OREGON DEPARTMENT OF TRANSPORTATION

OREGON HIGHWAY PLAN MOBILITY POLICY WHITE PAPER

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OREGON DEPARTMENT OF TRANSPORTATION

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Oregon Highway Plan
Mobility Policy White Paper

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1 INTRODUCTION

The Oregon Highway Plan[1] (OHP) Mobility Policy states that "It is the policy of the State of Oregon to maintain acceptable and reliable levels of mobility on the state highway system, consistent with the expectations for each facility type, location, and functional objectives. Highway mobility targets will be the initial tool to identify deficiencies and consider solutions for vehicular mobility on the state system."

Based on this policy, the OHP establishes vehicular volume-to-capacity (v/c) ratio-based measures and targets for different types of highways and surrounding land use areas. It also establishes a process for developing alternative mobility measures when necessary. The mobility measures included in the mobility policy respond to requirements in the Transportation Planning Rule[2] (TPR) to coordinate land use and transportation planning and are used to identify when vehicle capacity-based mitigations are needed in planning applications such as long-range transportation system planning, land use plan amendments, and development application review.

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[1] Oregon Highway Plan. *Oregon Department of Transportation.* Amended May 2015.

[2] Oregon Land Conservation and Development Department. *Oregon Administrative Rule 660-012-0060.*

In January 2011, twelve years after the OHP was first adopted, the Land Conservation and Development Commission (LCDC) and the Oregon Transportation Commission (OTC) convened a Joint Subcommittee to address stakeholder concerns that the TPR and OHP were having unintended consequences related to balancing transportation mobility with community and economic development objectives. Specifically, communities were concerned that the mobility policy in the OHP frequently overrode economic development and land use objectives and that the mobility policy's measures dealt only with vehicular mobility. It was felt that local land use and economic development objectives were not sufficiently factored into the analysis of transportation impacts and opportunities, particularly in light of recession recovery efforts. As a result of the Joint Subcommittee's recommendations regarding these concerns, the TPR and OHP were updated to try to better balance transportation, land use, and economic development goals. The update did so in part by referring to mobility "targets" instead of mobility "standards" to stress their flexible nature and adding direct policy language on tradeoffs when balancing a broad range of policy objectives, and emphasizing jurisdictions' ability to pursue alternative mobility targets.

While the 2011 updates to the TPR and OHP were an important step towards better balancing of state and local objectives, a forthcoming mobility policy update gives an opportunity to review and improve the policy further.

While the 2011 updates to the TPR and OHP were an important step towards better balancing of state and local objectives, a forthcoming mobility policy update provides an opportunity to review and improve the policy further. The following sections describe the potential for updates and improvements by describing key takeaways from interviews with stakeholders around the state regarding the mobility policy and considering best practices from around the country in mobility policy.

1.1 Ongoing Policy Challenges

The Oregon Mobility Policy is intended to maintain acceptable and reliable levels of mobility on the state highway system, consistent with the expectations for each facility type, location, and functional objective. Reliable and continuous mobility is a key engine of economic opportunity and connectivity throughout the state.

However, as Oregon grows and changes from a demographic and economic standpoint and continues to focus growth inside Urban Growth Boundaries (UGB), there will continue to be situations where the performance measures within the mobility policy may have unintended outcomes. These include, but are not limited to, instances when the targets are not feasible based on costs of improvements and limited funding, when

they hinder a multi-modal approach to providing mobility, or they do not align with the community's vision for growth.

To support an understanding of the successes and challenges of implementing the mobility policy, interviews were conducted with cities, counties, metropolitan planning areas, ODOT regional representatives, and other stakeholders across the state. These interviews found that while the mobility policy has some value in its current form, an updated mobility policy is perceived by stakeholders to have the potential to reduce frustrations and unintended outcomes. Key takeaways from these interviews include:

- The current mobility policy has some perceived benefits, including that it:
  - provides clear, measurable standards from which all jurisdictions can work;
  - is easy to use and explain;
  - establishes a context to initiate dialogue about potential solutions; and,
  - ensures that the impacts of development are evaluated and discussed.
- Expressed frustrations related to the current policy include that it:
  - relies on measuring the mobility of trucks and cars, not people (other modes), and it does so with one metric that does not account for the overall system;
  - does not adequately reflect the current and future needs of the transportation system and the surrounding community;
  - does not provide the flexibility to adapt to current values and changing realities of the transportation system in Oregon;
  - does not reflect the fiscal capacity to construct the improvements necessary to meet the mobility targets; and,
  - does not always align with other state goals and policies, such as Goal 2 (Land Use Planning), Goal 9 (Economic Development), Goal 10 (Housing), and Goal 14 (Urbanization).
- Suggestions from interviewees for updating the policy include:
  - expand the measures of mobility beyond vehicular volume to capacity (V/C);
  - consider bicycle, pedestrian, and transit mobility, but focus on completion of networks, rather than delay or capacity;
  - continue to consider vehicle capacity but look at the state and local systems more holistically; and,
  - consider travel time within a corridor, rather than just intersection capacity.
- Nearly all interviewees stated that highways in urban areas should be treated differently than highways in rural areas; however, there were varying perspectives on *how* flexible the policy should be in nature. Most supported allowing for differences in the policy based on the type or classification of the highways or land use context. A full summary of comments received in stakeholder interviews can be found in Attachment A.

1.2 OHP Update and Mobility Policy Considerations

The OHP is scheduled to be updated over the next two years and the mobility policy will be one aspect of the plan that will be reviewed and considered for an update. The purpose of this paper is to compile and develop considerations, options, and potential approaches for updating the mobility policy as part of the OHP update.

The purpose of this paper is to compile and develop considerations, options, and potential approaches for updating the mobility policy as part of the OHP update.

The OHP update should describe the State of Oregon's desired mobility outcomes and define "acceptable and reliable levels of mobility on the state highway system." The current policy includes this statement but does not define what acceptable and reliable levels of mobility entails other than stating that it is to be measured through the mobility measures housed within the policy. These measures, which are vehicular v/c-based, have led to much of the stakeholder frustrations described above.

An updated policy should define acceptable and reliable levels of mobility for the Oregon highway system more robustly and explicitly, which can in turn lead to reconsidering the way highway mobility is measured and the factors that are considered in setting the standards.

Best practices that should be considered for a potential change in the mobility policy and its measures include:

- Clearly defining desired mobility outcomes and what constitutes acceptable and reliable levels of mobility, especially regarding how expectations can change based on desired highway function, land use context, and travel mode.
- Using a variety of statewide objectives, balanced with mobility goals, to define how a facility should perform operationally.
- Recognizing that the transportation system is analyzed at different governmental and regulatory decision-making levels and for a variety of purposes.
- Providing a clear, measurable basis from which all jurisdictions can work and serve as a tool to start conversations about solutions.
- Maintaining the ease of use and understanding of the current policy.
- Defining and measuring mobility more broadly than solely through peak hour vehicular volume-to-capacity ratio.
- Aligning and organizing mobility measures, providing potential priorities, and identifying measurement time periods across modes.
- Using multimodal measures in addition to vehicular-based measures to analyze, balance priorities, and understand the mobility provided by the transportation system.
- Focusing on measures that evaluate transportation network redundancy, reliability, and efficiency instead of just point-based (intersection) or facility-based (corridor) measures.

1.3 White Paper Overview

To help inform the OHP update in addressing questions related to the state's mobility policy, this white paper provides an overview of the state highway system and its goals and performance measures (Section 2 – Background), the history and events that led to the current mobility policy (Section 3: Oregon Mobility Policy – History and Today), definitions of mobility and measurement approaches from around the country (Section 4: Mobility Definitions and Measurements), and potential policy update approaches for ODOT to consider (Section 5: Oregon Mobility Policy Moving Forward). A glossary of terms and a bibliography of key documents reviewed to inform this white paper are included as Attachment B and Attachment C, respectively.

Section 2: Oregon Highway System

ODOT owns and operates the state highway system, a large, diverse, and highly-used public investment. The purpose of the system is to provide safe and reliable mobility for Oregon's people and goods. This section is about the system and the users it serves. It describes ODOT's goals as enumerated in the OHP, other guiding documents ODOT uses to plan the highway system, and key performance measures ODOT uses to track its progress.

Section 3: Oregon Mobility Policy – History and Today

This section provides a legal and policy-based history of the OHP mobility policy, culminating in a description of the policy as it stands today. It describes the adoption of the 1991 Highway Plan Level of Service Policy, the 1999 OHP and its switch from Level of Service measurement to volume-to-capacity measurement, 2011 revisions to the OHP to better balance statewide goals, and the current state of the policy, including a discussion of its strengths and weaknesses. It also describes the support and framework for developing alternative mobility targets and provides examples where they have been applied to state facilities and acknowledged in locally adopted plans.

Section 4: Mobility Definitions and Measurements

This section discusses the concept of mobility and its relationship to the state highway system. It describes how mobility is defined and measured both around the country and in Oregon, relying on case studies summarized in Attachment D to support the discussion.

Section 5: Oregon Mobility Policy – Moving Forward

This section describes several potential approaches for updating the mobility policy and targets contained within the Oregon Highway Plan (OHP). It draws on the goals for the state highway system described in the "Background" section and the history and uses of the mobility policy described in the "Oregon Mobility Policy – History and Today" section. It presents the items to be considered before pursuing a change, such as applications the mobility policy must continue to satisfy, and it offers potential approaches to updating the mobility policy and targets within these parameters.

2 OREGON HIGHWAY SYSTEM

ODOT owns, operates, and maintains roads in every corner of Oregon – 7,483 miles in total[3]. The state highway system is as diverse as Oregon itself – ranging from six-lane, limited access freeways with metered ramp entrances in the Portland area to the gravel road that connects Prineville to Brothers. The state highway system also serves a diversity of users, from commuters, to travelers, to freight, each with varied and at times competing needs.

Because of the diversity of users on the system, ODOT must consider a variety of perspectives when measuring how effectively it serves these users. A highly functional transportation system should help workers get to their jobs, move goods to market, shoppers to stores, people to their family and friends, and allow Oregonians and visitors alike to enjoy the state's scenic and recreational opportunities. Efficient mobility on the state highway allows these opportunities to occur. As Oregon's population increases

[3] Per the Oregon Highway Plan.

and ages and demographics change, the challenge facing ODOT is to serve all these needs efficiently and effectively.

2.1 Goals of the Oregon Highway System

Limited funding makes the challenge of efficiently and effectively serving all highway user needs even more pressing. ODOT must make difficult, cost-constrained decisions regarding the operation and preservation of the state highway system, and these decisions often involve tradeoffs. To make the most effective decisions possible, Oregon works with stakeholders to set goals for the system to help orient decision making. Its most fundamental set of goals are captured in the Policy Element of the OHP.

2.1.1 Oregon Highway Plan Goals

The OHP contains the following six broad goals that apply the general directives from the OTP[4] to the state highway system.

[4] Oregon Department of Transportation. *Oregon Transportation Plan*. 2006. Note that the 1999 Oregon Highway Plan predates the current Oregon Transportation Plan.

1	**System Definition:** To maintain and improve the safe and efficient movement of people and goods, and contribute to the health of Oregon's local, regional, and statewide economies and livability of its communities.
2	**System Management:** To work with local jurisdictions and federal agencies to create an increasingly seamless transportation system with respect to the development, operation, and maintenance of the highway and road system.
3	**Access Management:** To employ access management strategies to ensure safe and efficient highways consistent with their determined function, ensure the statewide movement of goods and services, enhance community livability and support planned development patterns, while recognizing the needs of motor vehicles, transit, pedestrian and bicycles.
4	**Travel Alternatives:** To optimize the overall efficiency and utility of the state highway system through the use of alternative modes and travel demand management strategies.
5	**Environmental and Scenic Resources:** To protect and enhance the natural and built environment throughout the process of constructing, operating, and maintaining the state highway system.
6	**Tolling and Congestion Pricing:** To consider tolling to finance new infrastructure only if expected revenue pays for an acceptable portion of project costs, to consider tolls on currently non-tolled state highways consistent with other Oregon laws, statutes, and regulations, to ensure the objectives of tolling are clear, and to treat the use of toll-generated revenue as an important component in evaluating any tolling proposal.[5]

Of these six goals, Goal 1 deals most directly with the need to ensure effective and reliable mobility on the state highway system. Within Goal 1, Policy 1F is the Oregon mobility policy. It states that "It is the policy of the State of Oregon to maintain acceptable and reliable levels of mobility on the state highway system, consistent with the expectations for each facility type, location, and functional objective." Highway mobility targets will be the initial tool to identify deficiencies and consider solutions for vehicular mobility on the state system."

[5] The Oregon Transportation Commission adopted Oregon Highway Plan Amendment 12-21: Tolling and Pricing Policy in July 2012, which added Goal 6: Tolling and Congestion Pricing and policies 6.A – 6.E to the Plan. This goal includes no summary language; the summary included above is based on the full text of the goal.

2.1.2 A Strategic Investment in Transportation

The Oregon Transportation Commission's Strategic Investment Plan, *A Strategic Investment in Transportation*[6] (2017), also serves to illustrate and clarify ODOT's goals for the state highway system. This plan presents five goals for the state highway system that cannot be fully met with today's funding levels but that could be met with increased funding. These goals contribute to the fundamental vision of a strong multimodal transportation system that is fundamental to a vibrant economy with good jobs, a clean environment, safe and livable communities, and healthy people. These goals are:

- **Goal #1: Preserve and Maintain Existing Highways**
- **Goal #2: Seismic Resiliency and Safety**
- **Goal #3: Congestion Relief**
- **Goal #4: Public Transportation and Transportation Options**
- **Goal #5: Transparent, Accountable and Efficient Program Delivery**

2.2 Planning the Oregon Highway System

ODOT plans the maintenance and expansion of the state highway system to serve the system's users. It designs different parts of a facility to serve different types of users depending on the location, form, and function of the facility.

The OHP, including the mobility policy, serves as one starting point for ODOT and local governments to assess the effectiveness of individual intersections and segments of the state highway system. Transportation system plans, highway corridor plans, and facility plans are used to plan the intended form and function of segments in the state highway system. At this level of planning, traffic analysis can gauge whether the mobility targets set out in the OHP are feasible to meet from cost, safety, right-of-way, environmental impact, and land use context perspectives. When the mobility targets are not feasible to meet, alternative mobility targets can be pursued.

The OHP, including the mobility policy, serves as one starting point for ODOT to assess the effectiveness of individual intersections and segments of the state highway system.

[6] Oregon Transportation Commission. *A Strategic Investment in Transportation*. 2017.

As shown below, ODOT tracks the performance of the state highway system using 17 key performance measures (KPMs) related to safety, preservation, mobility, and stewardship:

- **Safety**
  - Traffic fatalities per 100 million vehicle miles traveled
  - Serious traffic injuries per 100 million vehicle miles traveled
  - Large truck at-fault crashes per million vehicle miles traveled
  - Rail crossing incidents – number of highway/railroad at-grade incidents
  - Derailment incidents – number caused by human error, track or equipment
- **Preservation (Asset Condition)**
  - Pavement condition – percent of state highway miles rated 'fair' or better out of total miles on ODOT highway systems
  - Bridge condition – percent of state highway bridges that are not 'distressed'
  - Public transit vehicle condition – percent of public transit buses that meet replacement standards
- **Mobility**
  - Passenger rail ridership – number of rail service passengers
  - Bikeways and walkways – percent of urban state highways with bike lanes and sidewalks
  - Traffic congestion – number of congested lane miles – ratio of annual average daily traffic to hourly highway capacity
  - Transit rides – average number of transit rides each year per Oregonian
- **Stewardship**
  - Construction projects on-time – the percentage of state administered projects that have satisfactorily completed all on-site work within 90 days of the last baselined contract completion date
  - Construction projects on-budget – the percentage of projects for which total construction expenditures do not exceed the original construction authorization by more than 10%
  - Certified firms (DMWESB) – percent of contracts awarded to certified small businesses
  - DMV field office wait time – percentage of DMV field office customers served within 20 minutes
  - ODOT customer service – percent of ODOT customers who are satisfied with services

ODOT also tracks many performance measures as required by the Fixing America's Surface Transportation (FAST) Act. This act requires ODOT to establish performance measures in areas such as safety, bridge and pavement condition, air quality, freight

movement, and performance of the National Highway System. ODOT has established performance measures and tracks progress towards its goals in accordance with the FAST Act.

One of the most important KPMs ODOT uses to track mobility is the Traffic Congestion measure[7] which is the ratio of annual average daily traffic to hourly highway capacity (AADT/C). For every highway lane mile, an AADT/C ratio of less than 10 is considered to represent uncongested or moderately congested traffic flow, while an AADT/C ratio of greater than 10 is considered to represent a congested or very congested traffic flow. As of 2017, approximately 8% (615 miles) of Oregon state highway lane miles are classified as congested using this measure. Given population growth throughout the state, this indicator is expected to worsen over time. By tracking mobility in this way, ODOT considers the perspective of connecting people and goods to the markets and opportunities they wish to reach. This mobility indicator helps ODOT monitor the level and extent of congestion over time and apply different techniques designed to manage and optimize system performance.

While ODOT utilizes a variety of performance measures to monitor system performance, ODOT is unique among state departments of transportation in that it has a singular performance measure (v/c) in its mobility policy that, based on the state's Transportation Planning Rule, is applied to determine if a transportation system plan is adequate to accommodate the future land use plan and growth projections.

[7] Traffic Congestion. *Oregon Department of Transportation.* April 2019.

Source: City of Portland Archives

3 OREGON MOBILITY POLICY—HISTORY AND TODAY

The Department of Land Conservation and Development (DLCD) adopted Goal 12, the Transportation Goal, in 1974.[8] To administer the Transportation Goal, the department adopted the Transportation Planning Rule (the TPR, OAR Chapter 660-012) in 1991, 17 years after it had adopted the original goal. Legal cases and major transportation decisions made during this period showed a need for a clear process for administering the goal and defined roles and responsibilities for different agencies and levels of

[8] Goal 12 is one of 19 statewide Land Use Planning Goals currently used today to guide land use planning in Oregon. Oregon passed Senate Bill 100 (SB 100) in 1973, which required that local government plans be consistent with State land use planning goals. It also created the Land Conservation and Development Commission (LCDC) as the chief implementation body. As its first task, the new LCDC rewrote the ten state planning goals in 1974 after dozens of workshops throughout the state. The ten goals of the 1969 legislation were made more clear and precise and four new goals were added. All fourteen goals were adopted in December 1974. An additional goal on the Willamette River Greenway was added in December 1975 and four goals focusing on coastal zone issues were added in December 1976 (see Senate Bill 100). For reference, see OregonEncyclopedia.org's land use planning web page.

government in transportation planning. The TPR requires that ODOT prepare, adopt, and amend a state transportation system plan, the Oregon Transportation Plan[9] (OTP). It also requires most jurisdictions to prepare and adopt a regional or local Transportation System Plan (TSP) that serves as the transportation element of a comprehensive plan (OAR 660-012-0015). One of the stated purposes of the TPR is to set out the "requirements for coordination among affected levels of government and transportation service providers for preparation, adoption, refinement, implementation and amendment of transportation system plans (660-012-0000(4))." The TPR requires that capacity analysis for state and regional facilities be consistent with "standards of facility performance considered acceptable by the affected state or regional transportation agency (660-012-0020(3)(a)(B))." For any planned transportation system, the plan needs to describe the type or functional classification of planned facilities and services and their planned capacities and performance standards (660-012-0020(3)(b)). Section -0060 includes requirements to ensure that the planned transportation system is adequate to support amendments to adopted plans and land use regulations, including changes to zoning. If proposed changes would "significantly affect" an existing or planned transportation facility, the local government must put in place measures to address the impact.

The TPR requires the planned transportation system be adequate to support adopted comprehensive land use plans consistent with "standards of facility performance." If proposed plan changes "significantly affect" an existing or planned transportation facility, measures must be put in place to address the impact.

The OTP is the overarching policy element of the state transportation plan addressing statewide transportation needs and investments. The OTP does not identify specific projects for development, but rather provides a policy framework that guides development of statewide mode and topic plans and regional and local transportation system plans that do identify specific needs or projects. Metropolitan Planning Organization (MPO), county, and city plans and policies must be consistent with the OTP and associated mode and topic plans; similarly, they must adopt policy and reflect decisions and projects that support and are consistent with each other and with adopted land use plans.

[9] Mode and Topic Plans, such as the OHP, Bicycle and Pedestrian Plan, and Freight Plan, are part of the OTP.

Statewide mode and topic plans are adopted as a part of the OTP and include statewide policy, requirements, and guidance related to transportation system planning. Mode and topic plans include the following:

- Oregon Aviation Plan
- Oregon Bicycle and Pedestrian Plan
- Oregon Highway Plan
- Oregon Public Transportation Plan
- Oregon Freight Plan
- Oregon State Rail Plan
- Oregon Transportation Safety Action Plan
- Oregon Transportation Options Plan
- Oregon Statewide Transportation Strategy - A 2050 Vision for Greenhouse Gas Emissions Reduction[10]

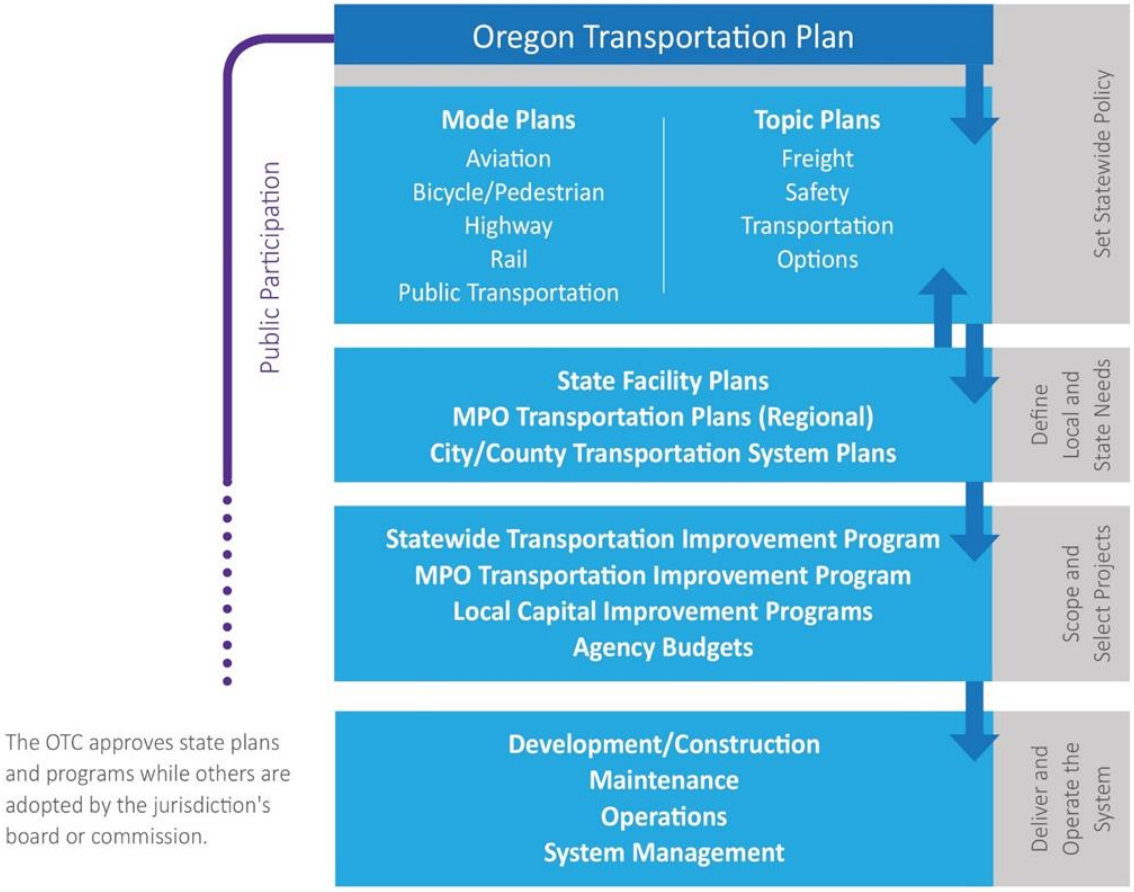
These documents also play a critical role in planning for local transportation systems as jurisdictions must address relevant statewide planning documents when updating and implementing the local TSP.

Statewide planning processes reflect a cooperative approach, as statewide planning and policy incorporates and respects the policy decisions made by local and regional partners. A diagram of these policy relationships is provided in Figure 1.

The OHP is the OTP modal plan that guides ODOT's planning, operations, and financing for the state highway system. Policies in the OHP emphasize the efficient management of the highway system to increase safety and to extend highway capacity, as well as partnerships with other agencies and local governments. These policies also link land use and transportation, establish targets for highway performance, incorporate access management standards, and emphasize the relationship between state highways and local road, bicycle, pedestrian, transit, rail, and air systems.

[10] Statewide Transportation Strategy. *Oregon Department of Transportation.* March 2013. See https://www.oregon.gov/odot/planning/pages/plans.aspx

Figure 1. Planning Hierarchy Diagram



The OHP Policy Element contains policies and actions under goals for System Definition, System Management, Access Management, Travel Alternatives, and Environmental and Scenic Resources. Goal 1, System Definition, contains Oregon's mobility policy. This policy (Policy 1F) identifies how the state measures mobility and establishes targets that are consistent with OTP and OHP policies. The mobility targets are based on volume to capacity ratios that vary according to highway classification, speed, and urban and rural land use types. These ratios compare roadway demand (volume) to roadway supply (capacity). The mobility targets are contained in OHP Table 6[11] and refer only to motor vehicle mobility on the state highway system. The Portland metropolitan area has separate mobility targets (OHP Table 7[12]), adopted to reflect "the unique context and policy choices that have been made by local governments in that area."[13]

These mobility targets must be used for the initial deficiency analysis of highway intersections and segments along state highways. However, where it can be shown that

[11] Oregon Highway Plan p. 84

[12] Oregon Highway Plan p. 85

[13] Highway Mobility Standards Background, Oregon Highway Plan p. 73.

it is infeasible or impractical to meet the targets, local governments may work with ODOT and stakeholders to consider and evaluate alternatives to the targets. Only the Oregon Transportation Commission (OTC) can adopt alternatives to the mobility targets and methodologies in the tables through an action to amend the OHP.

Local and regional TSPs must be consistent with OHP policies and standards for the state highway system. Local plans and development requirements can implement the state requirements by reflecting the intended function of state facilities through supporting policies, system investment, and management and performance decisions. As explored later, state mobility targets play a role in local long-range transportation system planning, as well as factor into local decisions related to plan amendments and changes to land use regulations where state facilities are impacted. Mobility targets are used to evaluate how proposed amendments impact the state highway system and provide ODOT an opportunity to participate in identifying mitigation measures if the state highway system is adversely impacted.

State mobility targets play a role in local decisions related to plan amendments and changes to land use regulations where state facilities are impacted. The targets provide ODOT an opportunity to participate in identifying mitigation measures if the state highway system is adversely impacted.

3.1 Transportation Planning Rule (TPR) Updates

The State amended the TPR in 1993 and in 1995, both times to extend the deadline for jurisdictions to adopt a transportation system plan.[14] In 2004, the Jaqua v City of Springfield decision was a challenge to the Rule concerning the relationship between the adequacy of transportation facilities and rezoning of land uses. The Jaqua case, taken to the State Court of Appeals, raised key issues as to the level of evaluation and planning process necessary in determining the adequacy of transportation facilities. The Jaqua decision and subsequent TPR amendments clarified how a determination of a significant effect identified through a traffic analysis for a plan amendment subject to 660-012-0060 is made. At the heart of the Jaqua decision was the acknowledgment of the significant gap between transportation projects needed to serve planned growth and the availability of funding to pay for those projects. The decision required a more rigid review from an impact and project scheduling perspective to keep this gap from getting worse as a consequence of plan amendments that allow more traffic intensive uses. The 2005 revisions to 660-012-0060 (1) – (3) clarified that performance standards

[14] The Politics of Implementation: Oregon's Statewide Transportation Planning Rule - What's Been Accomplished and How, Martha J. Bianco and Sy Adler, 1998.

must be met at the "end of the planning period" as the standard for conducting a traffic analysis and provided a series of recommended transportation improvements and actions that may be used as a demonstration of project commitment to clarify what projects can be relied on to comply with this section of the TPR.

In 2010, the OTC and LCDC established the Joint Subcommittee on the TPR and OHP to help address concerns that, as applied at the local level, the combination of TPR -0060 and OHP highway mobility standards was having unintended and undesirable consequences, such as making it difficult to increase the planned land use densities in their comprehensive plans. In response to further legal cases and concern from jurisdictions about ability to recover from the Great Recession in 2007-2009, the legislature passed a bill instructing ODOT and DLCD to take another look at the TPR and the OHP requirements. The 2011-12 set of amendments to both the TPR and the OHP responded to these concerns by streamlining requirements and clarifying options and choices available for complying with the TPR and OHP. The resulting TPR updates that became effective in 2012 focused on measures in OAR 660-012-0060 and are among the most significant changes that have been made to this Administrative Rule since its adoption. Changes focused on measures in OAR 660-012-0060, a section of the TPR that directs proposed plan and land use regulation amendments to be consistent with the identified function and capacity of existing and planned transportation facilities. It includes criteria for identifying significant effects of plan or land use regulation amendments on transportation facilities, actions to be taken when a significant effect is identified, identification of planned facilities, and coordination with transportation facility providers.

TPR Amendments

2005:

- Clarified that performance standards must be met at the "end of the planning period" as the standard for conducting a traffic analysis
- Includes criteria for identifying "significant effects," "reasonably likely" improvements, and how to address impacts

2012:
- Proposed plan and land use regulation amendments are to be consistent with the identified function and capacity of existing and planned transportation facilities
– Exempts zone changes consistent with the comprehensive plan from "significant effect" determination
-Introduced Multimodal Mixed-use Areas (MMA), allowing jurisdictions to exempt areas planned for higher density, multi-modal development, from performance standards related to motor vehicle traffic congestion, delay, or travel time
-Allows for jurisdictions to weigh economic benefits with anticipated negative transportation impacts in land use permitting, where a proposed amendment would create certain types of jobs as defined in the TPR
- Local government may accept partial mitigation where it can be shown that the economic benefits outweigh the negative effects on impacted transportation facilities

TPR amendments were made to allow local governments to exempt a zone change from the "significant effect" determination if the proposed zoning is consistent with the comprehensive plan map designation and the TSP. More significantly, amendments introduced the concept of Multimodal Mixed-use Areas (MMA), wherein jurisdictions would not have to apply performance standards related to motor vehicle traffic congestion, delay, or travel time in areas that have been planned for higher density, multi-modal development. The TPR now also allows for jurisdictions to weigh economic benefits with anticipated negative transportation impacts in land use permitting, where a proposed amendment would create certain types of jobs as defined in the TPR. A local government may accept partial mitigation where it can be shown that the economic benefits outweigh the negative effects on impacted transportation facilities; this is allowed even on state facilities if ODOT officially concurs that the benefits outweigh the impacts. As discussed in a later section, revisions to the OHP mobility policy were coordinated with the TPR amendments.

3.2 State Highway Mobility Policy Revisions

The 1991 OHP was a policy and strategy document that served as the highway element of the Oregon Transportation Plan until adoption of the current OHP in December 1999. It guided operating and financial decision-making through the development of highway standards, the identification of highway needs between 1991 and 1999, and the development of funding strategies to address these needs. The OHP originally used Level of Service (LOS) to assess highway system performance; these mobility standards were from the AASHTO Greenbook and did not have a policy foundation in either the OTP or OHP. The initial standards had a strong relationship to the ODOT Highway Design Manual (HDM), which was heavily influenced by the Federal Highway Administration (FHWA). The initial standards were focused on maintaining consistency between determining improvement needs and facility design. The standards were primarily a tool to ascertain when there was a problem on a facility (needs) and the appropriate facility design/solution standards (from the HDM). Development and land use issues were secondary. The following subsections summarize the evolution of the mobility policies since 1991.

3.2.1 1999 Oregon Highway Plan Level of Service Policy and Alternative Mobility Standards

The 1999 OHP included a shift in the mobility policy from level of service (LOS) letter grades to volume to capacity ratios (v/c) as the measure of vehicular highway congestion. This was done because level of service letter grades applied to a range of conditions, making it difficult to determine a significant effect pursuant to the TPR, as part of land use decisions related to plan amendments. Once a facility was LOS F, there was no further grade to measure significant effect; ODOT needed a more definitive way to measure performance and determine significant effect that could be a legally defensible standard.

Several reports and presentations on the Highway Mobility Standards policy were prepared for the Oregon Transportation Commission (OTC) when the 1999 OHP was being developed. The *Report on 1998 Draft Highway Plan Level of Service Policy*[15] contains an assessment of alternative ways of measuring mobility, examining 11 performance measures related to mobility including LOS and v/c. Performance measures were evaluated against criteria derived from the objectives of the Level of Service Policy. A summary of this evaluation from the report is shown in Figure 2.

The report ultimately recommended the use of v/c ratio as the basic measure of mobility because of its consistent application, ease of data collection and calculation, and ability to measure both intercity passenger and freight mobility. Along with the

[15] ODOT Transportation Planning Analysis Unit, September 29, 1998

recommendation to use the v/c ratio to measure mobility, the report discussed ways the standard can be made more flexible to support growth management objectives. The report recommended that alternative measures preserve a connection to v/c to retain the benefits of this method, but also noted flexible options such as allowing multiple hour measures, allowing special use area and use exceptions, and providing exceptions for small impacts and redevelopment.

1999 OHP Changes to Mobility Policy

- Shift in the mobility policy from level of service (LOS) letter grades to volume to capacity ratios (v/c) as the measure of vehicular highway congestion to provide a more definitive and legally defensible way to determine significant effect

- Policy amended to specify that the OTC could authorize alternative standards:

> **1) in metropolitan areas, to support an integrated land use and transportation plan, and**
>
> **2) in areas where severe environmental or land use constraints make it infeasible to implement transportation improvements and meet land use objectives.**

Figure 2. 1998 ODOT Evaluation of Performance Measures Related to Mobility

Performance Measure	Evaluation Criteria							
	Understandability	Continuity	Cost	Intercity Mobility	Growth Mgmt.	Multimodal	Operations	Forecasting
Level of Service (LOS)	⊙	⊙	●	⊙	⊙	○	●	⊙
Volume to Capacity Ratio (V/C)	⊙	●	●	⊙	⊙	⊙	●	●
Person Throughput	○	○	○	○	⊙	●	○	○
Vehicle Travel Time	●	○	⊙	●	⊙	○	⊙	⊙
Person Travel Time	⊙	○	○	○	⊙	●	○	○
Delay	●	○	⊙	●	⊙	○	⊙	⊙
Modal Split	●	○	○	○	●	●	○	○
Average Vehicle Occupancy	⊙	○	○	○	⊙	⊙	⊙	○
Vehicle Miles Traveled (VMT)	⊙	○	●	○	⊙	⊙	○	⊙
Vehicle Hours Traveled (VHT)	⊙	○	⊙	⊙	⊙	⊙	⊙	⊙
Accessibility	⊙	○	○	○	●	●	○	⊙

● = Best ⊙ = Average ○ = Not as Good

The 2nd *Report on 1998 Draft Highway Plan Level of Service Policy*[16] broadly describes the policy context for the Level of Service Policy, starting with a description of how transportation and land use decisions are inter-related. The report describes the relationship between the mobility policy and other OHP policies, and OHP policies to local land use decisions. Specifically, it describes four policies within the OHP - Land Use and Transportation (1B), Major Improvements (1G), Level of Service (1F), and Access

[16] ODOT Transportation Planning Analysis Unit, December 4, 1998.

Management (3A-3D and Appendix D) - that improve the connection between land development decisions and state highway system decisions.

The policy changes in the 1999 OHP reflected OTC concerns that the proposed option for modifying the standards within metropolitan areas was too limited. The policy was amended to identify two circumstances where the OTC could authorize alternative standards: 1) in metropolitan areas, to support an integrated land use and transportation plan, and 2) in areas where severe environmental or land use constraints make it infeasible to implement transportation improvements and meet land use objectives. The report confirms that, consistent with the new proposed requirements, alternative standards must be clear, objective, and related to v/c.

3.2.2 2011 Revisions to Policy 1F

In 2011, the State's mobility policy already allowed alternative mobility targets to be considered in metropolitan areas and special transportation areas, and where local land use objectives or severe environmental or land use constraints made transportation improvements infeasible to meet the targets in OHP Table 6 or Table 7. In 2010, a Joint Subcommittee consisting of OTC and LCDC members established to explore ways the OHP could continue to guide mobility on the statewide system while at the same time avoid unintended impacts to local land use and economic development objectives. At this time, ODOT was working on rulemaking to implement House Bill 3379 (2009), which sought to give local governments additional options for complying with the OHP when rezoning to accommodate economic development projects. For ODOT, the Joint Subcommittee's work was an opportunity to hear from local governments and other stakeholder interests. Based on a series of meetings and public testimony, the Joint Subcommittee concluded that the TPR and OHP lead to unintended consequences in two areas in particular: 1) economic development and 2) balancing land use and transportation objectives. Economic development objectives needed to be better balanced with transportation performance, as in practice the TPR and OHP were giving precedence to highway mobility. The state requirements were also making it difficult to increase development intensities, especially as desired and planned for in urban centers, contrary to other statewide planning goals. The Joint Subcommittee concluded that TPR amendments, OHP policy amendments, and related work were needed to address these issues. The OTC and LCDC concurred with this direction and initiated work by both the ODOT and DLCD.

After LCDC and OTC accepted the recommendations from the Joint Subcommittee, Senate Bill 795 was enacted to reinforce the work. This bill directed LCDC and OTC to address the potential OHP policy amendments in the recommendation, and to complete the amendments by January 1, 2012. Advised by a Technical Advisory Committee, ODOT worked through the following highest priority recommendations related to the OHP:

- Exempt proposals with a small increase in traffic
- Use average trip generation, not reasonable worst case
- Streamline alternate mobility standard development
- Allow corridor or area mobility standards
- Standardize a policy framework for considering measures other than volume to capacity ratios (v/c)

Resulting Policy 1F amendments were intended to provide flexibility and enhance options for adopting alternative mobility targets. The changes recognized that many segments of the state highway system exceeded OHP highway mobility targets. This was due to multiple factors, including transportation funding not keeping pace with growing needs on state facilities, concerns about the physical and social impacts of expanded transportation facilities, and other state and local policy objectives. Without providing more flexibility when applying mobility targets, many more segments were likely to exceed mobility targets in the future.

While jurisdictions were previously able to set alternative mobility targets, the 2011 revisions clarified this policy and made available more tools to help balance mobility with other state and local policy objectives. The changes highlighted that alternative mobility targets were an option under the following circumstances: 1) where it was infeasible or impractical to meet the adopted mobility targets for a state facility, 2) when other approaches are taken to best manage the transportation system in the area, such as local roadway enhancements, and 3) where ODOT and local jurisdictions wish to consider mobility broadly – through multimodal objectives and potential measures or within the context of regional or local land use and economic objectives. The policy change required balancing multiple transportation system objectives such as maintaining safety and considering the need for mobility on OHP Freight Routes to support statewide economic development objectives.

2011 OHP Policy 1F Revisions

- **Broader implementation of other OHP policies and consideration/balancing of multimodal OTP policy objectives and community objectives.**
- **Use of the term "mobility targets," replacing "mobility standards," which signified the opportunity to enhance implementation and flexibility of the mobility policies and balance other state, regional, and local objectives.**
- **Less stringent requirements/thresholds for plan amendments that have a small increase in traffic on congested facilities and increased flexibility for determining mitigation in some TPR applications.[17]**
- **Required consideration of "planned development" assumptions, consistent with the community's comprehensive plan, rather than "full development/full build-out" assumptions.**
- **Enhanced policies related to developing alternative mobility targets and required streamlining efforts as a specific action item.**
- **Enhanced policies related to coordination and consistency between planning and design expectations and incorporating practical design principles.**
- **Revised OHP Mobility Standard Tables to make the thresholds easier to meet, recognizing changes since 1999 such as increased levels of traffic and additional financial constraints.**

The change in terminology to "mobility targets" was a deliberate shift to better reflect the flexibility ODOT and local jurisdictions would now have in balancing mobility and other state and local objectives when applying Policy 1F, especially at system and facility planning stages. ODOT and local jurisdictions would still be obligated to plan for the state system to a level of mobility adopted in OHP Tables 6 and 7 and the volume to capacity ratio (v/c) remains the initial measure of performance. For long-range system planning, the mobility targets are the initial measures of system performance, but Policy 1F allows for development of alternative mobility targets

In practice, determining significant effect and compliance with the TPR for land use approvals largely relies on adopted mobility targets to determine needed mitigation on the transportation system to support the proposed change.

[17] See Action 1F.5.

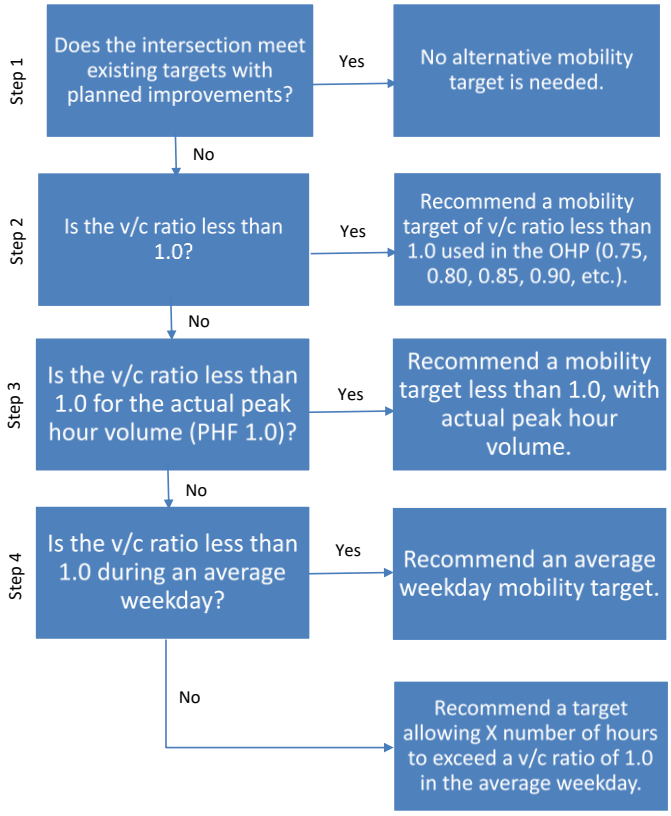
and/or the use of different performance measures as a planning outcome. However, the mobility targets are defined and treated as standards – a term used in the TPR – in order to ensure compliance with applicable administrative rules and to provide legal certainty during implementation. In practice, land use approvals requiring a modification to an adopted plan or land use requirement, determining significant effect and compliance with the TPR largely relies on adopted mobility targets to determine needed mitigation on the transportation system to support the proposed change. For the state highway system, the v/c target is considered the standard to which highways must be improved to maintain adequate mobility.

3.2.3 Developing Alternative Mobility Targets

Alternative targets may only be developed as part of a long-term, system, or facility planning process.[18] Long-range planning allows a broader and more comprehensive, system-wide perspective, as compared to applying alternative targets to a specific site as part of proposed development. The planning process should explore a variety of transportation-related solutions, including a number of system and demand management activities to maximize the efficiency of transportation movements and to identify solutions that are realistic to implement and have the potential to be effective. ODOT's policy is to first assess the performance of the state highway compared to the adopted OHP mobility targets. Where it can be shown that improvements to meet the adopted OHP mobility target are not feasible or do not meet broader community policies and objectives, other volume-to-capacity (v/c)-based targets or non v/c-based measures that establish more realistic future performance expectations should be developed. Figure 3 shows the methodology recommended in the ODOT PB-02 Operational Notice for the agency to determine the need for alternative mobility targets.

[18] While alternative mobility targets should not be developed directly through a development review action or to mitigate impacts from proposals subject to TPR Section 0060, development applications that are considered under Oregon Administrative Rule (OAR) 731-017 are an exception. The OTC approved OAR 731-017 implementing House Bill (HB) 3379 from the 2009 Legislative Session at their December 15, 2010 Meeting. The Rule addresses economic development projects unable to meet TPR requirements for state highways. See PB-02 Operational Notice, 2013.

Figure 3. ODOT Alternative Mobility Target Methodology



Policy 1F establishes that the affected local jurisdiction must agree to a proposed alternative mobility target for the state highway facility as part of the adoption of a local transportation system plan. Local jurisdictions do not adopt targets for state facilities; however, local TSPs set policies and include local system enhancements that can support recommended alternative targets on state facilities. Through the local planning process, state and local participants examine the trade-offs related to mitigating to the adopted target and outcomes associated with adopting an alternative target, including accepting higher levels of congestion that comes from reducing the mobility target.

Evaluating mobility targets includes looking at the trade-offs between mitigating to the adopted target and accepting higher levels of congestion that come from reducing the mobility target.

Policy 1F also requires that the local plan include findings demonstrating why the alternative mobility target is necessary, including the finding that it is infeasible or impractical to meet the mobility targets in the OHP. To support the establishment of an alternative mobility target, a local plan should include feasible actions for:

- Providing a network of local streets, collectors and arterials to relieve traffic 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 ramps, accommodate freight vehicles, and make the most efficient use of existing and planned highway capacity;
- Managing traffic demand and incorporating transportation system management tools and information, where feasible, to manage peak hour traffic loads on state highways;
- Providing for and enhancing multiple modes of transportation; and
- Managing land use to limit vehicular demand on state highways consistent with Policy 1B (Land Use and Transportation Policy).

In addition, the local plan must include a financially feasible implementation program and must demonstrate that the proposed mobility target(s) are consistent with and support locally adopted land use, economic development, and multimodal transportation policy and objectives. Locally adopted plan policy and implementation strategies must demonstrate a strong local commitment to carrying out the identified improvements and other actions.

3.3 Oregon Mobility Policy Implementation Today

Table 1 lists the facilities and locations of adopted and proposed alternate mobility targets. To date, the OHP has been amended eight times to incorporate alternative mobility targets. OHP amendments made in 2014 or earlier were supported by transportation analysis that did not have the guidance provided by the updated Policy 1F amendments and subsequent Operational Notice.[19] ODOT Region 2-supported planning in the last ten years has resulted in the adoption of five local transportation system plans and one regional plan that identified the need for alternative mobility targets. The requested OHP amendments related to these plans are shown as "pending" in Table 1 and are expected to be adopted by the OTC in 2020. Assuming the successful adoption of these cases, ten of the total 14 OHP amendments adopting alternative mobility targets will be in Region 2; five of the ten concern mobility on US 101.

[19] For example, the alternative mobility target established for the US 101 Camp Rilea to Surf Pines Facility Plan followed the methodology outlined by the ODOT Region 2 Planning Division interoffice memo titled *Methodology for OHP Alternate Mobility Standards in Region 2* (December 30, 2009). This methodology included a seven-step process for developing and establishing alternative mobility targets.

Table 1. Oregon Highway Plan Amendments - Alternate Mobility Targets[20]

ODOT Region	Jurisdiction	Facility/Location	Plan Type	OHP Amendment Date	Target(s) Based On			
					v/c ratio less than 1.0	Peak Hour Factor of 1.0	Avg. Annual Wkday Peak Hour	Hours to exceed v/c ratio of 1.0
1	Oregon City	OR 213/Beavercreek intersection.	Transportation System Plan	2018			●	●[21]
2	Polk County	OR-18 OR-22 Fort Hill IAMP[22]	Interchange Area Management Plan	2007				
2	Seaside	US 101 through Seaside, from Lewis and Clark Road to Avenue U (four intersections).	Transportation System Plan	2011			●	
2	Clatsop County	US 101, 4.6 mile segment south of Warrenton from Camp Rilea to Surf Pines (six intersections).	Facility Plan	2014			●	
2	Newport	US 101 in the South Beach area, from Yaquina Bay Bridge south to South 62nd Street (four intersections).	Transportation System Plan	2013			●	
2	Salem	Oregon 22, 25th Street to Gaffin Road (six intersections).	Facility Plan	2018	●[23]	●[24]	●[25]	
2	Gearhart	US 101, all intersections through the City of Gearhart.	Transportation System Plan	2020		●	●	

[20] Note that Table 7 of the OHP enacts alternative targets for the Portland metropolitan area.
[21] Target set at a maximum v/c ratio of 1.00 for the first, second and third hours (generally 3-6 pm).
[22] Alternate mobility standards were developed to reserve capacity at the ramps to address possible unexpected growth that may occur in the area.
[23] Three of the six intersections have a mobility target where the f v/c ratio is less than 1.0, calculating the maximum v/c ratio for 30th highest hour; targets for the other three intersections are set assuming average annual weekday peak hour volumes.
[24] Applies to one of the six intersections.
[25] Applies to three of the six intersections.

ODOT Region	Jurisdiction	Facility/Location	Plan Type	OHP Amendment Date	Target(s) Based On			
					v/c ratio less than 1.0	Peak Hour Factor of 1.0	Avg. Annual Wkday Peak Hour	Hours to exceed v/c ratio of 1.0
2	Lincoln City	US 101 through the City of Lincoln City.	Transportation System Plan	Pending			●	●[26]
2	Scappoose	US 30, all intersections through the City of Scappoose.	Transportation System Plan	Pending		●	●	●[27]
2	Newberg	OR 99W, all intersections on the couplet between Harrison Street and Villa Road (OR 219).	Transportation System Plan	Pending		●	●	●[28]
2	Yamhill County	Two intersections - OR 99W/Fox Farm Rd and OR 18/OR 99W/McDougall Rd - and specific highway segments along OR 99 and OR 18 through Yamhill County.	Transportation System Plan	Pending		●[29]	●[30]	
2	Albany Area MPO	US 20, OR 99E and OR 164 in the AAMPO Study Area.	Regional Transportation Plan	Pending		●		
3	Medford	I-5 South Medford Interchange, Northbound and Southbound off-ramps and Highway 99 at Stewart Avenue.	Jurisdictional Agreement	2000				●
3	Rogue River	I-5 Exit 48 (Rogue River Interchange) ramp terminals.	Transportation System Plan	2019			●	●
4	The Dalles	Chenoweth Interchange at I-84.	Jurisdictional Agreement	2006				

[26] The proposed alternative mobility target is a maximum v/c of 1.0 for 8 hours at one location, the US 101/32nd Street intersection.
[27] The proposed alternative mobility target is a maximum v/c of 1.0 for 4-6 hours.
[28] The proposed alternative mobility target is a v/c of 1.0, during the average annual condition for three hours between Springbrook Road and the eastern City limits.
[29] For OR 99W/Fox Farm Rd intersection and one OR 99W segment, between Dundee and OR 18.
[30] For OR 99W/Fox Farm Rd intersection and OR 99W between Dundee and OR 18.

The Table 1 summary makes clear that most of the alterative mobility targets are based on the Average Annual Weekday Peak and that targets could not be met using ODOT's standard analysis methodology measuring volumes during the 30th highest annual hour. For many jurisdictions (particularly recreation-dependent or -impacted areas), the 30th highest annual hour is in the summer, reflecting seasonal tourist traffic and when local commuting traffic peaks coincide with recreational traffic peaks. For US 101 in particular, the approach to establish a new mobility target started with the use of an analysis period that is more representative of travel that does not take place during the peak summer tourist season.

In most cases, the need for alternative mobility targets was identified through a local transportation system planning process in collaboration with ODOT. The alternatives evaluation process made clear that the size and scale of improvements necessary to meet existing and future needs, consistent with adopted mobility targets on state facilities, are either too expensive, too impactful on the community, or – as is usually the case – a combination of the two. Assuming an alternative mobility target through the local planning process acknowledges the constraints of the built and natural environment and reflects a community's acceptance of reduced mobility for the trade-off of minimizing the size and impact of the facility. In some cases, the resulting agreement between the local jurisdiction and ODOT on the maximum feasible and desired highway cross-section is captured in the adopted local transportation system plan and, where applicable, the state facility plan.

The need for alternative mobility targets is usually made clear when the size and scale of improvements to meet existing and future needs are either too expensive, too impactful on the community, or – as is usually the case – a combination of the two.

Alternative mobility targets adopted in Region 3 and Region 4 have addressed issues at I-5 interchanges and an I-84 interchange. Operational, safety, geographic, and geometric issues at the Rogue River Interchange necessitated a solutions package that include alternative mobility targets. In the case of the South Medford Interchange, alternative mobility standards were developed as an interim measure until the interchange is improved. Planning for the Fort Hill and I-84 Chenoweth interchanges altered mobility targets to preserve capacity, addressing concerns that future development could have an adverse impact on the facilities.

The transportation analysis to determine the appropriate alternate mobility target for a highway segment, intersection, or interchange ramp can be a "process within a process," a task completed as part of a long-range facility, transportation system, or interchange area management plan. In some cases, the desired transportation solutions in a transportation system plan will identify the need and include support for developing an alternate mobility target but will leave the detailed analysis to another separate or subsequent project. In any case, the methodology required to determine appropriate mobility targets adds additional time and expense to planning for transportation improvements to meet current and future identified needs.

TSPs frequently identify the need and support for developing an alternate mobility target but leave the detailed analysis to a subsequent project due to the time and expense of the process.

3.3.1 Applications of Mobility Policy

OHP Policy 1F establishes that mobility targets defined in OHP Tables 6 and 7, or those otherwise adopted by the OTC, are considered the highway system performance standards for compliance with the TPR. Therefore, the OHP mobility targets establish state highway mobility performance expectations for planning and plan amendment purposes. ODOT rarely uses these targets to evaluate the impacts of proposed development when a development applicant is seeking access on a state highway. However, local jurisdictions frequently rely on these targets in land use decisions, interpreting the ODOT targets as standards for purposes of TPR compliance. The sections below and Table 4 on page 35 describe the different applications of the mobility policy.

DEVELOPMENT REVIEW

Local jurisdictions around the state use the mobility policy to determine applicable operating standards for ODOT facilities in the traffic impact analysis process. While the targets in the mobility policy are intended by ODOT to be treated as targets for transportation and land use planning rather than as standards applied to development review, it is common that local agencies establish the mobility targets as standards for ODOT facilities within their TSPs and then by default in development review. Changes to the mobility policy may be able to improve communication between ODOT and local jurisdictions and clarify the appropriate uses of the OHP mobility targets in development review or advise jurisdictions on how to set their own standards for ODOT facilities within their TSPs.

Local jurisdictions apply their own standards to both TPR and development review applications. Those standards are typically set in either the TSP or municipal code and describe when a traffic impact analysis is required (threshold number of trips generated

by a development proposal), the analysis methods and how mitigation of impacts can be accomplished. Since the TPR requires local agencies to identify performance standards in their TSPs, they often interpret the ODOT targets as standards and are not advised about adopting their own standards for ODOT facilities.

Like the TPR analysis process, since traffic impact analyses are conventionally based around vehicle peak hour operations at intersections, a shift in the ODOT mobility policy towards other measures or more holistic measurement approaches could lead to a similar shift in traffic impact analysis convention.

PROJECT DELIVERY

The ODOT Highway Design Manual (HDM) is the primary document for highway design on the state highway system. HDM mobility standards utilize the same v/c ratio measure but are generally more restrictive than the OHP mobility targets to ensure a useful design life for the improvement being made; however, there is a design exception process that allows variation from the HDM when appropriate.[31]

The 2020 Blueprint for Urban Design (Blueprint) establishes revised design criteria to be used when designing urban projects on the state system and shifts the focus of highway project design from a design standards-based process to a performance-based process. It will be used as a "bridging" guidance document for urban design on Oregon state highways until all ODOT manuals related to urban design can be updated to include the revised design criteria.

LONG RANGE TRANSPORTATION PLANNING

In long range transportation planning, such as when developing local TSP updates or ODOT facility plans, future performance expectations are established based on the existing OHP mobility target tables or the performance expectations are established through identifying the need for alternative mobility targets. In addition to the measures in the mobility policy, ODOT uses a variety of other performance measures in its system planning processes. That said, land use, development, and growth assumptions are intrinsically tied to the policy, as are investments on the local transportation system.

As discussed earlier, Policy 1F allows alternative mobility targets to be developed through long range transportation system and facility planning, where the state and local jurisdictions jointly take a comprehensive look at transportation solutions for a system or large planning area. As the types of alternative mobility targets that have been proposed and adopted suggest, worthwhile changes to improve the current policy may include broadening the definition of mobility performance away from peak hour vehicle operations and towards more holistic measures, such as those that

[31] ODOT Analysis Procedures Manual, Chapter 9, Transportation Analysis Performance Measures.

consider broader time periods or that apply to a facility or area rather than specific intersection.

TSPs generally identify needs and the function, mode, location, and parameters (e.g. number of lanes, type of bicycle facility, etc.) of solutions. The precise location, alignment, and preliminary design of solutions is typically deferred to refinement plans or during project design and development.

TRANSPORTATION PLANNING RULE (TPR) COMPLIANCE

The OHP mobility policy is primarily used for identifying state highway mobility performance expectations for planning purposes. The mobility policy is used in relation to TPR in two ways: first, the policy must be addressed when developing state, regional, and local transportation system plans. Second, it is used to ensure proposed land use changes are consistent with the TSP or that it does not include a significant effect. OHP Policy 1F establishes that mobility targets defined in OHP Tables 6 and 7, or those otherwise adopted by the OTC, are considered the highway system performance standards for compliance with TPR. Based on this, any changes to the mobility policy should maintain its ability to be used to determine compliance with TPR.

Since TPR analysis is conventionally based around vehicle peak hour operations at intersections (even for purposes unrelated to the OHP) to determine if a land use change has a significant effect on the transportation system, a shift in the ODOT mobility policy towards other measures or more holistic measurement approaches, such as the effects on mode split, vehicle miles traveled, or access to goods and services, could lead to a similar shift in TPR analysis convention. The OHP will still be legally required to point to a preferred analysis process for TPR.

Table 4. Mobility Target Applications and Sources[32]

Analysis Step	Development Review (Traffic Impact Statement/ Traffic Impact Analyses)	Project Delivery	Long Range Planning (TSPs)	Facility Plans (Corridor and Refinement Plans)	Plan Amendments
Existing Conditions	OHP	OHP	OHP	OHP	OHP
Future No-Build	OHP	OHP	OHP	OHP	OHP
Alternatives Analysis/Future Modernization Build(s)	OHP/HDM	HDM/Blueprint	HDM/OHP[i]	HDM/Blueprint	OHP/HDM

[i] In Portland Metro, future modernization build alternatives on state highways are scoped and analyzed in corridor plans, refinement plans, or projects, not as part of TSPs.

3.3.2 Policy Strengths and Weaknesses

The current mobility policy, measures, and targets have done a good job of helping to determine locations not meeting the desired performance level for mobility. The challenge is when this determination leads to identifying potential solutions that are cost prohibitive, impractical, undesirable, and at odds with other statewide goals or local objectives. The current targets have helped preserve mobility on the state transportation system but, particularly in the last couple of decades, out of necessity, and to promote walkable and compact development, TSPs have been developed acknowledging financial realities and are frequently not meeting the mobility targets on state highways. This is particularly evident in planning for facilities within constrained areas, where it is cost prohibitive, impractical, or locally undesirable to develop a solution that would meet mobility targets, and where it would potentially be at odds with land use goals that aim to reduce vehicle dependency and promote compact development. The need for "alternative mobility targets" is frequently identified and agreed upon in TSPs; however, establishing the alternative mobility target and amending the Oregon Highway Plan occurs under a separate process due to the time and associated costs. This process, which includes both local and OTC adoption, is frequently not pursued until or unless the local agency wants to amend their comprehensive plan or there are zone changes needed by development that are not consistent with the comprehensive plan used in the TSP.

The state's mobility policy clearly expects that mobility targets "tailored to specific facility needs, consistent with local expectations, values and land use context will need

[32] Adapted from Analysis Procedural Manual, Exhibit 9-1 Sources of Adopted Mobility Targets/Standards for State Highways by Study Type

to be part of the solution for some highway locations," particularly in metropolitan areas, special transportation areas,[33] areas with high seasonal traffic, and areas constrained by the existing built or natural environment. While the existing process for developing alternative mobility targets as part of a long-range transportation system planning effort allows for context sensitive solutions, the result is still a mobility performance measure based on v/c as demonstrated by the OHP amendments to date (Table 1).

Using measures that are not based on v/c is clearly allowed by the policy; however, v/c is still the initial, default approach. The vehicular-based performance measure first approach raises the question of whether identified transportation solutions are properly prioritizing modal investments in the system.

Assuming the continued constrained fiscal environment for transportation funding and community interest in balancing local priorities and goals with traffic mobility, pursuing alternate mobility methodology and targets may become more of the rule than the exception. There are also outstanding questions regarding the alternative mobility target process itself. The analysis for pursuing and adopting an alternative target is the same, regardless of facility type or location within the state system. The current methodology (Figure 3) must be followed, regardless of where the facility is located. The diversity of transportation needs throughout the state and potential solutions logically call into question if a consistent approach will be uniformly successful or whether a "tiered" approach that acknowledges regional differences would better serve transportation system planning. Another outstanding policy question is the appropriate level of local influence over mobility targets governing a highway depending on its overall level of statewide importance (e.g., interstate vs. district highways).

Mobility Policy Questions:
-Does the vehicular-based measure first approach properly prioritize modal investments in the system?
-Should the alternative mobility target process be the same for all contexts and areas of the state?
-Should the highway classification impact the influence of local jurisdictions on the mobility target of a facility?

[33] See Land Use and Transportation, Policy 1B, in the Oregon Highway Plan.

Strengths and Weaknesses - OHP Policy 1F and the V/C-Based Performance Measure

- **Perceived Strengths**
  - Ease of consistent application across analysis types
  - Ease of data collection and calculation
  - Ability to measure both intercity passenger and freight mobility
  - Flexibility allowed through alternative mobility targets
  - ODOT participation in local plan amendment decisions/opportunity to appeal
  - Clear thresholds/developer accountability; legal threshold for TPR "significant effect" determination
- **Perceived Weaknesses**
  - Vehicle mobility on the state system given precedence over other local objectives (economic development, land use)
  - Cost of meeting targets in high-density and constrained environments
  - Inhibits increased land use density/development intensities through comprehensive plan amendments, especially within urban areas
  - Time-consuming and costly to develop alternative mobility targets
  - No differentiation in the alternative mobility target process based on highway classification
  - Alternative mobility targets increasingly becoming the rule/OHP Table 6 & 7 losing significance
  - Default mobility measure is vehicular-based and may not prioritize other modes accordingly
  - Difficult to apply flexibly throughout the state, in diverse situations
  - Targets are driven by a four-level statewide highway classification system that may not reflect the existing or future origin-destinations, trip length, vehicle miles traveled, composition of users and modes, economic/demographic drivers and trends, etc.

4 MOBILITY DEFINITIONS AND MEASUREMENTS

The way that a transportation agency measures mobility should depend greatly on how it and its partners and stakeholders perceive and define mobility. This section describes the various ways in which different agencies across the country define and measure mobility. It describes how perceptions and measurements of mobility have shifted over time for many agencies from simply "the absence of congestion" to a more robust, comprehensive view that includes access to goods and services, quality of service, and how a facility's capacity is used ("quantity of travel" or capacity utilization).

4.1 Why We Define and Measure Mobility

ODOT's mission is to provide a safe and reliable multimodal transportation system that connects people and helps Oregon's communities and economy thrive. Through the provision of an excellent transportation system, mobility is improved, Oregon's people are more connected, goods are more accessible, tourism thrives, and opportunities are made more abundant for all residents. One way that ODOT benchmarks its progress towards this mission is by measuring mobility. As described previously, while ODOT measures mobility in a variety of ways, its initial tool to identify mobility deficiencies in the state highway system is housed within the OHP as Policy 1F: Highway Mobility Policy.

4.2 Definitions of Mobility

There is no singular accepted definition of mobility throughout the transportation industry. When using the word mobility, some may be referring to how quickly a vehicle can travel on a facility, others may be referring to how effectively a person can reach goods, services, and opportunities, and others may be referring to the reliability of travel on a facility or system. While few transportation agencies have adopted definitions of mobility to date, much can be understood about the way they view mobility by understanding the way they measure mobility. Overviews of how various state and local agencies measure mobility are summarized in Attachment D. One agency that has adopted a definition of mobility is the Florida Department of Transportation (FDOT). Described below, this approach examines the many dimensions that make up mobility, rather than defining mobility as a single element.

4.2.1 Florida Department of Transportation's Four Dimensions of Mobility

FDOT's definition of mobility begins with the thesis that mobility is not a singular parameter but instead a multi-dimensional characteristic. In this way, FDOT describes four dimensions of mobility: quantity of travel, quality of travel, accessibility, and capacity utilization.

- **Quantity of Travel** refers to the magnitude of use of a facility or service. A higher quantity of trips on the state highway system may point to a strong economy and more connections to opportunities. However, it may also correspond to more long-distance commute patterns, a more auto-oriented mode share, an inadequate local road system that forces users onto the state system for local trips, and greater costs to maintain the system. Therefore, a higher quantity of travel is not inherently good or bad.
- **Quality of Travel** refers to traveler satisfaction with a facility or service. This is generally related to the facility's level of service and reliability as well as other factors such as pavement quality, roadway safety, etc. All other things being equal, improving the quality of travel is a good thing.
- **Accessibility** refers broadly to the ease in which travelers can access opportunities, goods, and services. Core to this dimension is the temporal proximity of populations to destinations. In this definition, accessibility should not be confused with access management policies nor site-specific ADA physical accessibility.
- **Capacity Utilization** refers to the quantity of travel relative to capacity and indicates how efficiently resources are being used and how congested a facility may be.

As shown in Attachment D, similar to FDOT, many transportation agencies are using performance measures to evaluate various dimensions of mobility, focusing less on

eliminating peak-hour congestion and more on improving mobility as a whole. When mobility is defined as a more robust measure than simply the absence of congestion, the strategies employed to provide the best mobility possible to all users expand.

While a majority of the Oregon state highway system's lane miles are rural and uncongested, ODOT's recent modal plans and strategic investment initiatives have begun to adopt this changing paradigm in denser urban areas. In these contexts especially, they focus less on building capacity to address congestion and more on providing a connected and multimodal network of transportation and maximizing operational efficiency of traffic movement. These plans each discuss mobility as related to their mode or topic, and some have an applied definition of mobility or propose mode-related measures, but these are not yet consistently implemented. ODOT's key performance measures (KPMs) are a further example of ODOT's focus on a connected, efficient, multimodal network of transportation in lieu of a focus on building capacity. However, these measures are not as directly linked to the mobility policy as ODOT's v/c ratio measure.

4.3 Mobility Policies/Measures from Other Agencies

While ODOT has used v/c ratio as its initial metric to measure mobility and support the Mobility Policy since 1999, a variety of other transportation agencies have explored and implemented the use of other metrics to measure mobility. As ODOT considers updates to its mobility policy, it should consider best practices used by other state and local agencies. A brief overview of several agencies that are using other types of mobility measurement is included in Attachment D. Note that the majority of policies reviewed were enacted within the last decade. Five key themes emerge from the examples of how other agencies consider mobility in their planning processes. These include:

- **Theme #1:** Agencies are seeking to measure mobility more broadly than solely through peak hour vehicular v/c ratios. They recognize that there are multiple facets of a well-functioning transportation system, and that using a single metric to evaluate a system may favor some perspectives over others.
- **Theme #2:** Agencies use multimodal measures in addition to vehicular-based measures to analyze and understand the mobility their system provides.
- **Theme #3:** Agencies analyze their transportation systems at a variety of levels and for a variety of purposes. V/c ratio, used by ODOT, is easily applied at a variety of scales (such as system, corridor, or intersection-level) but evaluating other aspects of mobility, as done by other agencies, may require the use of different measures at different scales and may be more complicated and labor intensive.
- **Theme #4:** Other state agencies tend to differ their performance measures primarily by land use context rather than primarily by highway classification system, as ODOT does.

- **Theme #5:** Oregon is unique among states in its use of a singular mobility measure to demonstrate the adequacy of coordinated transportation and land use planning. While many of the policies reviewed measure mobility more holistically than in Oregon, they may not analyze the coordination of transportation and land use planning as required in the TPR.

5 OREGON MOBILITY POLICY – MOVING FORWARD

There are several different potential approaches ODOT could pursue to update the mobility policy and measures described within the OHP. The following provides an overview of items to be considered before pursuing a change and identifies potential approaches to updating the mobility policy and measures.

5.1 Considerations for Changes to Mobility Policy

ODOT currently uses the mobility policy in a variety of ways, so any changes to the policy would need to continue to satisfy multiple applications. Additionally, any changes to the policy should improve how the state highway system meets other goals including economic development, compact urban growth, community livability, safety of the system's users, and efficient movement of people and goods.

5.1.1 Land Use Context

Local jurisdictions, stakeholders, and community members have expressed concern that interaction between the Transportation Planning Rule (TPR) and OHP highway mobility targets are having unintended and undesirable consequences in their communities, such as making it difficult to increase the planned land use densities in their comprehensive plans. As described in the "Background" section, stakeholders have been concerned that the requirements to meet v/c standards give vehicle mobility precedence over other local objectives, such as active transportation operations and safety, compact land use planning, and economic development. This concern originated prior to 2011 and continues today, as confirmed in stakeholder interviews.

The Oregon Transportation Commission revised the OHP mobility policy in 2011 to address these concerns and highlight flexibility in meeting mobility requirements. These revisions, including substitution of the term "mobility targets" for "mobility standards" and a streamlining of alternative mobility target development, aimed to better balance the goal of mobility with other statewide goals. When considering further changes to the mobility policy, this history, as well as the continued tension between mobility objectives and other statewide goals, must be considered. While the mobility policy is functioning as intended in many rural areas of the state, many of the state's most urban areas and many rural communities impacted by seasonal and tourist traffic continue to feel the strain associated with attempting to meet mobility targets while also promoting complete communities, building out planned land within urban growth boundaries, and balancing their transportation systems for multimodal uses.

The current mobility policy is to maintain acceptable and reliable levels of mobility on the state highway system, consistent with the expectations for each facility type, its location, and functional objectives. It considers land use context to define the target for vehicle mobility by determining whether the location is in an incorporated area, an urban growth boundary, a designated Metropolitan Planning Organization (MPO) area, or rural area. However, modifying the mobility policy further to include additional land use context considerations in establishing the mobility expectations for a facility could help reduce the tension between the mobility policy and land use goals in urban areas. This would be consistent with ODOT's

Modifying the mobility policy to include additional land use context considerations in establishing the mobility expectations for a facility could help reduce the tension between the mobility policy and land use goals in urban areas. This would be consistent with ODOT's current approach to highway design as outlined in the 2020 Blueprint for Urban Design (Blueprint).

current approach to highway design as outlined in the 2020 Blueprint for Urban Design (Blueprint). This new ODOT document provides design guidance for performance-based design rather than standards-based design. The design guidance considers a wide variety of land use contexts and could serve as a model for expanding the land use contexts considered in ODOT's mobility policy.

5.1.2 Highway Classification Context

In addition to land use context, the mobility targets included in the mobility policy are driven by the classification specified for a given highway (e.g., interstate, statewide, regional, etc.). Thus, highway classifications, how they are determined and whether they are appropriate, need to be further understood and considered in updating the mobility policy. Many DOT highway classification systems were originally driven by AASHTO guidance, the Interstate Highway Act, and the National Highway System classifications which each had different goals and objectives ranging from military needs to existing or future usage of the highways within a given state. While these criteria and classifications mostly were developed in the latter half of the 20th century, very few of them, including Oregon's, have been revisited since their development (however, expressway designations are reviewed on a defined timescale per legislation), as they have been tied to funding streams, allocation methodologies, etc. As a result, the classifications have remained static while the demographics and economic drivers within states have changed significantly and usage and users of the highways have also evolved.

To examine mobility policies and the respective performance measures, it is critical to also assess the drivers that impact the implementation and usage of these policies and measures to ensure that they reflect the vision and goals of the transportation system. As such, the highway classification system needs to be assessed to determine if the existing and desired future functions of highways are reflected in the criteria used to classify the highway itself. In performing this assessment, a roadway authority should explore whether or not a classification definition reflects the following factors: existing or future origin-destinations, trip length, vehicle miles traveled, composition of users and modes, economic/demographic drivers and trends, intended purpose and function of the facility, etc. that a highway or highway segment serve. For example, in Oregon there are seven highways (US30, US26, OR18, US20, OR126, OR38, and OR42) classified as statewide that traverse the coastal range between US101 and Interstate 5 which have

To examine mobility policies and the respective performance measures, it is critical to also assess the highway classification system to determine if the existing and desired future functions of highways are reflected in the criteria used to classify the highways themselves.

identical mobility targets; however, none of the factors listed above are consistent amongst these highways.

The following questions related to functional classification should be considered as part of the OTP/OHP update to help implement the mobility policy:

- Should highway classification continue to be a primary driver within the mobility policy and identified mobility targets?
- If yes, do the current highway classification system definitions in the OHP align with the desired definition of mobility within Oregon?
- Do the specified highway classifications properly reflect the existing and future desired function of each highway or highway segment within the state based on its utility and user make-up?
- Do either the highway classification definitions or current highway classifications need to change to better reflect the mobility definition and needs of the state?

5.1.3 Mobility Goals and Policies in ODOT's Other Modal Plans

As described in the "History and Today" section, statewide modal and topic plans are adopted as a part of the OTP and include state policy, requirements, and guidance related to transportation system planning. Oregon modal and topic plans include the Bicycle and Pedestrian Plan, Highway Plan, Public Transportation Plan, and Freight Plan, among others. The various modal plans address mobility in different ways. The Bicycle and Pedestrian Plan views mobility through the lens of a robust and safe multimodal network, the Public Transportation Plan focuses on convenience and travel choices, and the OHP views mobility as a measure of efficient, safe, and well-functioning highway facilities. The OHP is the only modal plan that specifies how mobility (vehicular) is measured throughout the statewide transportation system. While highway improvements must be multimodal, mobility targets are only defined for and applicable to motorized aspects of the state highway system. There is no overarching consistency in how the modal plans define mobility or how they define a successful system as it relates to mobility. Furthermore, there is no guidance on how the state prioritizes mobility needs between modes depending upon the land use context or otherwise. This is not only an issue for the state transportation system; the modal plans also play a critical role in guiding planning for local transportation systems, as local jurisdictions must be consistent with state policy and requirements when updating and implementing their TSPs.

5.1.4 What Makes a Performance Measure Viable?

ODOT's Transportation Planning and Analysis Unit (TPAU) published the *Report on 1998 Draft Highway Plan Level of Service Policy*, which examines various performance

measures related to mobility. Each measure examined, such as LOS, v/c ratio, person throughput, vehicle miles traveled, etc., was evaluated against the criteria shown below to judge whether the measure could be applied consistently, effectively, and beneficially. Though published over two decades ago, the list below remains pertinent to any discussion of a shift in mobility performance measurements, as it illustrates the pre-requisites for a good mobility performance measure and the potential negative effects these measures can have if enacted without caution. The list of evaluation criteria included the following:

- How understandable is the measure?
- Can the measure be applied in a consistent manner by many different people?
- Can the data needed for the measure be collected and analyzed cost-effectively?
- How well does the measure address intercity passenger and freight mobility?
- How easily can the measure be adjusted to encourage compact development in Special Transportation Areas and Regional Centers and maintain high levels of mobility in urban fringe areas?
- How multimodal is the measure? Does it tend to bias solutions?
- How relevant is the measure to operations decisions?
- How well can the measure be forecasted?
- Is the measure appropriate for the level of decision that's being made?

Many of the most important aspects to be considered when revising or replacing a performance measure are related to its ease of application. The measure should be well-understood, easily measured (including both the data collection and analysis processes) and reported, and, ideally, predictably forecasted. Other important criteria to consider include the measure's applicability to various levels of decision-making and its ability to satisfy the necessary legal processes satisfied by its predecessor (such as the TPR). As shown in the next section, the current v/c-based metric is used in many types of decision-making processes.

5.1.5 Satisfying all Applications

ODOT's current OHP mobility targets are used in a variety of applications. As described in the Section 3.3.1, these include TPR compliance, development review, long-range transportation planning, and project delivery. Some of these applications are direct outcomes of legal mandates, while others are more flexible. Any changes to the policy must be able to be similarly applied to these processes and to be effective in a variety of applications.

5.2 Potential Changes

The following section describes some of the potential revisions and additions that ODOT could consider in exploring modifications to the state mobility policy. It draws on the summary of other agencies' mobility measurement programs, key takeaways from stakeholder interviews focused on the mobility policy, and the mobility performance measure considerations and applications to be satisfied to inform best practices related to a potential change in the mobility policy. These best practices include:

- Clearly defining what constitutes acceptable mobility, especially regarding how expectations can change based on land use context and mode.
- Ensuring that the policy supports analyzing the transportation system at different governmental and regulatory decision-making levels and for a variety of purposes.
- Providing a clear, measurable basis from which all jurisdictions can work and serving as a tool to start conversations about solutions.
- Using a variety of statewide objectives, balanced with mobility goals, to define how a facility should perform.
- Aligning and organizing mobility measures, providing potential priorities, and identifying measurement time periods across modal plans.
- Seeking to measure mobility more broadly than solely through peak hour vehicular v/c ratio.
- Using multimodal measures in addition to vehicular-based measures to analyze, balance priorities, and understand the mobility provided by the transportation system.
- Focusing on measures that evaluate transportation network redundancy, reliability, and efficiency instead of just point-based or facility-based measures.
- Ensuring the drivers (e.g., highway classification and adjacent land use) for implementing the mobility policy and setting performance measure are in alignment with both the selected mobility definition and desired function of the highway and specific highway segments.

The following describes how the mobility policy, as well as the measures within the policy, could potentially be revised based on these themes.

5.2.1 Potential Policy Options

Few transportation agencies throughout the country, either state or local, have adopted a definition of mobility. However, the performance metrics that agencies choose to analyze can provide a picture of how they view mobility. The current OHP mobility policy is to maintain acceptable and reliable levels of mobility on the state highway system, but it does not specifically define what constitutes acceptable and reliable levels of mobility. Without a clear definition of mobility, or a specific description of what constitutes acceptable and reliable levels of mobility, the policy relies on the targets housed within it for this definition.

Without a clear definition of mobility, or a specific description of what constitutes acceptable and reliable levels of mobility, the policy relies on the targets housed within it for this definition.

Stakeholder feedback about negative effects of the policy center around the effects of the mobility measures, not the accompanying policy language. However, because the current policy language relies on the mobility measures to define what constitutes acceptable and reliable levels of mobility, any change to the mobility measures must be accomplished through a more robust and explicit definition of mobility. An update to the mobility policy must first be concerned with updating the language of the policy; then, new measures that better comply with the policy can follow.

ODOT could consider a range of potential options to updating, revising, or replacing the state mobility policy to include multiple aspects of mobility (such as peak-hour performance, network reliability, accessibility, etc.), consider land use context, and be multimodal in nature. The descriptions below discuss benefits and drawbacks to each option but do not recommend any options over the others. Table 5 summarizes these options.

Table 5. Potential Mobility Policy Update Options

Mobility Policy Option		Description
#1	No Change	Keep the mobility policy and v/c-based measures in place with no updates.
#2	Define Mobility in the OHP Mobility Policy	Better define mobility within the OHP mobility policy. This definition could be mode-neutral or include a separate definition for each mode. The definition could also describe the different mobility needs inherent to different land use contexts and/or highway classifications.
#3	Define Mobility in the OTP	Better define mobility within the OTP. This definition could be mode-neutral or include a separate definition for each mode. The definition could also describe the different mobility needs inherent to different land use contexts and/or highway classifications.
#4	Define Mobility Within Various Modal Plans	Better define mobility within the various modal plans. These definitions would be tailored to the individual modes described within each plan. The definitions could also describe the different mobility needs inherent to different land use contexts and/or highway classifications.
#5	Amend the TPR	Amend the TPR so that it no longer relies on the mobility policy to determine if a land use decision causes a significant transportation impact. Note that this would not be an ODOT action, but rather would be under DLCD purview.

POLICY OPTION #1: NO CHANGE

ODOT could retain the existing mobility policy. Under this option, both the policy and the mobility measures housed within the policy would remain as they are, and no update process would be needed. This alternative is immediately actionable and would maintain the current policy language as well as the current v/c-based measures, which are easily understood by various constituents, easily calculated, and applicable to several levels of analysis. However, maintaining the current policy could propagate a system that communities view as favoring vehicle mobility over other community goals. Because this option would not address community and stakeholder concerns, ODOT could increase efforts to describe the targets housed within the policy as targets for long-range planning only and make the process of adopting alternative mobility targets easier.

POLICY OPTION #2: DEFINE MOBILITY IN THE OHP

This option would feature a more robust definition of mobility in the OHP mobility policy. This could include either a mode-neutral definition or a separate definition for each mode. This definition could also describe the different mobility needs inherent to different land use contexts.

POLICY OPTION #3: DEFINE MOBILITY IN THE OTP

This option would feature a more robust definition of mobility in the Oregon Transportation Plan. This could include either a mode-neutral definition or a separate definition for each mode. This definition could also describe the different mobility needs faced by different land uses. By defining mobility in the OTP, as opposed to the OHP, the definition could better apply to all modal plans.

POLICY OPTION #4: DEFINE MOBILITY WITHIN VARIOUS MODAL PLANS

This option would feature a more robust definition of mobility within various modal plans. Each definition would be tailored to the mode discussed within its plan. The mobility policy, still housed within the OHP, would refer to the definitions from the other modal plans, and the measures housed within the mobility policy would arise from all of the mobility definitions for modes accommodated in the highway right-of-way.

POLICY OPTION #5: AMEND THE TPR RATHER THAN THE MOBILITY POLICY

Many of the stakeholder concerns regarding the mobility policy are centered around its relationship to the TPR. Rather than ODOT making changes to the mobility policy, DLCD could amend the TPR so that it no longer relies on the mobility policy to determine if a land use decision causes a significant transportation impact. Under this option, the TPR would need to define another means for local jurisdictions and to demonstrate that land use and transportation planning are adequately coordinated.

5.2.2 Potential Performance Measure Approaches

The mobility policy approach options #2, #3, and #4 above all include developing a more explicit and robust definition of mobility. For these approaches, the more robust definition of mobility could be used to update the mobility performance measures used to evaluate mobility. Potential approaches to updating the mobility measures that could be pursued under the various mobility policy approaches are described in Table 6.

Table 6. Potential Mobility Performance Measure Approaches

Mobility Performance Measures Approach	Applicable Mobility Policy Options		
	Option 2 - Define Mobility in the OHP	Option 3 - Define Mobility in the OTP	Option 4 - Define Mobility Within Each Modal Plan
a. Keep the v/c-based measure in place but revise the targets based on an expanded set of land use contexts and/or highway classifications, including identifying areas where the measures do not apply based on the multi-modal and land use contexts.	●		
b. Adopt a different measure: replace the current v/c-based measure with a different measure that examines mobility more holistically, better balances mobility with community goals, and still satisfies the necessary analysis processes. This measure, housed in the OHP, would refer to the definitions of mobility housed in other modal plans.	●		●
c. Adopt a suite of measures: replace the current v/c-based measure with a suite of measures that, together, examine mobility for all modes, better balance mobility with community goals, and still satisfy the necessary analysis processes. This may include using different measures for different analysis processes or in different modes, land use contexts, and/or highway classifications.	●	●	
d. Adopt mobility measures in each modal plan, similar to the OHP. Develop a framework for prioritization across modes within the OTP based upon the functional classification for each mode, land use context, and/or highway classification.	●	●	●

5.3 Summary

The Oregon Highway Plan (OHP) Mobility Policy states that "It is the policy of the State of Oregon to maintain acceptable and reliable levels of mobility on the state highway system, consistent with the expectations for each facility type, location, and functional objectives." Based on this policy, the OHP establishes vehicular volume-to-capacity (v/c) ratio-based measures and targets for different types of highways and surrounding land use areas.

The current policy does not define what "acceptable and reliable levels of mobility" entails other than stating that it is to be measured through the mobility measures housed within the policy. These measures, which are vehicular v/c-based, have led to much of the stakeholder frustrations described including measuring only the mobility of

trucks and cars, and not other modes, not adequately reflecting the current and future needs of the transportation system and the surrounding community, and conflicting with other state goals and policies, such as land use planning, economic development, housing, and urbanization. The flexibility that was added to the policy to address these issues remains largely vehicle centric, focused on allowing increased congestion rather than about defining desired mobility for the land use context and highway classification, and is time and cost intensive.

The OHP is scheduled to be updated over the next two years and the mobility policy will be one aspect of the plan that will be reviewed and considered for an update. An updated policy should address desired mobility outcomes and define acceptable and reliable levels of mobility for the Oregon highway system more robustly and explicitly. There are several potential directions ODOT could take to update the mobility policy. The options proposed are just some of the potential approaches to create a more broad-based mobility policy. These, in turn, can lead to reconsidering the way highway mobility is measured and the factors that are considered in setting the standards.

By considering the best practices described from other agencies and heeding Oregon's unique history and land use planning approach, ODOT can better balance state and community objectives while working towards improved mobility across the state.

Questions the OHP update should address related to the mobility policy include:

- How should mobility be defined for the Oregon highway system?
- What policy changes may be needed to achieve the desired mobility outcomes?
- Should additional land use context be considered in the mobility policy and if so, what are our expectations about mobility based on land use context?
- Should highway classification continue to be a factor in how we set mobility expectations for a facility and do the highway classifications need updating?
- What other factors should be considered in the mobility policy to better align the policy with our expectations about mobility?
- What mobility performance measures should be considered to better inform transportation decisions and investments from a mobility perspective?

ATTACHMENT A

Stakeholder Interview Summary

Oregon Department of Transportation

White Paper on Mobility Statewide

STAKEHOLDER INTERVIEW SUMMARY

Prepared by JLA Public Involvement

3/31/2020

jla
Public Involvement

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Public Involvement

1.0 Introduction

In January 2020, JLA Public Involvement (JLA) conducted a series of interviews to inform the development of a white paper examining options and issues for the Oregon Department of Transportation's (ODOT's) mobility policy.

A total of 22 individuals were interviewed, with a total of 15 interviews, summarized in this document.

Interviewees were asked a series of questions on topics including: definitions of mobility, strengths and weaknesses of the existing policy, potential measures of mobility to consider in updating the policy, and application of the policy, as well as how access, equity, and other modes of transportation should be addressed.

These interviews built on an interview process JLA conducted for ODOT and Metro in the fall of 2019 on the mobility policy for the Metro area. For that process, JLA interviewed nearly 70 individuals representing a full range of agency and community stakeholders.

Interviewees	
Name	**Affiliation**
Rich Crossler-Laird Mike Kimmlinger Kevin Haas	ODOT Tech Center
Lisa Cornutt Tom Guevara	ODOT Region 3
Della Mosier	ODOT Region 4
Teresa Penninger	ODOT Region 5
Karl McNair	City of Medford
Heather Richards	City of McMinnville
Darrin Lane Chuck Knolls	Linn County
Michael Robinson	Schwabe Williamson & Wyatt
Ryan Neal Jacob Cain	Port of Morrow
Tyler Deke Andrea Napoli	Bend MPO
Rob Inerfeld	City of Eugene
Mark Willrett	City of Klamath Falls
Derrick Tokos	City of Newport
Mike Jaffe Ray Jackson	MWCOG
Jeff Hazen	Sunset Empire

2.0 Summary of Key Findings

Interviewees all agreed the mobility policy needs to be updated and, overwhelmingly, agreed that the state should continue to have a mobility policy. However, there was no consensus on what the nature of that policy should be and whether it should consist only of measures, targets as guidance, or standards. Many of the interviewees expressed a need for deliberations to explore options.

- The main values cited of the current policy were that: it provides a clear, measurable basis or standard from which all jurisdictions can work; and it is a tool to start conversations about solutions, and ensure that development does not happen without considering impact.
- The main criticisms of the policy were:
    - The policy relies entirely on measuring the mobility of trucks and cars, not people (other modes), and it does so with one metric that does not account for the overall system.
    - The measures are antiquated and do not reflect the current needs of the transportation system, the future of development, or the needs of the community. The policy is not adaptive enough to reflect the current values and changing realities of the transportation system in Oregon.
    - We do not have the resources to make many of the improvements that would be necessary to meet the standards.
    - It is often in conflict with other state goals and policies.
- When asked for suggestions for updating the policy, most interviewees expressed a need for the updated policy to expand the measures of mobility beyond volume to capacity (V/C) to address the problems cited with the current policy. Many felt they did not have sufficient information to recommend specific measures; however, the most common suggestions were:
    - Consider bicycle, pedestrian and transit mobility, but focus on completion of networks, rather than delay or capacity.
    - Continue to consider vehicle capacity but look at the state and local systems more holistically.
    - Consider travel time within a corridor, rather than just intersection capacity.
- Nearly everyone stated that highways in urban and rural areas should be treated differently, but there were different views on just *how* flexible the policy should be. Most also supported allowing for differences in the policy based on the type or classification of the highways.

3.0 Summary by Question

3.1 CONTEXT

EXPERIENCE WITH OTHER MOBILITY POLICIES/DEFINITIONS.

Non-ODOT interviewees were asked **"Does your agency have an agency-specific definition of mobility and/or a mobility policy?**

- Most local jurisdictions who responded cited level of service (LOS) standards.
- Several stated they had no standards for non-vehicle modes, but rather focused on building the network.

PERSPECTIVE ON THE PURPOSE OF STATE HIGHWAYS

Interviewees were asked: **"What do you think should be the primary purpose of the state highway system, as distinct from the local system – or do you believe it should be distinct from the local system?"**

- With little exception, interviewees stated that the state highway system should have a purpose distinct from the local system.
- However, a major theme was the need for, and struggle to find, balance within communities, recognizing the important role a highway must also play in serving the needs of the local communities, as well as its longer-distance travel purpose. This opinion was not only expressed by representatives of local agencies but was articulated well by most of the ODOT staff.
  The nature and challenge of finding this balance was a driver for much of the following discussions about potential approaches for the mobility policy update. The Blueprint for Urban Design was referred to by several interviewees as a resource for this.
- The distinct purpose:
  - Most people commented on the need to connect different communities within the state:
    "State highways are the arteries; local systems are the veins."
    "They should focus more on regional traffic vs. local."
    "It's about moving people across longer distances inter- and intra-state."
  - Many, if not most, particularly commented on the importance of the state highway system for the economic function of moving goods and people longer distances.
- A couple of stakeholders expressed a strong conviction that the purpose of the state highways should not be in any way different than the purpose of the local system within urban areas, pointing to:
  - The need to serve access to a community's economically vital areas/lands.
  - The need to provide for safe pedestrian, bicycle, and transit movement and crossings.

> *"ODOT is unlike any other road authority in the state. We have a responsibility for local, regional, statewide, and interstate transportation needs. We can't throw away the last three for the first or vice versa."*

FAMILIARITY WITH THE POLICY

Interviewees were asked **"How familiar are you with, or how do you use, the current ODOT mobility policy, standards and targets?"** This was intended to provide context for the discussions of the questions that followed.

- Most local agency interviewees were familiar with and had used the policy – developing TSPs, projects, development review, and/or plan amendments – depending on their role.
- A few did not believe they had used it, primarily, it seemed, because their area roads were not congested enough to exceed the standards.
- The ODOT staff had generally used the policy in ways consistent with their roles in the agency. However, some of the planners felt they only had a loose understanding of the policy and lacked sufficient experience to speak about it in detail. Several noted that negotiation played more of a role than the policy itself. Almost all the planners wanted to make sure we were also talking to the ODOT technical experts that were responsible for directly applying the policy.

3.2 THE CURRENT POLICY: WHAT IS AND ISN'T WORKING

WHAT'S WORKING

Interviewees were asked **"What do you believe is working with the current mobility policy, standards and targets?"**

- Everyone felt the policy provided value in setting a target or standard as a starting point, a basis to work from, or at least as a tool to inform discussion of solutions.
- Several noted that V/C is a clear, measurable standard. Brings something tangible when trying to manage a complex system.
- For local TSPs, points included:
    - Helps identify priorities.
    - Identifies future traffic issues.
    - Gives us a standard to measure against so we don't overbuild for the future.
- Analysis may identify that they don't need STA's, UVA or other solutions they anticipated.
- Analysis for development review or an area plan can help identify improvements that policy makers can evaluate the value of doing: "Are the benefits worth the cost of improvement?"
- The policy sets some parameters to ensure development doesn't happen without consideration of and addressing impact. It is a tool to hold people accountable for the consumption of mobility.
- The alternative mobility standards option works when the situation is straightforward and ODOT is flexible. It allows for exception.
- It works for evaluation of alternatives during project development.
- Where capacity can be met, the standard can work for freight and can work for rural highway sections.
- Several interviewees noted that ODOT staff are helpful in applying the policy and negotiating solutions. Some noted ODOT's growing flexibility in applying the policy.

WHAT'S NOT WORKING

Interviewees were asked **"What do you believe is not working with the current mobility policy, standards and targets?"**

Comments included:

- It is blind to the system – the overall transportation system, the highway corridor and local system, other modes, etc.
- It's antiquated:
    - "It's a 1960's vehicle metric. All about cars."
    - The maximum congestion level is too low for today and the future. The 30th highest hour doesn't work. Should look at average weekday instead.
    - The policy is not always useful; you can't plan to standards that can't be met.
- The existing policy assumes the state has the money to maintain the V/C.
- There are problems at each stage of applying the policy:
    - TSP:
        - There were examples cited of major problems in Medford, Bend, Salem, Eugene and elsewhere that were considered unsolvable based on the current policy, so the TSPs "punted" the problem to future planning efforts that are unlikely to be able to "fix" the problem.
        - Doesn't always work for prioritizing TSP projects. Many are done for other reasons: safety, building networks for pedestrians and bicycles, etc.
    - Plan amendments: It can result in an over-focus on vehicles over all other modes and needs.
    - Development: Several interviewees immediately discussed the mobility standards in relationship to the TPR, citing how the standards and the TPR either inhibit needed development, or push that development farther away from the urban core areas. They stated that allowing for denser development in some congested areas could support people using other modes and reducing some traffic.
- It is very specific to cars and freight traffic; doesn't account for changes in how people travel and the role of other modes. It doesn't allow for looking at tradeoffs and can create barriers to other modes.
- Conflicts with other state goals for land use, VMT, climate, economic development, affordable house and, of course, safety.
    - Standards require wider, faster roads, degrading the safety of other modes, and creating "oceans of pavement." Need to balance safety and mobility.
    - One policy mandates high density; the other discourages it by pushing development further out.
    - This policy puts a community's opportunities for economic development in a lesser position.
    - By pushing development out, it reinforces reliance on cars, thus increasing the traffic problem.
- Geared to rural and other sections with limited access to the highway. In urban areas, people need to be able to get across – by foot, bicycle or car. The policy doesn't accommodate local communities – it creates a barrier, creates crossing safety issues and poor livability.
- Too restrictive.
- Alternative mobility standards were criticized for:
    - Taking too long – one to two years (one interviewee cited an example that was quick).
    - Overly prioritizing through-traffic over needs of local traffic to have access to the highway when it is the only arterial option.

    - Allowing flexibility to look at other levels of congestion, but not other modes.
    - Putting all the cost of necessary improvements on housing developers can drive up the cost of housing.
- Issues for development and developers:
    - Does a poor job of identifying what is required of the developer; it identifies the problem, but not reasonable, predictable, or affordable solutions. "It can defy common sense."
    - Those who have to pay for the required improvements are those who come in once capacity is used. Those who come earlier aren't contributing.
    - Process can take so long it inhibits development.
    - Elected officials are all about the economy and jobs, so they aren't going to stop the development.
    - The developers develop solutions to meet the letter of the policy, but it doesn't work for system.
- Additional problems with V/C:
    - It is an intersection-by-intersection process. Very time intensive.
    - It does not address time delay - now used by the Federal Highway Administration (FHWA).
    - It is limiting in its ability to look at context.
- Where the standard can't be met on interstates, it can create unsafe backups on the freeway.
- ODOT doesn't have the resources to do all the review necessary, so development can occur off the system but have major impacts to the highway.
- Interviewees often noted a lack of consistency within ODOT:
    - Planners use the OHP, but engineers use the Highway Design Manual. Need clarity on how they are applied and the relationship.
    - The new Blueprint for Urban Design is limited by current OHP.
    - Some regions, and some different staff within a region or division, will use the policy as a point for discussion, some enforce it more rigidly.
    - The term "mobility" is used officially for different things: freight, ADA, and movement of vehicles on state highways.
    - ODOT can work with locals to address crossing needs for bikes and pedestrians, but the engineer is not going to stamp a new pedestrian crossing on a high-speed, high-volume road, and risk the liability.
    - The high turnover rate of ODOT staff works against consistency in applying the policy.
    - "It's difficult for the traffic people to look at it with a broader perspective. It's the water they're swimming in- need to change the water."
- If we're going to balance the state and local needs, we need something more adaptive.

If we're going to balance state and local needs, we need something more adaptive.

THE VALUE OF A MOBILITY TARGET

Interviewees were asked: **"Should the state even have mobility target?"**

- Uniformly, the answer was, "Yes."
- The common theme was that it should at least drive conversations about how the local system and development affect the state system.

- However, interviewees disagreed on whether it should be a standard, a target, a benchmark, or provide measures that inform decisions but don't drive them. They had different views on:
    - The role of local jurisdictions and whether the policy should come from "bottom up" or "top down."
    - Whether there should be a broader range of "categories."
    - Having a standard, but also a "way out."
    - Having a means of balancing targets for different modes with a "composite score."
- For many, the policy currently serves as a "guide," but for some there was a concern that when it's just a guide it will be sacrificed when push comes to shove. However, several interviewees noted that when ODOT's policies have limited a local community's options, the legislature has been pressed to step in – for example, SB408 as a response to access management.

"We need leadership on how to play together."

3.3 CONSIDERATIONS FOR UPDATING THE POLICY

POTENTIAL MEASURES

Interviewees were asked: **"[As you know], our State has adopted policies to reduce VMT, address climate change and promote walking, biking and transit so many local agencies throughout the State have been looking for new ways to address and measure mobility, in light of those other goals. Right now, the policy uses volume to capacity as the primary measure. Is this still a good measure? Do you believe there should be others? If so, what do you believe could be the most important measures to consider for this update?"**

- Almost all interviewees supported expanding the measures.
- The most common theme was the need for consensus on an approach that can force us to *look more holistically at the local and state system*. Comments included:
    - Explore a combination of measures: vehicle, other modes, local economy, cost, safety, etc. Perhaps use a criteria-based approach that allows ODOT and its partners to use the appropriate measures from a menu of options.
    - Consider developing a tool that provides a composite score. [Note: there were several references to Mosaic.]
    - Look at the categories and strategies in the Blueprint for Urban Design. Consistency would be good.
    - Look at capacity of the local system in conjunction with the highway. One affects the other. It's like water; it finds the path of least resistance.
    - Expand the metrics to provide leadership on how to address mobility in highly congested urban environments.
    - Measure people, not vehicles.
- Nearly all interviewees acknowledged that *vehicle capacity still needs to be a critical part of the policy*.
    - They noted that even with changing technologies such as EVs and increased options, vehicle capacity will be a major issue. Some stressed that the rest of the state needs to get their goods through the Portland area.

- There is a lack of agreement on the role of V/C. Many recognize its value as a measure; fewer feel it should continue to be a standard, or that it should be used as the sole or primary measure.
- Other vehicle measures, such as LOS, were suggested either in conjunction with, or instead of, V/C. Several interviewees mentioned FHWA's focus on travel time and suggested LOS would be a better tool for that.
- Again, many noted the value of V/C and/or LOS as being tangible measures that everyone can understand and accept.
- Other comments included:
    - Look at more of a corridor approach, addressing travel time for an extended section. For instance, look at Central Oregon effort – focus on certainty travel time.
    - Look at queueing time to get on and off system. Sitting too long can cause unsafe behavior.
    - "We should just come to terms with the fact that there's going to be congestion. Accept it."

- Most also supported including alternative modes.
    - Most interviewees suggested a need to somehow address pedestrian, bicycle, and transit mobility.
    - Several emphasized it can't be one-size-fits-all. Many areas have no transportation options to the car and/or have limited public support to fund other modes.
    - Few were able to suggest actual measures. Those who did suggested:
        - Transit delay and ridership.
        - A network approach to alternative modes. Several suggested ODOT look at the success of the Netherlands' evolution from auto focus to developing a separate, heavily-used bicycle network.
        - Identify triggers that can be used to move people from SOV to other modes.
        - For sizeable developments, allow for requiring transit stops or other network investments.
        - Investments to reduce stress level, such as separate parallel facilities for bicycles.
        - Look at the highway as a corridor, allowing for separate bicycle and pedestrian infrastructure.
        - The data on other modes is not mature enough to get effective measures.
    - For development: "Can we have a policy that, when a developer comes with a proposal, they can invest in transit or active transportation network instead of a massive interchange that will fail in 5 years anyway?" How do we create a nexus for other modes? Provide a way for developers to get credit for encouraging other modes and teleworking.
- Other suggested mobility measures were:
    - Local economic development.
    - Safety. We can now quantify safety indicators of decisions. It can be a tangible measure.
    - Access. Can people access key destinations?
    - Cost.
        - The cost of improvements to meet targets needs to be a consideration. There have to be options when we have so little funding.
        - How can we be holistic without breaking the bank?
    - VMT and climate measures. There were polarized views:
        - Several suggested following California lead and learning from their efforts.

        - Others were skeptical or felt it was inappropriate or intangible – that it can't be quantified for mobility.
    - Health – exercise and air quality

- Additional suggestions:
    - Almost all planning looks at a solution rather than an outcome. How do we say, "don't jump to a solution?" The solution to one problem could be wrong for the system as a whole.
    - Use predictive measures.
    - ODOT should be jurisdiction-neutral.
- Several stated the local jurisdictions should have a role in setting targets.
- We need something that is flexible enough, but simple and defined enough – just a few measures.

POLICY VARIATIONS OR FLEXIBILITY

Interviewees were asked: **"Do you feel the policy and associated measures need to be different depending on the following?"**

a. The Region or area of the state?

- Nearly everyone stated that urban and rural should be treated differently, but there were different views on just *how* flexible the policy should be. Comments included:
    - For larger metro areas, people will tolerate vehicular delay, and there is more of a system to get around. For a lot of smaller communities, it is the only route.
    - Not all urban areas should be treated the same.
    - East and west regions have different needs and expectations.
    - There should be variation in the policy, but with clear criteria applied consistently across the state.
    - Topography can also provide limitations and opportunities.
    - Consider setting a threshold for even applying the policy. Areas such as Lake County shouldn't need to apply the policy.

There are 8500 jobs in the Port of Morrow service area, but only 4500 people. It's different than the state's urban areas. The system must support the different commute needs of the work force in different areas.

b. The functional class or roadway type? (e.g., arterials vs. throughways, centers and neighborhoods vs. industrial areas, regional freight network vs. other regional routes)?

- Fewer addressed this question specifically. For those who did, most saw a need for flexibility.
- Several just indicated there should be a distinction between throughways or expressways versus arterial-type highways.
- A counter opinion was that even I-5 should be considered in the context of the local system.
- Suggestions included the following:
    - Refer to the Blueprint for Urban Design.
    - Yes, need to address the purpose of the route.
        - Lifeline routes should reserve capacity for their function.
        - Preserve capacity for major freight routes.

        - Highways through business districts should serve the access needs of the community.
        - It should be less restrictive on non-expressways.
    - Recognize that one road can have different classifications for different sections, which should be treated differently.
- Comments about the current classifications:
    - The classifications and purposes in the 1999 plan were good. Build on that.
    - Oregon is changing, so should the classifications.
    - Too many highways in the highest category.

c. Land use context?

Very few addressed this, of those who did, the typical response was, "Yes." Comments included:

- It should depend on what the roadway is serving.
- There should be a policy to allow for more congestion and more access in commercial and industrial districts, but residential areas could focus more on higher V/C standards if there was other access to the local system.
- Land use is under local control, so it's difficult for the state to impact.

MOBILITY POLICY AND ACCESS TO PLACES

Interviewees were asked: **"How do you think the mobility policy and measures should address access to places?"**

Very few addressed this question. Of those who did, comments included:

- Traffic today – even more so than the past, given the mobile phone map apps – will go on the route least congested. So, we should focus on how well people can get from point A to point B.
- Particularly within urban areas, we should look at the system holistically. Share the burden of access between state and local systems as appropriate.
- One view: Consider travel time reliability between points in a community regardless of road used.
- Counter: Don't look at travel time; look at "are we accommodating the needed access to places."
- This should be context sensitive. In major metro areas, there are large employment centers. You can measure access to key points in those situations.
- Yes, consider the difficulty today of getting from Bend to La Grande without a car. There is no other feasible way. We should be looking at access from point A to point B by transit, as well.
- Need to look at the full impacts and allow connections necessary for the local system to provide necessary access – allowing for pedestrian connectivity and road crossings.
- Several focused solely on access management and suggested a need for less restrictions.

OTHER MODES

Interviewees were asked: **"How do you think the mobility policy and measures should address other modes on state highways?"**

- As discussed under the question on policy suggestions, nearly all agreed there should be some means of addressing other modes.
- Creating the needed networks was the primary message.
- See above for the key suggestions. Additional points were:
    - We need experts to evaluate how to measure tradeoffs.
    - Use incentives.
    - Recognize that it is more of a problem in rural Oregon.

We need to make sure that there is a usable network. Delay isn't the issue for other modes. It should be: "Are we accommodating them?

EQUITY'S RELATION TO MOBILITY MEASURES

Interviewees were asked: **"What about equity? How should equity relate to mobility measures?"**

- There was a lot of support in principle, but few clear ideas about how to achieve equity with this policy. The most common suggestions were:
    - Take a network approach that prioritizes alternative modes.
    - Identify areas with more low-income households and place a higher priority on safety for other modes in those areas, and make sure the highway is not a barrier.
    - Look at number of jobs attainable by each mode.
- A number of the interviewees outside of the major urban areas expressed some concern about how it could be applied with the mobility policy in a meaningful way.

3.4 DEFINING SUCCESS

DESIRED OUTCOMES

Interviewees were asked: **"What would you consider to be the most important outcomes of an update to the mobility policy? How would you define success?"**

The answers to this question uniformly echoed the interviewees' responses to previous questions:

- A more balanced approach among modes.
- A more jurisdictionally-blind approach – one that balances the needs of the local communities with freight and other through traffic.
- Making sure the policy is related to the economic and land use goals.
- Success is economic growth in the communities and the state.
- Something based in reality that provides meaningful guidance and is usable.
- Flexibility with bounds.
- Need to understand what the problem is first.
- Should be quantifiable.
- Make sure it can stay current and accurate.

- We need to show the leadership we did in the 80's when we invested in MAX instead of the Mt. Hood Freeway.

CONCERNS

What concerns do you have – what do you want to make sure is NOT an outcome?"

Again, the answers to this question echoed the interviewees' responses to previous questions:

- Continued focus just on vehicles.
- Some hard and fast, black and white, rigid, one-size-fits-all standard.
- Unfunded mandates.
- Something vague and complex that can't be measured, or that requires too much technical expertise for smaller communities.
- Unattainable goals.

3.5 ADDITIONAL RESOURCES TO INCLUDE AND CLOSING THOUGHTS

INDIVIDUALS AND/OR ORGANIZATIONS TO INCLUDE IN FUTURE ENGAGEMENT

Who else should we be talking to?

- All major transportation stakeholders – ODOT's mode-specific committees, Area Commissions on Transportation, transportation advocacy groups (freight, auto and alternative modes), business, equity groups, ports.
- League of Oregon Cities, Association of Oregon Counties, MPOs, and a broad range of jurisdictions that will need to use the policy.
- Transit agencies.
- Developers and land use advocates.
- Housing advocates.
- Planners often suggested the engineers.

Are there other agencies we should be looking at that have a different way of measuring mobility?

- California's experience with VMT.

Is there anything else you want to tell us?

- Keep the white paper concise and easy to read.
- Provide an online, easy to read graph of traffic on the state highways annually so you can see how it grows and compares to the mobility standards.
- Consider changing technology.
- Requirements to update TSPs every 5 years result in "check-the-box" planning. Full TSP efforts are too time-consuming to do more frequently. Should be for longer than 20 years.
- Look at the new approach to setting speed limits; is there a way to tie mobility targets to the same factors.

- Need designated “high, wide, heavy” freight routes.
- Thanks!

SUGGESTED INFORMATIONAL TOOLS

Interviewees were asked to supply any additional documents or tools that could help inform this effort.

- Central Oregon’s alternative approach for Highway 97.
- City of Portland’s research on alternative measures.

4.0 Comparison of Statewide Interviews and Portland Metro Area Interviews

For a more thorough understanding of stakeholder perspectives on the mobility policy, it's beneficial to consider the results of the Mobility Whitepaper interviews along with, and in comparison to, the Regional Mobility Policy Update interviews held for ODOT and Metro in Fall 2019.

4.1 PROCESS

The primary interview questions and format for the two processes were generally the same. The Metro area interviews covered a larger and broader set of interviewees. The interviews for the statewide process were designed to build on those.

Metro Area: For this effort, JLA interviewed a broad range of stakeholders with an interest in the principles, as well as the specifics of the Metro area policy adopted by both ODOT and Metro. These included:

- Elected officials and policy makers from each county, Metro, TriMet (the Portland metropolitan area transit district), ODOT, the Oregon Transportation Commission, and the Land Conservation and Development Commission.
- Transportation and land use practitioner staff from local, regional, and state agencies in the Metro area, as well as the Department of Land Conservation and Development and FHWA.
- Transportation and land use consultants.
- Business, economic development, freight, and trade representatives.
- Community representatives from a variety of backgrounds and organizations ranging from equity, environmental justice, sustainability/environmental protection, transit/bike/pedestrian advocacy, seniors and disability rights, and transportation advocacy.

Statewide: To expand on the results of the Metro process interviews, the project team focused the 15 statewide interviews on transportation practitioners at local agencies and ODOT regions outside the Metro area – specifically practitioners who were expected to have direct experience with the OHP Mobility Policy.

4.2 KEY MESSAGES

COMMON THEMES

There were many common messages from the two processes. Interviewees throughout both processes stated:

- There is value in having a mobility policy, but no clear agreement on how prescriptive that policy should be. The statewide practitioner interviews were consistent with the Metro area practitioner interviews.
- The policy needs to be updated to:
    - Support other state and regional goals.
    - Reflect the reality of limited funds for improvements.
    - Allow for balance between the needs of the local system and the state system.
    - Be more holistic and support the changing travel modes, needs and system.

    - Address other modes, not just vehicle mobility. In general, interviewees that represented urban areas – Metro area or statewide – expressed greater support for including other modes in the mobility policy.
- V/C is not a sufficient measure. The policy should be expanded to include other measures of mobility. The primary suggestions were:
    - Consider bicycle, pedestrian and transit mobility, but focus on completion of networks, rather than delay or capacity.
    - Continue to consider vehicle capacity but look at the state and local systems more holistically.
    - Consider travel time within a corridor, rather than just intersection capacity.
- Highways in urban and rural areas should be treated differently. Interviewees for both processes nearly unanimously suggested that the policy allow for flexibility to adapt to differences in the context of a highway. The most common difference mentioned was urban/rural.

These are all discussed in greater detail in this report as well as the Interviews Summary Report for the Regional Mobility Policy Update.

KEY DISTINCTIONS

There was a greater difference between the Metro area interviews and the statewide interviews on the following issues:

- Equity. Investing in transportation improvements to address racial and social equity was a major issue for most of the Metro area interviews. It has emerged as a key driver in much of the region's decision-making. When the statewide practitioners were asked about equity, nearly all supported seeking ways to address it; however, only a couple of interviewees volunteered the issue.
- Legally defensible policy. Only a couple of interviewees from the statewide process stressed the need to have a policy that would minimize and survive legal challenges; however, this was a major and widespread concern for the Metro area practitioners.
- Access. The concept of looking at access as a measure – e.g. how well the workforce is able to get from residential centers to major job centers using the overall transportation system, rather than how well a specific section of highway performs – was not as commonly understood or suggested by the statewide practitioners as it was by the Metro area interviewees.
- Intercity travel purpose of the state highway system. The practitioners outside the Metro area expressed greater concern about the need for the highway system to continue to support the intercity and other distance travel needs. Most of these interviewees also supported a need for the state system to be balanced with the local system.
- Corridor. Corridor-based measures of mobility were mentioned more frequently by the statewide practitioners.
- Safety. While safety was a major concern in both processes, Metro area practitioners more frequently expressed concerns about how improvements to address the mobility policy can conflict with the goal of safety.
- Transit. The need for the policy to address mobility for other modes (bicycle, pedestrian and transit) was raised consistently in both processes. The primary difference, as mentioned previously, was between those with rural versus urban perspectives. However, practitioners interviewed for the statewide process – regardless of their location – more frequently cited the challenges of using measures for transit, noting that transit is unavailable in much of the state.

ATTACHMENT B

Glossary of Terms

GLOSSARY OF TERMS

- **Access Management:** The regulation of median openings, driveways, intersections, and interchanges. This process is intended to enable access to land uses while maintaining roadway safety and mobility.
- **Alternative Mobility Target:** The threshold used to determine whether a state highway facility is operating with acceptable and reliable levels of mobility in locations when the typical mobility target cannot be met given current funding or a conflict with other state goals.
- **Capacity:** The maximum amount of traffic an intersection or roadway can accommodate. This measure makes up the denominator of the volume-to-capacity ratio.
- **Comprehensive Plan:** A document that states a City's adopted goals and policies regarding land use and that establishes a framework upon which to base decisions and actions related to the use of land. The State of Oregon requires each city to designated sufficient types and amounts of land to accommodate the need for further urban development.
- **Comprehensive Plan Amendment:** A change to a city's Comprehensive Plan text or map, initiated by the City, and applying to an entire land use map category or a large number of individuals or properties. This type of change must be analyzed in relation to transportation effects per the TPR.
- **Delay:** The average amount of time that a vehicle is stopped at an intersection before its driver can proceed. At signalized and all-way stop controlled intersections, the intersection's delay is calculated as the average delay of all entering vehicles. At two-way stop control intersections, the intersection's delay is calculated as the average delay of all vehicles entering at the minor approach.
- **Department of Land Conservation and Development (DLCD):** Oregon's chief land-use planning and regulatory agency. DLCD implements Oregon's land use and planning statues while assisting local governments in land use planning.
- **Land Conservation and Development Commission (LCDC):** A seven-member volunteer citizen board that guides the actions of DLCD.
- **Land Use Context:** The type of land uses prevalent in an area. This can refer to the uses themselves, such as residential, commercial, or recreational uses, or to the concentration of development within an area, ranging from urban to suburban to rural. Dense urban areas are often treated differently in transportation planning than sparse rural areas.

- **Level of Service (LOS):** A qualitative measure, graded on an A-F scale, used to describe motor vehicle traffic. This measure is based solely upon the delay experienced at a location, with different letter grades assigned based on the delay value in seconds.
- **Metropolitan Planning Organization (MPOs):** A federally mandated and federally funded transportation policy-making organization created to ensure regional cooperation in transportation planning. Urban areas with a population greater than 50,000 are required to create MPOs, and federal funding for transportation projects and programs are channeled through this planning process.
- **Mobility Measure:** A measurement of whether a state highway facility is operating with acceptable and reliable levels of mobility. The Oregon Highway Plan mobility measures are currently v/c ratio-based.
- **Mobility Standard:** The threshold used to determine whether a state highway facility was operating with acceptable and reliable levels of mobility. These thresholds, which were originally level-of-service based and then v/c ratio-based, were replaced with mobility targets in 2011.
- **Mobility Target:** The threshold used to determine whether a state highway facility is operating with acceptable and reliable levels of mobility. These thresholds are v/c ratio-based. The use of the word target began in 2011 and emphasizes the flexible nature of these thresholds.
- **Mode Share:** The proportion of travelers using a specific mode of transportation. For example, an 80% personal vehicle mode share means that 80% of a subset of travelers use a personal vehicle.
- **Multimodal:** Considering multiple modes of transportation, including but not limited to pedestrians, bicyclists, transit, personal vehicles, freight, and micromobility.
- **Multimodal Mixed-use Area (MMA):** A designation applied by local governments to downtowns, town centers, main streets, or other areas inside Urban Growth Boundaries that lifts the requirements in the Transportation Planning Rule to apply automobile congestion standards to the review of certain land use changes. Other transportation performance standards – including those related to safety, other modes of transportation, network connectivity, and freight accessibility – still apply.
- **Oregon Administrative Rule (OAR):** An agency directive, standard, regulation, or statement of general applicability that implements, interprets, or prescribes law or policy, or describes the procedure or practice requirements of any agency in Oregon.
- **Oregon Department of Transportation (ODOT):** The department of the state government of Oregon responsible for systems of transportation. Its mission is to

provide a safe and reliable multimodal transportation system that connects people and helps Oregon's communities and economy thrive.

- **Oregon Transportation Commission (OTC):** A five-member governor-appointed government agency that establishes the state transportation policy and guides the planning, development, and management of a statewide integrated transportation network.
- **Person Throughput:** A measure of the number of people a given facility can accommodate in a given amount of time. Generally, multimodal modes such as walking, bicycling, and transit outperform personal vehicle usage in this measure.
- **Reliability:** The consistency of travel times experienced on a transportation network. This measure is frequently calculated by dividing the 85th percentile travel time by the 50th percentile travel time but can be calculated in numerous ways.
- **Special Transportation Area (STA):** A designated district located on a state highway within an urban growth boundary, in which the need for appropriate local access often outweighs the considerations of highway mobility.
- **Transportation Planning and Analysis Unit (TPAU):** A unit within ODOT that analyzes the long-range effects of transportation decisions on travel behavior, transportation system performance, land use, and the economy to help inform transportation investment decision-making.
- **Transportation Planning Rule (TPR):** The Oregon Administrative Rule that implements the Statewide Planning Goal for transportation. It includes a direction to cities and counties to assess whether proposed plan amendments or zone changes will have a significant effect on the transportation system. This rule was enacted to support the promotion of a safe, convenient, and economic transportation system and to better link land use and transportation planning.
- **Transportation System Plan (TSP):** A description of a transportation system and outline of projects, programs, and policies to meet its needs now and in the future based on the community's aspirations.
- **Urban Growth Boundary:** A regional boundary mandating that the area inside the boundary be used for urban development and the area outside be preserved in its natural state or used for agriculture. Under Oregon law, each of the state's cities and metropolitan areas has created an urban growth boundary around its perimeter.
- **Vehicle Miles Travelled:** A tabulation of the total number of miles driven by personal vehicles in a certain area. While sometimes difficult to project or estimate, this measure speaks to overall travel trends in an area.

- **Volume-to-Capacity (v/c) Ratio:** A measure that reflects mobility and quality of travel of a roadway or section or a roadway. It compares roadway demand (vehicle volumes) with roadway supply (carrying capacity).
- **Zone Change:** A change to a zoning code or map. This type of change must be analyzed in relation to transportation effects per the TPR.
- **Zoning:** The process of dividing land into zones in which certain land uses are permitted or prohibited.

ATTACHMENT C

Bibliography

BIBLIOGRAPHY

The following bibliography contains citations and summaries of key documents, policies, and reports used to inform the Oregon Highway Plan mobility policy white paper. The table of contents below shows the sources divided into categories based on document type.

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State of Oregon Policies

OREGON LAND CONSERVATION AND DEVELOPMENT DEPARTMENT. OREGON ADMINISTRATIVE RULE 660-012-0060. ENACTED MAY 1991.

More commonly known as the Transportation Planning Rule (TPR), Oregon Administrative Rule 660-012-0060 was enacted to promote the development of safe, convenient and economic transportation systems that reduce reliance on the automobile. It directs cities and counties to assess whether proposed plan amendments or zone changes will have a significant effect on the transportation system. When a proposed land use action will have a significant effect, the city is required to mitigate this effect.

While the rule is intended to reduce reliance on the automobile, many jurisdictions have argued that it inhibits compact urban development and thus increases reliance on the automobile. The rule was revised in 2011, along with the Oregon Highway Plan mobility policy, to better serve the statewide goals related to economic development and land use along with the goal of mobility.

ODOT. OREGON TRANSPORTATION PLAN. SEPTEMBER 2006.

The Oregon Transportation Plan (OTP) is the long-range transportation system plan for the state. It establishes a vision and policy foundation to guide transportation system development and investment. The OTP and its mode and topic plans guide decisions by ODOT and other transportation agencies statewide and is reflected in the policies and decisions explained in local and regional plans.

Under the umbrella of the OTP are mode and topics plans that refine and apply the OTP policy to specific modes or topics and guide state, regional, and local investment decisions for the parts of the transportation system they address.

ODOT. OREGON HIGHWAY PLAN POLICY 1F REVISIONS. DECEMBER 2011.

This 2011 document requests to amend the OHP mobility standards. A joint subcommittee of the Oregon Transportation Commission (OTC) and Land Conservation and Development Commission (LCDC) found that the mobility standards were leading

to unintended consequences: transportation mobility being given precedence over economic development and land use objectives and difficulty of increasing development intensities, especially within urban areas.

Specific amendment language includes more direct policy language on tradeoffs when balancing a broad range of policy objectives, more clearly defining that mobility targets are a starting point when developing system and facility plans, and acknowledgement of the potential impacts of policy revisions on mobility performance of state highways. The document also outlines potential next steps in the implementation of OHP Policy 1F, including updating guidance documents and developing a training program.

OREGON TRANSPORTATION COMMISSION. A STRATEGIC INVESTMENT IN TRANSPORTATION. JANUARY 2017.

The Oregon Transportation Commission's Strategic Investment Plan, *A Strategic Investment in Transportation*, also serves to illustrate and clarify ODOT's goals for the state highway system. This plan presents five goals for the state highway system that cannot be fully met with today's funding levels but that could be met with increased funding. These goals contribute to the fundamental vision of a strong multimodal transportation system that is fundamental to a vibrant economy with good jobs, a clean environment, safe and livable communities, and healthy people. These goals are:

- Goal #1: Preserve and Maintain Existing Highways
- Goal #2: Seismic Resiliency and Safety
- Goal #3: Congestion Relief
- Goal #4: Public Transportation and Transportation Options
- Goal #5: Transparent, Accountable and Efficient Program Delivery

ODOT. OREGON HIGHWAY PLAN APPENDIX I: OREGON COMPLIANCE WITH FHWA PERFORMANCE MANAGEMENT REQUIREMENTS. MAY 2018.

This 2018 appendix to the Oregon Highway Plan demonstrates that ODOT is carrying out a continuing, cooperative, and comprehensive performance-based statewide transportation planning process in compliance with FHWA legislation. It does not make any changes to the transportation planning process detailed in the OHP, but rather describes this process to comply with FAST Act requirements. Specifically, it describes each of the performance management areas, measures, and targets prescribed by FHWA and lists ODOT's 2022 performance target in these areas.

ODOT. BLUEPRINT FOR URBAN DESIGN. JUNE 2019.

The Blueprint for Urban Design is an effort to bring a comprehensive and balanced approach to Oregon's urban design guidance and criteria. It is intended to create

clarity around defining specific urban contexts and improve alignment between the planning and design disciplines. It contains guiding principles that allow for flexibility in the performance-based design decision-making processes and updated guidance and criteria that reflect multimodal needs.

The fourth (and final) chapter of the Blueprint for Urban Design focuses on a performance-based approach to project development and discusses the role of project-level performance measures in developing context-sensitive transportation projects. It stresses that performance measures should be developed with both the desired project outcomes and an understanding of the urban context and primary highway users in mind, and that the performance measures should evaluate the trade-offs of various design decisions.

The guide states that project-level performance measures should reflect project goals and desired outcomes, be understandable and easy to communicate, be consistently, objectively measurable, help differentiate between alternatives, and be specific to the plan, rather than "copied and pasted" from a previous study. Within Appendix E, it lists examples of project-level performance measures by mode and provides a framework for ensuring that project-level performance measures align with project goals and desired outcomes.

Oregon Department of Transportation Communications

ODOT TRANSPORTATION PLANNING AND ANALYSIS UNIT. HIGHWAY PLAN LEVEL OF SERVICE POLICY QUESTIONS AND ANSWERS.

This question and answer-style document describes the purposes of the 1999 OHP Level of Service Policy and how the decision was made to update from the 1991 Policy (level of service-based) to the 1999 policy (v/c ratio-based). It briefly described the flexibility afforded in urbanized areas by enacting less stringent v/c ratio targets in these areas. It mentions the Portland metropolitan area's land use plans that resulted in less stringent v/c targets and describes how other metropolitan areas can pursue similar plans. Lastly, it describes in detail the concept of the v/c ratio, how it's calculated in a variety of situation, and why targets were set at the levels they were.

ODOT. MOBILITY STANDARD GUIDELINES. AUGUST 2009.

The OHP Mobility Standard Guidelines provide guidance on the processes and tools to consider in developing alternative mobility standards as provided in the OHP policy. The document discusses why mobility standard issues are being encountered more often in Oregon, how the current policy is applied, best practices for alternative standard development, and an overview of the measures that can be used to define an alternative standard. Lastly, the document provides case studies of jurisdictions that have successfully implemented alternative mobility standards.

ODOT. HIGHWAY MOBILITY STANDARDS: BACKGROUND RELATIONSHIP TO TPR ISSUES. NOVEMBER 2009.

This 2009 presentation discusses the purpose of the OHP mobility standards and how they relate to Transportation Planning Rule (TPR) requirements. The presentation describes how mobility standards are intended to provide consistent standards to evaluate impacts of development and plan changes on mobility but are not intended to affect design processes. The standards are also intended to identify mobility deficiencies without prescribing solutions.

The presentation goes on to discuss the creation of custom standards. This can be done either in metropolitan areas that create an integrated land use and transportation plan to support compact development or in Special Transportation Areas where environmental or land use constraints make transportation improvements infeasible.

Lastly, the presentation discusses the relationship between OHP mobility standards and TPR requirements. It discusses court ruling (such as the Jacqua decision) that established more rigid timing requirements regarding the provision of facilities to accommodate development. It discusses possible responses to these rulings, such as including timelines within mobility standards.

ODOT. OREGON HIGHWAY PLAN REVISIONS LONG-RANGE PLANNING. DECEMBER 2011.

This information sheet describes the meaning of the term "mobility targets", how they should be applied, recent changes to the targets, and methods to pursue alternative standards. It stresses that mobility targets, in most cases, are not strict standards, but rather a target level to serve as part of the conversation. It does note that following completion of long-range or corridor plans, targets are treated as standards when determining compliance with the TPR. It describes recent (as of 2012 publishing) changes to relax standards in UGB areas but notes that alternative measures may still be sought. It describes ODOT's role in the consideration and development of alternative mobility standards and gives examples of areas where alternative mobility targets may be considered.

ODOT. OREGON HIGHWAY PLAN FREQUENTLY ASKED QUESTIONS. DECEMBER 2011.

The OHP FAQ documents responds to a variety of frequently asked questions about the recent relaxations to ODOT mobility targets. It describes the intentional use of the word target to imply that these goals are not rigid and binding, and it describes the potential for worse facility operation given the relaxation of mobility targets, especially in urban areas. It describes the rationale for these changes, mostly centered around desire for greater density and economic growth and the infeasibility of capacity increases to match demand increases. Lastly, it describes scenarios where alternative mobility targets should and should not be pursued and notes that alternative targets are not meant to be enacted on a site-specific/applicant driven basis.

ODOT. OREGON HIGHWAY PLAN REVISIONS OVERVIEW. DECEMBER 2011.

This overview document describes 2012 revisions to the Oregon Highway Plan that address community concerns that development, transportation, and land use objectives need to be better balanced. Specifically, it describes the terminology change from "mobility standard" to "mobility target" to emphasize flexibility, the establishment of less stringent v/c targets, especially in urban areas, and the introduction of alternative mobility targets as an option for circumstances where constraints exist to meeting mobility objectives.

ODOT. PLANNING BUSINESS LINE TEAM OPERATIONAL NOTICE. MAY 2013.

This operational notice provides guidance for implementing alternative mobility targets as defined in OHP Policy 1F, Action 1F.3. It discusses the background and rationale for Action 1F.3 and the process required to pursue alternative mobility targets. It describes the specific steps that should be taken when developing alternative mobility targets, including starting with increases to the acceptable v/c, then considering changing design hours, and finally considering non-v/c-based targets. Lastly, the document defines the roles and responsibilities of the various divisions in ODOT in aiding jurisdictions pursuing alternative mobility targets.

ODOT. TRAFFIC CONGESTION ONE-PAGER. APRIL 2019.

This fact sheet describes Oregon's growing congestion and how ODOT is monitoring congestion levels using the ratio of Annual Average Daily Traffic to Hourly Capacity (AADT/C). It describes various measures ODOT is taking to manage the rate recurring congestion increases (making changes to increase pedestrian and bike use, increase vehicle occupancy rates, and reduce trips) and non-recurring congestion (incident response programs and safety enhancement projects).

Oregon Department of Transportation Research Reports

ODOT TRANSPORTATION PLANNING AND ANALYSIS UNIT. REPORT ON 1998 DRAFT HIGHWAY PLAN LEVEL OF SERVICE POLICY. SEPTEMBER 1998.

The Report on 1998 Draft Highway Plan Level of Service Policy reviews alternative ways of measuring mobility other than the v/c ratio and reviews ways that v/c standards can be made more flexible in metropolitan areas to better accommodate growth management objectives.

The report examines various performance measures related to mobility: Level of service, v/c ratio, person throughout, vehicle travel time, person travel time, delay, modal split, average vehicle occupancy, vehicle miles traveled, vehicle hours traveled, and accessibility. It evaluates each of these against criteria (shown below) to determine its suitability to accomplish similar goals as the v/c ratio. It ultimately recommends the use of v/c ratio as the basic measure of mobility because of its ease of consistent application, ease of data collection and calculation, and ability to measure both intercity passenger and freight mobility.

Along with the recommendation of use of the v/c ratio to measure mobility, the report discusses the negative effects this standard can have on growth management objectives and ways the standard can be made more flexible. It is recommended that alternative measures retain a connection to v/c to retain the benefits of this method, but flexible options tried elsewhere (most examples from Florida, plus some from California) include allowing multiple hour measures, allowing special use area and use exceptions, and providing exceptions for small impacts and redevelopment.

ODOT TRANSPORTATION PLANNING AND ANALYSIS UNIT. 2ND REPORT ON 1998 DRAFT HIGHWAY PLAN LEVEL OF SERVICE POLICY. DECEMBER 1998.

This report describes the changes made to the Oregon Highway Plan in 1998 to allow for more flexible mobility standards in specific cases that can positively affect land use and development outcomes.

It broadly describes the policy context for the level of service policy. Specifically, it describes the many public decisions that affect land use outcomes and how state highways affect land use outcomes. It then describes four policies within the Oregon Highway Plan (Land Use and Transportation [1B], Major Improvements [1G], Level of Service [1F], and Access Management [3A-3D and Appendix D]) that together improve the connection between land development decisions and state highway system decisions.

Lastly, it describes the 1998 changes to the Level of Service Policy. It describes the background leading to these changes: a variety of actors, including local government,

MPO, ODOT, and other stakeholders, expressed concerns that the previous option for modifying mobility standards was too limited and this limitation could negatively influence land use outcomes throughout the state. It describes the new requirements to create alternative standards (they must be clear, objective, and related to V/C) and denotes a few other revisions in the policy.

ODOT. DEVELOPMENT AND SENSITIVITY TESTING OF ALTERNATIVE MOBILITY METRICS. MARCH 2012.

This research report analyzes mobility metrics that could supplement v/c in representing the performance of state transportation facilities. There have been an increasing number of instances where the traditional v/c metric either cannot be met feasibly or would result in unintended negative consequences. In these instances, alternative mobility measures could prove helpful to simultaneously maintain operations of the state facility and accomplish the economic and land use goals of the community.

41 total metrics were analyzed, with a focus on those metrics that gave a more robust portrayal of mobility, better integrated mobility metrics with metrics representing complementary OHP policies, and the need to empirically relate selected supplemental metrics to v/c with reasonable ease and precision. Metrics are organized into the following six categories: mobility, reliability, land use/urban design, safety, infrastructure, energy/environment. The 41 total metrics are contained in a large table within the document.

Examples of metrics under each category include:

- Mobility: LOS, travel time, waiting time, VMT, queues
- Reliability: 95th percentile travel time, on-time performance, fluctuations in traffic volumes
- Land Use/Urban Design: Accessibility to destinations, accessibility to transit, street connectivity, land use mix
- Safety: Crash rates, crime
- Infrastructure: Freeway lane-miles with ITS, transit supply, total freeway lane-miles
- Energy/Environment: Fuel consumption per VMT or PMT, tons of pollutants generated

Ultimately, the report recommends network-wide v/c and regional accessibility as the two metrics to consider moving forward. It offers an analysis of the Medford area showing how these metrics, along with others, can be applied.

ODOT. ACCESSIBILITY PERFORMANCE MEASURES FINAL REPORT. MARCH 2012.

The Accessibility Performance Measures Final Report describes problems that ODOT's use of v/c as a mobility performance measure has caused both within the Portland

metro area and around the state. It then describes a research process to determine potential new performance measures that could be used in addition to or as an alternative to the v/c standards. It describes new performance metrics that can be used to measure the categories of mobility, reliability, accessibility, safety, infrastructure, energy/environment, and equity. While none of the proposed performance measures captured each of these categories, all categories were described by at least a few of the measures.

ODOT. TRANSPORTATION PERFORMANCE MEASURES FOR OUTCOME BASED SYSTEM MANAGEMENT AND MONITORING. SEPTEMBER 2014.

The Transportation Performance Measures for Outcome Based System Management and Monitoring research report inventories all ODOT performance measures and categorizes each as a societal outcome goal, system condition and performance goal, or an internal agency process goal. It then recommends revisions that could be made to existing performance measures, new performance measures that could be used to supplement existing performance measures and more adequately describe each of these goal areas, and performance measures recommended for discontinuation or archiving.

National Guidance

U.S. ENVIRONMENTAL PROTECTION AGENCY. GUIDE TO SUSTAINABLE TRANSPORTATION PERFORMANCE MEASURES. AUGUST 2011.

The Guide to Sustainable Transportation Performance Measures describes performance measures that jurisdictions can use to evaluate transportation facilities that incorporate environmental, economic, and social goals into the decision-making process. Specifically, it describes 12 performance measures that can readily be applied in transportation decision-making. For each measure, it describes specific applications and metrics. For example, for the "transit accessibility" performance measure, it describes applications in land use visioning and long-range transportation planning and gives examples of metrics such as "percent of population and employment within 0.4 miles of transit".

The guide also describes opportunities to provide these measures, such as in long-range plans, corridor-level evaluations, and performance monitoring, and provides examples of regional or metropolitan jurisdictions that have applied these measures in practice.

AMERICAN ASSOCIATION STATE HIGHWAY AND TRANSPORTATION OFFICIALS. ASSESSING ALTERNATIVE METHODS FOR MEASURING REGIONAL MOBILITY IN METROPOLITAN REGIONS. FEBRUARY 2012.

This National Cooperative Highway Research Program (NCHRP) task report assesses methods for defining and measuring mobility in metropolitan regions. It reviews examples of mobility measurement in the U.S. and internationally and uses its findings to develop best practice principals and recommended measures. Domestically, it finds that most state departments of transportation and metropolitan planning organizations use classical mobility measures such as level of service and v/c ratio, and that some jurisdictions also use travel-time related measures. Internationally, it finds a stronger focus on accessibility and customer satisfaction. The report compiles a list of "best practices" when considering which mobility measures to use, including that mobility measurement should be linked to strategic planning and that evaluation should be a standard part of this planning process. It also provides recommended mobility performance measures based on geographic scale. Lastly, it lists potential future topics of interest in the realm of mobility measurement, including new data that will allow less resource-intensive measurement of accessibility and a new focus on customer satisfaction as a target.

Other Jurisdictions' Projects and Policies

CALIFORNIA SENATE. SENATE BILL 743. SEPTEMBER 2013.

Senate Bill (SB) 743, signed in 2013, requires changes to the guidelines implementing the California Environmental Quality Act (CEQA) regarding the analysis of transportation impacts. Specifically, it intends to more appropriately balance the needs of congestion management with statewide goals related to infill development, promotion of public health through active transportation, and reduction of greenhouse gas emissions. It states that traffic congestion shall not be considered a significant impact on the environment within California Environmental Quality Act (CEQA) transportation analysis.

SB 743 requires the Governor's Office of Planning and Research (OPR) to identify new metrics for identifying and mitigating transportation impacts within CEQA. For land use projects, OPR identified Vehicle Miles Traveled (VMT) per capita, VMT per employee, and net VMT as new metrics for transportation analysis. For transportation projects, lead agencies for roadway capacity projects have discretion, consistent with CEQA and planning requirements, to choose which metric to use to evaluate transportation impacts and ultimately pursue alternatives to mitigate these impacts.

Within these metrics, differing standards apply to determine if a certain project type is anticipated to have no significant environmental impacts (thereby not requiring mitigation). For land use projects, OPR recommends that projects within one-half mile of either an existing major transit stop, a stop along an existing high-quality transit corridor, or those that reduce VMT compared to existing conditions should be presumed to have a less than significant impact. For transportation projects, while individual lead agencies have discretion, Caltrans has determined that projects that reduce VMT are presumed to have a less than significant impact. Projects that increase VMT, such as those that add roadway capacity, can still move forward by including VMT-reducing elements.

VARIOUS JURISDICTIONS. TRANSPORTATION REINVESTMENT INNOVATION AND PLANNING FOR US 97 (TRIP97) IN CENTRAL OREGON. OCTOBER 2013.

TRIP97 is a collaborative partnership between the communities who use and are responsible for the US97 transportation corridor in Central Oregon. These agencies are linked by their respective proximity and reliance on the US 97 corridor as an economic lifeline. The partnership represents a comprehensive approach to transportation system planning and management that includes a comprehensive set of performance measures used within a flexible evaluation approach, a detailed funding strategy tied to specific projects, and options for a governance structure that promotes collaboration and regional decision making.

These performance measures reflect the broad range of interests and measure progress towards the partnership's outlined goals. The measures are used for two applications: 1) project prioritization and investment decisions and 2) system adequacy evaluation and

development review. Project prioritization is a legislative planning effort with collaboration from affected agencies. It ranks and prioritizes projects using this evaluation to provide decision-makers with information as to which projects provide the greatest return on investment. The system adequacy evaluation is used to determine if a proposed action (land use or infrastructure change) results in a net benefit to the transportation system.

CITY OF BELLEVUE. COMPREHENSIVE PLAN. AUGUST 2015.

Bellevue's Comprehensive Plan is the city's foundational policy document, guiding growth and development in the city for the next 20 years. The maps, goals, and policies of the plan provide the basis for Bellevue's regulations, programs, and services.

The 2015 update to this plan acknowledges the expressed community interest in embracing a multimodal approach to mobility and included a policy change to the Transportation Element to broaden the measurement of transportation levels of service across all modes. While the prior Transportation Element called for the measurement of only the v/c ratio of vehicles traveling through specified intersection in the PM peak hour, the updated element established metrics, standards, and guidelines for all modes of travel.

MINNESOTA DEPARTMENT OF TRANSPORTATION. STATEWIDE MULTIMODAL TRANSPORTATION PLAN. JANUARY 2017.

The Statewide Multimodal Transportation Plan is the Minnesota Department of Transportation's (MnDOT's) plan for the future of the state's multimodal transportation network. Produced every five years, it evaluates the status of the transportation system, what's changing, and how the state is going to move forward over the next twenty years.

Within its plan, MnDOT continually tracks 61 different performance metrics to inform its progress toward its objectives of open decision-making, transportation safety, critical connections, system stewardship, and healthy communities. MnDOT sets a target for each performance metric, updated regularly through this long-range planning effort, and uses the knowledge of which targets it meets and which it falls short of to drive how it invests in and operates its system. It focuses on asset-management related measures such as pavement and bridge condition for this purpose, while other measures are tracked in detail but not directly used to inform state highway capital improvements.

WASHINGTON DEPARTMENT OF TRANSPORTATION. MOBILITY PERFORMANCE FRAMEWORK DRAFT. JUNE 2017.

The Mobility Performance Framework is a draft document intended to provide specific details on how to assess mobility in order to achieve the state's desired mobility outcome: *To improve the predictable movement of goods and people throughout Washington State, including congestion relief and improved freight mobility*.

The framework focuses on the high-level goals of accessibility, predictability (which is defined in a similar way as reliability), and efficiency. Within each of these goals, the framework houses various measures and metrics to determine Washington Department of Transportation's (WSDOT's) progress on each goal. The framework provides the data sources and analysis tools necessary to calculate each metric with the ultimate goal of using this framework to identify needs and assess alternative strategies.

A key intent of the framework is for it to be scalable across the entire range of analysis that WSDOT conducts – from corridor sketch plans that are carried out across the state to the planning and design of a spot improvement at an intersection. Note that depending on the type and scale of application, different measures and metrics from the framework may be applicable. Additionally, metrics and measures could also vary across different land use contexts.

FLORIDA DEPARTMENT OF TRANSPORTATION. THE FDOT SOURCE BOOK. FEBRUARY 2019.

The FDOT Source Book describes the mobility performance of Florida's transportation system using decades of research and historic data from multiple sources including vehicle probe data, volumes, and roadway geometry. Through the Source Book, a comprehensive report is provided for all major modes of travel in Florida.

Although the Source Book measures are not facility specific, they are the aggregation of measures calculated at the facility level. Some of these mobility measures are leveraged for making funding decisions when used at the segment level. The Source Book provides mobility performance measures for every segment of the State Highway System.

While earlier iterations of the Source Book grouped their performance measures according to the four dimensions of travel, the most updated Source Book groups its performance measures according to mode. This was done because some measures cut across multiple dimensions of travel.

MARYLAND DEPARTMENT OF TRANSPORTATION. MARYLAND STATE HIGHWAY MOBILITY REPORT. 2019.

The 2019 Maryland Mobility Report provides a summary of performance along Maryland Department of Transportation State Highway Administration (MDOT SHA) roadways and the areas of joint partnership with other MDOT business unit facilities for the calendar year 2018. The goals of MDOT SHA is to deliver safe, sustainable, intelligent, and exceptional transportation solutions with a focus on customer service that allows for the millions of motorists the mobility they desire. MDOT SHA focuses on policies, programs, and projects with a performance-based and practical transportation approach that systematically addresses recurring and non-recurring congestion.

The report employs three measures to gauge statewide congestion levels on both the state freeway/expressway and arterial corridor system. These include percent system

congested, percent peak hour VMT in congested conditions, and annual cost of congestion. To measures statewide reliability levels on the state freeway/expressway system it employs two measures: percent system unreliable and percent peak hour VMT in unreliable conditions. MDOT uses these measurements to identify projects and programs to mitigate congestion and meet the needs of the traveling public.

DISTRICT DEPARTMENT OF TRANSPORTATION. DISTRICT MOBILITY PROJECT. ONGOING.

District Mobility is the multimodal system performance management program for the District Department of Transportation (DDOT) to better quantify and qualify the state of its transportation system. District Department of Transportation (DDOT) utilizes a holistic multimodal perspective measuring the transportation system performance through congestion, reliability, and accessibility categories.

To measure the transportation system's performance in the three categories listed above across all modes, DDOT analyzed eleven separate performance measures. While DDOT mainly uses the results of this analysis qualitatively, it aspires to produce more continuous analysis across all performance measures tracked and incorporate these results more explicitly into the transportation planning process.

Other Jurisdictions' Reports and Guidance

WASHINGTON STATE TRANSPORTATION CENTER (TRAC). CONCURRENCY STUDY LITERATURE REVIEW. MAY 2002.

This literature review summarizes research done by the Center for Urban Transportation Research at the University of South Florida describing how alternative modes such as transit, bicycle, and pedestrian travel can be incorporated into the transportation concurrency process. It also describes analysis methodologies for alternative modes such as bicycle and pedestrian level of service and transit quality of service.

The literature review describes the effects of land use on transportation mode choice by comparing examples in Florida where transportation and land use planning is not concurrent to examples around the country where land use planning is done with transportation demand management in mind. It also discusses regulatory approaches, such as zoning, tax increment financing, and impact fees, to better plan for and fund alternative transportation modes. Lastly, it discusses case studies of the multimodal concurrency standards various counties in Florida have created.

TWIN CITIES METROPOLITAN COUNCIL. METROPOLITAN HIGHWAY SYSTEM INVESTMENT STUDY. TECHNICAL MEMORANDUM #2: PERFORMANCES MEASURES. APRIL 2010.

The MHSIS (Metropolitan Highway System Investment Study) Appendix G describes recommended performance measures to be considered in the evaluation of alternatives during the study.

It includes a description of the high-level transportation policies of the region (Twin Cities metro area), including that the transportation system must optimize all available transportation modes and that single-occupancy vehicle usage must decrease in order for the region to meet its mobility goals. It encourages the usage of HOV and HOT lanes, bus-only lanes, and managed/priced roadway to optimize the transportation system and reduce vehicular demand.

The appendix then walks through the selection process for the evaluation criteria, namely, to follow the overarching goals of optimizing the investments already made in the region with targeted capacity expansion coupled with multimodal system and demand management strategies. It lists five objectives, each with its own performance measure categories and performance measures.

- Objective #1: Increase the people-moving capacity of the metropolitan highway system
- Objective #2: Manage and optimize, to the greatest extent possible, the existing system
- Objective #3: Accommodate future demand within the metropolitan highway system

- Objective #4: Increase trip reliability
- Objective #5: Reduce travel time

FLORIDA DEPARTMENT OF TRANSPORTATION. FLORIDA'S MOBILITY PERFORMANCE MEASURES AND EXPERIENCE. OCTOBER 2011.

This paper provides an overview of the measures FDOT uses for its system-wide reporting, describes the benefits and drawbacks of the ways these measures are used, and gives thoughts on how performance metrics can be improved moving forward. It begins by listing the 16 performance measures used across the four "dimensions" of mobility: quantity of travel, quality of travel, accessibility, and capacity utilization. It describes the positive and negative aspects of each of these 16 performance measures and states the importance of using multiple performance measures to assess travel outcomes – the use of just one performance measures, such as LOS, provides an incomplete picture of mobility. Lastly, it discusses potential future improvements to performance metrics, such as the introduction of more multimodal measures and a focus on holistic travel reliability rather than individual facility performance.

WASHINGTON COUNTY, OREGON. MULTI-MODAL PERFORMANCE MEASURES AND STANDARDS. JUNE 2014.

The Multi-Modal Performance Measures and Standards report details multi-modal performance measures and application methods recommended for use in Washington County, summarizes lessons learned from the process of testing various performance measures for their applicability in Washington County, and describes the policy framework for allowing jurisdictions to adopt multi-modal measures. The document describes potential standards and implementation processes for each measure. It also describes how different performance measures or standards should be used in a variety of settings and outlines the appropriate settings (TSP, subarea, and multi-jurisdictional corridor studies; project/corridor planning; and/or development review and plan amendments) to use each of the proposed measures.

FLORIDA DEPARTMENT OF TRANSPORTATION. DEVELOPING FLORIDA STATEWIDE MULTIMODAL MOBILITY PERFORMANCE MEASURES. JANUARY 2016.

The report describes the history of performance measure usage by FDOT dating back to 1991, including the creation of FDOT's first Data Source Book in 2000, which now serves as the primary source for mobility measurement reporting in the state. It also describes the Strategic Intermodal System (SIS), established in 2003, a statewide network of high-priority transportation facilities, including highways, airports, seaports, bus terminals, etc.

The document then describes Florida's multimodal mobility performance measurement program. It details the consensus built between FDOT and the state's metropolitan planning organizations around the desire for more multimodal performance measures and the distribution of tasks between FDOT and specific MPOs to accomplish that goal.

It lists the various performance measurements arising from that consensus-building process organized by mode.

FDOT. MOBILITY PERFORMANCE MEASURES. OCTOBER 2017.

The first part of this presentation by FDOT staff describes the mobility performance measures FDOT is implementing. Travel time reliability for both person-miles and freight are key among these, as are emissions-related measures such as percentage change in tailpipe CO2 emissions compared to the previous year.

The second part of the presentation, given by a different FDOT staffperson, describes primary and secondary measures FDOT could consider using, such as daily VMT, percentage miles heavily congested, and multimodal measures such as percent sidewalk coverage and percent bicycle lane coverage.

ATTACHMENT D

Summary of Other Agency Mobility Policies & Measures

ATTACHMENT D – SUMMARY OF OTHER AGENCY MOBILITY POLICIES AND MEASURES

Washington Department of Transportation

The Washington Department of Transportation (WSDOT) is working to create a Practical Solutions Performance Framework[34] that will help it make "the right investments, in the right place, at the right time." As part of this framework, WSDOT is developing measures and metrics for its mobility goal, to be housed in the Mobility Performance Framework.

This framework focuses on three high-level goals related to mobility:

- Accessibility: Ability to easily connect to goods and services across modes, abilities, and socioeconomic groups
- Predictability: Consistency of travel time and experience by mode, including measurement of congestion as well as options to avoid congestion
- Efficiency: Number of current/potential users divided by the cost to build/maintain the transportation infrastructure

Within each of these goals, the framework houses various measures and metrics to determine WSDOT's progress on each goal. For example, under the goal of accessibility, measures include density of housing and jobs and pedestrian facility availability, and metrics within these measures include population density, job destiny, and sidewalk miles per capita.

The measures applicable to each goal vary based on the type of analysis (corridor sketch planning, system-level prioritization, corridor/subarea strategy evaluation, or project-level evaluation) being performed and the applicable context (urban core, town/urban, suburban, or rural). Measures important for rural project-level evaluation may not be applicable or feasible to calculate for urban core system-level prioritization.

For each metric, the framework provides the data sources and analysis tools necessary for calculation. While the Mobility Performance Framework is still in draft form, once adopted, WSDOT would use these metrics to identify needs and assess alternative strategies.

[34] Washington Department of Transportation. *Mobility Performance Framework Draft*. 2017.

Florida Department of Transportation

As described above, FDOT has employed a definition of mobility comprised of four fundamental components (quantity of travel, quality of travel, accessibility, and capacity utilization). Through this holistic mobility lens, it has similarly sought to measure mobility comprehensively. As such, it has developed multiple performance measures within each of its four dimensions of mobility for a total of 16 primary mobility performance measures. FDOT has used these 16 measures for system-wide reporting for over a decade. FDOT's measures for the different aspects of mobility include:

Quantity of Travel:

- Vehicle miles traveled
- Person miles traveled
- Truck miles traveled
- Transit ridership

Quality of Travel:

- Average travel speed
- Vehicle delay
- Person delay
- Level of Service
- Travel time reliability

Accessibility:

- Proximity to major transportation hubs
- Percent urban miles with sidewalks
- Percent urban miles with paved shoulders/bicycle lanes

Capacity Utilization:

- Vehicles per lane mile
- Percent of miles heavily congested
- Percent of travel heavily congested
- Duration of congestion

FDOT analyzes and reports each of these measures in the Source Book[35] annually for a variety of geographies: the entire state, all counties with population over one million

[35] Florida Department of Transportation. *The FDOT Source Book.* 2019.

(aggregated), all other urbanized areas (aggregated) and all rural areas (aggregated). FDOT doesn't report at the individual county or roadway level, given the lack of precise data. Recently, FDOT has begun to report these measures grouped by mode instead of by dimension, allowing more logical grouping of measures that cover multiple dimensions of mobility.

The principal goal of this analysis and reporting is to understand high-level trends in mobility within the state of Florida and to illustrate additional financial resource needs. As such, some of the measures in this approach may not scale well to some of the uses Oregon has for its mobility measurement, such as analysis of individual facilities.

Minnesota Department of Transportation

The Minnesota Department of Transportation (MnDOT) continually tracks 61 different performance metrics through its Statewide Multimodal Transportation Plan[36] that it uses to inform its progress towards its five stated objectives: 1) open decision-making, 2) transportation safety, 3) critical connections, 4) system stewardship, and 5) healthy communities. MnDOT sets a target for each performance metric, updated regularly through long-range planning efforts, and uses the knowledge of which targets it meets and which it falls short of to drive how it invests in and operates its system.

MnDOT's five objectives have a broader reach than simply understanding the operational characteristics of the transportation system. Objectives such as open decision-making and system stewardship may not be directly applicable to ODOT's intended use of performance measures; however, the performance metric framework is noteworthy. MnDOT uses some of the performance measures it tracks in this process to inform its statewide highway investment plan (these include measures such as pavement condition, bridge conditions, and other asset management-related measures). Other measures, such as some congestion-related measures and multimodal infrastructure measures, are tracked in detail but not directly use to inform state highway capital improvements.

The performance metrics most directly related to mobility are listed below:

- Percentage of State-Owned Sidewalk Miles Substantially Compliant with ADA Standards
- Span of Transit Service
- Number of Jobs Within 30 Minute Drive in the Twin Cities
- Number of Jobs Within 30 Minute Transit Commute in the Twin Cities

[36] Minnesota Department of Transportation. *Statewide Multimodal Transportation Plan.* 2017.

- Interstate Reliability
- Truck Travel Time Reliability
- Average Incident Clearance Time

California Department of Transportation (Caltrans)

Senate Bill (SB) 743[37], signed in 2013, requires changes to the guidelines implementing the California Environmental Quality Act (CEQA) regarding the analysis of transportation impacts. Specifically, it intends to more appropriately balance the needs of congestion management with statewide goals related to infill development, promotion of public health through active transportation, and reduction of greenhouse gas emissions. It states that traffic congestion shall not be considered a significant impact on the environment within California Environmental Quality Act (CEQA) transportation analysis.

SB 743 requires the Governor's Office of Planning and Research (OPR) to identify new metrics for identifying and mitigating transportation impacts within CEQA. For land use projects, OPR identified Vehicle Miles Traveled (VMT) per capita, VMT per employee, and net VMT as new metrics for transportation analysis. For transportation projects, lead agencies for roadway capacity projects have discretion, consistent with CEQA and planning requirements, to choose which metric to use to evaluate transportation impacts and ultimately pursue alternatives to mitigate these impacts.

Within these metrics, differing standards apply to determine if a certain project type is anticipated to have no significant environmental impacts (thereby not requiring mitigation). For land use projects, OPR recommends that projects within one-half mile of either an existing major transit stop, a stop along an existing high-quality transit corridor, or those that reduce VMT compared to existing conditions should be presumed to have a less than significant impact. For transportation projects, while individual lead agencies have discretion, Caltrans has determined that projects that reduce VMT are presumed to have a less than significant impact. Projects that increase VMT, such as those that add roadway capacity, can still move forward by including VMT-reducing elements.

Maryland Department of Transportation

The Maryland Department of Transportation (MDOT) publishes an annual mobility report[38] in which it measures congestion and reliability on the state freeway/expressway system and arterial corridor system. It employs three measures to gauge statewide

[37] California Senate. *Senate Bill 743.* 2013.

[38] Maryland Department of Transportation. *Maryland State Highway Mobility Report.* 2018.

congestion levels on both the state freeway/expressway and arterial corridor system. These include:

- Percent system congested,
- Percent peak hour VMT in congested conditions, and
- Annual cost of congestion.

To measure statewide reliability levels on the state freeway/expressway system it employs two measures:

- Percent system unreliable and
- Percent peak hour VMT in unreliable conditions.

MDOT uses these measurements to identify projects and programs to mitigate congestion and meet the needs of the traveling public.

District Department of Transportation (Washington, D.C.)

The District Department of Transportation's (DDOT) District Mobility Project[39] employs a holistic multimodal perspective measuring the transportation system performance through three categories: congestion, reliability, and accessibility. DDOT defines congestion in two ways: 1) the level at which transportation system demand approaches or exceeds the available capacity of the system, and 2) a sign of prosperity indicating an economically vibrant and active community.

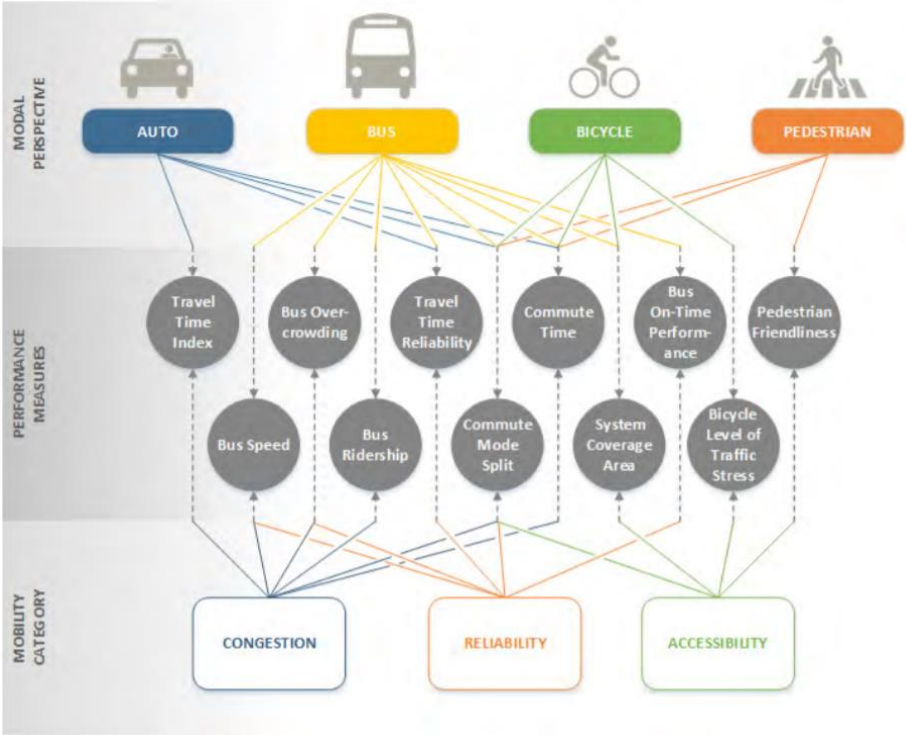
To measure the transportation system's performance in the three categories listed above across all modes, DDOT analyzed eleven separate performance measures. While DDOT mainly uses the results of this analysis qualitatively, it aspires to produce more continuous analysis across all performance measures tracked and incorporate these results more explicitly into the transportation planning process.

The eleven performance measures, shown in Figure D-1, include commute mode split, travel time index, bicycle level of traffic stress, and bus ridership. The performance measures were identified based on both their ability to accurately portray the multimodal performance of the District's transportation network and on the availability, attainability, and reliability of the data sources needed to analyze them. Some otherwise-effective performance measures were left out based upon the difficulty of their continuous analysis. Metrics that are being used for regular analysis lend

[39] District Department of Transportation. *District Mobility Project*. Ongoing.

themselves to consistent application have available data, forecastability, transparency, and modal neutrality.

Figure D-1. Performance Measures Identified for the District Mobility Project



City of Bellevue

The 2015 update to the City of Bellevue Comprehensive Plan[40] acknowledged the expressed community interest in embracing a multimodal approach to mobility and included a policy change to the Transportation Element to broaden the measurement of transportation levels of service across all modes. While the prior Transportation Element called for the measurement of only the v/c ratio of vehicles traveling through specified intersection in the PM peak hour, the updated element established metrics, standards, and guidelines for all modes of travel. The updated Transportation Element is described below by mode:

- Vehicle Mode: Retain existing intersection-based LOS metrics and standards and establish a new urban corridor travel time metric. Both intersection LOS and corridor travel time consider land use context. Vehicle mobility is favored in some neighborhoods with low density, while in neighborhoods where transit, walking,

[40] City of Bellevue. *Comprehensive Plan*. 2015.

and bicycling are viable options for more trips, vehicle LOS standards acknowledge tolerance for greater congestion.

- Pedestrian Mode: Focus on the quality of the pedestrian environment rather than on a congestion metric. Apply metrics, standards, and guidelines to the pedestrian network along arterials. Establish a standard of sidewalk + landscape width; establish guidelines on crosswalk and curb design.
- Bicycle Mode: Establish guidelines based on level of traffic stress on corridors and at intersections based on roadway traffic speeds, vehicle volumes, topography, etc.
- Transit Mode: Establish guidelines for transit rider access, transit stop/station components, and some speed and reliability factors that are under the control of the City.

Figure D-2 provides an overview of the metrics, standards, and guidelines that inform the design of public investments and private-sector projects. While only the metrics codified as standards are binding through the public investment and development review processes, metrics shown below as guidelines should also be considered and influence these processes.

Figure D-2. Bellevue Modal Metrics, Standards, and Guidelines

Mode	LOS Metric	LOS Standard	LOS Guideline
Vehicle	Volume/Capacity at Intersections	LOS C-E+, Varies by land use context	N/A
	Typical Urban Travel Speed on Arterials	N/A	Percent of posted speed limit, LOS varies by neighborhood context
Pedestrian	Sidewalk plus Landscape buffer	12-20 feet for sidewalk+landscape Varies by land use context	N/A
	Pedestrian Comfort, Access and Safety at Intersections	N/A	Crosswalk and back-of-curb design varies by land use context
Bicycle	Level of Traffic Stress on Corridors	N/A	Design to achieve LTS/LOS varies by roadway traffic speed and volume
	Level of Traffic Stress at Intersections	N/A	Maintain corridor LTS/LOS at intersections. Design components vary by context
Transit	Passenger Comfort, Access and Safety	N/A	Varies by transit stop/station typology
	Transit Travel Speed on Corridors	N/A	14 mph on Frequent Transit Network corridors between activity centers

Central Oregon Transportation Agencies

In an effort to more comprehensively evaluate transportation outcomes and fund improvements along US 97 in Central Oregon, nine agencies, comprised of ODOT, Deschutes and Jefferson Counties, Bend MPO, and five cities, entered into a collaborative partnership called Transportation Reinvestment Innovation and Planning for US 97 in Central Oregon, or TRIP97[41].

Central Oregon has experienced significant growth over the last 40 years, with the population of Deschutes County tripling since 1980. This growth has had significant impacts to the regional and local transportation systems and current transportation policies have made it challenging to maintain current standards in an affordable manner. Furthermore, the Partnership identified the need to evaluate transportation system performance from a more holistic perspective than is allowed by current policy, which primarily focuses on roadway/intersection capacity. Goals shared by all members of the Partnership include Economic Development & Job Creation, Safety, Mobility, Accessibility, Travel Options for all Users, Network Redundancy, and the Environment.

The TRIP97 Partnership developed a broad range of performance measures for the US 97 corridor to reflect the broad range of interests and measure progress towards the outlined goals. Performance measures selected for each goal described above are shown in Figure D-3.

[41] Various Jurisdictions. *Transportation Reinvestment Innovation and Planning for US 97 in Central Oregon.* 2013.

Figure D-3. TRIP97 Performance Measures

Goal Area	Performance Measure
Mobility	▪ Average Travel Time ▪ Travel Time Reliability ▪ Side-Street Delay
Economy	▪ Job Potential/Funding Plan Revenue
Safety	▪ Predicted Crash Frequency and Severity
Environment	▪ Carbon Dioxide Emissions
Network Redundancy	▪ Percent of north-south travel on US 97
Accessibility	▪ Public street turning movement opportunities per mile
Travel Options	▪ Multimodal Level of Service

These performance measures are used for two applications: 1) project prioritization and investment decisions and 2) system adequacy evaluation and development review. Project prioritization is a legislative planning effort with collaboration from affected agencies. It ranks and prioritizes projects using this evaluation to provide decision-makers with information as to which projects provide the greatest return on investment. The system adequacy evaluation is used to determine if a proposed action (land use or infrastructure change) results in a net benefit to the transportation system.

Metropolitan Council (Twin Cities Metropolitan Area MPO)

Metropolitan Council, the Twin Cities MPO, authored a memorandum[42] recommending performance measures to be considered in the evaluation of corridor-based alternatives in a highway system investment study. These performance measures seek to accomplish five objectives:

[42] Metropolitan Council. *Metropolitan Highway System Investment Study. Technical Memorandum #2: Performance Measures.* 2010.

- Objective #1: Increase the people-moving capacity of the metropolitan highway system.
- Objective #2: Manage and optimize, to the greatest extent possible, the existing system.
- Objective #3: Reduce future demand on the metropolitan highway system.
- Objective #4: Increase trip reliability.
- Objective #5: Reduce travel time.

Examples of performance measures used to support these goals, shown in Figure D-4, include person-miles traveled by facility (Objective #1), change in regional mode share (Objective #2), change in peak period VMT (Objective #3), change in travel time index (Objective #4), and corridor-based travel time by facility type (Objective #5).

Metropolitan Council's proposed performance measures are intended for use in the evaluation of specific alternatives; however, they could be used to establish benchmarks that are used in facility or system planning.

Figure D-4. Metropolitan Council Proposed Performance Measures

OBJECTIVES	PERFORMANCE CATEGORIES	MEASURES OF EFFECTIVENESS
Increase the people-moving capacity of the metropolitan highway system	Person Throughput	Person Miles Traveled by facility / lane type
		Vehicle Miles Traveled by facility / lane type
	Transit Mode Split	Change in treatment corridor mode share
		Change in regional mode share
Manage and optimize, to the greatest extent possible, the existing system	Facility Performance	Ratio of PMT / VMT (mode distribution)
		Lane miles at volume / capacity > 0.95
		Average speed by facility / lane type
Accommodate future demand within the metropolitan highway system.	Peak Period Vehicle Traffic Volumes	Change from baseline in peak hour volumes
		Change in peak period VMT
	Temporal Extent of Congestion	Hours per day operating with congestion
		Change in freeway links operating with congestion

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		Change in non-freeway corridors operating with congestion
		Change in VMT during congested conditions
		Change in VHT during congested conditions
Increase trip reliability	Travel Time Reliability	Variability of travel time by facility / lane type
		Change in travel time index (total travel time compared to a free-flow travel time) of travelers
Reduce travel time	Travel Time Savings	Corridor-based travel time by facility / lane type
		Change in travel time by treatment corridor
		Differentiation of travel time by mode