

Oregon Greenhouse Gas Reduction Toolkit: Strategy Report

OREGON SUSTAINABLE TRANSPORTATION INITIATIVE



Bicycle and Pedestrian Safety

This report describes bicycle and pedestrian safety improvements and the safety impacts of traffic calming techniques.



What is it?

Bicycle and pedestrian safety improvements encourage nonautomotive travel by reducing vehicle speeds and providing a pleasant environment for those on foot, bicycle, or assisted mobility devices. These techniques are sometimes called traffic calming. They are self-enforcing measures that provide cues to drivers to reduce speeds. The ODOT Bicycle and Pedestrian Design Guide provides detailed descriptions of bicycle and pedestrian safety improvements and discusses the importance of context-sensitive design. Examples include:

- » **Curb extensions** narrow the street by widening the sidewalk, reducing the distance to cross.
- » **Frequent stop signs** reduce speeds and can discourage through-traffic.
- » **Textured or raised crosswalks** slow traffic and have a psychological effect of giving preference to pedestrian activity.
- » **Road diets** are reductions in the number of lanes to free space for wider sidewalks, bicycle facilities, medians, or a center turn lane.
- » **Chicanes** require drivers to follow a curved path due to the design of a street's edge. Methods include shifting parking from one side of the roadway to the other, parking islands, and offset landscaped curb extensions.
- » **Speed tables** can be added to pedestrian crossings to create a raised crosswalk or intersection, slowing vehicles and enhancing pedestrian visibility.
- » Pedestrian refuges allow pedestrians to cross half the street at a time.
- » **Transit stops** require special attention to safety, as many pedestrian crashes are associated with the boarding or disembarking of transit vehicles.
- » **Tight turning radii** at intersections will slow the speed of vehicles making turns, improve visibility, and reduce the crossing distance for pedestrians.
- » **Pedestrian-scale lighting** of sidewalks and crosswalks increase safety and enhance the aesthetics of the pedestrian environment.
- » **Flashing beacons** activated by the pedestrian supplement other visual markers, and increase safety at uncontrolled crosswalks.
- » **On-street parking** provides a buffer between motor vehicle traffic and pedestrians along a sidewalk. Curb extensions are recommended to mitigate reduced visibility for pedestrian crossings.
- » **Diverters and intersection median barriers** restrict automobile traffic while allowing bicycles and pedestrians to pass through, reducing cut-through traffic in neighborhoods.
- » **Bicycle facilities** can give bicyclists an explicit place on the road (e.g. a cycle track), or indicate that bicycles

may make use of the entire roadway (e.g. sharrows)

How well does it work?

Vehicle speed is strongly associated with both the likelihood of pedestrian crash occurrence and the seriousness of pedestrian injury. It is estimated that only 5% of pedestrians would be killed when struck by a vehicle travelling at 20 mph or less, while fatality rates rise to 40, 50, and nearly 100 percent for striking speeds of 30, 40, and 50 mph or more, respectively.¹

Combined pedestrian and bicycle infrastructure and policies have been estimated to result in a .2 to .5 percent reduction in baseline greenhouse gas (GHG) emissions.²

How can it benefit my community?

In addition to reducing GHG emissions, pedestrian and bicycle safety measures can:

- » Encourage physical activity and promote a healthy lifestyle
- » Increase safety for bicyclists and pedestrians
- » Increase access to destinations for all modes
- » Increase community involvement and activity in developing policy and promoting projects
- » Increase in transit use when stops have good bicycle/pedestrian access
- » Control stormwater through inclusion of planting strips and drainage infrastructure

What does it cost?

Costs of bicycle and pedestrian safety features vary widely by construction materials, drainage requirements, complexity, and aesthetic considerations. Techniques relying on restriping of roadways and narrowing lanes are less costly than pouring new asphalt or concrete, and some measures have little or no extra cost when completed during roadway construction or reconstruction.

Detailed cost estimates and case studies can be found via the Pedestrian and Bicycle Information Center (www.pedbikeinfo.org). Funding for bicycle and pedestrian safety projects is available through federal and state grants, and can improvements can be required for new developments.

Where has it been used?

The City of Eugene has created a Pedestrian and Bicycle Master Plan with the goal of doubling the percentage of trips made on foot and by bicycle from 2011 levels by 2031. A key element of the plan is fostering a safe and pedestrian-friendly environment, and the plan identifies priority improvements, potential funding sources, and recommended changes to the City's development code.

Other examples include the Wilsonville Bicycle and Pedestrian Master Plan and the Corvallis Development Code.

Where can I learn more?

- » Bicyclinginfo.org and Walkinginfo.org have lots of information about safety improvements.
- » ODOT Bicycle and Pedestrian Design Guide. <http://www.oregon.gov/ODOT/HWY/BIKEPED/pages/planproc.aspx>
- » How to Increase Bicycling for Daily Travel – Active Living Research. http://www.activelivingresearch.org/files/ALR_Brief_DailyBikeTravel_May2013.pdf
- » Cool Planning: A Handbook on Local Strategies to Slow Climate Change – Chapters 9 and 10. http://www.oregon.gov/LCD/tgm/docs/cool_planning_handbook.pdf

The Toolkit is a component of the Oregon Sustainable Transportation Initiative (OSTI), which was formed to address the requirements of Senate Bill 1059 (2010).

For more information, please visit:

<http://cms.oregon.gov/ODOT/TD/TP/pages/ghgtoolkit.aspx>



¹ Lead, W.A. and D.F. Preusser, *Literature review on Vehicle Travel Speeds and Pedestrian Injuries among Selected Racial/Ethnic Groups*. 1999. Accessed 5/31/2013. <http://www.nhtsa.gov/people/injury/research/pub/hs809012.html>

² *Moving Cooler: An Analysis of Transportation Strategies for Reducing Greenhouse Gas Emissions*. Cambridge Systematics, Inc. Urban Land Institute, July 2009.