

CHAPTER 6: Promote Transportation Safety

► **POLICIES IN THIS CHAPTER FOR PROMOTING TRANSPORTATION SAFETY:**

- › *Modify driver behavior*
- › *Improve standards for infrastructure*
- › *Improve emergency response*
- › *Support innovative, comprehensive safety programs*

Safety has been, and continues to be, one of the fundamental missions of WisDOT. The department emphasizes safety in all of its efforts, from education and enforcement to engineering and emergency response. WisDOT remains committed to a multi-disciplinary philosophy that safety “is everybody’s business” and continues to coordinate efforts across the entire department. WisDOT will focus on enabling all people to safely use the transportation system even as new challenges arise, such as the aging of the state’s population and increased freight movement on highways and railways.

This chapter incorporates recent federal legislative requirements defined in the Safe Accountable Flexible Efficient Transportation Equity Act – a Legacy for Users (SAFETEA-LU), as well as elements of the department’s . However, this chapter goes beyond these important documents to define the department’s vision:

The following long-range plan objectives will guide WisDOT in achieving this vision:

- » Reduce crashes, injuries and fatalities
- » Educate users on safety strategies
- » Design and construct safe transportation facilities
- » Identify and support partnerships between governmental units to achieve safety improvements

Challenges

In 2007, there were 125,123 crashes on Wisconsin’s roadways, resulting in 737 deaths. These deaths included 106 motorcyclists, 10 bicyclists and 52 pedestrians. In addition, more than 50,000 individuals were injured in these crashes. Many crashes are the result of driver behavior (588 of the 737 deaths in 2007 were from alcohol or speed-related crashes). It is estimated that someone is injured or killed in a speed-related crash in Wisconsin every 46.8 minutes. While WisDOT has made great strides in addressing safety needs system-wide, efforts to improve must continue.

Wisconsin motorists also face the risk of vehicle-deer collisions. October and November are the peak months for vehicle-deer collisions. During the fall mating season, deer are more active, especially at dusk and dawn when they move to and from their bedding and feeding areas. Every year thousands of vehicle-deer crashes are reported. Motorcyclists are especially vulnerable. In 2007, a total 14 people



▲ *Figure 6-1: The promotion of transportation safety includes an improved emergency response.*



Wisconsin Strategic Highway Safety Plan, 2006-2008

WisDOT and its safety partners are challenged with continuing to lower motor vehicle injury and fatality rates and improve overall highway safety. The *Strategic Highway Safety Plan* describes Wisconsin's most critical highway safety issues and outlines a plan to significantly reduce fatalities and serious injuries on all public roads.

The plan's overall strategic goal is to reduce traffic fatalities, injuries and crashes on Wisconsin roadways by 5 percent from the 2001-2005 average by 2008.

The plan identifies Wisconsin's top 10 highway safety issue areas, and short- and long-term strategies for each area to improve safety. Issue areas include:

- › Increasing safety belt use
- › Improving design and operation of intersections
- › Reducing speed-related crashes
- › Reducing impaired driving
- › Designing safer work zones

~ www.dot.wisconsin.gov/library/publications/topic/safety/hwy-strategic-safety-plan.pdf

died in Wisconsin vehicle-deer crashes; 10 of them were motorcyclists. Figure 6-2 illustrates that the number of crashes on all state roads has fallen slightly during the past decade, as has the number of injuries. WisDOT can improve safety by working to continue these trends. However, fatality numbers, as seen in Figure 6-3, have remained relatively constant.

Rail-highway crossings also present a safety challenge. From 2004 to 2007, an annual average of 68 crashes occurred at rail-highway crossings in Wisconsin. These crashes resulted in an annual average of seven deaths and 20 injuries. Some *Connections 2030*

recommendations may result in more frequent or higher speed train movements across Wisconsin roadways, which may necessitate application of higher design standards for railroad crossings.

Long-term changes in vehicle characteristics present potential challenges for WisDOT engineers, regulatory challenges for WisDOT's Division of Motor Vehicles, and enforcement challenges for WisDOT's Division of State Patrol. Changes in vehicle characteristics may include lighter, more fuel-efficient personal vehicles; neighborhood electric vehicles¹; and increasing numbers of heavy or overweight freight haulers using the highway system. Multiple uses of trails and unapproved uses of WisDOT rights of way are another challenge that the department will continue to address.

Finally, transportation safety has a significant economic impact. In 2007, it is estimated that crashes cost Wisconsin \$2.9 billion in economic loss, including costs related to lost worker productivity, medical expenses and property damage.

Opportunities

WisDOT has developed the following policies to promote transportation safety:

- » Modify driver behavior
- » Improve standards for infrastructure
- » Improve emergency response
- » Support innovative, comprehensive safety programs

Wisconsin's role in transportation safety

As the steward of the state's transportation system, WisDOT is responsible for addressing safety for all

¹ Most neighborhood electric vehicles are classified as low-speed vehicles, which limits their operation to roads where the posted speed limit is 35 miles per hour and limits their maximum operating speed to 25 miles per hour.

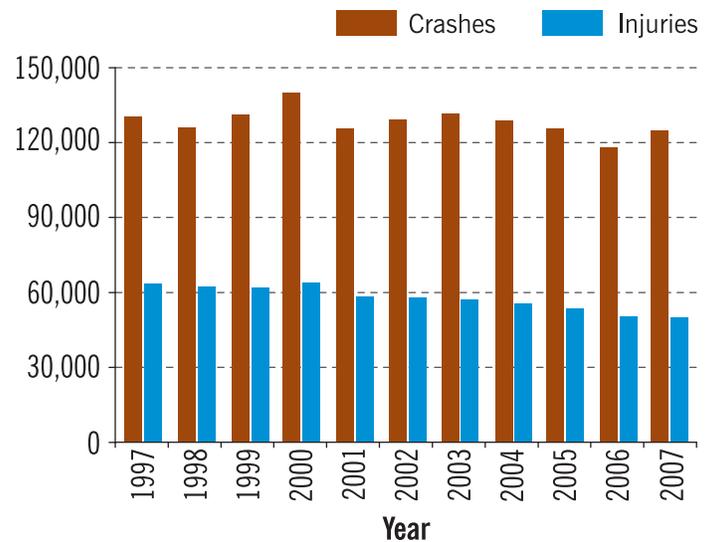
SINCE TRANSPORTATION SAFETY is one of WisDOT's fundamental missions, all WisDOT divisions and bureaus have a role in increasing transportation safety. The department's influence and ability to address safety varies depending on who has ownership or jurisdiction.

transportation modes and systems. The department's influence and ability to address safety varies depending on who has ownership or jurisdiction over the particular system or mode. For state trunk highways, WisDOT is able to directly fund safety improvement needs. For the local system, WisDOT provides funding, data and technical assistance.

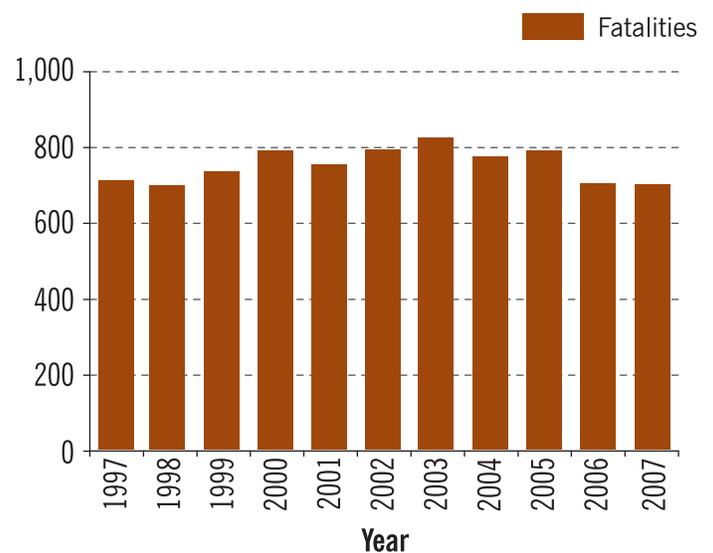
Since transportation safety is one of WisDOT's fundamental missions, all WisDOT divisions and bureaus have a role in increasing transportation safety:

- » The Division of State Patrol enforces traffic safety laws, conducts motor carrier inspections, assists travelers, provides statistical and policy research, and offers grants and training
- » The Division of Motor Vehicles ensures that only safe drivers are licensed, takes appropriate suspension and withdrawal actions when serious violations occur, and ensures that vehicles sold in Wisconsin comply with all safety and regulatory standards
- » The Division of Transportation System Development plans, designs and constructs transportation projects that incorporate safety solutions. The division also operates and maintains the state trunk highway system
- » The Division of Transportation Investment Management oversees the Safe Routes to School Program, Highway Safety Improvement Program and Meta-Manager safety analysis software that can identify "hot spots" for crashes

In addition to motor vehicle safety, WisDOT has roles in supporting safety for other modes, such as walking, bicycling, rail and air. These include:



▲ Figure 6-2: Number of crashes on all Wisconsin roads



▲ Figure 6-3: Number of fatalities on all Wisconsin roads





▲ *Figure 6-4: WisDOT will coordinate with the Office of the Commissioner of Railroads regarding rail crossing investments.*

- » Considering and, where feasible, incorporating marked crosswalks and bicycle lanes into regular highway designs
- » Offering sidewalks as part of regular reconstruction projects, and making sure pedestrian facilities accommodate the needs of people with disabilities
- » Coordinating activities with the Office of the Commissioner of Railroads regarding rail crossing investments
- » Assisting the Federal Aviation Administration (FAA) and local airport owners with infrastructure improvements and equipment for improved navigation and communications
- » Supporting specialized transit to address safety concerns related to an aging population (see Chapter 8,)

WisDOT’s strategies during the next 20 years will also meet the new federal requirements identified under SAFETEA-LU. These requirements include:



▲ *Figure 6-5: WisDOT supports pedestrian safety by offering sidewalks as a part of regular reconstruction projects.*

- » A new core Highway Safety Improvement Program
- » Strategic highway safety planning
- » Safety programs targeted toward work zones, older drivers and pedestrians (including the Safe Routes to School program)

► **POLICY:**
Modify driver behavior

WisDOT's comprehensive approach to improving the safety of the state's transportation system includes changing driver behavior. To accomplish this policy, WisDOT will continue to:

- » Address safety in transportation planning and programming activities
- » Educate the public on traffic safety
- » Enforce and strengthen traffic laws

Background

Nationally, speeding, driving under the influence of alcohol or drugs, failing to yield, and running red lights contribute to approximately 93 percent of traffic crashes. In 57 percent of these crashes, driver behavior is the sole reason for the crash. In Wisconsin, the consequences of poor driver behavior are also documented.

In 2007, 46 percent of state traffic fatalities were alcohol-related, 34 percent of deaths resulted from speed-related crashes, and 21 percent of fatalities came from crashes that involved both speed and alcohol. Also in 2007, 59 percent of the deaths in passenger car and light truck crashes involved occupants not using safety restraints. Further, 75 percent of motorcyclist fatalities were riders not wearing helmets.

Address safety in transportation planning and programming activities

Wisconsin has integrated safety into its procedures

Highway Safety Improvement Program

Developed by the Federal Highway Administration, the Highway Safety Improvement Program provides guidance to state and local agencies for developing and implementing a comprehensive highway safety improvement program that best suits their capabilities and needs.

The program consists of components for planning, implementation and evaluation of safety programs and projects. Funding obtained through the program is used to apply new procedures to enhance highway safety efforts, including improving techniques for data collection, analysis and evaluation.

~ www.fhwa.dot.gov/tfhrc/safety/pubs/81218/intro.htm

and plans for several decades. Ongoing research and statistical analyses continually identify opportunities for improvements that integrate safety into state procedures and plans. WisDOT continues to emphasize safety as one of its fundamental responsibilities by addressing safety in documents at all levels of planning and program development.

To maintain and improve the department's safety planning and programming focus, WisDOT will:

- » Continue to use and improve safety design and planning tools
- » Use Highway Safety Improvement Program funds to improve safety across the state

IN 57 PERCENT OF CRASHES, driver behavior is the sole reason for the crash. WisDOT's comprehensive approach to improving the safety of the state's transportation system includes modifying driver behavior.



- » Incorporate Safety Conscious Planning into all activities
- » Continue to refine the collection, analysis and application of data to improve the planning and design of future transportation projects
- » Continue to address the issues identified in the current and future updates of the plan

Continue to use and improve safety design and planning tools

WisDOT's day-to-day operations include numerous applications of safety-related design and planning tools. For example, access management has been used for decades as a tool to improve safety on state highways. It does so through restrictions such as prohibiting driveways on hills and curves, or limiting exit and entry points to commercial and industrial operations along state highways. These restrictions limit the number of turning movements along a given segment of roadway. For more information on access management see the "Manage access on Wisconsin's state trunk highway system" policy in Chapter 9, *Promote Transportation Efficiencies*.

Furthermore, the *Facilities Development Manual* (FDM) includes safety-driven national standards such as incorporating safety improvements when pavement fixes are scheduled. WisDOT will continue to use and improve upon these and other tools to ensure transportation facilities are safely designed. New tools are being developed to assist planners and designers in identifying locations where safety can be improved. For example, road-safety

audits are being conducted to comprehensively identify problems with roadway design.

Continue to refine the collection, analysis and application of data to improve planning and design for future transportation projects

Safety Analyst software is being developed to better detect "hot spots" for safety issues. Other projects include developing speed management guidelines for roadways; conducting intersection studies for major corridors; and analyzing cross-median crash data.

These studies will fold into other tools, including the Federal Highway Administration's urban demand models and the Decision Support System for WisDOT. To strengthen planning capabilities, WisDOT will continue to develop a computerized toolbox to improve data collection, sharing and analysis. This system will enable staff to quickly and accurately identify locations with safety problems, and encourage more coordination and cooperation inside and outside the department.

WisDOT will continue to refine data collection and analysis techniques and applications to improve planning and design for future transportation projects.

Continue to address the issues identified in the current Strategic Highway Safety Plan and future updates of the plan

Wisconsin's 2006-2008 *Strategic Highway Safety Plan* describes the state's most critical highway safety issues and outlines a plan to significantly reduce fatalities and serious injuries

Decision support system

A decision support system is a computerized information system that supports organizational decision-making activities. A properly designed decision support system is an interactive software-based system intended to help decision makers compile useful information from raw data, documents, personal knowledge and/or business models to identify and solve problems and make decisions.

~ www.informationbuilders.com/decision-support-systems-dss.html

on all public roads. The plan also includes actions related to pedestrian and bicyclist safety and reducing vehicle-train collisions. WisDOT will continue to address the issues identified in the current plan and in future updates.

Use Highway Safety Improvement Program funds to improve safety across the state

The primary funding support for implementation comes from Highway Safety Improvement Program funding. Projects funded by this program must use strategies to reduce fatalities and serious injuries on public roads. WisDOT will use these program funds to improve safety across the state.

Incorporate Safety Conscious Planning into all activities

WisDOT will incorporate Safety Conscious Planning into all activities. In implementing Safety Conscious Planning, WisDOT will work toward consistency with safety recommendations established in previously published planning documents and other guidance materials including, but not limited to:

- » *State Airport System Plan 2020 and Airport Improvement Program*
- » *Strategic Highway Safety Plan*
- » *State Bicycle Transportation Plan 2020*
- » *State Pedestrian Policy Plan 2020*
- » *Facilities Development Manual*
- » *State Access Management Plan*

The Safety Conscious Planning process allows WisDOT to recognize and address safety issues in a comprehensive manner. WisDOT will coordinate decisions to leverage funding and opportunities for complementary, multimodal actions. For example, a highway improvement project at rail crossings could be analyzed to determine if safety accommodations for bicyclists and pedestrians could be added

Safety Conscious Planning

Safety Conscious Planning is a comprehensive, system-wide, multimodal, proactive process that better integrates safety into transportation decision-making. The concept evolved from the safety requirements under the Transportation Equity Act for the 21st Century. It has gained increased importance under SAFETEA-LU.

simultaneously with the highway work. WisDOT will also continue close coordination of projects with utilities to ensure construction worker safety with minimal service disruptions for utility customers.

Educate the public about traffic safety

WisDOT will continue to make safety education and outreach a top priority. These efforts include updating and distributing guides on the rules of the road and safe driving strategies; supporting education programs for motorcyclists; and continuing public information campaigns such as safety belt use and operating under the influence.

Education-based outreach also includes child safety seat installation checks; working with groups that represent drivers with medical issues; producing, disseminating and presenting information on safely navigating roundabouts; and meeting with advocacy groups who promote specialized safety messages, such as Mothers Against Drunk Driving, Students Against Drunk Driving and various motorcycle groups.

Combining these efforts helps build partnerships to improve awareness and safety. Specifically, the Division of Motor Vehicles conducts written and road tests to grant driver's licenses, regulates private driving schools for both regular and commercial drivers, and provides oversight for the multiple traffic offender and group dynamics programs offered through Wisconsin's technical colleges. These courses are designed to improve the driving behavior of those convicted of multiple traffic offenses or operating while intoxicated.



In addition, WisDOT works to educate those with cognitive or physical limitations about strategies that will allow them to continue to drive safely. For example, WisDOT examiners work with drivers when license restrictions will improve safety but still allow them to operate legally (for example, daytime-only driving or limited radius).

As Wisconsin's population ages, issues relating to older drivers will grow in importance. WisDOT will continue to work with organizations that educate seniors on the availability of transportation services such as public transit and specialized transit. WisDOT will promote third-party driver training programs such as the American Association of Retired Persons (AARP) Drive Safely program. WisDOT is a leader in improving the availability of transportation services such as public transit and specialized transit for those who do not drive.

WisDOT continues to emphasize education and strengthening the driver licensing process to reinforce behavioral changes, especially in the crash-prone under-25 demographic group. Wisconsin's Graduated Drivers License program has been in effect since 2000 and has been very successful. However, there is still room for progress, as those under the age of 25 remain overrepresented in motor vehicle crashes, injuries and deaths. While the Division of Motor Vehicles conducts road



▲ *Figure 6-6: Campaigns to assert pedestrian right of way in crosswalks are a component of continuing driver education outreach.*

tests for driver licensing, the Department of Public Instruction manages the instructional materials for driver's education classes. WisDOT will continue to assist the Department of Public Instruction on revisions to driver education program materials.

WisDOT will also continue to educate the public through public service announcements in all media. Recent announcements have addressed drunk driving, moving over or slowing down for emergency vehicles, and work zone safety.

Changes in transportation technology and increases in roadway congestion are two reasons driver education must be viewed as an ongoing process.

In addition to continuing driver education outreach efforts, WisDOT will increase educational outreach to address safety issues for other modes. This will include campaigns to assert pedestrian right of way in crosswalks and to recognize the rights of bicyclists to share the roadways. WisDOT will also continue to support the Operation Lifesaver program that teaches safe behavior while crossing railroad tracks. Furthermore, WisDOT will work with the Wisconsin Department of Natural Resources, legislators, and others to identify what vehicles may and may not be safely operated on Wisconsin rights of way. The use of small vehicles that are street legal in Wisconsin under limited circumstances presents an important challenge for the state's safety community.

Safety education and outreach at work: Wisconsin Motor Carrier Advisory Committee

WisDOT staff from several divisions meet regularly with representatives from Wisconsin's motor carrier industry and federal officials to improve the safe and efficient transport of freight. Committee members discuss issues of national and statewide importance in order to collaboratively develop solutions that best meet the needs of those who work and travel in Wisconsin. Issues range from medical eligibility to safe parking of vehicles.

Enforce and strengthen traffic laws

Enforcement remains the primary tool in improving driver behavior. While the Wisconsin State Patrol, county sheriffs, and local police have made great efforts in driver behavior enforcement, especially speeding and drunk driving, these remain ongoing enforcement concerns.

Safety belt use increases crash survival by providing vehicle occupants additional protection. About 75 percent of Wisconsin residents now use safety belts. However, several demographic groups have below-average safety belt usage: drivers between the ages of 16 and 25, male drivers and pickup truck drivers. Wisconsin recently passed primary enforcement of safety belt laws. Under this law, police officers are allowed to stop motorists if they are not wearing a safety belt. Similar laws in other states have produced multiple benefits, including reductions in crash injuries and fatalities, as well as the societal costs associated with the fatalities and injuries averted. WisDOT will continue to apply and support enforcement tools to increase safety belt compliance.

During the *Connections 2030* plan period, Wisconsin is expected to experience increases in vehicle miles traveled and increases in the overall state population; therefore, Wisconsin's State Patrol will require additional resources to maintain the current service level and coverage along state highways.

WisDOT will support legislation to increase the number of troopers, and it will support additional vehicles, communication systems and other tools that allow troopers to safely and effectively perform their duties.

Technology-based safety enforcement is well established in the United States. Because reckless driving behaviors such as running red lights and driving around lowered railroad crossing gates are difficult to enforce, WisDOT will monitor legislative discussions regarding the use of technology at highway-rail crossings and intersections for research and potential enforcement.

WisDOT will continue to work with Wisconsin law enforcement agencies and courts to suspend and revoke the privileges of drivers who violate traffic

Badger TraCS

Traffic and Criminal Software (TraCS), an application developed by the state of Iowa in partnership with the Federal Highway Administration, serves as a national model for the development of automated reporting systems for law enforcement. TraCS is designed with modular architecture capable of sharing common data among forms and incorporating crash, citation, OWI, commercial motor vehicle inspection and incident forms. Wisconsin's version of TraCS is Badger TraCS and its suite of forms includes:

- > MV4000 (police accident report), an abbreviated MV4000 for single-unit, property damage vehicle-deer crashes
- > A form for amending previously submitted MV4000s
- > Uniform traffic citation
- > Alcohol incident reporting form
- > Uniform municipal citation
- > Warning citation
- > Drivers condition and behavior form
- > Attachment form to submit photos and other supplemental information

TraCS allows for immediate data entry in the squad car or entry at a later time at the headquarters office.

~ www.dot.state.wi.us/drivers/drivers/enforce/tracs/index.htm

laws and create unsafe conditions. The department will also continue to ensure that people who sell automobiles are not selling unsafe or stolen vehicles.

WisDOT also leads the effort to automate the citation and crash-reporting system used by police agencies in Wisconsin. More than 100 agencies have been trained to use Badger TraCS – a real-time, online reporting system that will improve the efficiency and effectiveness of officers' incident reporting. WisDOT will continue to support training and use of this system for law enforcement community members across the state.



► **SUMMARY OF POLICY ACTION ITEMS:**
Modify driver behavior

Short-term (2008 – 2013)

- Continue to implement the current Strategic Highway Safety Plan and future plan updates.
 - Continue to use and support effective enforcement tools to increase compliance, save lives and reduce injuries.
 - Monitor legislative decisions regarding the use of technology at highway-rail crossings and intersections, for research and potential enforcement.
 - Continue to use and improve planning tools and design methods to address safety issues.
 - Develop tools to assist planners and designers in identifying safety issues (for example, road safety audits).
 - Continue to refine data collection and analysis techniques, as well as applications to improve planning and design for future transportation projects.
 - Continue administering the Highway Safety Improvement Program.
 - Continue incorporating Safety Conscious Planning into all activities, to achieve consistency with safety recommendations established in previously published planning documents.
 - Coordinate decisions to leverage funding and opportunities for complementary, multimodal actions, including increased educational outreach, to address safety issues for other modes.
 - Continue to make safety education and outreach a top priority using written guidance material, education programs, and public information campaigns.
 - Continue working with the Wisconsin Department of Natural Resources, legislators, and others to identify what vehicles may and may not be safely operated on WisDOT rights of way.
 - Promote third-party driver training programs such as the AARP Drive Safely program.
 - Support legislation that increases the number of troopers, to address expected increases in vehicle miles traveled and the overall state population.
 - Support the provision of additional State Trooper vehicles, communication systems and other tools needed to allow enforcement officers to perform their duties safely and effectively.
 - Continue efforts to automate the citation and crash reporting system, “Badger TraCS,” and support training and the use of this system for law enforcement community members across the state.
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Entire planning period (2008 – 2030)

- Continue close coordination of projects with utilities to ensure construction worker safety with minimal service disruptions for utility customers.
 - Continue to work with organizations that educate seniors on the availability of transportation services such as public transit or specialized transit.
 - Continue to assist the Department of Public Instruction with revisions to driver education program materials.
 - Continue to support the Operation Lifesaver program that teaches safe behavior while crossing railroad tracks.
 - Continue to ensure that people selling vehicles are not selling unsafe or stolen vehicles.
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► **POLICY:**
Improve standards for infrastructure

Highway design standards are continually researched, reviewed and updated to ensure characteristics such as speed, lane width, shoulder width and slope, and stopping-sight distance meet current traffic requirements. Roadway engineering improvements during the past several decades have changed the mix of causal factors and injury outcomes for traffic crashes. Design tools such as guard rails, divided highways, cable barriers, clear zones and shoulder-edge rumble strips not only reduce the negative influences of roadway design, roadway condition or environmental factors, but also minimize the impacts of driver error. These tools help keep vehicles on the road, and minimize the consequences of leaving the road – two key department safety goals.

Roadway engineers apply both proactive and reactive tools in their efforts, such as designing facilities, including roundabouts, to modify driver speed behaviors. This requires engineers to anticipate potential problems and determine how drivers could avoid them, while at the same time identifying existing problems and designing the facilities to eliminate or reduce their impacts. For example, in rural areas, safety design challenges include topography, ATV crossings, and access points. Project engineers recognize that human perceptions such as speed and distance, and driver behaviors such as distracted driving and driving too fast for conditions, reflect how the built environment will be used.

Connections 2030 identifies two actions that support improving standards for infrastructure. These are:

- » Engineer infrastructure to be safe
- » Maintain infrastructure for safe operation and use

Engineer infrastructure to be safe

In addition to continually addressing safety considerations on the state's heavily traveled



▲ *Figure 6-7: Design tools such as guard rails, divided highways, cable barriers, clear zones and shoulder-edge rumble strips help keep vehicles on the road and minimize the consequences of leaving the road – two key WisDOT safety goals.*

routes, WisDOT has focused additional attention on safety considerations for bicycle riders and pedestrians; senior drivers; work zones; and rural, two-lane highways.

Design features such as wider paved shoulders, improved pavement marking and lighting, roundabouts, and access management help address safety concerns for the highway users, as well as for bicyclists and pedestrians. Figure 6-8 provides just one example of how changes to design and vehicle access can improve the safe operation of a roadway. Where appropriate, WisDOT will continue to include these elements as standard features for most highway projects through 2030.

At high-volume intersections, operation and design improvements such as improved signal timing, dedicated turn lanes and improved signage are elements of a comprehensive effort to improve safety. Engineers may also incorporate technology such as metered freeway on-ramps, variable message boards and weigh-in-motion truck scales to improve traffic flow and safety (see Chapter 9, *Promote Transportation Efficiencies*, for policies discussing





▲ *Figure 6-8: Work zone safety is a critical concern. Motorists and construction maintenance workers alike face challenges on projects that require maintaining traffic flow on facilities.*

access management and the application of Intelligent Transportation Systems and operational tools).

The U.S. Department of Transportation adopted guidelines developed by the American Association of State Highway and Transportation Officials on how to modify roadways to safely accommodate senior drivers and pedestrians as well as other users. Ideas range from larger roadway signs to roadway lighting. WisDOT will integrate the American Association of State Highway and Transportation Officials recommendations on engineering, operations and maintenance into its activities. WisDOT will also continue to increase investments in roadway engineering and operational improvements that reduce the negative influences of roadway design, roadway condition or environmental factors, and minimize the impact of driver error.

Work zone safety is identified as a critical concern in the *Strategic Highway Safety Plan*. Motorists and construction maintenance workers face challenges on projects that require maintaining traffic flow on deteriorating roadways. On average, Wisconsin annually experiences nearly 2,000 crashes in work zones that injure 900 people and result in 11 deaths. Department analyses of statistical trends show an increase in the number of fatal crashes in work zones. As more existing highways undergo rehabilitation during the plan period, WisDOT will improve planning, training and design practices for safer management and operation within work zones (see Chapter 9, *Promote Transportation Efficiencies*, for additional discussion regarding work zone management). Major safety hazards are created along rural, two-lane highways as drivers attempt to pass slow-moving vehicles or farm equipment, increasing the potential for head-on crashes. WisDOT has installed passing lanes along some highway segments. These “third lanes” provide passing zones at regular intervals for slow vehicles to move over and let other traffic pass without crossing into oncoming traffic.

WisDOT will continue to study the use and effectiveness of passing lanes, and will continue to add them on some roadways. Chapter 9, *Promote Transportation Efficiencies*, further highlights the department’s commitment to using passing lanes to address safe traffic movement, where appropriate.

WisDOT will also continue to make safety improvements for other modes:

- » **Railroads:** On state-owned rail corridors, WisDOT will continue to invest in programs that improve railroad tracks and roadbeds, and railroad crossings (see Chapter 7, *Foster Wisconsin’s Economic Growth*, for specific policies related to state freight rail issues).

On privately owned corridors, WisDOT will work with the Office of the Commissioner of Railroads and private companies to identify potential needs for improved rail-crossing safety measures such as signals, gates, grade separations, and crossings that should be closed, and it will discourage trespassing by installing fencing.



Case study: Design tool reduces crashes

Fatalities, injuries and calls to the police dropped significantly the year after a directional median opening (a median that directs turning movements) was constructed in 2001 at WIS 42/WIS 57 and Utah Street, near Sturgeon Bay in Door County.

- » Aviation: WisDOT will continue to support engineering improvements ranging from technical improvements such as landing and navigational aids, weather monitoring equipment, and rescue and firefighting equipment, to simpler treatments such as runway lighting, land acquisition for protection zones, and fencing to prevent wildlife incursions onto runways.

Maintain infrastructure for safe operation and use

Once constructed, transportation facilities require regular maintenance to ensure safety elements continue to function as designed.



▲ Figure 6-9: Technology such as variable message signs improve traffic flow and safety.

While maintenance activities include regular treatments such as painting, pavement sealing and pothole repairs, they can also include repairs to damaged guardrails and traffic signals.

In general, county highway crews perform most maintenance activities on state facilities through contracts with WisDOT. As discussed elsewhere in this plan, maintenance activities are vital to the overall safe operation of the system. System maintenance is a priority and a challenge. Efforts will continue to focus on identifying methods to better estimate maintenance costs for existing and new infrastructure (for more information, see Chapter 5, *Preserve and Maintain Wisconsin's Transportation System*). As more lane-miles are added to the state trunk highway system, maintenance funding needs will also increase. WisDOT will consider options such as increases in the maintenance budget to help offset rising costs for materials, labor and number of lane-miles.



Bridges are perhaps the most critical transportation-related structures. Whether spanning another highway, a body of water, a railroad, or another structure, bridges require regular inspections to ensure that stress from regular use has not caused the structure to become unsafe.

When bridge inspections identify weakened structural elements, maintenance to retrofit or repair these elements is essential. In cases where bridge structures have significant damage, weight limits or even closures may be necessary. Wisconsin's program for inspections and repairs allows most structures to be repaired or replaced before weight restrictions or closures are required. WisDOT will continue its policy of addressing bridge safety on the state trunk highway system first. WisDOT will continue to ensure safe

infrastructure through a regular program of inspections, repairs and replacements as needed. Further, WisDOT will continue to employ cost-effective maintenance practices that improve the safety and efficiency of travel on state highways.

Operational treatments such as coordinated signal timings, debris removal and winter event operations (such as snow and ice removal) are also crucial for the safety of the transportation system. WisDOT will support development and implementation of operational improvements to enhance safety. The department will also seek greater flexibility in its investments in operational improvements that prevent or delay more costly treatments. (For more information, refer to Chapter 9, *Promote Transportation Efficiencies*, and Chapter 5, *Preserve and Maintain Wisconsin's Transportation System*.)

► **SUMMARY OF POLICY ACTION ITEMS:**
Improve standards for infrastructure

Entire Planning Period (2008 – 2030)

- Continue and/or increase investments in roadway engineering and operational improvements that reduce the negative influences of roadway design, roadway condition or environmental factors, as well as soften the impact of driver error.
- Improve planning, training, and design practices for safer management and operation within work zones.
- Continue to work with the Office of the Commissioner of Railroads and private railroad companies to identify potential rail crossing safety improvements such as signals, gates, grade separations, or closing crossings, and discourage trespassing by installing fencing.
- Continue to support safety-engineering improvements at airports, ranging from technical improvements (landing and navigational aids) to simpler treatments (runway lighting).
- Consider funding options such as increases in the maintenance budget to help offset rising costs for materials, labor and lane-mile additions.
- Support development and implementation of operational improvements to enhance safety.
- Seek greater flexibility in investing in operational improvements that may prevent or delay more costly treatments.
- Continue to include pedestrian and other safety elements as standard features for most highway projects through 2030.
- Continue to study the use and effectiveness of passing lanes, and continue to use them where appropriate.
- Continue to invest in programs that improve railroad tracks and roadbeds, and railroad crossings.
- Continue policy of addressing bridges on the state trunk highway system first; ensuring infrastructure safety through a regular program of inspections, repairs and replacement.

► **POLICY:**
Improve emergency response

Quick response is vital to preventing secondary crashes and increasing the number of people who survive crashes. In order to improve safety after incidents occur, WisDOT will:

- » Continue to improve emergency and incident response

Improve emergency/incident response

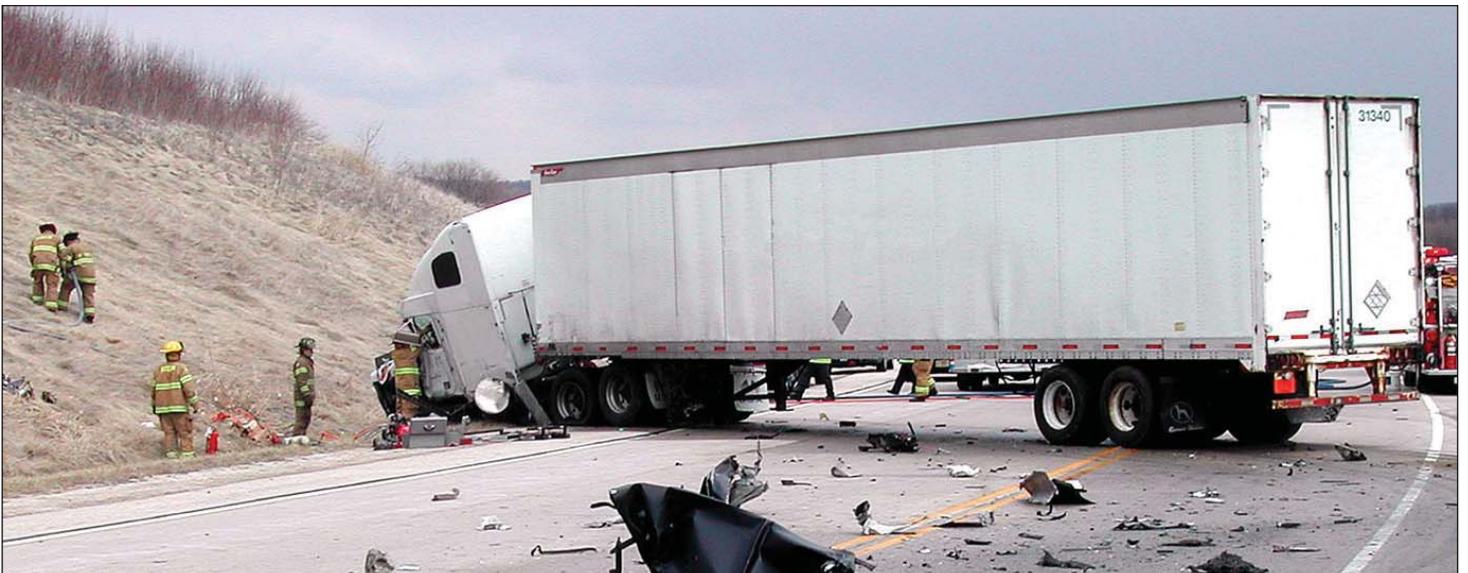
WisDOT's Statewide Traffic Operations Center monitors highways in Milwaukee, Madison and Wausau using video technology and coordinated communication efforts. The center also coordinates statewide emergency responses through a toll-free telephone number available to law enforcement agencies (see Chapter 9, *Promote Transportation Efficiencies*, for more discussion).

In urban areas, WisDOT will continue to use technology for faster detection and response to incidents. Statewide, WisDOT will continue to invest in communication system redundancy

Statewide Traffic Operations Center

The WisDOT State Traffic Operations Center (STOC) handles traffic management for Wisconsin. It is staffed 24 hours per day, seven days per week and communicates regularly with sheriff, fire, police departments and the Wisconsin State Patrol, as well as media outlets and construction project managers. The actual operations center is located in southeastern Wisconsin in the city of Milwaukee. From the STOC, it is possible to use various traffic management tools such as closed circuit television units, ramp meters, variable message signs, highway advisory radio, roadway sensors and other tools. It is designed to improve the safety and efficiency of the freeway system by reducing incidents and relieving traffic congestion.

~ www.dot.wisconsin.gov/travel/stoc/



▲ *Figure 6-10: Quick response is vital to preventing secondary crashes and increasing the number of crash survivors.*



▲ *Figure 6-11: Rapid detection and response to crashes will also reduce the number of secondary crashes that occur in congested situations.*

and integration throughout the plan period. This includes interoperability systems and standards that allow several agencies and responders to exchange communications across a single channel.

While secondary to safety considerations, enhancements to incident response systems and procedures will also help to mitigate unexpected or non-recurring congestion (see Chapter 9, *Promote Transportation Efficiencies*, for more information on

WisDOT’s Emergency Transportation Operations (ETO) Plan). Rapid detection and response to crashes will also reduce the number of secondary crashes that occur in congested situations. The Statewide Traffic Operations Center is also developing best practices for incident management. WisDOT will support the adoption of such practices, and it will support a regular review process to update these practices. Refer to Chapter 11, *Promote Transportation Security*, for more information on improving emergency response.

► **SUMMARY OF POLICY ACTION ITEMS:**
Improve emergency response

Short Term (2008 – 2013)

- Continue to invest in communication system redundancy and integration throughout the plan period.
- Support the Statewide Traffic Operations Center’s development of best practices for incident management and a process to regularly review and update these practices.

Entire Planning Period (2008 – 2030)

- Continue to use video technology and sensors to allow faster detection and response to incidents.

► **POLICY:**
Support innovative, comprehensive safety programs

While some safety improvement strategies can be applied as stand-alone techniques, many successful strategies are best applied with combined coordination across engineering, education, enforcement and other techniques. These strategies typically address broad visions of safety improvements. To implement these coordinated and broad strategies WisDOT will:

- » Support innovative, comprehensive safety programs

Support innovative, comprehensive safety programs

WisDOT's strongest effort at a comprehensive safety solution has focused on intoxicated driving. Efforts have focused on obtaining citizen support and the reporting of intoxicated drivers. WisDOT conducts numerous public outreach programs, coordinates with groups such as MADD and SADD, and rewards citizens who use cell phones to report intoxicated drivers.

Other state-supported programs have focused on a three-point strategy to prevent intoxicated people from driving:

- » Providing certified alcohol server intervention training
- » Implementing comprehensive designated driver programs
- » Initiating confidential Safe Ride alternative transportation programs

Wisconsin uses fines, license sanctions and incarceration as consequences for Wisconsin drivers convicted of repeated Operating While Intoxicated (OWI) or related offenses. Experience suggests that incarceration alone does not alter the drinking and driving behavior of individuals with alcohol-related problems. In the past two decades, public

Safe Routes to School

The Safe Routes to School program was established in August 2005 as part SAFETEA-LU.

The program provides funds to the states to substantially improve the ability of primary and middle school students to walk and bicycle to school safely.

Each state administers its own program and develops its own procedures to solicit and select projects for funding. The program establishes two distinct types of funding opportunities: infrastructure projects and non-infrastructure related activities (such as education, enforcement and encouragement programs).

~ safety.fhwa.dot.gov/saferoutes/

policies have been designed to use education and rehabilitation to change the drinking and driving behavior of persons convicted of OWI. The most successful effort emphasizes early intervention.

Pre-trial, intoxicated driver intervention programs, commonly known as intensive supervision programs, aim to rehabilitate drunk drivers as soon as possible after arrest and before conviction, thereby reducing the likelihood of future drinking and driving. These programs have operated in Wisconsin since 1993. Analysis has demonstrated that clients who complete their programs are less likely to be re-arrested for drinking and driving than those who did not complete them. Further, for those few intensive supervision program clients who are re-arrested, the elapsed time before a subsequent offense is longer.

Another comprehensive effort related to safety is the Safe Routes to School program. Safe Routes to School seeks to comprehensively improve safety near schools by creating safer walking and biking routes. The Safe Routes to School program improves walking and biking travel options, promotes



healthier lifestyles in children at an early age and decreases auto-related emissions near schools. The program was established in August 2005 as part of SAFETEA-LU. While existing programs such as Congestion Mitigation Air Quality, Hazard Elimination and Transportation Enhancements could be used to promote some safety and air-quality programs, Safe Routes to School is the first program specifically aimed at safety near schools.

Specific program goals are to:

- » Enable and encourage children, including those with disabilities, to walk and bike to school
- » Make bicycling and walking to school a safer and more appealing transportation alternative, thereby encouraging a healthy and active lifestyle from an early age
- » Facilitate the planning, development and implementation of projects and activities that will improve safety and reduce traffic, fuel consumption and air pollution in the vicinity (approximately two miles) of primary and middle schools (grades kindergarten through eight)

As previously mentioned, work zone safety is another safety emphasis area where comprehensive strategies are applied. Congestion resulting from work zones is often unpredictable. Movement of equipment into and out of work zones, variation in lane direction and width, and unexpected closures of lanes and ramps all contribute to rapidly changing conditions for drivers. As part of a comprehensive approach to improving work zone safety, WisDOT



▲ *Figure 6-12: Enabling and encouraging children to walk to school is a specific goal of the SRTS program.*

will support strategies including, but not limited to:

- » Lowering speed limits, with increased enforcement and higher penalties for violators
- » Installing design elements and including barriers to protect workers from traffic
- » Educating drivers with signage indicating length of project, in time and distance

Other important safety elements, such as reckless or risk-taking driving and safety belt use, are also being addressed through comprehensive programs. WisDOT will support retention and expansion of successful comprehensive programs like these to improve public awareness of safety, and to encourage public involvement when witnessing unsafe drivers and conditions.

► **SUMMARY OF POLICY ACTION ITEMS:**
Support innovative, comprehensive safety programs

Entire Planning Period (2008 - 2030)

- Continue to support the Safe Routes To School program, working with stakeholders to comprehensively improve safety near schools by creating safer walking and biking routes.
- Support strategies as part of a comprehensive approach to improving work zone safety.
- Support retention and expansion of successful comprehensive programs to improve public awareness of safety.