

presence of unstable terrain and the coast, sensitive wetlands and endangered plants and animals. In these places it may not be feasible to improve the transportation system to the degree necessary to accommodate the reasonable use of properties in accordance with acknowledged comprehensive plans. In such circumstances, the standards in Table 6 might also preclude comprehensive plan changes that carry out the Land Use and Transportation Policy (1B) such as compact development in a Special Transportation Area. Therefore, the Transportation Commission may adopt alternate standards to accommodate development where practical difficulties make conformance with the highway mobility standards infeasible.

Local governments may adopt higher operating standards if desired, but the standards in Tables 6 and 7 must be used for deficiency analyses of state highways.

The policy also anticipates that there will be instances where the standards are exceeded and the deficiencies are correctable but the necessary transportation improvements are not planned. This may be due to environmental or land use constraints or to a lack of adequate funding. In these circumstances, the Department of Transportation's objective is to improve highway performance as much as possible and to avoid further degradation of performance where improvements are not possible. Action 1F.5 gives examples of actions that may be undertaken to improve performance.

Policy 1F: Highway Mobility Standards

It is the policy of the State of Oregon to use highway mobility standards to maintain acceptable and reliable levels of mobility on the state highway system. These standards shall be used for:

- *Identifying state highway mobility performance expectations for planning and plan implementation;*
- *Evaluating the impacts on state highways of amendments to transportation plans, acknowledged comprehensive plans and land use regulations pursuant to the Transportation Planning Rule (OAR 660-12-060); and*
- *Guiding operations decisions such as managing access and traffic control systems to maintain acceptable highway performance.*

Action 1F.1

Apply the highway mobility standards below and in Table 6 to all state highway sections located outside of the Portland metropolitan area urban growth boundary and the standards below and in Table 7 to all state highway sections located within the Portland metropolitan area urban growth boundary.

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- On portions of highways where there are no intersections, the volume to capacity ratios in Tables 6 and 7 shall not be exceeded for either direction of travel on the highway.
- At unsignalized intersections and road approaches, the volume to capacity ratios in Tables 6 and 7 shall not be exceeded for either of the state highway approaches that are not stopped. Approaches at which traffic must stop, or otherwise yield the right of way, shall be operated to maintain safe operation of the intersection and all of its approaches and shall not exceed the volume to capacity ratios for District/Local Interest Roads in Table 6 and Table 7 within urban growth boundaries or 0.80 outside of urban growth boundaries.

At signalized intersections other than crossroads of freeway ramps (see below), the total volume to capacity ratio for the intersection considering all critical movements shall not exceed the volume to capacity ratios in Tables 6 and 7. Where two state highways of different classifications intersect, the lower of the volume to capacity ratios in the tables shall apply. Where a state highway intersects with a local road or street, the volume to capacity ratio for the state highway shall apply.

- Although a freeway interchange serves both the freeway and the crossroad to which it connects, it is important that the interchange be managed to maintain safe and efficient operation of the freeway through the interchange area. The main problem to avoid is the formation of traffic queues on freeway off-ramps which back up into the portions of the ramps needed for safe deceleration from freeway speeds. This is a significant traffic safety concern. The primary cause of traffic queuing at freeway off-ramps is inadequate capacity at the intersections of the freeway ramps with the crossroad. These intersections are referred to as ramp terminals. In many instances where ramp terminals connect with



Traffic is bunching up and slowing down in all lanes of this freeway because traffic demand exceeds capacity.

another state highway, the volume to capacity standard for the connecting highway will generally be adequate to avoid traffic backups onto the freeway. However, in some instances where the crossroad is another state highway or a local road, the standards will not be sufficient to avoid this problem. Therefore, the maximum volume to capacity ratio for the ramp terminals of interchange ramps shall be the smaller of the values of the volume to capacity ratio for the crossroad, or 0.85.

At an interchange within a metropolitan area where a majority of the interchange access management area (Policy 3C) of the interchange is developed, the maximum volume to capacity ratio may be increased to as much as 0.90, but no higher than the standard for the crossroad, if:

1. It can be determined, with a probability equal to or greater than 95 percent, that vehicle queues would not extend into the portion of the ramp needed to accommodate deceleration from freeway speed; and
2. The interchange access management area is retrofitted to comply, as much as possible, with the standards contained in Policy 3C of this plan.

For the purposes of this policy, the portion of the freeway ramp needed to accommodate deceleration shall be the distance, along the centerline of the ramp, needed to bring a vehicle to a full stop from the posted freeway speed at a deceleration rate of 6.5 feet/second² (two meters/second²).

- Because the freeway ramps serve as an area where vehicles accelerate or decelerate to or from freeway speeds, the maximum volume to capacity ratio for the interchange ramps exclusive of the crossroad terminals shall be the standard for the freeway with the following exception. For freeway on-ramps where entering traffic is metered to maintain efficient operation of the freeway through the interchange area, the maximum volume to capacity ratio may be higher.
- The Director of the Department of Transportation or his/her delegate shall have the authority to adopt methods for calculating and applying the volume to capacity ratio standards in this policy or any alternative standards adopted pursuant to this policy.

Action 1F.2

Apply the highway mobility standards over a 20-year planning horizon when developing state, regional or local transportation system plans, including ODOT's corridor plans. When evaluating highway mobility for amendments to transportation system plans, acknowledged comprehensive plans and land use regulations, use the planning horizons in adopted local and regional transportation

system plans or a planning horizon of 15 years from the proposed date of amendment adoption, whichever is greater. To determine the effect an amendment to a transportation system plan, acknowledged comprehensive plan or land use regulation has on a state facility, the capacity analysis shall include the forecasted growth of traffic on the state highway due to regional and intercity travel and to full development¹¹ according to the applicable acknowledged comprehensive plan over the planning period.

Action 1F.3

Where it would be infeasible to meet the standards in this policy, consider adopting alternate highway mobility standards for:

- Metropolitan areas or portions¹² thereof to support an integrated land use and transportation plan for promoting compact development, reducing the use of automobiles and increasing the use of other modes of transportation, promoting efficient use of transportation infrastructure, and improving air quality;
- Special Transportation Areas (STAs); and
- Areas where severe environmental or land use constraints¹³ make infeasible the transportation improvements necessary to accommodate reasonable use of properties in accordance with acknowledged comprehensive plans or to accommodate comprehensive plan changes that carry out the Land Use and Transportation Policy (1B).
- The alternative standards shall be clear and objective and shall be related to v/c (e.g., corridor-average v/c, network-average v/c, and the ratio of average daily traffic and hourly capacity (adt/c)). The standards shall be adopted as part of a regional and/or local transportation system plan. The plan shall demonstrate that it would be infeasible to meet the highway mobility standards in this policy. In addition, the plan shall include all feasible actions for:
 - Providing a network of local streets, collectors and arterials to relieve traffic

¹¹ Full development, for the purposes of this policy, means the amount of population and employment growth and associated travel anticipated by the community's acknowledged comprehensive plan over the planning period. The Transportation Commission encourages communities to consider and adopt land use plan amendments that would reallocate expected population and employment growth to designated community centers to reduce reliance on state highways.

¹² This policy does not prescribe minimum or maximum sizes for portions of metropolitan areas that would qualify for alternative standards. Nevertheless, the area must be of the size necessary to support compact development, reduce the use of automobiles and increase the use of other modes of transportation, promote efficient use of transportation infrastructure, and improve air quality.

¹³ Examples of severe environmental and land use constraints include endangered species, sensitive wetlands, and historic districts.

demand on state highways and to provide convenient pedestrian and bicycle ways;

- Managing access and traffic operations to minimize traffic accidents, avoid traffic backups on freeway ramps, and make the most efficient use of highway capacity;
- Managing traffic demand, where feasible, to manage peak hour traffic loads on state highways;
- Providing alternative modes of transportation; and
- Managing land use to limit vehicular demand on state highways consistent with the Land Use and Transportation Policy (1B).

The plan shall include a financially feasible implementation program and shall demonstrate strong public and private commitment to carry out the identified improvements and other actions.

In metropolitan areas, the alternate highway mobility standards will become effective only after the standards have been approved by the metropolitan planning organization and adopted by the Transportation Commission.

Outside of metropolitan areas, the alternate highway mobility standards will become effective only after the Transportation Commission has adopted them in a corridor plan or in a portion of a corridor plan.

Action 1F.4

Develop corridor plans for Interstate Highways, other freeways and designated highway Freight Routes in the Portland metropolitan area that are important for through travel. Develop standards for those routes to provide adequate levels of highway mobility.

Action 1F.5

For purposes of preparing planning documents such as corridor plans and transportation system plans, in situations where the volume to capacity ratio for a highway segment is above the standards in Table 6 or Table 7, or those otherwise approved by the Commission, and transportation improvements are not planned within the planning horizon to bring performance to standard because of severe environmental, land use or financial constraints, the performance standard for the highway segment shall be to improve performance as much as feasible and to avoid further degradation of performance where no performance improvements

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are feasible. Examples of actions that might improve performance include the following:

- Reconfigure highway and side-street accesses to minimize traffic conflicts at intersections;
- Limit parking near signalized intersections to increase intersection capacity;
- Coordinate and operate traffic signals to improve traffic progression;
- Relocate driveways and improve local road connections to direct traffic away from overburdened intersections and intersections where side-street capacity is limited in order to optimize traffic progression on the state highway;
- Improve turning-radii at intersections that are heavily used by trucks to avoid lane blockages;
- Install raised medians to reduce traffic conflicts;
- Improve accesses so that traffic can enter or exit the highway with minimal disruptions of flow; and
- Manage land uses to favor types of uses that generate less traffic or traffic peaks which do not coincide with traffic peaks on the highway. This could be done by making appropriate plan amendments or changes to zoning ordinances.

Local governments may also request that the Transportation Commission adopt alternate standards in accordance with Action 1F.3.

Action 1F.6

For purposes of evaluating amendments to transportation system plans, acknowledged comprehensive plans and land use regulations subject to OAR 660-12-060, in situations where the volume to capacity ratio for a highway segment, intersection or interchange is above the standards in Table 6 or Table 7, or those otherwise approved by the Commission, and transportation improvements are not planned within the planning horizon to bring performance to standard, the performance standard is to avoid further degradation. If an amendment to a transportation system plan, acknowledged comprehensive plan or land use regulation increases the volume to capacity ratio further, it will significantly affect the facility.

MAXIMUM VOLUME TO CAPACITY RATIOS OUTSIDE METRO ^{A, B, C, 14}							
Highway Category	Inside Urban Growth Boundary					Outside Urban Growth Boundary	
	STA ^D	MPO	Non-MPO Outside of STAs where non-freeway posted speed <= 35 mph, or a Designated UBA	Non-MPO outside of STAs where non-freeway speed > 35 mph	Non-MPO where non-freeway speed limit >= 45 mph	Unincorporated Communities	Rural Lands
Interstate Highways ^E	N/A	0.80	N/A	0.70	0.70	0.70	0.70
Statewide Expressways	N/A	0.80	0.70	0.70	0.70	0.70	0.70
Freight Route on a Statewide Highway	0.85	0.80	0.80	0.75	0.70	0.70	0.70
Statewide (not a Freight Route)	0.90	0.85	0.85	0.80	0.75	0.75	0.70
Freight Route on a Regional or District Highway	0.90	0.85	0.85	0.80	0.75	0.75	0.70
Expressway on a Regional or District Highway	N/A	0.85	N/A	0.80	0.75	0.75	0.70
Regional Highways	0.95	0.85	0.85	0.80	0.75	0.75	0.70
District / Local Interest Roads	0.95	0.90	0.90	0.85	0.80	0.80	0.75

Table 6: Maximum volume to capacity ratios for peak hour operating conditions

Notes for Table 6

^A OHP Amendment 00-04 established alternative mobility standards for Portland Metro and the Rogue Valley MPO (RVMPO). For Metro, see Table 7, below. For RVMPO see note B, below and the OHP amendment establishing the RVMPO alternative standards located on the web at: <http://www.oregon.gov/ODOT/TD/TP/docs/orhwyplan/registry/0004.pdf>. Where there is a conflict between the Table 6 standards and the established alternative mobility standards, the more tolerant standard (higher v/c ratio) applies.

^B The maximum volume to capacity ratio at the Northbound and Southbound off-ramps of the South Medford Interchange is >1.0 for four hours daily until the new South Medford Interchange is constructed. The maximum v/c ratio at Highway 99 at Stewart Avenue is >1.0 for two hours daily. When the new interchange is completed, the mobility standards for the ramps will be those in Table 6.

^C For the purposes of this policy, the peak hour shall be the 30th highest annual hour. This approximates weekday peak hour traffic in larger urban areas.

^D Interstates and Expressways shall not be identified as Special Transportation Areas.

^E National Highway System (NHS) highway design requirements are addressed in the Highway Design Manual (HDM).

¹⁴ Table 6 was replaced in August 2005, part of OHP Amendment 05-16.

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MAXIMUM VOLUME TO CAPACITY RATIOS INSIDE METRO^A		
Location	Standard	
	1st hour	2nd hour
Central City Regional Centers Town Centers Main Streets Station Communities	1.1	.99
Corridors ^B Industrial Areas Intermodal Facilities Employment Areas Inner Neighborhoods Outer Neighborhoods	0.99	.99
Banfield Freeway (<i>from I-5 to I-205</i>) ^C	1.1	.99
I-5 North ^C (<i>from Marquam Bridge to Interstate Bridge</i>)	1.1	.99
Highway 99E ^C (<i>from Lincoln Street to Highway 224 Interchange</i>)	1.1	.99
Sunset Highway ^C (<i>from I-405 to Sylvan Interchange</i>)	1.1	.99
Stadium Freeway ^C (<i>from I-5 South to I-5 North</i>)	1.1	.99
Other Principal Arterial Routes I-205 ^C I-82 (<i>east of I-205</i>) I-5 (<i>Marquam Bridge to Wilsonville</i>) ^C Highway 217 ^C US 26 (<i>west of Sylvan</i>) Highway 30 Tualatin Valley Highway (<i>Cedar Hills Blvd to Brookwood Avenue</i>) ^C Highway 224 ^C Highway 47 Highway 213 242 nd /US 26 in Gresham	.99	.99
Areas of Special Concern^D Beaverton Regional Center Highway 99W (<i>I-5 to Tualatin Road</i>)	1.0 .95	D

Table 7: Maximum Volume to Capacity Ratios Within Portland Metropolitan Region

Notes for Table 7: Maximum volume to capacity ratios for two hour peak operating conditions through a 20-year horizon for state highway sections within the Portland metropolitan area urban growth boundary.

- ^A The volume to capacity ratios in the table are for the highest two consecutive hours of weekday traffic volumes. This is calculated by dividing the traffic volume for the average weekly two-hour PM peak by twice the hourly capacity.
- ^B Corridors that are also state highways are 99W, Sandy Boulevard, Powell Boulevard, 82nd Avenue, North Portland Road, North Denver Street, Lombard Street, Hall Boulevard, Farmington Road, Canyon Road, Beaverton-Hillsdale Highway, Tualatin Valley Highway (from Hall Boulevard to Cedar Hills Boulevard and from Brookwood Street to E Street in Forest Grove), Scholls Ferry Road, 99E (from Milwaukie to Oregon City and Highway 43).
- ^C Thresholds shown are for interim purposes only; refinement plans for these corridors are required in Metro's Regional Transportation Plan and will include a recommended motor vehicle performance policy for each corridor.
- ^D Areas with this designation are planned for mixed use development, but are also characterized by physical, environmental or other constraints that limit the range of acceptable transportation solutions for addressing a level-of-service need, but where alternative routes for regional through traffic are provided. In these areas, substitute performance measures are allowed by OAR.660.012.0060(2)(d). Provisions for determining the alternative performance measures are included in Section 6.7.7 of the 2000 RTP. The OHP mobility standard for state highways in these areas applies until the alternative performance measures are adopted in local plans and approved by the Oregon Transportation Commission.