



Date: September 11, 2013
To: Local jurisdictions and interested parties
From: Anthony Buczek, PE, Transportation Engineer
Re: RTP Safety Policy Refinements

Purpose

This memo summarizes proposed refinements to the Regional Transportation Plan (RTP) safety policies to incorporate the recommendations of the Regional Transportation Safety Plan (RTSP), based on data from the regional State of Safety report (2011) and the Regional Safety Workgroup.

Action Requested

Review the RTP Safety Policy language (Attachments 1 – 6) and advance these policies to help guide RTP system development.

Background

Between 2009 and 2012, responding to a FHWA recommendation, Metro convened a Regional Safety Workgroup comprised of local governments, ODOT, TriMet, FHWA, practitioners, and researchers to draft a Regional Transportation Safety Plan (RTSP). The RTSP is a data-driven and specifically urban-focused safety plan to reduce fatalities and severe injuries in the Portland Metropolitan region.

Metro, in coordination with the Regional Safety Workgroup analyzed crash data provided by ODOT and produced the first State of Safety in the Region report. This report provides the data foundation of the RTSP. Some of the key findings from the data are:

- Arterials have the highest serious crash rate for all modes.
- Alcohol and drugs are primary contributing factors to fatal crashes.
- Speeding and aggressive driving are the leading contributing factors toward serious crashes.
- Serious pedestrian crashes are disproportionately represented after dark.
- Serious nighttime pedestrian and bicycle crashes occur disproportionately where street lighting is not present.
- Streets with more traffic lanes have particularly high serious pedestrian crash rates per mile and per vehicle mile traveled (VMT).

The RTSP aims to address these findings and help to meet the RTP target for reducing fatal and severe injury crashes by 50 percent for all modes. The RTSP includes a number of recommendations for improving safety in the Portland Metropolitan region. Some of the recommendations are system management and operation actions which are best implemented by the operators of the transportation system. The following recommendations are appropriate for incorporation into the RTP:

- Continue data collection and analysis of ODOT crash data to support regional and local planning efforts.
- Develop performance measures for identifying high crash mobility corridors and high crash arterials across the region.
- Continued support of regional and state policies that seek to reduce VMT, including multimodal facilities, transit, RTO, and TDM.
- Elevate safety to equal importance as mobility in regional policy as part of the next RTP update that will start in 2013.
- Use strategies including Highway Safety Manual strategies to address safety on multi-lane roadways, such as medians, speed management, access management, improved pedestrian crossings, roundabouts, and road diets.
- Develop safe crosswalks on arterials and multi-lane roads, generally adhering to the region's maximum spacing standard of 530 feet and at all transit stops.
- Focus on improved pedestrian crossings including lighting, particularly on multi-lane arterials.
- Ensure bike routes and crosswalks – marked and unmarked – are adequately lit.
- Along high-volume and/or high-speed roadways, where feasible, provide protected bicycle facilities such as buffered bike lanes, cycle tracks, multi-use paths, or low-traffic alternative routes

Summary of Main Policy Refinements

The attached refinements (*see tracked changes in attachments 1 through 6*) include revised RTP policy language. A summary of the main refinements is provided below:

Safety refinements

1. **Sections 2.3, 2.3.1 Performance Targets (p.1-2):** Updated both the goal/objective language and performance measure based on the recommendations of the Regional Safety Workgroup to reference "fatal and severe injury crashes". Updated baseline to 2007 – 2011, the first five years of consistent Metro-wide data.
2. **Section 2.5.2/Build a well-connected network (p.6-7):** Added text that medians and access management should be used on streets with 4 lanes or more where feasible. Medians would include openings for turn lanes and access points, as appropriate. Most of the region's fatal or severe injury crashes occur on roads with 4 or more lanes. Multilane roads have a higher rate of fatal and severe injury crashes, but medians are one of the most effective safety countermeasures, having been demonstrated to reduce injury crashes by 20% - 40%. Access management has also been proven to be an effective countermeasure on multilane arterials.
3. **Section 2.5.2/Arterial streets (p.9):** Added text stressing the need for attention to safety on these facilities, and suggested proven countermeasures including engineering, enforcement, and education. Also indicate need to develop objective performance measures for region's arterials.
4. **Section 2.5.6/Regional Pedestrian Network Vision (p.10,12):** Added text clarifying that a well-connected network of pedestrian facilities includes safe street crossings, and added a paragraph noting the importance of frequent well-designed pedestrian crossings, particularly on multi-lane arterials.
5. **Section 2.5.6/Improve pedestrian access to transit (p.14):** Added text noting importance of safe crossings at transit stops.

6. **Section 2.5.7/Implement incentives to use of travel options (p.16):** Added improved roadway safety as a benefit of travel behavior changes.

Next Steps

The refined policies will be used to help guide RTP project solicitation this Fall and are recommended to be included in the draft RTP that is released for public comment in March 2014. Questions and comments should be directed to Anthony Buczek at 503-797-1674 or anthony.buczek@oregonmetro.gov

Attachments

- Attachments 1 through 6 correspond to the six Safety Refinements listed above.

Goal 5: Enhance Safety and Security

Multi-modal transportation infrastructure and services are safe and secure for the public and goods movement.

- **Objective 5.1 Operational and Public Safety** - Reduce fatal ~~and ities~~, ~~serious-severe~~ ~~injuryies and~~ crashes ~~per capita~~ for all modes of travel.
- **Objective 5.2 Crime** - Reduce vulnerability of the public, goods movement and critical transportation infrastructure to crime.
- **Objective 5.3 Terrorism, Natural Disasters and Hazardous Material Incidents** - Reduce vulnerability of the public, goods movement and critical transportation infrastructure to acts of terrorism, natural disasters, hazardous material spills or other hazardous incidents.



Goal 6: Promote Environmental Stewardship

Promote responsible stewardship of the region's natural, community, and cultural resources.

- **Objective 6.1 Natural Environment** – Avoid or minimize undesirable impacts on fish and wildlife habitat conservation areas, wildlife corridors, significant flora and open spaces.
- **Objective 6.2 Clean Air** – Reduce transportation-related vehicle emissions to improve air quality so that as growth occurs, the view of the Cascades and the Coast Range from within the region are maintained.
- **Objective 6.3 Water Quality and Quantity** – Protect the region's water quality and natural stream flows.
- **Objective 6.4 Energy and Land Consumption** - Reduce transportation-related energy and land consumption and the region's dependence on unstable energy sources.
- **Objective 6.5 Climate Change** – Reduce transportation-related greenhouse gas emissions.



2.3.1 Performance targets

While goals and objectives are a vital component of the plan, equally important are quantifiable performance targets and indicators to track the region’s progress. Investments that work together toward achieving a set of performance targets is critical for the region to be successful in realizing a truly integrated, multi-modal transportation system that achieves the goals and objectives of this plan.

Raising the bar from past RTPs, the plan includes a set of interim transportation performance targets, listed in **Table 2.3**, that support the outcomes-based framework and the plan’s goals and objectives. The interim targets provided policy direction for developing the investment strategy recommended in Chapter 3 and for updating local transportation system plans. Table 2.3 includes findings on how well the plan performs in relation to the targets. The supporting data is found in Appendix 1.7.

Table 2.3
Regional Transportation Performance Targets

Target	Performance	Finding
ECONOMY		
<p>Safety –By 2035, reduce the number of <u>fatal and severe injury crashes for pedestrians, bicyclists, and motor vehicle occupants fatalities plus serious injuries</u> each by 50% compared to <u>20052007 – 2011 average</u>.</p>	<p>Between <u>2003 – 20052007 - 2011</u>:</p> <p>There were an <u>estimated annual average of:</u></p> <p><u>55-63 fatal or severe injury pedestrian crashes fatalities and serious injuries</u></p> <p><u>27-35 fatal or severe injury bike crashes fatalities and serious injuries</u></p> <p><u>392-398 fatal or severe injury motor vehicle only crashes fatalities and serious injuries</u></p>	<p><u>The region has established a baseline to track progress toward achieving the target over time.Reducing the number of fatal and severe injury crashes by half would result in at least 248 fewer people killed or severely injured, on average, in crashes in the Metro region each year. The corresponding reduced societal cost of crashes would be approximately \$480 Million (2012 dollars) annually in the Metro region.</u></p>
<p>Congestion – By 2035, reduce vehicle hours of delay (VHD) per person by 10 percent compared to 2005.</p>	<p>By 2035:</p> <p>VHD per person increases by 193% in 2 hour pm peak travel period</p> <p>VHD per person increases by 255% in the 1 hour mid-day travel period</p>	<p>The region does not meet the target. The data shows that VHD per person increases dramatically from 2005 based on the planned level and mix of investments.</p>

Target	Performance	Finding
Freight reliability – By 2035, reduce vehicle hours of delay truck trip by 10 percent compared to 2005.	By 2035: VHD per truck trip increases by 180% in 2 hour pm peak travel period VHD per truck trip increases by 235% in the 1 hour mid-day travel period	The region does not meet the target. The data shows that VHD per truck trip increases dramatically from 2005 based on the planned level and mix of investments.
ENVIRONMENT		
Climate change – By 2035, reduce transportation-related carbon dioxide emissions by 40 percent below 1990 levels.	By 2035: Carbon dioxide emissions increase by 50% above 2005 levels	The State is developing a 1990 baseline and developing targets for light duty vehicles pursuant to House Bill 1059. The data shows that carbon dioxide increases from 2005 based on the planned level and mix of investments.
Active transportation – By 2035, triple walking, biking and transit mode share compared to 2005.	By 2035: Transit mode share increases by 4% compared to the 10% target Walking increases by 7% compared to the 19% target Biking increases by 1% compared to the 3% target	The region does not meet the target. However, the data shows that the region is making progress toward achieving the target.
Basic infrastructure – By 2035, increase by 50 percent the number of essential destinations ¹ accessible within 30 minutes by trails, bicycling and public transit or within 15 minutes by sidewalks for all residents compared to 2005.	Data under development	The methodology for establishing a base line for this target is being developed.
Clean air – By 2035, ensure zero percent population exposure to at-risk levels of air pollution.	In 2035: Carbon monoxide is estimated at 836,484 lbs/day, 29% below the regional motor vehicle	The region meets the target for carbon monoxide and ozone (VOC and NOX) exposure from transportation sources.

¹ Consistent with the evaluation methodology used for the High Capacity Transit plan, essential destinations are defined as: hospitals and medical centers, major retail sites, grocery stores, elementary, middle and high schools, pharmacies, parks/open spaces, major social service centers (with more than 200 monthly LIFT pick-up counts), colleges and universities, employers with greater than 1,500 employees, sports and attraction sites and major government sites.

Target	Performance	Finding
	<p>emissions budget for 2035</p> <p>Hydrocarbons (VOC) is estimated at 17 tons/day, 58% below the regional motor vehicle emissions budget for 2035</p> <p>Nitrogen oxide (NOX) is estimated at 16 tons/day, 73% below the regional motor vehicle emissions budget for 2035</p>	A regional standard for air toxics is under development.
Travel – By 2035, reduce vehicle miles traveled per person by 10 percent compared to 2005.	<p>In 2035:</p> <p>Vehicle miles traveled per person decline 4% below 2005 levels.</p>	The region does not meet the target. However, the data shows that the region is making progress toward achieving the target.
EQUITY		
Affordability – By 2035, reduce the average household combined cost of housing and transportation by 25 percent compared to 2000.	In 2005, the average household in the Portland region spend about 44 percent of its income on housing and transportation.	The region will track progress toward this target.
Access to daily needs – By 2035, increase by 50 percent the number of essential destinations accessible within 30 minutes by bicycling and public transit for low-income, minority, senior and disabled populations compared to 2005.	Data under development	The methodology for establishing a base line for this target is being developed.

The interim performance targets are numerical benchmarks to assess the region’s progress in carrying out the RTP vision. These targets draw from federal and state legislation. They are aspirational and begin moving the region towards outcomes-based decision making. It is expected that as evaluation methods and tools are enhanced the targets will be further refined during the next RTP update.

A broader set of performance targets that include land use as well as equity, economic and environmental measures will also be developed as part of the *Making the Greatest Place*. Monitoring of all the performance targets will provide accountability for achieving the goals of the plan. Decision-makers can use this information to adapt policies and investment strategies based on what is learned.

2.5.2 Arterial and Throughway Network Vision

Though our region has changed dramatically over the past century, the shape of the major street network serving our region has changed little. Most of our regional streets were once farm-to-market roads, many established along Donation Land Claim boundaries at half-mile or mile spacing. The region's throughway system evolved from the mid-1930s, when the first highway was built from Portland to Milwaukie, to the completion of I-205 in the early 1980s. Most of the throughway system was built along the same donation land claim grid that shapes the regional street system, with most throughways following older farm-to-market routes or replacing major streets.

This inherited network design has proven to be an adequate match for accommodating the changing travel demands of our growing region. The regional street and throughway system concept seeks to apply this proven network design to developing and undeveloped areas in the region, while seeking opportunities to bring existing urban areas closer to this ideal when possible.

Arterial and Throughway Network Concept

The regional street and throughway system concept contains policy and strategy provisions to develop a complete and well-connected roadway system that provides adequate capacity and supports all modes of travel. Rather than relying principally on levels of congestion to direct how and where to address motor vehicle capacity needs, the concept calls for implementing a well-connected network design that is tailored to fit local geography, respect existing communities and future development and protect the natural environment.



Freeways allow people and goods to connect to major destinations across the region.

Three policies form the foundation of this vision:

- 1. Build a well-connected network of “complete” streets that prioritize safe and convenient pedestrian and bicycle access**
- 2. Improve local and collector street connectivity**
- 3. Maximize system operations by implementing management strategies prior to building new motor vehicle capacity, where appropriate**

Build a well-connected network of complete streets that prioritize pedestrian and bicycle access

A well-connected network of complete streets is critical to achieving the 2040 Growth Concept vision. In general, the roadway network should be designed to provide for trips through or across the region on throughways, shorter trips through portions of the region on arterial streets and the shortest trips on collector and local streets. Traffic speeds, access and level of street connectivity vary depending on the function of the street. The design of transportation facilities should consider the facility's traffic function, all modes of travel, and community development goals.

This approach results in a traffic hierarchy of:

- throughways (for example, limited-access facilities such as I-84, US 26, I-5, I-205 and I-405)
- arterial streets (for example, Cornell Road in Washington County, Halsey Street in the City of Portland and Sunnyside Road in Clackamas County).
- collector streets
- local streets

The traditional traffic classifications for throughways, arterial streets and other streets are a good starting point for distributing traffic in communities to avoid bottlenecks on overburdened routes or avoid the need to build overly wide streets as a community grows. Throughways serve only as mobility routes, with little or no property access, and an emphasis on connecting major destinations across the region. Arterial streets provide both mobility, moving traffic, goods, and people within the region, and access to property along the street. The degree to which one of these regional street purposes predominates over the other is determined by the functional classification.

The RTP presumes that building a regional street and throughway system to accommodate all motor vehicle traffic during peak travel periods is not practical nor would it be desirable considering potential environment and community impacts. As a result, the regional street and throughway network concept calls for one-mile spacing of major arterial streets, with minor arterial streets or collector streets at half-mile spacing, recognizing that existing development, streams and other natural features may limit the provision of these connections. Major and minor arterial streets can be either 2 or 4 lanes with turn lanes as appropriate. [Streets with 4 or more lanes should include medians, with appropriate median](#)

“Complete” streets are defined as roadways that are designed and operated with all users in mind – including bicyclists, transit vehicles and users, freight delivery vehicles and pedestrians of all ages and abilities.

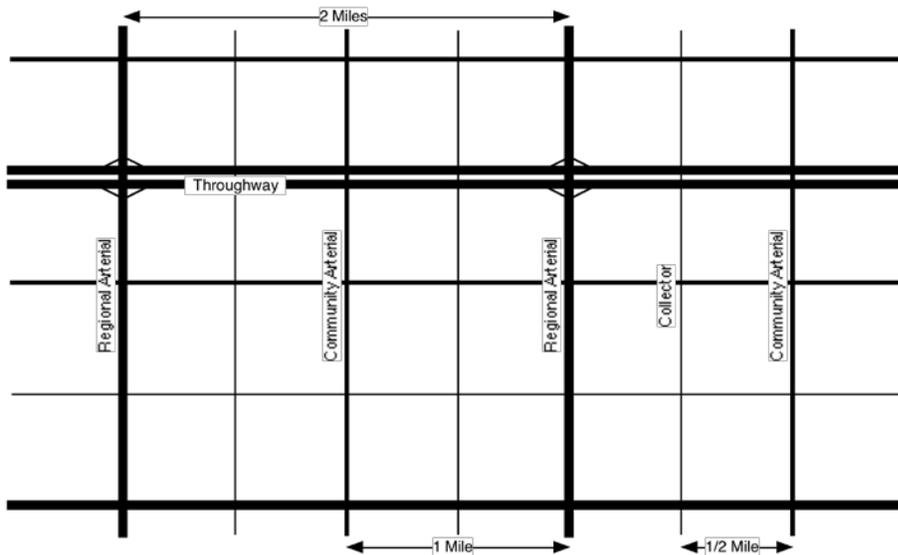


openings for turning movements and turn lanes. Access management strategies should be used on arterial streets and all streets with 4 or more lanes.

Shown in **Figure 2.11**, the illustrative arterial street network is complemented by a well-connected system of collector and local streets. This system of regional and local streets is multi-modal in design, serving automobiles, motorcycles, trucks, transit, bicycles and pedestrians. The 4-lane regional arterial street design with median reflects an optimal compromise for all of these modes, accommodating urban levels of traffic, while also allowing for safe and convenient bicycle and pedestrian travel and crossings at major intersections.

Research and experience have shown that there are optimal street designs for various types of roadways. Local streets and collectors are planned to consist of 2-lanes with turn lanes, major arterials are planned to consist of up to 4-lanes with medians with turn lanes and access management strategies, throughways are planned to consist of 6-lanes plus auxiliary lanes with grade separated interchanges or intersections. Therefore, before adding additional through lanes beyond the planned system, plans and studies must demonstrate that the additional lanes beyond the planned system do not compromise the function of the roadway for all modes and that the planned system of through lanes, transit service, bike, pedestrian and other parallel arterial, operational, system and demand management solutions do not adequately address transportation needs first, prior to considering widening beyond the planned system to address capacity concerns.

Figure 2.11
Regional Arterial and Throughway Network Concept



Note: Conceptual model, illustrating multi-modal transportation corridors and showing ideal spacing of arterial streets. Most of the region's travel occurs off the throughway system, on a network of multi-modal arterial streets. The RTP policy places a new emphasis on ensuring that

arterial networks are fully developed as the region grows, providing both local circulation and preserving highway capacity for regional and statewide travel.

The Regional Street and Throughway Network is shown in **Figure 2.12**.

Figure 2.12 Regional Street and Throughways Network Map

Arterial streets

Arterial streets are intended to provide general mobility for travel within the region and provide important connections to the throughway system. Arterial streets connect major commercial, residential, industrial and institutional centers with each other and link these areas to the throughway system. Arterial streets are usually spaced about one mile apart and are designed to accommodate motor vehicle, truck, bicycle, pedestrian, and transit travel.

Arterial streets usually carry between 10,000 and 40,000 vehicles per day and allow higher speeds than collector and local streets. Major arterial streets accommodate longer-distance through trips and serve more of a regional traffic function. Minor arterial streets serve shorter trips that are localized within a community. As a result, major arterial streets usually carry more traffic than minor arterial streets. The arterial functional classification is implemented through the Boulevard and Street design classifications described in Table 2.6 and in the glossary.



Major arterial streets accommodate longer-distance through trips, while minor arterials serve shorter trips within a community.

Safety is a primary concern on the regional arterial system, on which approximately 60% of the region's fatal and severe injury crashes occur. More attention to safe design and operation of the arterial system could reduce the number of people killed and injured, using national best practices as a guide. Efforts should include:

- proven design strategies such as medians, speed management, access management, improved pedestrian crossings, roundabouts, and road diets
- enforcement actions targeting high-risk behaviors, such as speeding, aggressive driving, driving under the influence, red-light running, and failure-to-yield at pedestrian crossings
- education initiatives intended to promote safer behavior among all users of the system

The safety targets of the RTP will not be met without a concerted effort to make the region's arterial roadways substantially more safe. The location of approximately 60% of the fatal and severe injury crashes in the region, efforts to substantively improve transportation safety in the region must give arterial roadways highest priority. The development of an objective metric to measure safety on the region's arterials, regardless of jurisdiction, should be developed to support prioritization of corridor safety efforts.

2.5.6 Regional Pedestrian Network Vision

Successful communities across America are increasingly defined by their walkability. Everyone is a pedestrian², but too often walking is not a safe and convenient option for getting to work or school or meeting daily travel needs. Walking, however, contributes to a healthy lifestyle for young and old alike and walking supports vibrant local economies. This travel mode is the common denominator for all other modes of travel as each trip begins or ends with at least a short walk. Transit trips in particular are based on walk access to transit stops and stations.

As a primary mode of travel that serves short trips and supports other modes the pedestrian system should be complete, direct, safe and enjoyable to use. It must be accessible to everyone regardless of one's ability to walk unassisted. Walking for short distances is an attractive option for most people when safe and convenient pedestrian facilities are available. The combination of well maintained and illuminated sidewalks of appropriate width, curb ramps, well marked and protected street crossings, and streetscape amenities that might include benches, landscaping and wide planting strips make walking an attractive, convenient and safe mode of travel. On-street facilities might be supplemented with trails and separate sidewalk connections that provide direct and pleasant connections for the pedestrian.



Pedestrians play an important role in economic development by supporting commercial activity in centers. The RTP considers walking and bicycling as equals with other transportation modes.

Four policies form the foundation of this vision:

1. Promote walking as primary mode for short trips
2. Build a well-connected network of pedestrian facilities, including safe street crossings, that serves all ages and abilities

[NOTE - This is consistent with recommendations of the RTSP and the ATP, and complementary of other ATP policy updates.

3. Create walkable downtowns, centers, main streets and station communities

² Given that everyone is a pedestrian, some advocates are choosing to simply use the term "people" instead of "pedestrians."

4. Improve pedestrian access to transit

Walking as used in this network vision, includes getting around using wheelchairs and other forms of mobility assistance. Safe and ADA-compliant routes may be particularly critical for persons who are unable to drive. It is important to remember that sidewalks and pedestrian crossings serve the needs of all mobility levels and should include design elements that help make travel as safe and convenient as possible. Many children, seniors and people with disabilities rely on transit and other elements of the regional pedestrian network.

Pedestrian activities also play a role in economic development by supporting places where people like to visit and live. Walking helps support commercial activity in neighborhoods and centers. The pedestrian network when fully developed helps people get around by safely providing links between destinations such as schools, parks, and employment sites, offers opportunities for active living, helps contribute to environmental health, supports other modes like transit, makes communities more inviting and provides a travel option that is inexpensive and accessible to most people. The region's investment in public transit is only realized to the extent that persons can safely access those transit services. This section describes the policy framework to guide development of a region-wide network of on-street and off-street walking facilities.

Promote walking as primary mode for short trips

As our communities seek to emphasize moving people rather than cars, it is important to exploit all travel options including the most basic mode of travel. One in four trips made in America are a mile or less in length, yet only 21 percent of those trips are made on foot.³ In addition to being the oldest and cleanest form of transportation, walking is often the quickest and most convenient way to accomplish short trips in urban areas and neighborhoods surrounding community centers. Several characteristics of short auto trips make them especially attractive to replace with walking. In urban areas, short trips greatly contribute to arterial congestion, as well as a disproportionate amount of air pollution (due to cold starts) and crashes.⁴

In a society where over two-thirds of adults are obese or overweight⁵ walking can improve both physical and mental health. A one-mile trip is a twenty-minute walk, which is two-thirds of the daily exercise regimen recommended by the U.S. Surgeon General.

Promoting walking as the preferred mode for short trips will help the region achieve the RTP performance target of tripling the share of walking trips by the year 2035. This includes constructing new sidewalks, filling in sidewalk gaps, providing safe crosswalks at regular intervals, completing ADA-compliant curb ramps and developing a pedestrian infrastructure in a connected, systematic way. Regional partners must take many actions to create conditions necessary to achieve this target. The four policy areas that follow describe actions relating to pedestrian facilities, land use development and connections to transit.

³ National Household Travel Survey, 2001, <http://nhts.ornl.gov/>

⁴ Oregon Bicycle and Pedestrian Plan, 1995, <http://www.oregon.gov/ODOT/HWY/BIKEPED/planproc.shtml>

⁵ Center for Disease Control and Prevention, 2008, <http://www.cdc.gov/nchs/fastats/overwt.htm>

Build a well-connected network of pedestrian facilities

A well-connected high-quality pedestrian environment facilitates walking trips by providing safe and convenient access to pedestrian destinations within a short distance. Key elements of the urban pedestrian system include on-street sidewalks, off-street trails, safe street crossings at regular intervals, illumination and streetscape amenities that foster pedestrian travel. By providing dedicated space for those on foot or using mobility devices, pedestrian facilities facilitate and support walking as a mode of travel.

Regionally, more attention is needed toward providing safe crossings, particularly of multi-lane arterials, which tend to serve as barriers to walking. Two-thirds of the region's fatal and severe injury pedestrian crashes occurred on arterial roadways, with half occurring on streets with 4 lanes or more. Regional policy calls for safe crosswalks spaced no more than 530 feet apart (unless there are no intersections, bus stops or other pedestrian attractions), including features such as markings, medians, refuge islands, beacons, and signals, as appropriate. Where crossings are not provided, pedestrians will often cross anyway, without the benefit of a safe place to cross. Pedestrian crashes on high-speed arterial streets often result in a fatality or severe injury.

Public transportation use is fully realized only with safe and convenient pedestrian connections, especially safe crossings and those facilities that connect stations or bus stops to surrounding areas or that provide safe and attractive waiting areas. Improving walkway connections between office and commercial districts and surrounding neighborhoods provides opportunities for residents to walk to work, shopping or to run personal errands. Buildings need to be oriented to the street and be well connected to sidewalks. Safe routes across parking lots need to be provided. This reduces the need to bring an automobile to work and enhances public transportation and carpooling as commute options.

Regional trails are generally located near or in residential areas or near mixed-use centers, and are likely to be used by people walking to work or school, to access transit or to travel to a store or library. Trails that support purely recreational uses are not considered part of this transportation network, although they are important components of the regional parks and greenspaces system. Recreational trails complement a healthy life-style that includes walking and cycling. Pedestrian/bicycle-only bridges also are included in this designation. In high use areas, regional trails should be designed to provide safe separation between bicyclists and pedestrians.

Create walkable downtowns, centers, main streets and station communities

Pedestrian districts are areas of high, or potentially high, pedestrian activity where the region places priority on creating a walkable environment. These include the central city, regional and town centers and light rail station communities where sidewalks, plazas and other public spaces are integrated with civic, commercial and residential development. These districts can take many forms from traditional main streets to life-style shopping centers. They are often characterized by compact mixed-use development served by transit. These areas are defined as pedestrian districts in the RTP.

Pedestrian districts should be designed to reflect an urban development and design pattern where walking is a safe, convenient and enjoyable travel mode. These areas will be characterized by buildings oriented to the street and boulevard-type street design features such as wide sidewalks with buffering from adjacent motor

vehicle traffic, marked street crossings at all intersections with special crossing amenities at some locations, special lighting, benches, bus shelters, awnings and street trees.

All streets within pedestrian districts are important pedestrian connections.

Improve pedestrian access to transit

Transit/mixed-use corridors (referred to only as corridors in the 2040 Growth Concept) are priority areas for pedestrian improvements. They are located along good-quality transit lines and will be redeveloped at densities that are somewhat higher than today.

These corridors will generate substantial pedestrian traffic near neighborhood-oriented retail development, schools, parks and bus stops.

These corridors should be designed to promote pedestrian travel with such features as wide sidewalks with buffering from adjacent motor vehicle traffic, street crossings at a minimum of 530 feet – though an ideal spacing is 200 to 400 feet where possible (unless there are no intersections, bus stops or other pedestrian attractions), special crossing amenities at some locations, special lighting, benches, bus shelters, awnings and street trees. This designation includes multi-modal bridges.

Summary



NW 23rd in Portland is an example of a lively pedestrian district.

Currently the regional pedestrian network is incomplete and ~~unsafe~~inadequately safe; the sidewalk and crosswalk network accessing transit in particular has gaps in continuity and quality, and few locations provide adequate safe crossing opportunities. **[NOTE - Need for safe crossings also addressed in ATP policy changes.]** A complete pedestrian system provides a basic building block for economic vitality in centers and other commercially-oriented areas, but when incomplete fails to maximize the connection between transportation and land use that helps contribute to vibrant communities. The existence of gaps prevents the basic system from functioning uniformly throughout the region by inhibiting access to transit, limiting access to centers and other community-level destinations such as parks and schools. It is important for local jurisdictions to pursue sidewalks on every street (except expressways), even if they are not defined as part of the regional pedestrian network (transit mixed-use corridors, mixed-use centers, station communities and regional trails.)

Planning for pedestrian system improvements requires the same level of planning and analysis as might be applied to roadway planning. Investment programs should set priorities for sidewalk improvements to and along major transit routes and communities where physically or economically disadvantaged populations are resident. Emphasis should be given to filling gaps and providing safe crossings of the busiest streets. Access to schools, parks and community centers that are active parts of the local community is important for influencing a healthy lifestyle that includes walking.

Oregon State statutes and administrative rules establish that pedestrian facilities are required on all collector and higher classification streets when those roads are built or reconstructed. Exceptions are provided where cost is excessively disproportionate to need or where there is an absence of need due to sparse population or other factors.

Table 2.10
Detecting and clearing incidents quickly restores lost capacity

Number of Hwy Lanes	% Facility Capacity Lost by Blockage Type			
	Shoulder	1 Lane	2 Lanes	3 Lanes
2	19%	65%	100%	N/A
3	17%	51%	83%	100%
4	15%	42%	75%	87%

Source: TRB⁶

When implemented with active traffic management techniques, such as variable speed limits and lane management signs, the number and severity of crashes can be reduced.⁷

Implement market-based incentives and programs to increase awareness and use of travel options

TSMO also manages transportation from the demand side to help residents and employees of the region increase their awareness and use of travel options and reduce their trips made driving alone. Transportation demand management (TDM) strategies increase the share of trips that have a lower impact on the transportation system. TDM projects support rideshare and employer commuter services, expand collaborative marketing campaigns for travel options, and incorporate employer and youth transit pass programs.



Carpooling is one strategy to reduce drive alone trips, supporting the region’s efforts to improve mobility throughout the region.

All modes benefit from TDM projects. TDM projects raise general awareness about walking, bicycling and transit use, which increases safety for all users. TDM projects encourage travelers with flexibility to use non-drive alone options, such as walking, biking or vanpooling, or travel during off-peak hours.

By providing travel information and option incentives like employer or youth passes, this will provide incentives for people to adjust their travel behavior from driving to walking, bicycling, and taking transit. Benefits

Drive less. Save more. 1 out of 5 Portland residents reduced car trips due to the campaign.

Source: Moore Information, Inc, January 2009

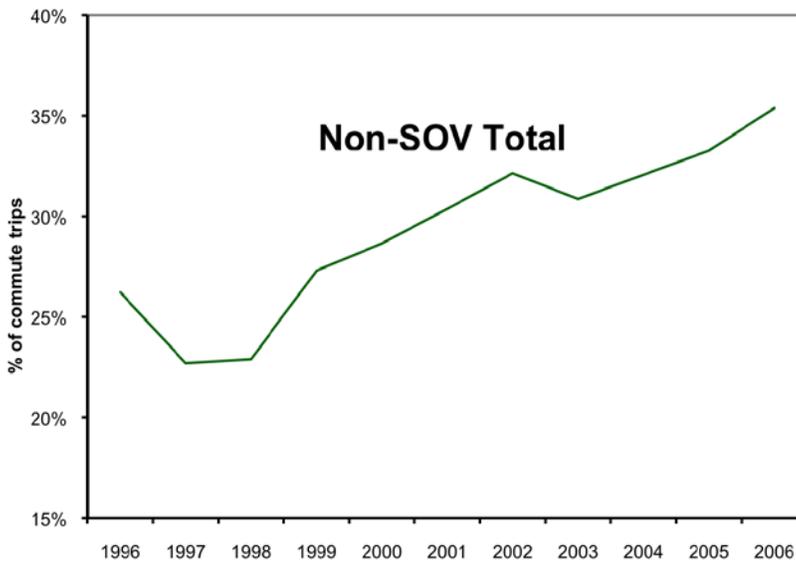
⁶ Highway Capacity Manual 2000. *Transportation Research Board, National Research Council, Washington, D.C., 2000.*

⁷ Research and Innovative Technology Administration (RITA) Intelligent Transportation Systems Benefits Database. Website: <http://www.benefitcost.its.dot.gov/its/benecost.nsf/BenefitsHome> (June 2009)

from this change in travel behavior include healthier people, [reduced roadway injuries and fatalities](#), reduced personal transportation costs, reduced air pollutants, and improved travel times and for other roadway users.

As an example, RTO partners provide services to over one thousand employers throughout the Portland region. Employers may implement travel option programs such as buying transit passes for their employees. Over the last decade, employee commute trips that used non-drive alone modes (transit, bicycling, walking, carpooling/vanpooling, and telecommuting) rose from 22 percent to over 35 percent among participating employers.

Figure 2.26 Effectiveness of Employer-Based Commuter Programs



Employer-based commuter programs have resulted in significant increases walking, biking and use of transit.

Source: Portland State University Center for Urban Studies, July 2007

TDM projects support the 2040 growth concept by encouraging people to make choices that reduce their dependence on cars. As a result, vehicle trips are reduced saving energy and reducing GHG emissions.