FTA guidance. Several deal exclusively with safety. None, except for NICTD and Gary Public Transportation Corporation, contain or reference mutual aid provisions for assisting in local emergencies, although the fixed route operators maintain these arrangements. It should be noted that the municipal operators each maintain a plan for their transit system to comply with FTA and NIRPC Subgrantee Oversight Department guidance, but Indiana law already requires the development and maintenance of these plans for the municipality as a whole.

NICTD did apply for, and was awarded, two U.S. Department of Homeland Security grants in FFY 2004 and 2005. This funding was for planning, surveillance equipment at boarding platforms, and threat awareness training.

Critical Facilities & Transportation System Elements

Indiana prepared, in 2003, a State Hazard Identification and Vulnerability Analysis. It has not publicly disclosed the list of facilities and transportation system elements identified. Known obvious critical transportation-related facilities include the Interstate and NHS-designated highways, the four major rail corridors, the Port of Indiana, the Gary/Chicago/Milwaukee ITS corridor, Borman ITS Center, NICTD commuter rail line (and infrastructure including electrical substations, train control system, and the electric power grid as a whole), and the Gary/Chicago Airport. Other critical infrastructure includes buried petroleum pipelines, petroleum storage depots, oil refining plants, the regional telecommunications infrastructure (fiber optic and wireless) system, and public water intakes in Lake Michigan.

Security Goals and Strategies

- Transit operators should update their existing plans to have stand-alone safety and security components.
- NIRPC should engage in a dialogue with the INDOT District and Regional IDHS Offices concerning appropriate security planning activities.
- The small demand-response transit service operators should meet with local emer-

gency response officials to discuss security issues and to increase awareness of the resources available from the operator. Develop stronger ties to local emergency services providers and formalize existing informal mutual aid agreements.

- Transit operators should conduct employee training on threat identification & risk assessment on an ongoing basis.
- Improve local transit security by expanding the use of camera surveillance systems at transit transfer facilities and on-board transit vehicles and requiring all operators to store vehicles in secured facilities.