Chapter 4: System Management

Chapters 2 and 3 described the growing demands being placed upon the transportation system and how the existing system is currently serving Central Ohio travelers. Looking to the future, most important is ensuring 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 through the use of technology and innovation, and making the system as safe and secure as possible.
Activities focused on preserving, maintaining, and operating the transportation system are an important component of the MTP. The most recent federal legislation, Fixing America’s Surface Transportation, or FAST Act, places 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.

Spending 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 continue to grow, there is a limit to how many resources can be directed toward building new facilities. The existing system needs to be maintained and operated efficiently to ensure 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.

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.

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 MTP assumes adequate funding for operations, maintenance, and preservation, as described in the Preservation and Maintenance Strategies section of this chapter.

**SYSTEM MANAGEMENT ACTIVITIES**

As part of its Transportation Information Management System, ODOT collects pavement condition rating (PCR) data, which uniformly measure conditions on roadways classified as collector and above 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. Each 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. The table also shows what portion of that subsystem currently meets the acceptable PCR criteria. Consistent with ODOT’s Access Ohio, the MTP sets a
target that 95 percent of roads classified as collector and above have an acceptable PCR.

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.

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. 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, and below 5 indicates the need for bridge replacement. If a bridge on ODOT’s system ranks between 6 and 8, it identifies the need for deck overlay, deck replacement, substructure sealing, or other work. Figure 4.2 shows the General Appraisal rating for bridges. Consistent with ODOT’s Access Ohio, the MTP set a target based upon the General Appraisal rating of bridges. The short-term (2020) target is that 95% of bridges have a GA rating of 5 or better. The long-term (2040) target is that 98% of bridges have a GA rating of 5 or better.

PRESERVATION AND MAINTENANCE STRATEGIES AND PROJECTS

As the owner of the most important roadways, 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 Transportation Asset Management Plan, which emphasizes making steady, systematic improvements rather than waiting to make repairs until the asset needs major reconstruction. “Fix it First” also includes the Pavement & Bridge Preservation Program. The local jurisdictions, responsible for maintaining the remainder of the system, take a similar approach of allocating significant portions of their transportation funding to maintaining the system.

Strategies presented throughout the MTP may help preserve and maintain the transportation system. Strategies and projects to expand the system will also improve the condition of the system. However, the following strategies and projects specifically address system preservation and maintenance.
FIGURE 4.2
Bridge General Appraisal Ratings
1. Multi-jurisdictional dialogue to improve opportunities for collaboration.

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 includes 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.

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

Although ODOT collects data on the majority of the most important roadways, there are data gaps. When it comes to the local agencies, how they 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 are 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 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.

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. Preserve and maintain the existing transportation system.

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. A number of programs at the state level focus on maintaining the existing system. These include:

**District Pavement & Bridge Preservation Program**
- Provides funding for the preservation and rehabilitation of the Priority, Urban and General System pavements and the state-maintained bridge structures.
- The goal is to maintain pavements and bridges at “steady state” conditions, or a relatively low and stable level of deficiencies where a predictable rate of preventive maintenance and regular repairs can efficiently sustain the system conditions.
MORPC estimates approximately $6.6 billion in federal, state, and local funds will be expended through 2040 to preserve the transportation system.

**ODOT Major Bridge Program**
- Provides a source of funds separate from each ODOT district’s bridge allocation.
- For high-cost bridge rehabilitation and replacement, typically projects over one million dollars.

**Multi-Lane Major Rehab Program**
- Focuses on almost 3,000 miles of multi-lane roadways in the state.

**County Bridge Program**
- Provides funds to counties for bridge replacement or rehabilitation.
- The County Engineers Association of Ohio (CEAO) serves as the program manager and is responsible for project selection, funding criteria and program priorities.

**Local Major Bridge Program**
- Provides funds to counties and municipalities for bridge replacement or major bridge rehabilitation projects that have County Maintenance Responsibility.

**Municipal Bridge**
- Provides funds to municipalities for bridge replacement or rehabilitation.

**ODOT Bridge Partnership Program**
- Funds eligible bridges with 100% federal dollars and requires no local match.
- Reduces inventory of structurally deficient county and municipal bridges across the state.

**Urban Paving Program**
- Provides funds for eligible surface treatment and resurfacing projects on state and U.S. routes within municipal corporations.

**State Capital Improvement Program (SCIP)**
- Administered by the Ohio Public Works Commission (OPWC).
- Funds road, bridge, water, storm, and sanitary sewers.
- Carries a statutory requirement for districts to give priority to projects that repair or replace existing infrastructure.
- OPWC also administers the Local Transportation Improvement Program (LTIP). LTIP is available only for road and bridge projects.

**Local Capital Improvement Programs**
- Document spending in local government operating budgets.

MORPC estimates approximately $6.6 billion in federal, state, and local funds will be expended through 2040 to preserve the transportation system in the MPO planning area. Section 7.2 has detailed information about the financial forecast for the MPO planning area. As listed above, a number of agencies provide federal, state, and local funding to address the maintenance and preservation of the existing transportation system in the region. Depending on the agency, the programs address separate, but sometimes overlapping, portions of the transportation system.
4.2 Intelligent Transportation Systems

Intelligent transportation systems (ITS) is a “system of systems,” envisioned to evolve using communication technologies and real-time coordination to allow for more effective operations/use of the transportation system without adding pavement. ITS refers to an assortment of technologies, systems, and transportation management concepts. ITS plays a key role in a safe, efficient, and innovative transportation system for all travelers. A key aspect of ITS is providing information to travelers because when travelers know traffic conditions in real-time, they can make more informed travel decisions. Examples of ITS technologies include coordinated signal systems, dynamic message signs, portable changeable message signs, ramp meter signals on freeways, CCTV traffic cameras that monitor traffic flow and incidents, and transit-related systems such as the Automated Vehicle Locator (AVL), which helps determine the real-time location of public fleet vehicles.

ITS enables collaboration, communication and cross-jurisdiction/agency system integration. ITS is a proven solution to reduce congestion, increase traffic flow, enhance safety and improve air quality. It is imperative to create one transportation system that works across jurisdictions and agencies and utilizes limited resources most efficiently.

BACKGROUND
FHWA developed the national ITS architecture to provide a unifying framework for ITS infrastructure deployment. As the MPO for the region, MORPC houses and maintains the regional ITS architecture. ITS has been and will continue to be an integral part of transportation planning in Central Ohio.

In 2014, ITS workshops were sponsored by FHWA to assist MORPC in conducting an update of the Regional ITS Architecture, which was completed in 2015. For this update MORPC utilized Turbo Architecture v7.0 to generate more detailed listings of system inventory and system interconnections. The 2015 Central Ohio Regional ITS Architecture is available online at: http://morpc.org/itsArchitecture/. The website displays all existing and planned systems and demonstrates the information flow between them. The regional ITS architecture serves as a tool to educate both professionals and the public of the importance of ITS and information exchange. 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.

THE SYSTEM TODAY
There are two ways MORPC looks at the extent of the ITS system. First is to inventory how many of the roadways classified as principal arterial and above em-
ploy ITS to coordinate signals, utilize ramp meters or message signs, all of which optimize the traffic flow. Second is to inventory how many of the principal arterials and above have coverage by video surveillance to monitor and respond to incidents or other changing travel conditions.

The extent of the ITS coverage is shown in Figures 4.3 and 4.4. These corridors are regionally significant because they accommodate a high volume of through traffic. The MTP sets a target to have 90% of functionally classified Principal Arterials and above utilizing coordinated ITS technologies by 2040. The City of Columbus continues to talk to neighboring jurisdictions about opportunities to connect their signals to the regional system. MORPC will continue to work with its member jurisdictions and through the Columbus Traffic Signal System update to establish multi-jurisdictional partnerships.

The USDOT will make an award of up to $40 million for one mid-sized city that can demonstrate how advanced data and intelligent transportation systems (ITS) technologies and applications can be used to reduce congestion, promote safety, protect the environment, respond to climate change, connect underserved communities, and support economic vitality. The City of Columbus has submitted an application for this Smart City grant. The USDOT will announce the recipients of the Smart City Challenge in June 2016.

**ITS STRATEGIES AND PROJECTS**

Along with continued deployment of existing ITS technologies, new ITS technology, such as autonomous and connected vehicles, has the potential to significantly alter the demands placed on the region’s transportation system. Since opportunities for system integration and operational coordination extend beyond jurisdictional boundaries, it is important to have collaboration in planning for both system and inter-jurisdictional integration. MORPC will continue to work with its stakeholders to implement the following strategies and projects:

1. **Improve traffic and transit operations by increasing efficiency through investment in advanced technology.**

   MORPC will continue to monitor development in transportation system management and operations and evolving transportation technologies in order to improve traffic flow in our region. New technologies are being investigated at federal, state, and regional levels.

   MORPC fosters system integration and agency cooperation concerning ITS technologies. Working together across agencies and jurisdictions is important in order to reduce overall costs by combining and sharing resources and information.

**ODOT Statewide Traffic Management Center (TMC)**

The ODOT Statewide TMC operates the traffic management and traveler information system on Ohio’s interstates, freeways, expressways, and state highways. The mission of the TMC is to increase transportation safety, reduce congestion, and increase efficiency on Ohio’s state highways. The Statewide Traffic Management Center is located at ODOT’s Central Office. The TMC has dedicated operators who monitor traffic in each major metropolitan area across the state including Akron/Canton, Cincinnati/Northern KY, Cleveland, Columbus,
FIGURE 4.3 Interstates, Freeways, & Expressways Employing ITS Technologies

The information shown on this map is compiled from various sources made available to us which we believe to be reliable. NI: Wa/GO/ORE/TP/AM (2010) MTP Maps/ITS/InterstateFreewayExpressway.mxd 2/20/2016

Sources: ODOT, MORPC
FIGURE 4.4
Principal Arterials Employing ITS Technologies
Dayton/Springfield, and Toledo. The operators can control cameras, post messages to DMS, HAR, and the Buckeye Traffic website, etc. The operators are monitoring more than 500 traffic cameras around the state in all the major metro areas and also a couple in the more rural areas.

ODOT Active Traffic & Demand Management (ATDM) Study
At the state level, ODOT’s ATDM study examined potential pilot programs for the Central Ohio area and other regions in the state to improve travel time reliability, reduce vehicle delays and improve safety through the utilization of strategies other than typical highway expansion projects. ATDM is the dynamic management, control, and influence of travel demand, traffic demand, and traffic flow of transportation facilities. ATDM strategies can provide significant capacity benefits at a fraction of the cost to build traditional capacity projects. Some examples of ATDM are Ramp Metering, Hard Shoulder Running (HSR), Variable Speed Limits, and Dynamic Lane Assignment. Four corridors are identified in the MTP for ATDM strategy by 2040.

US 33 Intelligent Corridor
MORPC and respective local and regional planning partners have started to move the US 33 Intelligent Corridor (US 33 from Marysville to Dublin) project forward in 2016. The US 33 corridor uniquely ties the physical assets of the Transportation Research Center (TRC) and many companies along the corridor to the abundance of physical and intelligence assets available at The Ohio State University. The intelligent corridor project includes the installation of next generation ITS. Improvements may include fiber-optic extensions in the public right-of-way, dedicated short-range communication technology (DSRC) fixtures, and enhanced cellular infrastructure to allow for the deployment of test-bed connected vehicles, or partial autonomous vehicles.

2. Broaden the transportation system managed in a coordinated manner.

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

Columbus Traffic Signal System (CTSS)
The City of Columbus’ Computerized Traffic Signal System is a significant ITS system in the Central Ohio region. Established in the 1980s, the system has control of nearly 1,000 intersections in Columbus and surrounding areas and is considered a backbone for the region’s ITS network due to its size and the investment that has been made. The city is implementing a multiphase project to create a modern, open-architecture, computerized traffic signal system and communications network. The work includes new central control system hardware and software, as well as fiber optic and wireless communications infrastructure. Columbus has contacted neighboring jurisdictions to better understand their signal plans and to see if there are opportunities to connect their signals to the regional system.
Transportation Improvement Program (TIP)
The Transportation Improvement Program (TIP) lists the various ITS projects with allocated funding. All ITS projects using federal funding in Central Ohio must conform to the Regional ITS Architecture and be included on the TIP.

3. Develop a regional multi-modal traveler information system.

Central Ohio ITS Committee
MORPC reinitiated the ITS Committee for the Central Ohio region in January 2014. The Central Ohio ITS Committee will allow for collaboration and coordination between various stakeholders on regional traffic operations investments and practices in the Central Ohio region. Its main purpose is to coordinate ITS activities in Central Ohio and assist MORPC in maintaining and updating the regional ITS architecture and ensuring compliance with it.

Regional ITS Architecture
In 2015, MORPC completed the fourth update to the Regional ITS Architecture. MORPC utilized Turbo Architecture v7.0 to generate more detailed listings of system inventory and system interconnections. The ITS Architecture identifies all entities (device types) and how they interface among agencies. The regional ITS architecture should be used to verify that all ITS projects fall in line with the existing structure. If the project includes a new interface that isn’t already identified within a stakeholder’s inventory, then the stakeholder should reference the ODOT Traffic Engineering Manual (TEM), Part 1301-2, to identify the required steps that need to be taken to qualify for ITS funding. It is in the best interest of the project stakeholders to keep the ITS architecture updated, by communicating any changes to ODOT and MORPC.
Between 2009 and 2013, 165,340 individuals lost their lives as a result of motor vehicle crashes occurring within the United States. This translates to someone being killed on average every 15 minutes on our nation’s roadways, or around 91 deaths every day. Traffic collisions are consistently ranked among the 5 leading causes of death within both the United States and the State of Ohio, and represent a major public health concern globally. Central Ohio is not immune to these issues. The MPO planning area had 182,761 crashes reported between 2010 and 2014 and involved almost half a million people (465,471). Of these individuals, 483 lost their lives and another 66,315 were injured, with 4,451 suffering incapacitating (life-changing) injuries. Aside from the devastating human impact caused by these crashes, the economic impact is staggering - around $10 billion dollars in associated loss observed annually for the State of Ohio.

While it’s not likely these transportation safety issues will be resolved tomorrow, nationally, reductions in the number of fatalities and serious injuries have been realized over the last few decades. Traffic deaths and serious injuries are preventable and transportation safety needs to be continuously prioritized as investments are being made in our transportation system. By doing this, not only will past improvements be sustained, but further reductions in fatal and serious injuries will be observed, with the ultimate goal of achieving zero deaths on the regional transportation system.

**LEGISLATIVE BACKGROUND**

In 2005, SAFETEA-LU established the Highway Safety Improvement Program (HSIP), structured and funded to make significant progress in reducing the occurrence of fatalities and serious injuries on all public roadways. It stressed a data-driven, strategic approach to improving highway safety and nearly doubled the funds allocated for safety-related infrastructure projects. With its focus on performance, SAFETEA-LU also required states to develop a Strategic Highway Safety Plan (SHSP).

In 2012, The Moving Ahead for Progress in the 21st Century Act (MAP-21) continued the primary features of HSIP, including the requirement for a comprehensive, data-driven, approach to transportation safety that is intended to underlay any defined goals and strategies. MAP-21 further required MPOs, like MORPC, to coordinate with state departments of transportation on setting a minimum of four safety performance targets for the region: number of fatalities, number of serious injuries, fatality rate and serious injury rate.

Like its recent predecessors, the Fixing America’s Surface Transportation (FAST) Act continues the tradition of providing a data-driven framework for reducing fatalities and serious injuries and maintained current funding levels of HSIP.

**MEASURABLE OBJECTIVE**

The MTP sets a target of 0.42 fatalities per 100 million VMT.
MORPC’S TRANSPORTATION SAFETY PROGRAM
With the passage of the SAFETEA-LU, MORPC began to engage more directly in activities surrounding the improvement of transportation safety within the Columbus region. This resulted in the creation of a dedicated Transportation Safety Program in 2006. Today, transportation safety is among the top priorities at both the state and regional levels and continues to see significant attention and funding. MORPC’s Transportation Safety Program is based on a model of cooperation within the State of Ohio and aims to deliver the resources and information our partners need to create a safer region. MORPC works closely with the Ohio Department of Transportation in its development and implementation of the Ohio SHSP.

SAFETY STRATEGIES AND PROJECTS
In order to improve safety and realize efficiencies, collaboration and resource sharing are required. This involves bringing various agencies to the table, 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 and is multi-jurisdictional in nature. And while strategies presented throughout the MTP involve collaborating with stakeholders to indirectly improve transportation safety, MORPC will continue to seek opportunities to work with member agencies and other partners to implement the following strategies and projects that deal directly with the safety of Central Ohio’s transportation system.

1. Ensure the accuracy, availability, and timeliness of crash data and information.

MORPC stresses a data-driven, strategic approach to improving highway safety and making informed investment decisions. The data generated through motor vehicle crash reporting are fundamental aspects of any program seeking to reduce the number of fatalities and serious injuries resulting from these crashes. MORPC will continue to work both locally and statewide to pursue investments in the accuracy and timeliness of regional crash data and ensure relevant crash data and information are available and useable by all of our partners.

Participate in the Traffic Records Coordinating Committee (TRCC)
MORPC, serving as a representative for the Ohio Association of Regional Councils, is one of several stakeholders involved in the TRCC. This statewide committee brings together law enforcement, legal professionals and transportation officials, among others, to improve crash reporting in Ohio. Recent work of the TRCC includes providing resources to local jurisdictions that enable the electronic submission of crash reports, improving the accuracy and availability of crash data, along with providing resources to police agencies to improve overall reporting accuracy.

Regional Crash Fact Sheets
Each year, MORPC analyzes crash data from the most recent five-year period (i.e., 2010-2014) and develops a set of Regional Crash Fact Sheets. This annual publication provides a comprehensive picture of the transportation safety issues facing the Central Ohio region and reports on major crash trends. They include in-depth analyses of various crash types, such as pedestrian and bicycle crashes, and their associated contributing factors. They also provide insight into behav-
ioral issues such as speeding and impaired driving. The Regional Crash Fact Sheets serve as an important resource for both the region and the state as they provide the type of actionable information needed to reduce serious injuries and fatalities.

Promote the use of Crash Data and Tools
Through the efforts of both the Ohio Department of Transportation and the Ohio Department of Public Safety, Ohio maintains some of the best crash data within the nation. These data, along with tools and trainings, are available to professionals and the general public across the state. MORPC continues to promote and advocate for the use of these data and tools, such as ODOT’s GIS Crash Analysis Tool (GCAT), when making investment decisions.

2. Reduce the occurrence of severe crashes and address high-crash locations.

As noted earlier, the HSIP requires the allocation of federal funds through a data-driven process to make the best use of these limited resources. The process of identifying and working with our partners to address high-crash locations is central to MORPC’s safety planning program. By providing local jurisdictions with a better understanding of where locations exist within the region that experience an overabundance of crashes, MORPC can better work with our partners to acquire the resources necessary to address them.

Annual Identification of High-Crash Locations
Every year, using crash data from the most recent three-year period (i.e., 2012-2014), MORPC analyzes locations within the MPO to identify those that are experiencing an overabundance of severe crashes. This results in a number of “High-Crash Location lists” that are made available to local governments and the general public including: the Top 40 Regional High-Crash Locations (Table 4.2, Figure 4.5), the Top High-Crash Intersections by Jurisdiction, as well as the Top Pedestrian and Bicycle High-Crash Clusters. These high-crash location lists serve as a starting point for the identification and resolution of traffic safety issues in the region. MORPC continues to work with jurisdictions after these lists are published to further understand the crash patterns at a given location and identify specific strategies and resources to improve them.

Develop and Implement a Regional Systematic Safety Improvement Program
In 2013, MORPC and ODOT’s Highway Safety Program launched a pilot project to develop and implement a replicable process for the identification of locations with a high risk of severe crash types (i.e., pedestrian, intersection crashes) and address them using proven low-to-medium safety countermeasures. To date, this pilot has provided additional safety resources to over 12 local jurisdictions within the MPO planning area and has resulted in the installation of treatments at over a hundred locations. MORPC will continue to work with ODOT to ensure these resources are available to local governments, as they provide these agencies with enhanced ability to prevent severe crashes on the locally maintained system.
### TABLE 4.2
Top 40 Regional High-Crash Locations

<table>
<thead>
<tr>
<th>Rank</th>
<th>Location</th>
<th>Jurisdiction</th>
<th>Total Crashes (Freq.)</th>
<th>Fatal</th>
<th>Serious Injury</th>
<th>Visible Injury</th>
<th>Possible Injury</th>
<th>PDO</th>
<th>Severity (EPDO)</th>
<th>Average Daily Traffic (ADT)</th>
<th>Crash Rate (MEV)</th>
<th>Annual Crashes</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>E Livingston Ave @ Hamilton Rd / SR 317</td>
<td>Columbus</td>
<td>152</td>
<td>1</td>
<td>4</td>
<td>22</td>
<td>16</td>
<td>109</td>
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<td>36,100</td>
<td>3.85</td>
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<td>Broad St / SR 16 @ James Rd</td>
<td>Columbus</td>
<td>165</td>
<td>5</td>
<td>17</td>
<td>29</td>
<td>114</td>
<td></td>
<td>3.40</td>
<td>50,100</td>
<td>3.01</td>
<td>56 61 48</td>
</tr>
<tr>
<td>3</td>
<td>Dublin Granville Rd / SR 161 @ Maple Canyon Dr</td>
<td>Columbus</td>
<td>152</td>
<td>3</td>
<td>19</td>
<td>20</td>
<td>110</td>
<td></td>
<td>2.96</td>
<td>36,700</td>
<td>3.78</td>
<td>39 54 59</td>
</tr>
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<td>4</td>
<td>Cleveland Ave @ Dublin Granville Rd / SR 161</td>
<td>Columbus</td>
<td>162</td>
<td>3</td>
<td>18</td>
<td>24</td>
<td>117</td>
<td></td>
<td>2.89</td>
<td>50,200</td>
<td>2.95</td>
<td>50 54 58</td>
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<td>Morse Rd @ Northtowne Blvd / Walford St</td>
<td>Columbus</td>
<td>115</td>
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<td>8</td>
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<td>79</td>
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<td>89</td>
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<td>11</td>
<td>62</td>
<td></td>
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<td>30,700</td>
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<td>10</td>
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<td>95</td>
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<td>37,000</td>
<td>2.16</td>
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<tr>
<td>12</td>
<td>Hilliard Rome Rd @ Renner Rd</td>
<td>Columbus</td>
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<td>9</td>
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<td></td>
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<td>Cleveland Ave / SR 3 @ E 5th Ave</td>
<td>Columbus</td>
<td>95</td>
<td>1</td>
<td>11</td>
<td>14</td>
<td>69</td>
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<td>Karl Rd @ Morse Rd</td>
<td>Columbus</td>
<td>128</td>
<td>2</td>
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<td>102</td>
<td></td>
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<td>46,400</td>
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<tr>
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<td>Feder Rd / Fisher Rd @ Hilliard Rome Rd</td>
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<td></td>
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<td>46,100</td>
<td>2.00</td>
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<td>28,800</td>
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<td>31 22 28</td>
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<td>26,200</td>
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<td>16 28 43</td>
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<td>Gender Rd @ Refugee Rd</td>
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<td></td>
<td>4.10</td>
<td>35,900</td>
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<tr>
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<td>Georgesville Rd @ W Broad St / US 40</td>
<td>ODOT</td>
<td>99</td>
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<td>24</td>
<td>64</td>
<td></td>
<td>2.53</td>
<td>35,200</td>
<td>2.57</td>
<td>35 39 25</td>
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TABLE 4.2
Top 40 Regional High-Crash Locations, continued

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<tr>
<th>Rank</th>
<th>Location</th>
<th>Jurisdiction</th>
<th>Total Crashes (Freq.)</th>
<th>Crash Severity</th>
<th>Severity (EPDO)</th>
<th>Average Daily Traffic (ADT)</th>
<th>Crash Rate (MEV)</th>
<th>Annual Crashes</th>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Fatal</td>
<td>Serious Injury</td>
<td>Visible Injury</td>
<td>Possible Injury</td>
<td>No Injury</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2012</td>
<td>2013</td>
<td>2014</td>
<td>2012</td>
<td>2013</td>
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<tr>
<td>21</td>
<td>James Rd @ Livingston Ave</td>
<td>Columbus</td>
<td>81</td>
<td>3</td>
<td>9</td>
<td>12</td>
<td>57</td>
<td></td>
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<tr>
<td>22</td>
<td>E Broad St / SR 16 @ Hamilton Rd / SR 317</td>
<td>Whitehall</td>
<td>97</td>
<td>1</td>
<td>11</td>
<td>21</td>
<td>64</td>
<td></td>
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<tr>
<td>23</td>
<td>Morse Rd @ Sunbury Rd</td>
<td>Columbus</td>
<td>99</td>
<td>3</td>
<td>10</td>
<td>13</td>
<td>73</td>
<td></td>
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<tr>
<td>24</td>
<td>E Main St / US 40 @ McNaughten Rd</td>
<td>Columbus</td>
<td>127</td>
<td>18</td>
<td>20</td>
<td>89</td>
<td>2.40</td>
<td></td>
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<td>Cleveland Ave @ Innis Rd</td>
<td>Franklin County</td>
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<td>11</td>
<td>17</td>
<td>52</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>E Main St / US 40 @ S James Rd</td>
<td>Columbus</td>
<td>96</td>
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<td>14</td>
<td>10</td>
<td>71</td>
<td></td>
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<tr>
<td>27</td>
<td>N Hague Ave @ W Broad St / US 40</td>
<td>Columbus</td>
<td>80</td>
<td>2</td>
<td>6</td>
<td>10</td>
<td>62</td>
<td></td>
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<tr>
<td>28</td>
<td>S Murray Hill Rd @ W Broad St / US 40</td>
<td>ODOT</td>
<td>103</td>
<td>13</td>
<td>19</td>
<td>71</td>
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<td>Hayden Rd @ Riverside Dr / US 33</td>
<td>ODOT</td>
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<td>13</td>
<td>15</td>
<td>77</td>
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<tr>
<td>30</td>
<td>Hamilton Rd / SR 317 @ Refugee Rd</td>
<td>Columbus</td>
<td>102</td>
<td>2</td>
<td>7</td>
<td>15</td>
<td>78</td>
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<tr>
<td>31</td>
<td>E Fulton St @ S 4th St / US 23</td>
<td>Columbus</td>
<td>106</td>
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<td>6</td>
<td>10</td>
<td>89</td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>E Broad St / SR 16 @ Rosehill Rd</td>
<td>Columbus</td>
<td>86</td>
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<td>9</td>
<td>11</td>
<td>64</td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>Chatterton Rd / Refugee Rd @ Noe - Bixby Rd</td>
<td>Franklin County</td>
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<td>12</td>
<td>13</td>
<td>73</td>
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<tr>
<td>34</td>
<td>High St @ Lane Ave</td>
<td>Columbus</td>
<td>80</td>
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<td>7</td>
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<td>16</td>
<td>10</td>
<td>42</td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>E Main St / US 40 @ Hamilton Rd / SR 317</td>
<td>Whitehall</td>
<td>90</td>
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<td>8</td>
<td>16</td>
<td>65</td>
<td></td>
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<tr>
<td>37</td>
<td>Morse Rd @ Westerville Rd / SR 3</td>
<td>Columbus</td>
<td>128</td>
<td>11</td>
<td>1</td>
<td>7</td>
<td>108</td>
<td></td>
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<tr>
<td>38</td>
<td>Morse Rd @ Stelzer Rd</td>
<td>Columbus</td>
<td>124</td>
<td>2</td>
<td>9</td>
<td>19</td>
<td>94</td>
<td></td>
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<tr>
<td>39</td>
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<td>Columbus</td>
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<tr>
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<td>Alum Creek Dr @ E Livingston Ave / US 33</td>
<td>Columbus</td>
<td>98</td>
<td>2</td>
<td>7</td>
<td>8</td>
<td>81</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total (all sites combined)</td>
<td></td>
<td>4,430</td>
<td>4</td>
<td>75</td>
<td>498</td>
<td>608</td>
<td></td>
</tr>
</tbody>
</table>
Columbus Area Pedestrian Safety Committee
The Columbus Area Pedestrian Safety Committee is part of the Franklin County Safe Communities program. The objective of the committee is to plan and implement pedestrian safety interventions as outlined in the Safe Communities grant and address local safety issues. The Columbus Area Pedestrian Safety Committee (CAPS) is a coalition working toward making Columbus a more pedestrian-friendly city for children and adults.

Safety Projects & Studies
MORPC continues to work with local jurisdictions to help secure the resources and expertise needed to address the safety issues with which they are confronted. This includes assistance with safety funding applications, project-level crash data analysis, before-and-after analyses, and evaluation of effective countermeasures. Specially, MORPC offers direct technical assistance on safety planning projects and fulfills requests for crash data and analysis. The evaluation techniques used reflect those currently used at the state level, with an increased reliance on the predictive methodologies contained within the Highway Safety Manual (HSM).

3. Advance initiatives that address high-risk drivers and behaviors.

MORPC also 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, not just engineering.

Ongoing Regional Safety Education
Throughout the year, MORPC coordinates with the Ohio Department of Public Safety (ODPS) on the promotion of national safety initiatives within the MPO area. MORPC also supports regional/state safety campaigns on local issues through in-kind contributions and technical assistance. Finally, MORPC will promote national best practices and professional development opportunities occurring within Central Ohio such as LTAP and webinars.

Progressive Safety Legislation
MORPC works with policy makers at the federal, state, and local levels to ensure an understanding of the safety implications of adopting, or not adopting, specific pieces of transportation legislation. This will entail continued legislative tracking of key transportation legislation.

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. Stakeholders, 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.
4. Expand bicycle and pedestrian networks through the implementation of complete streets and multi-use path connections.

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 6 includes many activities that further this strategy. Chapter 5 focuses on all opportunities to reduce single-occupancy vehicle travel.
4.4 Transportation Security

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, to 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 for which the region must prepare 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.

MORPC’S SECURITY PROGRAM
MORPC has no direct role in responding to emergencies. MORPC has federally mandated transportation planning functions, which it should maintain despite the results of a natural or human-created event. Various other organizations carry the primary responsibility for security planning and response. MORPC’s role must enhance 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 works with leaders in the Central Ohio region 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 decision-making outside the imme-
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. MORPC participates in a variety of other councils and committees on issues related to security and the transportation system.

SECURITY STRATEGIES AND PROJECTS

Recommendations presented throughout the MTP may help improve transportation security. MORPC and security partners will continue to implement the following strategies and projects.

1. Promote and strengthen security and emergency preparedness efforts

**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).

**Chemical Emergency Preparedness Advisory Council**

The Chemical Emergency Preparedness Advisory Council (CEPAC) serves as the official local emergency planning committee (LEPC) for Franklin County.

**Franklin County Emergency Management and Homeland Security (FCEM&HS)**

Franklin County Emergency Management & Homeland Security coordinates and prepares for county-wide all-hazards disaster planning, community education, warning, training, grant funding, response, and recovery efforts in order to prepare and protect the citizens of Franklin County before, during, and after natural and man-made disasters.

**Natural Hazards Mitigation**

FCEM&HS updated the Franklin County Natural Hazards Mitigation Plan in 2012. 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 region 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.
Automated Critical Asset Management System
The Ohio Department of Public Safety (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.).

Regional, State and National Security Efforts
MORPC will continue to monitor state and federal legislation for its impact on Central Ohio’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.

2. Broaden the transportation system managed in a coordinated manner.

Intelligent Transportation Systems
The region will continue to deploy ITS technologies that enhance transportation security, such as the dynamic message signs that share important information about incidents to roadway users (as shown in Figure 4.3). 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.

ODOT Statewide Traffic Management Center (TMC)
Also described in Section 4.2, the ODOT Statewide TMC operates traffic management and traveler information system on Ohio’s interstates, freeways, expressways, and state highways. The TMC has dedicated operators who monitor traffic in each major metropolitan area across the state. The operators can control cameras, post messages to DMS, HAR, and the Buckeye Traffic website, etc. The operators are monitoring more than 500 traffic cameras around the state in all the major metro areas and also a couple in the more rural areas. The MTP sets a target for 90% of functionally classified arterials and above to be under video surveillance by 2040. Figure 4.7 shows the 18% of arterials and above that are currently monitored by video surveillance.

Transit Operations Video Surveillance
Video surveillance on transit vehicles and at transit stops or stations creates a safer environment for transit users. For the safety and security of employees and customers, the Central Ohio Transit Authority utilizes video surveillance equipment on all of its fixed-route buses and facilities. The Delaware Area Transit Agency does not currently employ video surveillance on any of its vehicles or facilities. The MTP sets a target for 100% of transit vehicles and facilities to have surveillance capabilities by 2040.
FIGURE 4.7
Video Surveillance of the Roadway System

The information shown on this map is compiled from various sources made available to us which we believe to be reliable.

The Ohio Location Map

Sources:
ODOT, MORPC