

Chapter 12: Transportation Safety

Introduction

Safety can be defined as the ability of a person to use the regional transportation system (any mode) to transport themselves, passengers, or goods in a way that does not endanger themselves, others using the system, the population, or the environment. Reducing the risk of transportation-related crashes for all users of the system is an important element of the planning process and development of the Bend Metropolitan Transportation Plan.

The passage of the Safe Accountable Fair Efficient Transportation Equity Act – A Legacy for Users (SAFETEA-LU) brought increased attention to addressing the safety of the transportation system. SAFETEA-LU required regional plans to consider how to best increase the safety of the transportation system for motorized and non-motorized users. The Moving Ahead for Progress in the 21st Century Act (MAP-21) replaced SAFETEA-LU in July 2012 as the current federal transportation authorization bill. MAP-21 increases the emphasis on safety by requiring the US Department of Transportation (USDOT) to set performance measures related to fatal and severe injury crashes. It also significantly increases funding for the Highway Safety Improvement Program.

This chapter presents the transportation safety element. The purpose of this chapter is to identify programs and plans directed at improving transportation safety in the MPO region and outline strategies the MPO can undertake. As the chapter will note, there are already systematic screening programs in place for area roadways. Therefore, no new analysis of crash data was completed.

Safety Background Information

The purpose of this section is to provide background information on the regulations and policies that guide transportation safety planning and programming in the Bend MPO region.

Policy and Regulatory Framework

Several agencies at the federal and state level have developed plans and corresponding strategies that address the safety of their transportation facilities. These plans stress the importance of building, maintaining, and operating a transportation system that is safe for all users.

Federal

Congress enacted MAP-21 in 2012. Like the authorization bill before it, MAP-21 promotes safety as one of eight planning factors to be included in metropolitan planning. It also increases funding for the Highway Safety Improvement Program.

The national goal for safety set by MAP-21 is to significantly reduce fatalities and

severe injuries on public roads. To achieve that goal, the bill requires that the USDOT define relevant performance measures. Once these measures are set, States will have one year to define their respective targets, in coordination with MPOs and public transportation providers, for each measure. After the State measures are defined, MPOs will have 180 days to set their targets. These targets are to be coordinated with the State's targets and any targets set by local public transportation providers. USDOT has proposed four performance measures related to fatal and severe injury crash frequency and crash rate. These measures are not expected to become effective until the second quarter of 2015¹.

State

Transportation Planning Rule (TPR)

In 1991, the Land Conservation and Development Commission adopted the Oregon Transportation Planning Rule (TPR). The TPR implements State Land Use Planning Goal 12, Transportation, which was adopted by the Oregon Legislature in 1974. The TPR requires most cities and counties and the state's Metropolitan Planning Organizations to adopt transportation system plans that consider all modes of transportation, encourage a safe environment and avoid principal reliance on any one mode to meet transportation needs. By state law, local plans in MPO areas must coordinate with the metropolitan transportation plan (MTP). Recent updates to the TPR do not affect the requirements for safety planning.

Oregon Transportation Plan (OTP)

The Oregon Transportation Plan, amended in September 2006 by the Oregon Transportation Commission (OTC), includes Goal 5 which addresses safety and security and details related policy and strategies. The OTP safety goal and policy is outlined below. Several key strategies were also identified in the plan to help attain the desired outcome of a safe transportation system.

Goal 5 – SAFETY AND SECURITY

To plan, build, operate and maintain the transportation system so that it is safe and secure.

Policy 5.1 – Safety

It is the policy of the State of Oregon to continually improve the safety and security of all modes and transportation facilities for system users including operators, passengers, pedestrians, recipients of goods and services, and property owners.

Transportation Safety Action Plan (TSAP)

The most recent version of ODOT's Transportation Safety Action Plan was adopted in 2011. It identifies 112 actions to reduce crashes, as well as improve the outcome of crashes. These actions cover a range of strategies, including engineering, enforcement, education, emergency medical services (EMS), and evaluation related activities. Ten of

¹ <https://www.fhwa.dot.gov/tpm/about/action.pdf>

these actions are designated as Emphasis Area Actions because they address the most significant contributing factors to fatalities and severe injuries. The Emphasis Area Actions include measures related to speed, impaired driving, occupant/bicyclist protection, inexperienced drivers, and EMS. The strategies outlined in the action plan provide guidance to potential safety investments within the Bend Metropolitan planning area.

The TSAP also provides a summary of crash trends around the State and significant measures that have been implemented to reduce fatalities and severe injuries on Oregon’s roads. ODOT will initiate an update to the TSAP in 2015.

BMPO Safety Goals and Policies

In addition to the goals outlined in the new federal legislation, the Bend MPO has set goals and policies that emphasize the importance of building, maintaining and operating a regional transportation system (regardless of mode) that is safe for all users. The goals and policies of the Bend MTP were developed based on a review of the existing goals outlined in other regional and local plans (e.g. Oregon Highway Plan, Deschutes County TSP, and City of Bend TSP) and are outlined in Chapter 2. The goals related to safety were created and adopted to help guide the future development of the roadway network, address safety concerns in a range of areas, and select specific projects for construction. Stemming from the goals and policies, a series of evaluation criteria have been developed to rank potential projects for the regional transportation system. Evaluation criteria includes: the ability of a project to address existing safety deficiencies and the ability to support TSM/ITS strategies.

Safety Planning in the Bend MPO

The Oregon Department of Transportation (ODOT) and the City of Bend have existing processes for performing detailed network screening and plans that include specific safety-related recommendations in the Bend MPO region.

ODOT Safety Implementation Plans

ODOT has completed plans that contain specific implementation strategies for three different safety emphasis areas: intersection, roadway departure, and pedestrian and bicycle crashes.

Roadway Departure Safety Implementation Plan

This plan’s goal is to reduce fatalities from roadway departure crashes statewide by 20 percent. It describes a number of countermeasures that could be deployed systematically to achieve this goal and it advocates for a multidisciplinary approach involving coordinated engineering, enforcement, and education efforts. Appendix B of the plan identifies State and local roads, including several locations in the Bend MPO, that could benefit from deployment of specific countermeasures.

Intersection Safety Implementation Plan

Oregon's Intersection Safety Implementation Plan predicts that statewide intersection fatalities will be reduced by about thirteen percent if its recommendations are fully implemented. Similar to the plan for roadway departures, this plan details countermeasures to be deployed systematically in conjunction with a coordinated engineering, education, and enforcement approach. Specific intersections identified within the Bend MPO region for potential countermeasure deployment can be found on the plan's website: <http://www.oregon.gov/ODOT/HWY/TRAFFIC-ROADWAY/Pages/intersections.aspx>.

Pedestrian and Bicycle Safety Implementation Plan

This mode-specific plan uses a systemic planning process to identify priority corridors across all public roads in the state. These corridors are where treatments are likely to have the most impact for reducing the severity and/or frequency of crashes involving people walking or bicycling. The plan also contains a toolbox of countermeasures and outlines a project development framework that could help future projects in the Bend MPO.

Project candidate locations are identified for each region based on either a risk-based or crash-frequency-based assessment for each mode. Identified corridors within the Bend MPO can be found in Part A of the plan.

ODOT Safety Priority Index System

ODOT maintains a Safety Priority Index System (SPIS) that ranks high collision locations statewide in order to identify sites for further investigation. SPIS fulfills screening requirements for the Highway Safety Improvement Program (HSIP) authorized in MAP-21. The process was recently updated in 2012 to include not only state facilities, but also most local arterial and collector roads (those for which volume data is readily available). The system provides a weighted score based on the severity, frequency, and rate of collisions over the previous three years. Each year, sites that are in the top 5% in terms of their SPIS ranking are investigated further to determine if there is a systematic issue(s) that can be addressed. Potential treatments undergo a benefit-cost analysis and promising projects are initiated using HSIP or other funds. States used to be required to file a report on their top 5% locations, but MAP-21 removed this requirement. A map of the top 15% SPIS sites can be found on ODOT's website:

http://www.oregon.gov/ODOT/TD/TDATA/pages/gis/odotmaps.aspx#spis_sip_maps.

More information on the SPIS sites identified within the Bend MPO region can be requested from ODOT.

All Roads Transportation Safety

In 2012, ODOT completed a Memorandum of Understanding (MOU) with the League of Oregon Cities and Association of Oregon Counties that describes how HSIP funds will be allocated to roads managed by local jurisdictions in Oregon. This program is known as the All Roads Transportation Safety (ARTS) Program (formerly known as Jurisdictionally Blind Safety Program). The purpose of this program is to collaboratively

reduce fatal and serious injury crashes on all public roads across the state through data-driven processes that are jurisdictionally blind. There is currently a transition plan in place for beginning the ARTS program, with full implementation expected by 2017.

City of Bend Multimodal Traffic Safety Program

The City of Bend recently established a comprehensive data-driven roadway safety management program. This program generally follows the principles outlined in the *Highway Safety Manual* and involves network screening; diagnosing crash causes, types, and other characteristics; and determining how to most cost-effectively reduce crashes. The process has been carried out once so far and is expected to be refined and repeated in coming years.

The current program covers the years 2012-14. Its screening process identified 21 priority locations for more detailed investigation. Further review of these sites identified crash trends that could potentially be addressed by a countermeasure at 19 of the 21 sites. The estimated cost of implementing the identified treatments is just over \$2 million, while the expected economic benefits from reduced crashes is expected to be over \$10 million, a fivefold return. It also identifies education and enforcement strategies aimed at the following behaviors, identified as priorities during the screening phase:

- Driving under the influence of intoxicants (DUII)
- Speeding
- Red light running
- Bicycle and pedestrian nighttime visibility (i.e. clothing, reflectors/lights)
- Wrong-way bicycle riding

Bend MPO State of Safety Report

The Bend MPO is working on a report describing the state of safety within the MPO boundaries. When completed, this document will describe existing crash data, including patterns and trends, identify safety goals for the region, and outline strategies to be undertaken to achieve those goals. The MPO plans to extend elements of the City's Multimodal Traffic Safety Program into the unincorporated areas of the MPO as part of this plan.

Planned Safety Projects in the Bend MPO

The screening processes described above have produced candidate projects that have been prioritized and selected for implementation. Table 12-1 summarizes these projects according to the process that identified them (i.e. ODOT HSIP or City of Bend Multimodal Traffic Safety Program). When constructed, these projects will represent nearly \$4 million in overall investment in reducing crashes in the Bend MPO area. Note that the ODOT HSIP identifies projects falling into one of three categories:

- Signalized/FYA – Signalized intersection improvements, including flashing yellow arrow (FYA) upgrades where applicable
- Pedestrian – Improvements targeting reduced pedestrian crashes at signalized intersections

- Curve Signage – Improving curve signage and pavement markings

Table 12-1: Planned Safety-Specific Projects in Bend MPO

Location	Description	Estimated Cost
ODOT HSIP Projects		
Reed Market Road: 3 rd St – 27 th Ave	Signalized/FYA	\$52,000
Knott Road/27 th Street:	Curve Signage	\$32,500
US 97 – Stevens Rd		
3 rd Street: Revere Ave – Murphy Rd	Signalized/FYA	\$156,000
27 th Avenue: Butler Market Rd – Bear Creek Rd	Signalized/FYA	\$130,000
Penn Ave/Neff Rd – 8 th St – Medical Center	Signalized/FYA	\$78,000
Wall St/Bond St – Newport Ave – Idaho Ave	Pedestrian	\$39,000
Wall St/Bond St – Revere Ave – Franklin Ave	Signalized/FYA	\$273,000
<i>ODOT HSIP Total</i>		<i>\$760,500</i>
City of Bend Multimodal Traffic Safety Program Projects		
Bear Creek/Purcell/Pettigrew	Stop Sign Visibility	\$6,820
Country Club/Murphy Powers/3 rd	Stop Sign Visibility	\$5,390
	Signal Modifications, Pedestrian Crossing Improvements	\$65,586
Reed Market Rd/3 rd	Signal Modifications, Pedestrian and Bike Crossing Improvements	\$208,287
Reed Market/27 th	Signal Modifications	\$96,740
Wilson/2 nd	Do Not Block Intersection Signing and Markings	\$18,480
Butler/27 th	Signal Modifications, Bike Lane	\$56,570
Division/Revere	Signal Modifications, Road Diet	\$347,687
Bond/Colorado	Signal Modifications	\$55,300
Awbrey/Portland	Mini Roundabout	\$98,883
Brosterhaus/3 rd	Signal Modifications	\$69,000
Neff/Purcell	Signal Modifications, Bike Lanes	\$86,590
Franklin/Wall	Signal Modifications, Pedestrian Crossing Improvements, Eliminate Right-turn Lane/Add Parking Spaces	\$56,506
Greenwood/1 st	Road Diet	\$273,867
Greenwood/Hill	Road Diet	\$273,868
3 rd /Franklin	Signal Modifications, Bike Crossing Improvements	\$208,207

Location	Description	Estimated Cost
Greenwood/Hill	Shared Lane Markings	\$49,166
1 st /Franklin	Road Diet, Bike Crossing Improvements	\$207,531
<i>City of Bend Total</i>		<i>\$3,118,321</i>
Overall Total		\$3,878,821

Safety Programs in the Bend MPO

In addition to the plans described above, there are a number of ongoing transportation safety-focused programs in the Bend MPO region. Key programs are described below.

Road User Safety Task Force

Initially formed to improve road safety for people on bicycles, the road user safety task force now focuses on reducing crashes between motor vehicles and bicycles and pedestrians. Many of the task force's efforts are aimed at educating road users. Notable projects the group has taken on include media campaigns, obtaining a proclamation from the Bend City Council of a road safety week in each year starting in 2010, and a bicycle and pedestrian counting program.

Traffic Safety Advisory Committee

The City of Bend's Traffic Safety Advisory Committee is both an interagency and citizen group made up of representatives from the City's Fire & Rescue, Police, and Community Development departments and Transportation Division, ODOT Region 4, Bend/LaPine School District, Deschutes County Road Department, and five citizens-at-large. This committee is responsible for overseeing safety-related projects and programs in Bend and ensuring interagency/departments coordination. It also provides a forum for public comment on transportation safety matters, advises other committees (including the Bend MPO board), liaises with the Oregon Traffic Safety Commission, and promotes awareness of safety programs and issues.

Bicycle Diversion Program

The mission of the bicycle diversion program is "education through enforcement." Under this program, people who are cited for bicycle-related traffic infractions are given the option to have their fine reduced by taking an educational course that is offered monthly. The program is a collaborative effort of local enforcement agencies, the City of Bend, and Commute Options.

Pedestrian Injury Prevention Action Team Program

Commute Options was recently selected to participate in the *Pedestrian Injury Prevention Action Team Program* run by the Safe States Alliance. As a part of this program, Commute Options staff will receive guidance in preparing training materials for local and State agencies and conduct these trainings and have the access to grant

funds that can be awarded to local agencies.

Shared Future Coalition

The Shared Future Coalition is a Deschutes County group formed to reduce underage and binge drinking in 18 to 25 year olds. ODOT and the City of Bend have representative members in this group. The group is focused on community engagement to educate and reduce environmental influences.

Safety Strategies for Bend MPO

The plans described above contain a number of strategies related to engineering, education, enforcement, and policy development to reduce crashes in the Bend MPO region. There are several opportunities for safety-related policy development within the Bend Metropolitan planning area. These opportunities include:

- Supporting the City of Bend and ODOT with implementing the projects and programs identified in their safety plans, including support in the development of application materials for the new All Roads Transportation Safety (ARTS) program.
- Working with the City of Bend, Deschutes County, and ODOT to coordinate network screening and safety planning efforts within the MPO region, including expanding the City's screening methods to the unincorporated areas in the MPO region.
- Continuing Intelligent Transportation Systems planning and project programming, paying special attention to investments that will enhance safety.
- Continue refining safety criteria for project scoring, selection, and implementation.
- Identifying additional transportation funding sources that are specifically targeted at safety projects to supplement the limited funds from conventional transportation sources.
- Continuing to stay abreast of research on transportation safety developed by national and regional agencies around the country, seeking out best practices that can be applied within the Bend Metropolitan planning area.

A number of projects have been identified and included in the Preferred Alternative Project List in Chapter 6 of this plan that address the underlying safety issues of critical locations within the Bend Metropolitan Planning Area. The purpose of these projects is to reduce the potential for collisions, using a variety of countermeasures. With limited resources, focusing improvements on corridors has emerged as a way to manage the existing roadway system. Corridors are the focus of traffic safety projects that typically initiate a combination of roadway improvements, enforcement efforts, and public

information and education programs. Corridor analysis can also be useful to examine trends in crashes over multiple years and to track whether or not improvements on a corridor contributed to a reduction in crashes.

Ensuring the Bend Metropolitan planning area has a transportation system that is safe to use is a complex task. Several strategies for implementation have been recommended that could potentially improve the safety for all modes of travel; however, additional data and analysis are required to better inform the decision making process where limited funds would provide the most return on investment. Future updates to the Plan may include additional data on where incidents have occurred and how successful the proposed solutions have been in addressing the underlying issues.