Chapter 4: System Management

While Chapter 3 described the different components of the transportation system and strategies and projects to expand the system, more important is the need to ensure the existing system is maintained and operated as efficiently as possible.

This chapter focuses on preserving and managing the existing transportation systems. The MTP strategies and projects in this chapter focus on keeping the existing system in a state of good repair, managing the system better through the use of technology, and making the system as safe and secure as possible.

4.1 System Preservation and Maintenance

Activities focused on preserving, maintaining and operating the transportation system are an important component of the MTP. Recent efforts, such as the *2008-2030 Capitalways Transportation Plan*, place more emphasis on system preservation and maintenance. This includes projects related to operation of the transportation system (e.g., plowing, mowing, painting and traffic control), bridge replacement/rehabilitation, road resurfacing and reconstruction.

Key Goals

- 3 Economic Opportunity
- 4 Sustainable Neighborhoods
- 5 Collaboration
- 6 Health, Safety and Welfare

Spending money on preservation, maintenance and operations makes up the largest single category of what the region spends on the transportation system. Even as the needs of the MPO planning area continues to grow, there is a limit to how many resouces can be directed toward building new roads. The existing system needs to be maintained and operated efficiently to insure the health, safety and welfare of the region.

While operations, maintenance and system preservation in aggregate are significant, the individual projects are often so small they seem regionally trivial. Consequently, the MTP does not individually identify these types of projects.

BACKGROUND

Historically, Ohio has provided adequate resources to preserve and maintain its roads and bridges. Significant portions of federal, state and local budgets fund system preservation and maintenance activities. Often funding used on regional system expansion projects, such as those identified throughout the MTP, address system preservation through the rehabilitation of existing facilities when adding capacity. Maximizing the life of existing infrastructure is an important part of the project selection process. For more information on that process, please see Chapter 6.

MORPC estimates approximately $5.7 billion in federal, state and local funds will go to preserve the transportation system in the MPO planning area through 2035. Please see Section 6.3 for more information. A number of agencies provide federal, state and local funding to address the maintenance and preservation of the existing transportation system in the region: ODOT, Ohio Public Works Commission (OPWC), local governments and MORPC. Depending on the agency, the programs address separate, but sometimes overlapping, portions of the roadway system.

ODOT is committed to building upon the tradition of preserving, maintaining and modernizing one of the most well regarded transportation systems in the nation. ODOT promotes “Fix It First” programs. “Fix It First” includes ODOT’s Operating Program, which includes items such as payroll, certain equipment expenditures, facility maintenance and roadway maintenance. Roadway maintenance includes expenditures such as salt, used for snow and ice control and asphalt. “Fix it First” also includes the Pavement Preservation Program and Bridge Preservation Program.

MORPC estimates approximately $5.7 billion in federal, state and local funds will go to preserve the transportation system. Source: MORPC

The MTP sets a target that 95 percent of the roads classified as collector and above have an acceptable PCR.

The 2011 ODOT District Multi-Year Work Program Guidelines promote "steady-state" conditions. "Steady-state" refers to road and bridge conditions with acceptably low and stable deficiencies that can be maintained in that condition through predictable preventive maintenance and regular repairs. To accomplish this, ODOT collects pavement condition rating (PCR) data, which uniformly measure conditions on many important roads in central Ohio, as shown in Figure 4.1.

ODOT's goal is to maintain the best PCR for each "pavement subsystem" of the state system. "Pavement subsystem" refers to the type of roadway and its function in the system. Each subsystem has different acceptable PCR criteria, as shown in Table 4.1 below. The table also shows what portion of that subsystem currently meets the acceptable PCR criteria. Again, the goal varies by subsystem.

Note that the MTP sets a target that 95 percent of the roads classified as collector and above have an acceptable PCR.

Table 4.1 Pavement Condition Ratings

ODOT Pavement Subsystem	Subsystem PCR Criteria	Lane Miles Meeting Criteria	Lane Miles Below Criteria	Percent Meeting Criteria	MORPC MTP Target
Priority - Interstates, divided and multi-lane	PCR ≥ 65	1,011.19	44.24	95.81%	95%
General - two-lane	PCR ≥ 60	2,891.85*	68.70*	97.68%*	95%*
Urban - US & State Routes	PCR ≥ 55	778.23	2.10	99.73%	95%

* - Includes roadways collector and above that are not a part of ODOT's system

Ohio law requires an annual inspection for all bridges. This law applies to all bridges in the state, regardless of who owns them. In general, bridge conditions change slowly. Dramatic, year-to-year fluctuations are rare. Figure 4.2 shows the sufficiency ratings for bridges in the MPO area. Bridges are "structurally deficient" or "functionally obsolete" if the sufficiency rating is less than 80.1.

The sufficiency rating is based on a formula and is an overall assessment of the condition of a bridge from 0 (the worst possible rating) to 100 (the best possible rating). Deficient bridges are eligible for inclusion in the four-year TIP. Bridge sufficiency ratings determine the type of funding for which the bridge is eligible.

The MTP sets the target to reduce structurally deficient and functionally obsolete bridges by 5 percent by 2016 and by 25 percent by 2035. Currently, 18 percent of the bridges in the MPO area are structurally deficient or functionally obsolete.

Reduce structurally deficient and functionally obsolete bridges by 25 percent by 2035.

Composite condition measures called "general appraisal" look at the major structural items of a bridge, such as its superstructure, piers and abutments. This rating system is unique to ODOT and measures the structural conditions of bridges, as opposed to the federal sufficiency rating, described above, which measures traffic volumes, geometrics, use and structural conditions. The general appraisal summarizes the conditions of the bridge. It helps schedule replacements or maintenance work. On a scale from 0 to 9, 9 indicates the best condition; 5 or below indicates the need for bridge replacement. If a bridge on ODOT's system ranks between 6 and 8, it will provide deck overlay, deck replacement, substructure sealing or other work.

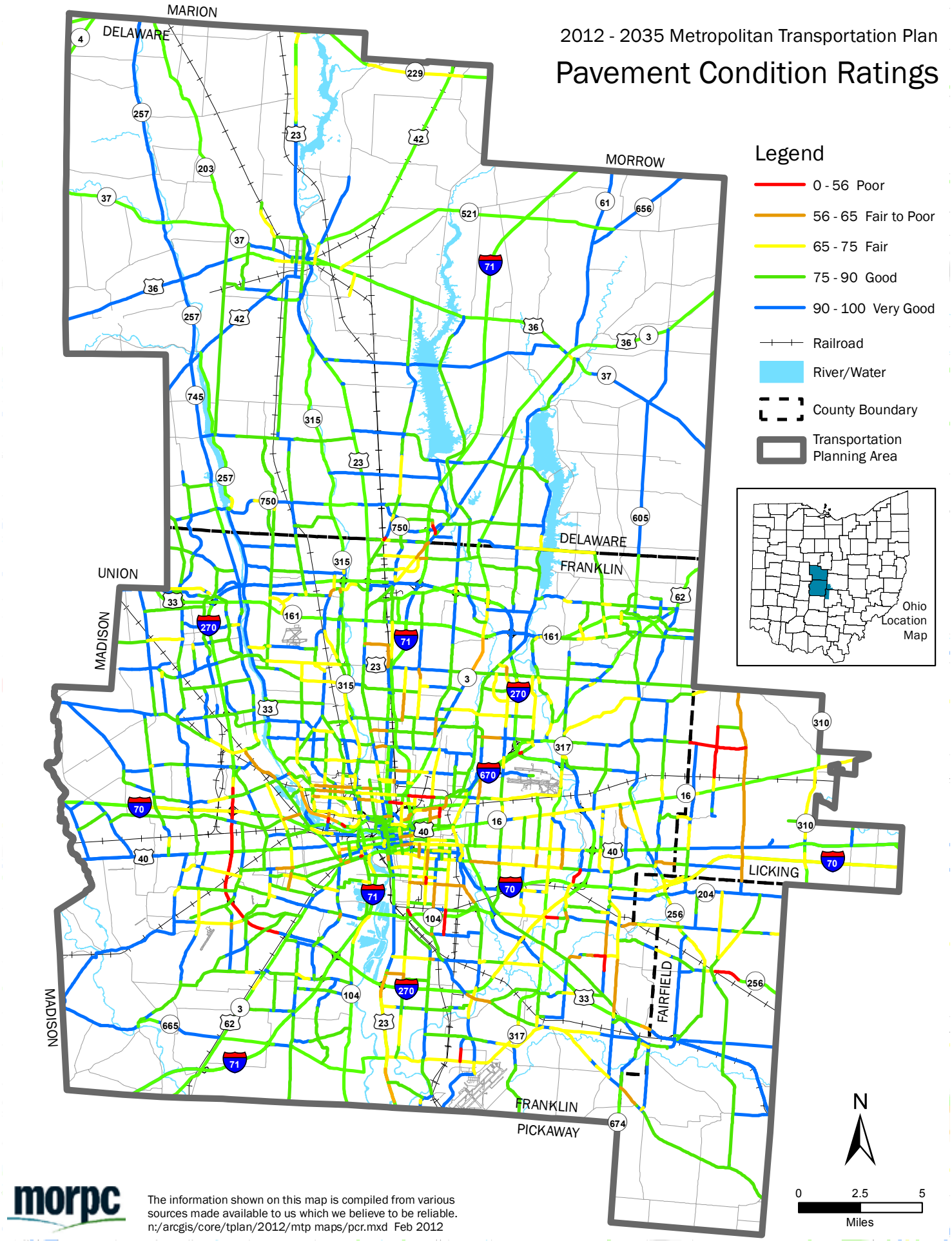


Figure 4.1 Map of Pavement Condiition Ratings

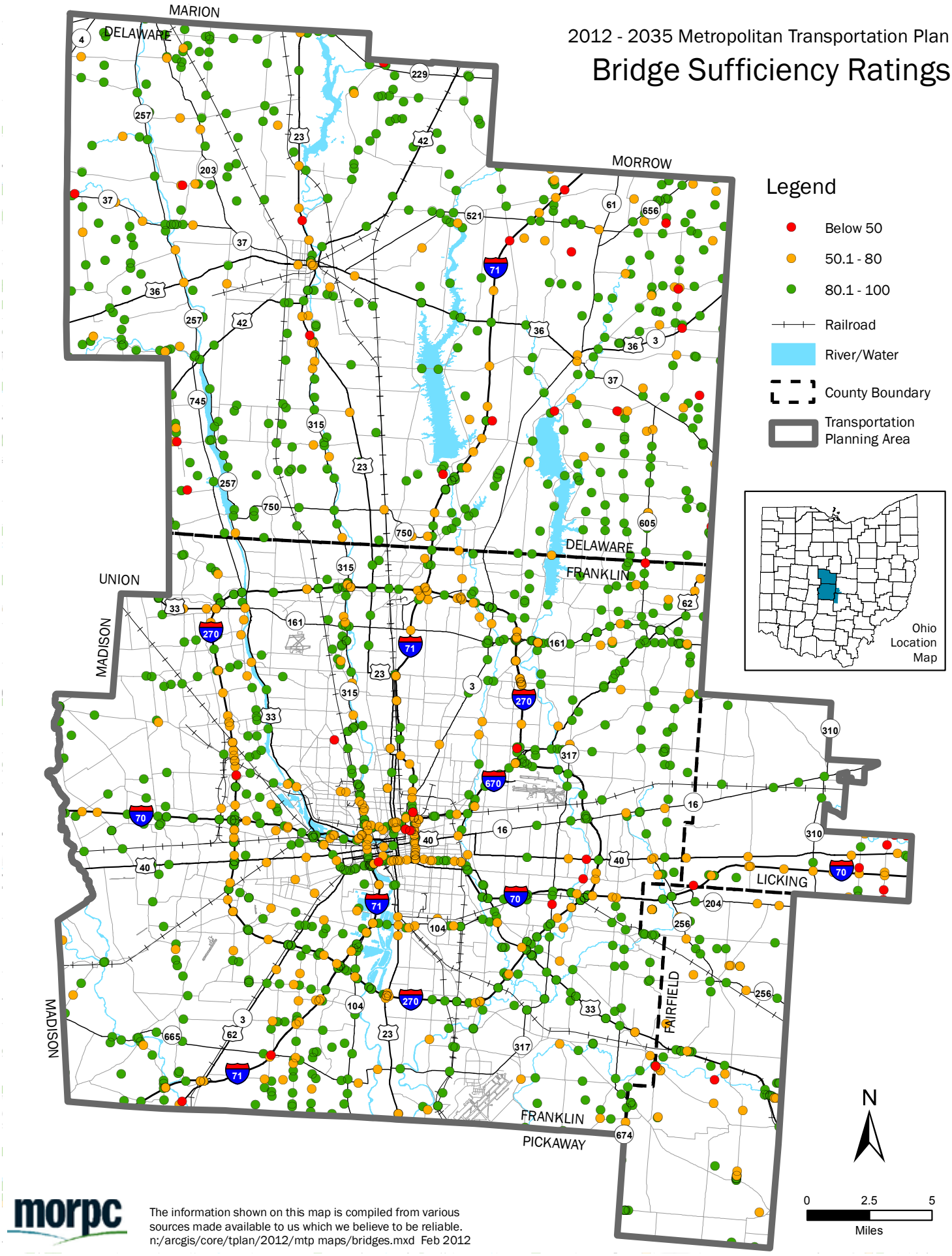


Figure 4.2 Map of Bridge Sufficiency Ratings

ODOT established its Major Bridge Program in 2002. This program provides a source of funds separate from each ODOT district's bridge allocation. The program reserves funds for high cost bridge rehabilitation and replacement. Typically, this includes bridge projects over one million dollars. The Major Bridge Program was able to solve individual ODOT districts' inability to fund the high cost of major bridge projects, which would otherwise consume most or all of the regular bridge allocation on a single project. ODOT's "30-Year Major Bridge Asset Management Plan" prioritizes and schedules funding years for these major bridge preservation projects. The MPO planning area includes eight major bridges.

While ODOT manages a large state system, components of the Federal-Aid Highway System rely on federal funding allocated through MORPC for similar system preservation and maintenance activities. Statewide, ODOT terms these "local system preservation programs." Other components of the roadway system may rely solely on funding from local governments. Local Capital Improvement Programs (CIPs) document some of this spending, though portions may exist in local government operating budgets. Operational expenses for roadways off the state system, such as mowing and plowing, rely on funding from local governments as well.

MORPC lacks a full and accurate regional overview of maintenance and operations activities. MORPC has worked with many local governments to gather the information necessary to estimate future spending. Spending on maintenance and operations comes in no standardized or detailed form. For example, some activities are obscured in general operating budgets. Consequently, without better information, the plan assumes adequate funding for operations, maintenance and preservation.

Two state programs help supplement local funding for system preservation and maintenance. The programs also provide an incentive for communities to standardize some of their local preservation program information.

The Ohio Public Works Commission (OPWC) administers the State Capital Improvement Program (SCIP). The SCIP grant program funds infrastructure, such as road, bridge, water, storm and sanitary sewers. OPWC also administers the Local Transportation Improvement Program (LTIP). LTIP is only available for road and bridge projects. The MPO planning area includes two OPWC Districts. District 3 is Franklin County. District 17 covers the rest of the MPO planning area. Many applications are for locally maintained road or bridge projects.

In general, each OPWC district can formulate its own SCIP and LTIP project evaluation criteria depending on the needs of the district. For example, District 3 and District 17 both assign more points to repair and replacement projects. Both districts review the condition and age of infrastructure. Both districts place emphasis on road and bridge projects. In District 3, additional points are available if the project is in an older, land-locked suburb where it addresses aging infrastructure past its useful life

MAJOR BRIDGES

SR 315 as it crosses the Olentangy River, 5th Ave. and King Ave.

US 23 South (3rd Ave) as it crosses Goodale St. and Railroad Tracks

I-70 Westbound as it crosses the Scioto River near Downtown

I-70 Eastbound as it crosses the Scioto River near Downtown

I-670 as it crosses US 33 and the Scioto River near the SR 315 interchange

I-670 as it crosses US 33, the Scioto River and Railroad Tracks near the I-70 interchange

I-270 Westbound as it crosses the Scioto River and SR 745 and 257

I-270 Eastbound as it crosses the Scioto River and SR 745 and 257

Source: ODOT, "30-Year Major Bridge Asset Management Plan"

The SCIP program carries a statutory requirement for districts to give priority to projects that repair or replace existing infrastructure. A maximum of 20 percent of SCIP grant funds can go to new or expansion projects. Agencies that apply for new or expansion projects through the SCIP grant must provide at least 50 percent in matching funds. Repair or replacement projects only need a 10 percent match. Consequently, most are system preservation projects.

OPWC also developed a standardized capital improvement report (CIR) to assist communities in identifying each entity's infrastructure components, the condition of those components and funding needed. The 5-year CIR includes:

- an inventory of existing local roads and bridges
- future five-year capital improvement plan and maintenance of effort from the past two years
- a summary of the inventory documenting condition by lane miles and number of bridges to summarize repair or replacement costs

The five-year plan includes the applicant's top priority projects and a financial plan for accomplishing the work. The standardized summary of the local condition, repair and replacement costs for each community provides invaluable information for documenting the system at a regional or state level.

PRESERVATION AND MAINTENANCE STRATEGIES AND PROJECTS

Recommendations presented throughout the MTP may help preserve and maintain the transportation system. As previously noted, strategies and projects to widen roadways will also improve the condition of those roadways. However, the following strategies and projects specifically address system preservation and maintenance:

5 6

1. Ensure multi-jurisdictional and cross-agency collaboration on system preservation and maintenance.

Working together across agencies and jurisdictions will help reduce overall costs by combining and sharing resources and information.

Transportation organizations need to focus on how to maximize the use of existing infrastructure by maintaining the existing system. Working together across agencies and jurisdictions will help reduce overall costs by combining and sharing resources and information.

Through the TIP, MORPC reviews community CIPs and contacts them in order to include their system preservation projects - even those that are completely locally funded. The Paving the Way program, funded by MORPC, collects and disseminates upcoming construction project information throughout the region.

Increased regional coordination could help establish guiding principles and best practice methods for making informed transportation resource allocation decisions. Coordination would help improve accountability. An asset management approach addresses the entire life cycle of transportation infrastructure including maintenance and operations. It recognizes that investments in transportation assets must consider a broad set of objectives, including physical preservation, congestion relief, safety, security, economic productivity and environmental stewardship.

2. Establish consistent data collection procedures and standard rating systems concerning roadway condition. 5

As mentioned above, how agencies collect transportation data differs greatly. Such disparity impedes having a complete and accurate set of regional data. In order to standardize such processes, local governments should be encouraged to account for their road and bridge infrastructure network using the "modified approach" permitted by the General Accounting Standards Board (GASB) when completing their Comprehensive Annual Financial Report (CAFR). The modified approach does not charge depreciation expense against the related infrastructure network as long as

- The network is managed using an asset management system.
- The network is being preserved at or above, approximately, a state minimum condition level.

The asset management system would have to provide an up-to-date inventory of the infrastructure. It also must perform a condition assessment of the network at least every three years. It must estimate the annual amount each year required to maintain and preserve the asset network at the established minimum condition level. Using this methodology, only the costs of network additions and capacity improvements are capitalized.

A regional asset management tool that collects and provides standardized information about maintenance, preservation activities, needs and operations would be of great benefit in understanding the state of the region's transportation infrastructure. MORPC is positioned to help create a tool that works across jurisdictions and agencies to help use limited resources most efficiently.

MORPC has worked to create and maintain a uniform Location Based Response System (LBRS) roadway centerline Geographic Information System (GIS) file. MORPC is working on a web interface that will allow other jurisdictions to submit changes to the file. Such a system could help collect and organize consistent condition data.

3. Advance projects that preserve and maintain the existing transportation system. 3 4 6

Funding is limited. Project priority must reflect regional need. For example, MORPC maintains a Federal Funding Committee that helps decide what transportation projects receive MORPC's federal funding in the short-term. The committee will derive decision criteria for the next rounds of funding from the MTP, which set targets for roadway and bridge condition (see Chapter 7).

Where federal funds do not apply, state and local officials are encouraged to employ cost-effective preservation strategies and to optimize every dollar spent. It is important to develop training for low-cost, long-term treatment strategies, forecasting for program budgets and optimization of expenditures. Use of geographic information systems (GIS) for decision-making and information sharing is critical.

4.2 Intelligent Transportation Systems

Key Goals

1. Energy
2. Natural Resources
3. Economic Opportunity
4. Sustainable Neighborhoods
5. Collaboration
6. Health, Safety and Welfare

Despite efforts to add transportation system capacity, improve operations and manage travel demand, congestion is increasing. One way to address the ongoing congestion and safety issues is through technologies that improve traffic flow, such as "intelligent transportation systems" (ITS). ITS refers to technologies that help operators to better monitor and manage the system, to respond to incidents more quickly and to disseminate traffic-related information back to the public. Examples of ITS technologies include dynamic message signs, ramp meter signals on the freeway, cameras that monitor traffic flow and incidents, and automatic vehicle location (AVL) systems, which track the real time location of public fleet vehicles (see also Section 3.2 on the transit system).

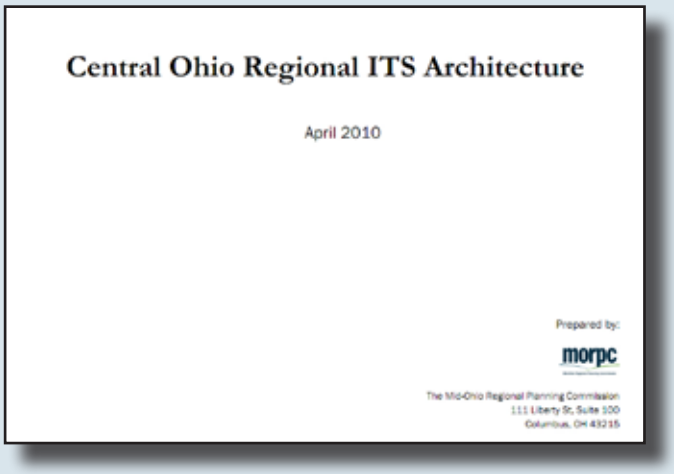
ITS enables collaboration, communication and cross-jursidiction/agency system integration. ITS is a proven alternative solution to reduce congestion, increase traffic flow, enhance safety and improve air quality.

BACKGROUND

Most travelers are unconcerned about who owns and operates the various components of the transportation system. They expect it to work seamlessly and efficiently. The strength of an MPO is its ability to reach out to a vast array of stakeholders to enable communication and cooperation among them. In this regard, MORPC works with many different agencies interested in finding solutions for various transportation issues in central Ohio. MORPC fosters system integration and agency cooperation concerning ITS technologies.

FHWA developed the national ITS architecture to provide a unifying framework for ITS infrastructure deployment. MORPC houses and maintains the regional ITS architecture. This *Central Ohio Regional ITS Architecture* identifies the organizations that provide ITS or those that have an interest in them. It defines the different

The *Central Ohio Regional ITS Architecture* is available for download on MORPC's website.


Central Ohio Regional ITS Architecture

April 2010

Prepared by:

morpc

The Mid-Ohio Regional Planning Commission
111 Liberty St, Suite 100
Columbus, OH 43215

operating systems, the functions they perform, what information they exchange and how that information is exchanged. Identifying the different types of technologies and interconnections helps one understand the existing systems. It helps detect any gaps related to the information exchange, or any agencies that could collaborate. The architecture ensures that institutional agreements and technical integration for the implementation of ITS projects are in place. Its primary goal is to facilitate the efficient deployment and use of ITS equipment, networks and management structures to create a safer and more efficient transportation system across jurisdictions. All ITS projects using federal funding must conform to the Regional ITS Architecture.

All ITS projects using federal funding must conform to the Regional ITS Architecture.

ITS STRATEGIES AND PROJECTS

As noted above, intelligent transportation systems (ITS) are an alternative solution to improve traffic flow without adding pavement. MORPC is involved in promoting the implementation of ITS as well as better collaboration and communication between the agencies throughout the region. MORPC will continue to work with its stakeholders to implement the following strategies and projects:

1. Ensure multi-jurisdictional and cross-agency collaboration on ITS.

5

Transportation organizations need to focus on how to maximize the use of existing infrastructure. Working together across agencies and jurisdictions is important in order to reduce overall costs by combining and sharing resources and information.

Working together across agencies and jurisdictions is important in order to reduce overall costs.

Columbus Traffic Management Center (TMC)

The Columbus Traffic Management Center (TMC) once housed both the City of Columbus and ODOT traffic management functions, enabling the two agencies to work together on improving traffic flow and emergency response. Instead of treating roadway management as an isolated and individual responsibility, the TMC shared this duty. Consequently, its staff developed a better knowledge about traffic in the Columbus area. In 2010, ODOT moved its equipment to its headquarters to integrate it into a statewide operation center. While ODOT and Columbus city staff no longer share the TMC, improved technologies make it possible to maintain virtual relationships to accomplish the same goals. Continued communication between these two agencies remains important.

Traffic Management Center (TMC) Interconnection

Long-term, the region will work to interconnect all other TMCs to share information and feeds from various field monitoring equipment. In the short-term, communication among all agencies in the region with existing or planned ITS projects should continue to take place. MORPC will encourage stakeholder communication to keep all parties aware of ITS changes within the region.

Implement Columbus Signal System Upgrade

The City of Columbus is upgrading its signal system based on a 2005 MORPC study, *Columbus Traffic Signal System Assessment & Strategic Plan*. Columbus is leading the effort to install the backbone communication infrastructure that will support a regional system. The project is in its third phase. Columbus is talking to neighboring jurisdictions to better understand their signal plans, and more importantly, to see if there are opportunities to connect their signals to

a regional system. MORPC will continue to ensure that communities work to improve traffic signal coordination along regional corridors (see #2, below).

1 2 3 5 6

2. Advance ITS projects that increase the extent of the transportation system able to be managed in a coordinated and efficient manner.

Since funding is limited, the region must prioritize ITS projects based on the overall need and the ability to integrate it with other projects to maximize regional value.

Transportation Improvement Program

In regard to ITS planning, the Transportation Improvement Program (TIP) lists the various ITS projects with allocated funding. The TIP will remain an important tool in providing more detailed information about various projects and funding priorities.

ITS Project Identification and Prioritization

Utilizing the Regional ITS Architecture, MORPC, along with external partners, identifies areas where ITS elements and ITS integration are missing. In addition to identifying operational ITS technologies with missing links, the process focuses on areas lacking ITS in general. For example, emergency and freight management could implement more ITS technologies.

Identify Regional Corridors for Signal Coordination

The MTP identifies important regional corridors for signal coordination that cross multiple jurisdictions (see Figure 4.3). These corridors are regionally significant based on high traffic volume and importance to through traffic. MORPC will work directly with its stakeholders and through the Columbus Traffic Signal System Update to establish multi-jurisdictional partnerships. Such partnerships will help ensure signal coordination for improved traffic flow throughout each corridor.

5 6

3. Ensure conformity of projects to the Regional ITS Architecture.

According to the Federal Highway Administration (FHWA), any agency requesting federal dollars for an ITS project through MORPC or the state must conform to the Regional ITS Architecture. MORPC ensures that ITS stakeholders remain aware of the ITS architecture and work together to implement ITS projects.

Maintain Regional ITS Architecture Website

With the help of a consultant, MORPC developed a website, available to its members, that allows all ITS stakeholders to access information about communication flow diagrams between systems. Such information helps ITS stakeholders make informed decisions about who to contact in system development and operation.

Inform ODOT About Regional ITS Projects

ODOT and the Ohio Division of FHWA developed Ohio Procedures for Implementing ITS Regulations (23 CFR 940), which describes the various steps an agency needs to follow when designing and implementing ITS projects funded with federal dollars. One of the project sponsor's responsibilities is

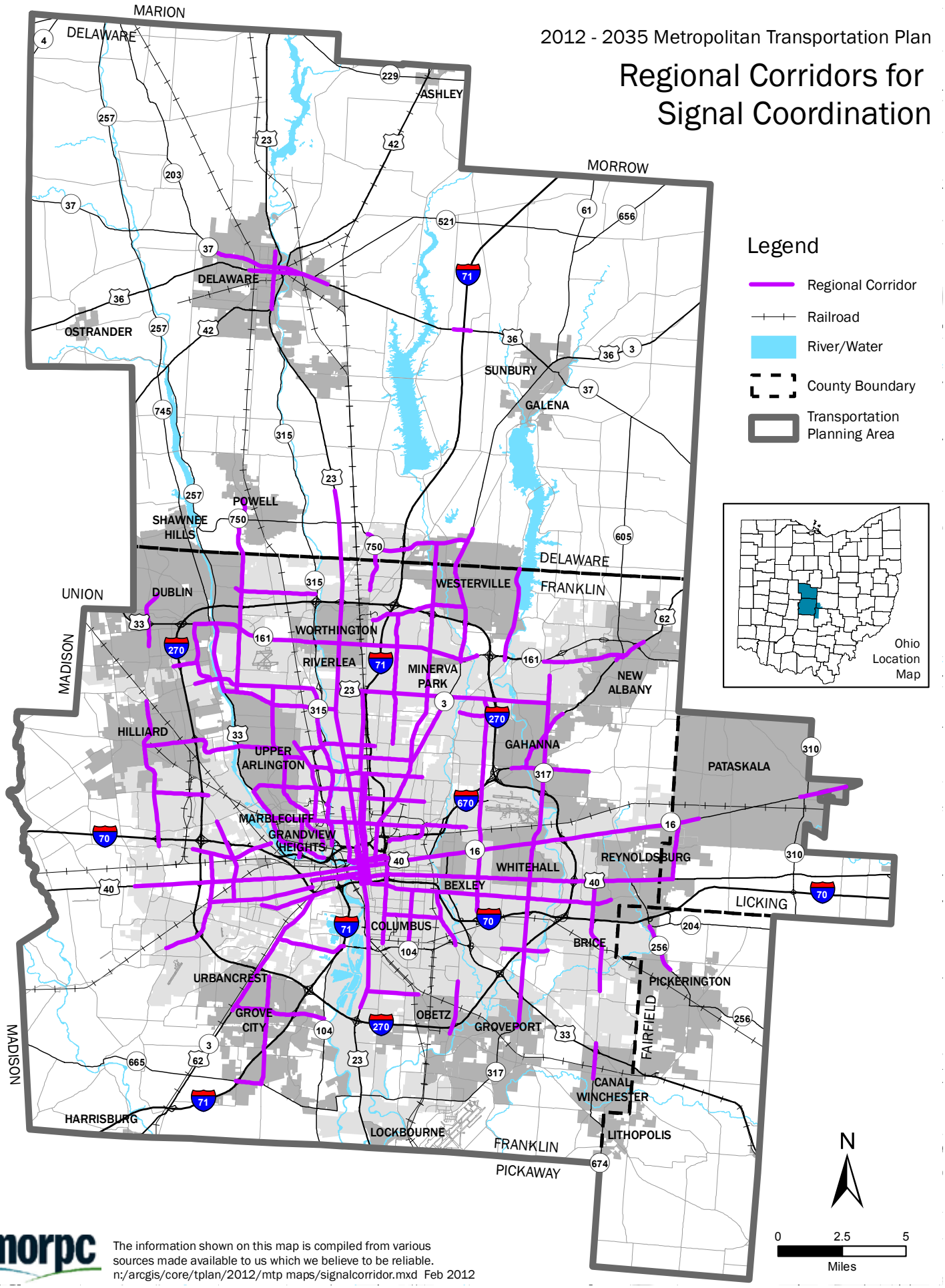


Figure 4.3 Map of Regional Corridors for Signal Coordination

to ensure that a systems engineering process is used in addition to the previously mentioned Regional ITS Architecture conformity. This approach permits ODOT and FHWA to establish concurrence in the level of ITS assessment and documentation needed. As part of this process, every two years MORPC, and all other Ohio MPOs, provides ODOT district offices with a list of all ITS projects as identified through the TIP. To maintain this documentation, the project sponsors must notify MORPC of any changes or updates to the architecture.

Maintenance and Update of ITS Architecture

In 2009, MORPC completed the third update to the Regional ITS Architecture. Continuing development of the Regional ITS Architecture requires working closely with all local governments. The update reflects all existing and committed ITS projects in the region, as identified through the TIP. Personal meetings, phone interviews and an online survey helped identify existing and planned ITS technologies, the functions they perform and their potential or actual integration with other systems. An online form will help keep track of any change requests to ensure that the architecture remains up to date.

1 2 3 4 5 6

4. Support the development of a regional multi-modal traveler information system.

No matter how effectively ITS technologies help manage roadways, residents must know more travel information in order to make informed decision.

Implement Advanced Traveler Information System (ATIS)

Central Ohio has several transportation information systems, including the ODOT's Buckeye Traffic, the City of Columbus' Paving the Way and COTA's trip planning website. MORPC's Ride**Solutions** program offers car- and vanpool matching options (see Chapter 5 for more information). Other data collection systems have useful transportation information, but do not disseminate the information to the public.

Although these agencies work together, the systems are not always linked. The public has difficulty obtaining all information related to any particular trip at one site. None of the websites offers the option to compare transportation modes for a requested trip based on travel time, length and cost.

In 2009, MORPC, together with Cambridge Systematics, studied the feasibility of a system that displays all travel-related information. Then, travelers can make informed decisions about the best transportation mode, route, time and cost for each trip. Modal options would not be restricted to just highways and transit, but would also consider bicycling, air travel and any other modes. The system would also serve as a clearinghouse for information about construction, weather, congestion, incidents, emergencies and evacuations. The system would be a consistent and credible voice to the media, public and system operators.

The project team developed a strategic plan and rough cost estimate to implement such a regional traveler information system: *Advanced Traveler Information System Study*. Since then, MORPC has met with a variety of local and state stakeholders to gain support, discuss needed technologies and identify potential funding sources. Public and private stakeholders need to reconvene to discuss system development.

4.3 Transportation Safety

The public expects and demands that the transportation system is safe and efficient for all users. Transportation is an essential part of modern existence, linking the various activities in which people participate: home, work, school, shopping and recreation. Unfortunately, fatalities and injuries from motor vehicle crashes are a major public health problem.

Key Goals

1. Energy
2. Natural Resources
3. Economic Opportunity
4. Sustainable Neighborhoods
5. Collaboration
6. Health, Safety and Welfare

According to the National Highway Traffic Safety Administration (NHTSA), in 2009, over 33,808 people lost their lives in motor vehicle crashes in the United States. Although this represents a decline from previous years, it remains a devastating statistic considering that, on an average day, over 90 people will not return home to their families and loved ones. Crashes are the leading cause of death for teenagers and all persons aged 4 to 34. The MPO planning area had 116,266 crashes reported from 2007 to 2009, which involved 310,714 people – resulting in 310 fatalities and 42,981 injuries.

In addition to the impact on family and friends, society must bear the cost of traffic crashes. Motor vehicle crashes result in a significant annual economic impact, estimated at $231 billion per year in 2001. This amounts to 2.3 percent of the gross domestic product or $820 for every person living in the United States.

The MPO planning area had 116,266 crashes reported from 2007 to 2009.

For states and metropolitan areas struggling with congestion on freeways and other major roads, crashes represent a major source of "non-recurring congestion." Non-recurring congestion refers to its unpredictable frequency, as opposed to the congestion resulting from recurring peak period traffic. Crashes can result in temporary lane closures for disabled vehicles and emergency crews. This reduces the capacity of the road, causing such congestion. Some estimates blame between 50 and 70 percent of urban congestion on crash-related incidents.

BACKGROUND

Traditionally, safety has played a role in organizations that plan and maintain highways and other surface transportation assets, though not always identified as a specific element in the long-range planning process. The 1998 federal transportation bill, Transportation Equity Act for the 21st Century (TEA-21), recognized the importance of safety planning from a regional and statewide level. When SAFETEA-LU replaced TEA-21 in 2005, it further emphasized safety.

SAFETEA-LU established the Highway Safety Improvement Program (HSIP), structured and funded to make significant progress in reducing highway fatalities. It has nearly doubled the funds allocated for safety-related infrastructure projects. Under SAFETEA-LU, states must develop a Strategic Highway Safety Plan (SHSP). MORPC works closely with the ODOT in its development and implementation of the Ohio SHSP.

The MTP targets a 15 percent reduction in crashes by 2035 (2 crashes per million VMT).

Along with the growing emphasis on safety in the transportation planning process, emerging behavioral and demographic factors have become important considerations over the past few decades. One can no longer view safety solely through the lens of engineering. A multi-faceted approach, including education and enforcement, is required to mitigate transportation safety problems successfully.

MORPC's crash data reporting video received the 2008 National Association of Development Organizations (NADO) Award.

MORPC publishes information about navigating roundabouts in various formats.

Crosswalks like the one above were part of pedestrian safety stings. Source: MORPC

MORPC'S SAFETY PROGRAM

The cooperation of many different agencies and groups will make safety program activities more successful in addressing fatal and injury crashes. To this end, MORPC participates in a variety of activities that address safety issues. MORPC is involved in several state and local safety committees, including ODOT's Comprehensive Highway Safety Plan Committee, the ODPS' Traffic Records Coordinating Committee (TRCC), county Safe Communities programs and various ad hoc groups. Additionally, MORPC is addressing safety from a comprehensive standpoint by bringing awareness to topics such as Complete Streets and Lifelong Communities, working with its partners to implement related policies (see Sections 3.5 and 3.6).

Improving crash data reporting and analysis is a fundamental component of the safety program. From 2005 to 2009, MORPC contracted with a local consulting firm to clean and analyze crash data received from ODPS. This process improved MORPC's ability to identify high-crash locations and provide high quality data. Beginning in 2010, MORPC began using ODOT data, as the quality and usability of the dataset improved significantly. To underscore the value in collecting this data, MORPC produced a video explaining the importance of crash reporting, aimed at educating law enforcement officials.

MORPC's safety program also targets users of the transportation system. For example, MORPC has developed a roundabout safety video. The video explains the benefits of roundabouts and shows how to navigate one safely. The video is available on the MORPC website. All driving schools in the state have a DVD version for use in their curriculum.

Other examples of outreach and education include a 2011 mini-grant from the FHWA, which resulted in MORPC collaboration with local jurisdictions to conduct "pedestrian safety stings." During these events, local law enforcement officers gave warnings to motorists who failed to yield to pedestrians in the crosswalk. As part of the project, MORPC created a brochure to educate both motorists and pedestrians about their roles and responsibilities on the roadways. Also in 2011, MORPC and other partners, such as COTA, designed and distributed pedestrian safety wristbands to people most likely to walk at night. These armbands are reflective and thus increase the safety of pedestrians walking at night.

While these approaches address various aspects of transportation safety, they all have the same goal: to reduce the number of crashes in our region and state through engineering, education, enforcement and emergency management. Many of the safety strategies and projects identified in the MTP originate from MORPC's participation in various safety committees and initiatives. Also, discussion with and feedback from local jursidictions and safety-related agencies informs the strategies and projects. A few of the activities result from patterns and trends revealed in crash data analyses.

SAFETY STRATEGIES AND PROJECTS

Recommendations presented throughout the MTP will help improve transportation safety. For instance, strategies and projects that will improve a roadway intersection may also improve safety. One can make the same connection for many strategies and projects that improve the transportation system. However, the following strategies and projects specifically address transportation safety.

In order to implement these strategies in the most efficient manner, collaboration and resource sharing are required. This includes various agencies, including law enforcement, emergency responders, state transportation officials, local transportation officials, political leaders and the public. As a result, MORPC's approach to safety planning involves substantial collaboration. It is multi-jurisdictional in nature. MORPC seeks opportunities to work with member agencies and other stakeholders to improve safety and realize efficiencies across the region.

1. Ensure a high level of complete and accurate crash data. 5 6

Crash data reports are a fundamental aspect of any program seeking to reduce fatalities and injuries resulting from motor vehicle crashes. Fortunately, the quality and usability of crash data in Ohio have improved over the past few years.

Refine GIS Crash Analysis Tool (GCAT) and Promote its Use to Communities

MORPC continues to work closely with ODOT to refine the GCAT system, which has significantly improved access to and mapping of crash data. ODOT recently allowed MORPC member agencies to access the system. MORPC will work with these agencies to ensure that they are able to use the system successfully.

Traffic Records Coordinating Committee (TRCC)

MORPC is one of several stakeholders involved in the TRCC. This committee brings together law enforcement, legal professionals and transportation officials, among others, to improve crash reporting in Ohio. Recent work of the TRCC includes an update to the OH-1 form, which is used by Ohio law enforcement uses the OH-1 form to record the details of a crash.

Crash Data Improvement Grants

One of the activities of the TRCC is to apply for and coordinate crash data improvement grants. Example activities funded through these grants include training for law enforcement and electronic crash data systems improvements. MORPC plays a supporting role in identifying opportunities for and implementing crash data improvement grants.

Franklin County Fatality Review Board

The Franklin County Fatality Review Board meets once per month to review all fatal crashes that occur in the county. MORPC is one of several stakeholders present at the meetings that, among other purposes, provide an opportunity for law enforcement, engineers, planners and educators to better understand fatal crashes and develop countermeasures, as well as make suggestions for crash reporting improvements.

3 4 5 6

2. Advance projects that address high-crash locations in the region.

The process of identifying and addressing high-crash locations is central to MORPC's safety planning program. The HSIP requires the allocation of federal funds through a data-driven process to make the best use of limited funds.

Identify High-Crash Locations for Motorized and Non-Motorized Traffic on an Annual Basis

MORPC has developed a GIS-based methodology for assigning crashes to intersections and segments. In 2009, MORPC introduced a new methodology for identifying pedestrian and bicycle high crash locations and corridors. Additionally, MORPC maintains a database and GIS files containing all non-motorized crash locations in the transportation planning area since 2003.

Each year MORPC publishes a list of the top 40 high crash intersections in the region (see Table 4.2 and Figure 4.4). Additionally, MORPC develops a list of the top two crash locations for each city and unincorporated county area, along with the top location for each village. MORPC also publishes an annual list of the top pedestrian and bicycle crash locations/corridors in the MPO area. MORPC also employs ODOT crash data to identify high crash locations on the freeway system (also shown on Figure 4.4).

Continue to Evaluate Transportation Projects Based on Safety Criteria

Safety is one of the project selection criteria for inclusion in the MTP, as detailed in Chapter 6. Safety has been and will remain a consideration in the TIP and OPWC funding applications.

Assist Local Government Agencies

MORPC responds to numerous safety-related requests from member agencies. Typically, these requests concern a suspected safety issue at a particular location. Requests may also be general in nature (e.g., all bike crashes in a particular year). MORPC will continue to provide data and resources to these agencies as requested. MORPC will increase the local capacity to understand and access the data independently. MORPC will continue to be an advocate for local members' requests for ODOT safety funding, and will assist in the application process.

4 5 6

3. Support and advance initiatives that promote behavioral changes to improve transportation safety.

In addition to its technical role in safety planning, MORPC engages in various efforts to encourage safe behavior. Through these activities, MORPC recognizes that safety is a complex problem; the region must address safety on many levels.

Annual Crash Fact Sheets

Each year, MORPC develops regional crash fact sheets, which report on major trends in central Ohio. The fact sheets break down crash statistics by type, severity, time of day, contributing factors and driver age. Other sheets include in-depth analyses on specific crash types such as fatal crashes, bicycle crashes, pedestrian crashes and work-zone crashes. The fact sheets serve as an important resource for the region, as well as the state.

Top 40 Regional High-Crash Intersections (2008-2010)*

*Crash statistics for a given location are based on the area within 250 feet of the intersection center

Rank 08-10	Location	Jurisdiction	Total Crashes	Rank 05-07	Rank 06-08	Rank 07-09
1	Cleveland Ave @ Morse Rd	Columbus	249	3	2	1
2	Broad St / SR 16 @ James Rd	Columbus	141	24	43	7
3	Dublin Granville Rd / SR 161 @ Maple Canyon Dr	Columbus	159	5	7	4
4	Gender Rd @ Refugee Rd	Columbus	139	13	6	6
5	Hamilton Rd / SR 317 @ E Livingston Ave	Columbus	142	1	1	3
6	Cleveland Ave @ Oakland Park	Columbus	105	35	24	8
7	Chatterton Rd / Refugee Rd @ Noe-Bixby Rd	Franklin County	106	7	3	2
8	S Central Ave / Harrisburg Pike @ W Mound St	Columbus	94	86	N/A	51
9	Hamilton Rd / SR 317 @ Refugee Rd	Columbus	153	2	4	5
10	US 33 @ Petzinger Ave	Columbus	103	62	N/A	N/A
11	Cleveland Ave @ Dublin Granville Rd / SR 161	Columbus	182	32	19	15
12	James Rd @ Main St / US 40	Columbus	121	28	36	18
13	Clime Rd @ Demorest Rd	Columbus	92	58	N/A	40
14	Morse Rd @ Westerville Rd	Columbus	139	9	16	9
15	Innis Rd @ Westerville Rd / SR 3	ODOT	98	72	44	37
16	Cleveland Ave @ Innis Rd	Franklin County	92	39	14	20
17	Henderson Rd @ Olentangy River Rd	Columbus	140	25	23	24
18	Cleveland Ave / SR 3 @ 5th Ave	Columbus	98	20	15	22
19	International Gateway @ Stelzer Rd	Columbus	111	112	N/A	N/A
20	Morse Rd @ Sunbury Rd	Columbus	129	4	5	10
21	E Broad St @ Waggoner Rd	Columbus	115	23	9	14
22	Agler Rd @ Sunbury Rd	Columbus	85	47	N/A	N/A
23	Broad St / US 40 @ Wilson Rd	ODOT	94	69	26	36
24	Hilliard Rome Rd @ Roberts Rd	Columbus	93	21	20	28
25	Main St / US 40 @ Mcnaughten Rd	Columbus	100	12	17	17
26	Georgesville Rd @ Holt Rd	Columbus	100	83	N/A	N/A
27	Morse Rd @ Northtowne Blvd / Walford St	Columbus	116	63	54	44
28	Hayden Run Rd @ Riverside Dr / US 33	ODOT	103	49	30	39
29	Hard Rd @ Sawmill Rd	Columbus	110	41	32	12
30	Hilliard Rome Rd @ Renner Rd	Columbus	162	18	18	23
31	James Rd @ Livingston Ave	Columbus	107	27	22	21
32	Hamilton Rd / SR 317 @ Kimberly Parkway / Kingsland Ave	Columbus	78	11	10	16
33	W Broad St / US 40 @ Georgesville Rd / Phillipi Rd	ODOT	81	37	38	45
34	Refugee Rd @ Winchester Pike	Columbus	93	17	34	65
35	Brice Rd @ Scarborough Blvd / Tussing Rd	Columbus	136	57	40	41
36	Karl Rd @ Morse Rd	Columbus	136	36	25	26
37	Georgesville Rd @ Hall Rd	Columbus	75	34	66	83
38	Broad St / SR 16 @ Taylor Station Rd	Columbus	132	84	49	34
39	Dublin Granville Rd / SR 161 @ Karl Rd	Columbus	126	26	29	25
40	Morse Rd @ Stelzer Rd	Columbus	112	N/A	N/A	77

Legend:
Rank = Rank number given to each intersection based on the methodology that includes crash frequency, rate, and severity.
Jurisdiction = Jurisdiction who owns / operates the intersection.
Total Crashes = Number of crashes per 3 year period within 250 ft. of the center of the intersection.

Table 4.2 Top 40 Crash Locations 2008-2010

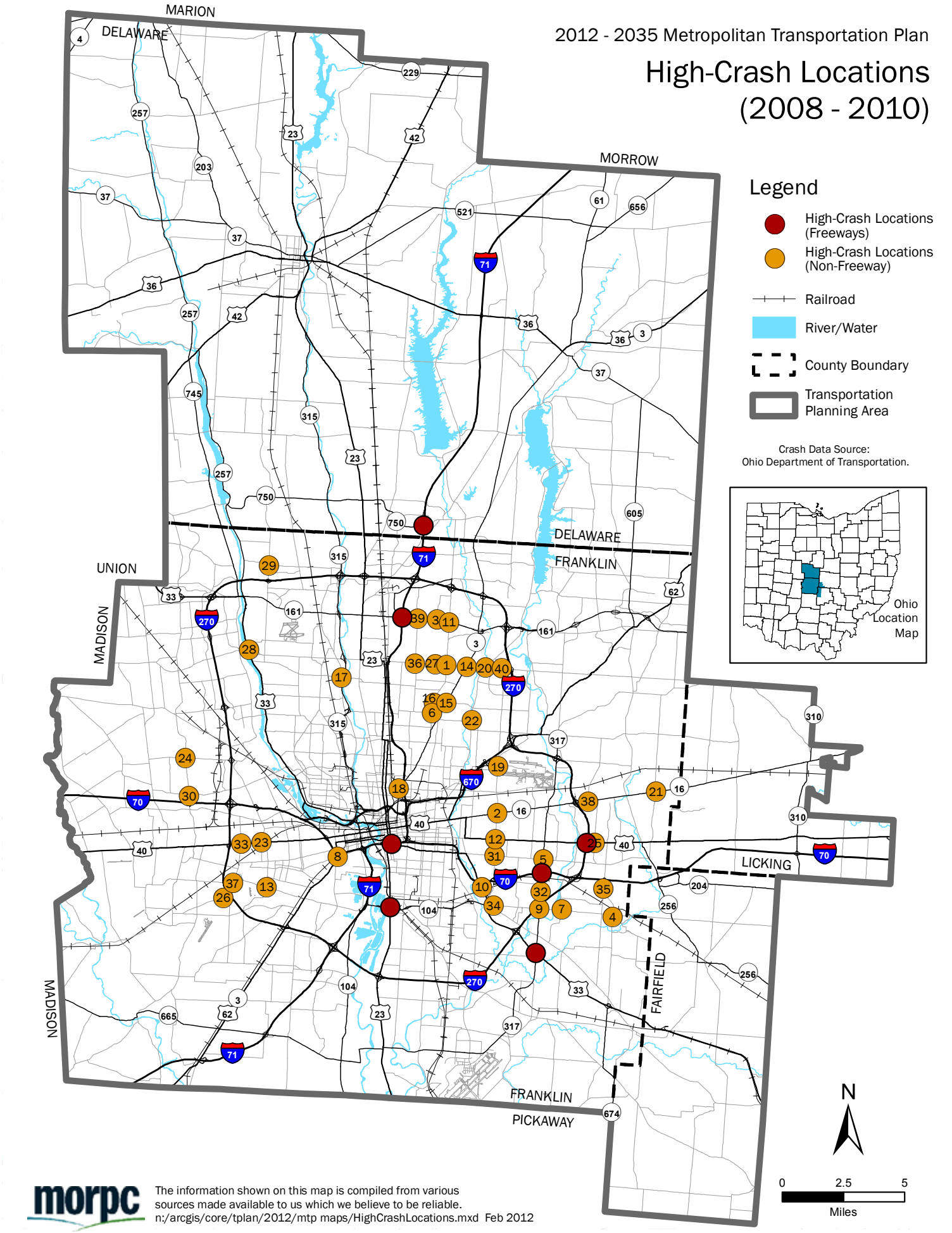


Figure 4.4 Map of High Crash Locations

Support Safety Initiatives

MORPC will continue to collaborate with several local, statewide and national organizations to advance causes that improve the safety of the transportation system by addressing behavioral issues. Distracted driving and teen safety are recent examples of issues that have gained attention.

Safety Education

Through the crash analysis process and in working with its regional partners, MORPC will continue to identify safety-related behavioral issues and address these issues through outreach and education. Previously identified safety issues led to activities, such as the pedestrian safety stings, which sought to educate both motorists and pedestrians about their respective rights and responsibilities. Future efforts will include the development of educational materials for various modes of travel.

4. Improve access to alternative modes of transportation.

1 2 3 4 5 6

While the strategies discussed above deal with safety directly, another effective strategy is to promote the use of alternatives to motorized travel. Greater use of alternative modes along with other strategies that reduce motorized travel would reduce the overall amount of vehicle miles traveled. This, in turn, would result in fewer crashes and fatalities.

Chapter 3 includes many activities that further this strategy. Chapter 5 focuses on all opportunities to reduce single-occupancy vehicle travel. Despite exhaustive treatment elsewhere in the MTP, perceived and real unsafe conditions remain a barrier to alternative modes for many.

Complete Streets Outreach

In 2010, MORPC adopted a Complete Streets Policy, which replaced its 2004 Routine Accommodations Policy. The policy requires all transportation project sponsors using MORPC-attributable funding to accommodate all users along project roadway corridors. The Complete Streets Policy emphasizes making all roadways safe and comfortable for users of all ages, including seniors and youths. Please see Section 3.5 for more details.

Safe Routes to School (SRTS)

MORPC encourages and supports efforts to increase walking and bicycling to school among students in grades K-8. Funding for all aspects of Safe Routes to School, including infrastructure, education, encouragement, enforcement, and evaluation, is available through federal Safe Routes to School grants, administered by ODOT. Please see Section 3.5 for more details.

Develop and Promote Resources that Encourage Alternatives to Motorized Travel

Periodically, MORPC develops resources that encourage alternatives to motorized travel. For example, the Columbus Metro Bike User Map illustrates the usability of roads for bicycling based on factors such as speed, traffic volume and lane widths. Less experienced bicyclists can use the map to find a safer or more comfortable route. MORPC and its partners will develop other resources as the needs and opportunities arise.

4.4 Transportation Security

Key Goals

- 2 Natural Resources
- 3 Economic Opportunity
- 5 Collaboration
- 6 Health, Safety and Welfare

Security planning involves monitoring the transportation system to ensure against infrastructure failures. It also requires preparation to deal with situations where the roadway network could fail. Commerce and quality of life in communities require functioning regional transportation networks. During emergencies, these networks allow first responders to reach the event site and to stage and manage their operations. Regional transportation agencies support traffic control, damage assessments and the restoration of critical services. Effective public safety objectives for these agencies range from alternate routing around an incident scene, to evacuations and long-term mode shifts during recovery.

BACKGROUND

Central Ohio is home to various threats, such as floods, tornadoes, dam failures, severe thunderstorms and winter storms. This list of threats the region must prepare for now includes terrorism. The unexpected and complex nature of these natural and human-caused incidents requires extensive coordination, collaboration and flexibility among all the agencies and organizations involved in the planning, mitigation, response and recovery.

Regional cooperation and coordination are essential to security and emergency preparedness. No significant event is truly local, as political boundaries are permeable and local critical infrastructure may serve the entire region. No jurisdiction stands alone. The high-risk, well-resourced municipality may be as dependent on a smaller jurisdiction for support in an emergency as the smaller jurisdiction is on the larger ones. The complexity of the region, with a range of potential events, presents significant challenges to coordinating and implementing effective homeland security programs.

TOP 16 HAZARD RANKINGS

1. Flooding
2. Severe winter weather
3. Dam failure
4. Terrorism
5. Infectious diseases
6. Tornadoes
7. Severe summer weather
8. Extreme heat
9. Hazardous materials
10. Drought
11. Utility interruptions or failures
12. Invasive species
13. Air and water pollution/ contamination
14. Transportation accident - aircraft
15. Civil disturbance
16. Earthquakes

Source: *Risk Assessment for Franklin County*, 2010

MORPC'S SECURITY PROGRAM

MORPC does not have a direct role in responding to emergencies. MORPC has federally mandated transportation planning functions, which it maintains despite the results of a natural or human-created event. Various other organizations carry the primary responsibility for security planning and response while MORPC enhances security planning and activities already in place. To do so, MORPC helps the region coordinate planning in preparation for and anticipation of potential future incidents. It plays a similar role helping to coordinate public information dissemination strategies.

MORPC's security program mission is to work with other jurisdictions and agencies in the MPO planning area to increase the security of the transportation system for motorized and non-motorized users through initiatives that reduce or eliminate system deficiencies and enhance the integration and connectivity of the transportation system for the purposes of safety, security, and emergency evacuation.

MORPC can serve as a forum for cooperative decisionmaking outside the immediate urgency of emergencies. MORPC can help fund regional transportation strategies and projects related to security. MORPC has capabilities in technical analysis

of the transportation network that can play a critical role in emergency preparedness and security planning.

For example, MORPC works with county emergency management agencies (EMAs), such as Franklin County Emergency Management and Homeland Security (FCEM&HS). MORPC participated recently as FCEM&HS updated the *Risk Assessment for Franklin County* and *Franklin County Natural Hazards Mitigation Plan*. MORPC helped coordinate multiple EMAs in developing *The Planning Framework for the Evacuation of the Transportation Needs Populations of Central Ohio* (see next page). MORPC participates in a variety of other councils and committees on issues related to security and the transportation system.

No significant event is truly local, as political boundaries are permeable and local critical infrastructure may serve the entire region.

SECURITY STRATEGIES AND PROJECTS

Recommendations presented throughout the MTP may help improve transportation security. To achieve the above mission, MORPC and security partners will continue to implement the following strategies and projects:

1. Promote and strengthen emergency preparedness efforts. 5 6

Homeland Security Advisory Council

The director of ODPS convenes the Homeland Security Advisory Council (HSAC) to discuss security issues with a variety of state agencies and first responders. MORPC represents the Ohio Association of Regional Councils (OARC). MORPC will continue to provide input and advice to the HSAC on MPO roles in transportation security across the state.

Chemical Emergency Preparedness Advisory Council

Chemical Emergency Preparedness Advisory Council (CEPAC) serves as the official local emergency planning committee (LEPC) for Franklin County. MORPC will continue to serve on CEPAC, providing input on the role of MORPC while assisting CEPAC in regional collaboration and communication with other county LEPCs.

Central Ohio Emergency Management Council

MORPC will help provide the means for collaboration in planning, communication and information sharing to help facilitate an adequate response to a regional emergency. MORPC can enhance the capabilities of local and regional organizations, including first responders, through provision and sharing of information, as well as improve the effectiveness of regional plans by maximizing the sharing and coordination of resources. As a part of these activities, MORPC will help establish a forum where policy makers can be educated on emergency management issues and develop regional policy. This group will also work to implement the next steps identified in *The Planning Framework for the Evacuation of the Transportation Needs Populations of Central Ohio*.

REGIONAL ASSISTED EVACUATION PLAN

MORPC received a grant from the Federal Transit Administration (FTA) to develop an evacuation planning framework that addresses "transportation needs populations" in Franklin County and its six adjacent counties. Transportation needs populations include the young, elderly, individuals with disabilities, persons without access to private vehicles, persons with limited English-speaking proficiency and individuals living within institutions. *The Planning Framework for the Evacuation of the Transportation Needs Populations of Central Ohio* provides guidance for developing robust strategies in the region to ensure that future evacuations accommodate the vulnerable transportation needs populations. Beyond central Ohio, this framework serves as a nationwide model for regional cooperation in emergency preparedness for transportation needs populations. It can guide other regions throughout the United States in developing plans tailored to each region.

3 5 6

2. Advance projects that improve and maintain the transportation network to address issues related to homeland security and emergency preparedness.

Regional Training and Exercise Program

MORPC assisted FCEM&HS and other agencies in and near the MPO planning area as they developed a program to coordinate county training and exercises, expand regional collaboration, and more efficiently use federal, state and local funding and resources in order to enhance regional preparedness for all hazards.

Intelligent Transportation Systems

One way to incorporate safety and security into transportation planning is through greater collaboration between transportation planning and operations. ITS helps facilitate this collaboration. The information is important in metropolitan regions and congested corridors where numerous jurisdictions, agencies and service providers are responsible for safety, security and efficient operations of various aspects of the transportation system.

The region will continue to deploy ITS technologies that enhance transportation security, such as the changeable message signs that share important information about incidents to roadway users. MORPC will promote the use of ITS for transportation security. The Regional ITS Architecture will help integrate emergency preparedness components into ITS projects. See Section 4.2 for more information on ITS.

Emergency Infrastructure Repair Regional Plan

MORPC will work with local, state and federal agencies to ensure the rapid repair of transportation infrastructure in the event of an emergency.

3. Advance projects and policies that incorporate emergency and security aspects. 2 5 6

Natural Hazards Mitigation

FCEM&HS updated the *Franklin County Natural Hazards Mitigation Plan* in 2011. This plan guides the mitigation actions communities in the region take to reduce or eliminate the impact of natural hazards. This plan is federally mandated. It allows Franklin County to receive federal funding for mitigation projects. MORPC participated in the update with multiple agencies and jurisdictions, and will assist as necessary with ongoing implementation.

Strategic Highway Network

The Strategic Highway Network (STRAHNET) routes within the MORPC planning area are essential to accommodate the movement of military supplies and personnel in times of national emergency. STRAHNET routes include the National Interstate System, as well as key non-interstate routes, such as connectors to ports and military installations. MORPC, through its planning processes, identifies the operation and maintenance needs of the interstate and state highway systems within the MPO area, including STRAHNET. See Figure 4.5 for an unclassified visual representation of the STRAHNET within the region.

Automated Critical Asset Management System

The ODPS Homeland Security Division maintains the state Constellation/Automated Critical Asset Management System (ACAMS). ACAMS is a web-based system of tools, resources and related training to assist in protecting critical infrastructure and key resources. MORPC continues to work with stakeholders to inventory critical facilities in and elements of the transportation system (e.g., transit system, rails, airports, Interstate system, National Highway System routes, etc.).

Transportation Security TIP

MORPC will implement a Transportation Security TIP to ensure the safety of the MPO planning area's transportation system and prioritize critical transportation infrastructure.

Regional, State and National Security Efforts

MORPC will continue to monitor state and federal legislation for its impact on the MPO planning area's transportation security efforts. In addition to these efforts, MORPC will continue to participate in regional groups as appropriate, such as Meta-Leadership, Citizen Corps, and Metropolitan Medical Response System.

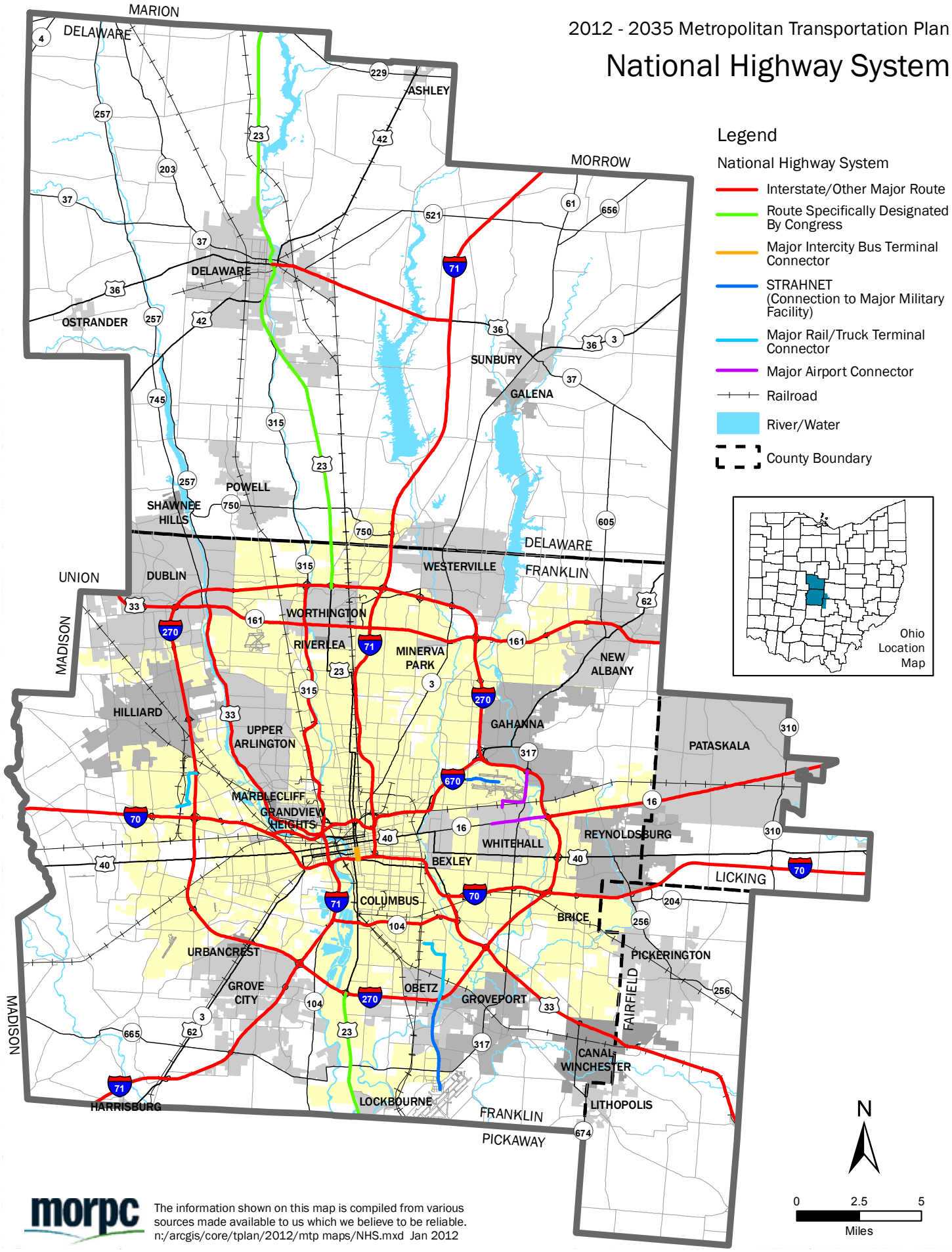


Figure 4.5 Map of National Highway System