APPENDIX L

2023 Regional Transportation Plan

Federal performance-based planning and congestion management process documentation

November 30, 2023

Metro respects civil rights

Metro fully complies with Title VI of the Civil Rights Act of 1964 that requires that no person be excluded from the participation in, be denied the benefits of, or be otherwise subjected to discrimination on the basis of race, color or national origin under any program or activity for which Metro receives federal financial assistance.

Metro fully complies with Title II of the Americans with Disabilities Act and Section 504 of the Rehabilitation Act that requires that no otherwise qualified individual with a disability be excluded from the participation in, be denied the benefits of, or be subjected to discrimination solely by reason of their disability under any program or activity for which Metro receives federal financial assistance.

If any person believes they have been discriminated against regarding the receipt of benefits or services because of race, color, national origin, sex, age or disability, they have the right to file a complaint with Metro. For information on Metro's civil rights program, or to obtain a discrimination complaint form, visit www.oregonmetro.gov/civilrights or call 503-797-1536.

Metro provides services or accommodations upon request to persons with disabilities and people who need an interpreter at public meetings. If you need a sign language interpreter, communication aid or language assistance, call 503-797-1700 or TDD/TTY 503-797-1804 (8 a.m. to 5 p.m. weekdays) 5 business days before the meeting. All Metro meetings are wheelchair accessible. For up-to-date public transportation information, visit TriMet's website at www.trimet.org.

Metro is the federally mandated metropolitan planning organization designated by the governor to develop an overall transportation plan and to allocate federal funds for the region.

The Joint Policy Advisory Committee on Transportation (JPACT) is a 17-member committee that provides a forum for elected officials and representatives of agencies involved in transportation to evaluate transportation needs in the region and to make recommendations to the Metro Council. The established decision-making process assures a well-balanced regional transportation system and involves local elected officials directly in decisions that help the Metro Council develop regional transportation policies, including allocating transportation funds.

Regional Transportation Plan website: **oregonmetro.gov/rtp**

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PURPOSE

Federal law requires Metro to develop a comprehensive performance-based planning process for metropolitan transportation planning and programming purposes. Performance based planning means that the region develops goals and policies and then identifies strategies to help meet those goals and policies. The region's long history and commitment to performance-based planning processes is evident in region's long-range transportation plan, the Regional Transportation Plan (RTP), and its associated modal and topical plans and strategies. Together, the RTP and its supporting strategies guide transportation investments and decision-making in the region.

This appendix documents the region's approach to addressing the federal transportation performance-based planning and congestion management requirements contained in the Moving Ahead for Progress in the 21st Century Act (MAP-21) signed into law in 2012, and subsequent transportation reauthorizations, Fixing America's Surface Transportation (FAST) Act in 2015 and the Bipartisan Infrastructure Law (BIL) in 2021. This appendix also constitutes the region's official Congestion Management Process (CMP). The multimodal performance measures and near-term performance monitoring targets in this appendix are used to monitor transportation system performance using empirical or observed data between scheduled updates.

The CMP network (see Figure 4) defines the scope for data collection, management and reporting purposes, focusing on multimodal transportation facilities and services located on the National Highway System (NHS) and the region's high capacity transit network. The NHS includes the region's interstates and some state-owned arterials, regional freight routes and frequent and enhanced transit corridors. The CMP also continues the region's transition to using observed data for performance monitoring consistent with federal requirement and can be expanded in the future as data collection and resources allow.

Together, regional performance targets defined in Chapter 2 of the RTP, regional policies defined in Chapter 3 of the RTP and this appendix reflect a comprehensive and multimodal performance-based planning approach to manage congestion and provide safe, equitable, reliable, and climate-friendly mobility options for people, goods and services, while achieving a broader set of land use, economic, equity and environmental outcomes. This approach includes modeling tools, analysis and research combined with meaningful public engagement to help quantify and better understand the potential outcomes of policy decisions and investment actions. The framework also guides data collection, tool development and monitoring/reporting activities described at the end of this appendix.

This comprehensive performance-based planning process satisfies the requirements as described in federal regulations and will be re-evaluated as part of scheduled updates to the RTP to respond to new requirements, information learned through monitoring activities and changes in the availability of data and tools so that they can be refined as necessary.

INTRODUCTION

Our region's economic prosperity and quality of life depend on a transportation system that provides every person and business with access to safe, reliable, healthy and affordable ways to get around.

The Regional Transportation Plan provides a shared vision, goals, objectives, policies, and strategies that guide investments for all forms of travel to keep people connected and commerce moving throughout the region, while achieving a broader set of economic, equity and environmental outcomes. The plan is updated every five years to address trends and challenges facing the region and plan for future growth.

First developed in the 1990s, the greater Portland region's Congestion Management Process (CMP) is designed with these challenges in mind. It represents a new way of thinking about integrated transportation networks and land use to manage mobility of people and goods movement. Signed into law in 2012, the Moving Ahead for Progress in the 21st Century (MAP-21) created the most significant federal transportation policy shift since the 1991 Intermodal Surface Transportation Efficiency Act (ISTEA). MAP-21 established eleven national performance measures for MPOs, state departments of transportation, and transit agencies to assess and monitor the performance of the system. The following transportation reauthorizations, Fixing America's Surface Transportation (FAST) Act in 2015 and the Bipartisan Infrastructure Law (BIL) in 2021 continued the implementation of MAP-21 performance measures.

As a result of MAP-21, MPOs, state DOTs, and transit agencies set performance targets associated with the eleven national performance measures in a cooperative and coordinated manner in 2018. Once performance targets were set MPOs, State DOT's, and transit agencies are expected to monitor and report on progress towards the performance targets for two and four year cycles depending on the performance metric.

The objective of the performance-based planning and programming framework is to ensure States and MPOs invest federal resources in projects that collectively make progress toward the achievement of seven national goals – safety, infrastructure condition, congestion, system reliability, freight reliability, environmental sustainability and project delivery.

This appendix lays out the framework of the region's CMP, which includes federal transportation performance measures and targets, and provides a road map for locating the elements of the CMP and federally required-performance measures and targets that have been woven into the RTP and supporting documents.

FEDERAL CONTEXT FOR PEFORMANCE-BASED PLANNING

Federal Transportation Performance Management (TPM) Program

Signed into law in 2012, MAP-21 established performance-based transportation planning and decision-making provisions. Subsequent transportation reauthorizations, Fixing America's Surface Transportation (FAST) Act in 2015 and the Bipartisan Infrastructure Law (BIL) in 2021 continued the implementation of MAP-21 performance measures. Table 1 lists the MAP-21 goal areas and defined performance measures that must be reported for the greater Portland area.

Table 1. National Goal Areas and Performance Measures for the Greater Portland area

National Goal Areas	Federal Performance Measure(s)
Safety	Fatalities (number and rate per 100 million vehicle miles traveled)
	Serious injuries (number and rate per 100 million vehicle miles traveled)
	Non-motorized fatalities and serious injuries (number)
Infrastructure condition	Condition of pavements on the Interstate System and on the non-Interstate National Highway System
	Condition of bridges on the National Highway System
	State of good repair for public transit assets for rolling stock, equipment, facilities and infrastructure
Congestion reduction	Percent of Non-Single Occupancy Vehicle (SOV) travel[1]
System reliability	Percent of reliable person-miles traveled[2] on Interstate System and on the non-Interstate National Highway System
Freight movement and economic vitality	Percent of Interstate System miles with reliable truck travel times[3]
Environmental sustainability	Total emissions reduction for CMAQ funded projects by applicable pollutants[4]

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[1] A minimum option for measurement will be use of the American Community Survey (ACS) Journey to Work data from the U.S. Census Bureau. State DOTs and MPOs also may use localized survey or measurements. Finally, State DOTs and MPOs may use volume counts for each mode to determine the percent non-SOV travel, and will be encouraged to report any data not available in national sources today (such as bike counts) to FHWA. This measure may include travel avoided by teleworking.

[2] Reliable defined as the ratio of the 80th percentile travel time of a reporting segment to a "normal" travel time (50th percentile), using data from FHWA's free National Performance Management Research Data Set or equivalent. Data are collected in 15-minute segments during all time periods other than 8 p.m.-6 a.m. local time. The measures are the percent of person-miles traveled on the relevant NHS areas that are reliable

[3] The ratio will be generated by dividing the 95th percentile time by the normal time (50th percentile) for each segment. Then, the Index will be generated by multiplying each segment's largest ratio of the five periods by its length, then dividing the sum of all length-weighted segments by the total length of Interstate. Reporting is divided into five periods: morning peak (6-10 a.m.), midday (10 a.m.-4 p.m.) and afternoon peak (4-8 p.m.) Mondays through Fridays; weekends (6 a.m.-8 p.m.); and overnights for all days (8 p.m.-6 a.m.)

[4] Applicable pollutants include: nitrogen oxide (NOx), volatile organic compounds (VOCs), carbon monoxide (CO), and particulate matter (PM10 and PM2.5)

The Portland metropolitan region developed its MAP-21 performance targets in 2018 and the targets were first adopted as part of the 2018 RTP. As part of the target development, the region collected data, established baselines for each measure, and coordinated with partners the Oregon Department of Transportation and the region's transit agencies – TriMet and SMART – to ensure targets were consistent and moving in the same direction. Monitoring of performance began for the suite of MAP-21 performance measures in 2019.[5] Through subsequent coordination processes organized by ODOT in 2022, new targets were established for the second 4-year performance period. The new targets are reflected in this appendix.

The MAP-21 performance targets differ from the system performance assessment conducted on the RTP investments to understand the performance of the region's transportation system. The MAP-21 federal performance measures require MPOs, state DOTs, and transit agencies to use observed and monitored data to measuring performance and set targets for the system. The observed data approach to performance differs from the system assessment approach which looks at projections of future impacts from investments.

Figure 1. RTP performance measurement system
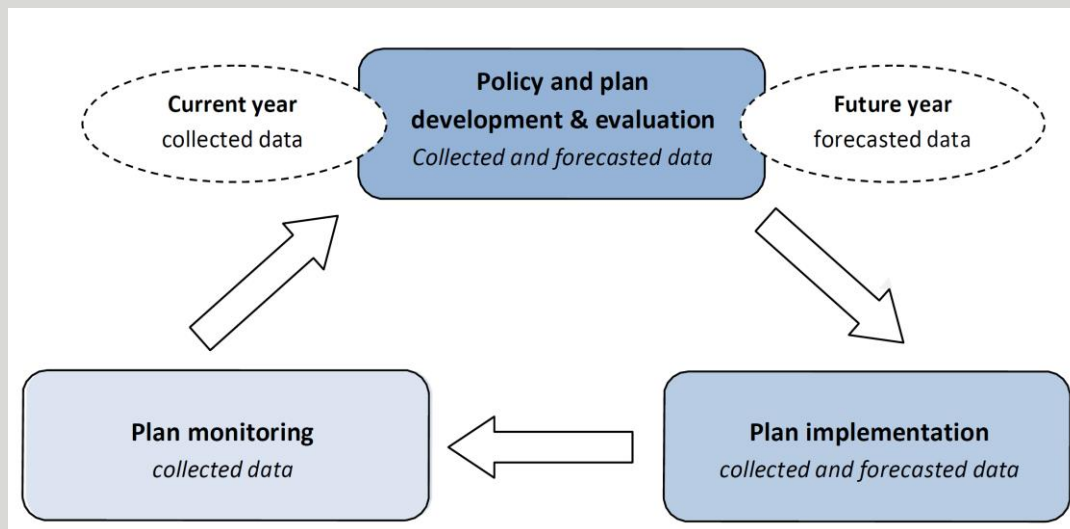
As the federally-designated metropolitan planning organization (MPO) for the greater Portland region, Metro is also required to maintain the region's congestion management process (CMP). A CMP has been a federal requirement since the passage of Safe Accountable Flexible Efficient Transportation Equity Act - A Legacy for the Users (SAFETEA-LU) in 2005. Subsequent federal transportation reauthorizations, including the MAP-21 in 2012, FAST Act in 2015 and the Bipartisan Infrastructure Law (BIL) in 2021 continued the implementation of CMP requirements fully maintain the requirements of the CMP with additional strategies and options. The legislation and regulations are the basis for the federally required transportation performance targets and the CMP components that are incorporated in the RTP and supporting documents, including this appendix.

Typically, Metro reviews and updates the region's CMP, as needed, concurrent with updates to the RTP. This appendix reports on system performance and incorporates updated performance targets necessary to meet federal performance-based planning requirements and describes the data collection, tools and research activities necessary to support Metro's efforts to fulfill its transportation performance measurement and reporting responsibilities, including the region's congestion management process.

REGIONAL CONGESTION MANAGEMENT PROCESS (CMP)

Traffic congestion occurs when the number of users on a transportation facility exceeds or approaches the capacity of that facility. Congestion has many causes, but mostly results from too much vehicle traffic for the physical capacity of a road to handle (bottlenecks) or periodic events like crashes, vehicle breakdowns, road work zones, storms and special events (e.g., parades, major sporting events). For drivers, congestion falls into two buckets: routine congestion, which typically occurs daily, versus traffic incidents that are unexpected and difficult to predict. While many transportation agencies have traditionally only looked at roadway capacity, many agencies in larger metropolitan areas are now looking at the overall ability of a road to move people, whether in private vehicles, transit, or walking or biking, to better reflect the constrained nature of transportation in urban areas.

Did you know?

Causes of congestion in the greater Portland region

More than half of all congestion is caused by crashes, breakdowns and other causes that can be addressed using system management and operational strategies.

- 2021 FHWA Pooled Fund Study

It is also important to note that high traffic volumes that may result in congestion can also be a sign of growth and economic vitality, as is the case in the greater Portland region. Drivers can usually plan their day around routine congestion and the typical bottlenecks. Much of the throughway system (greater Portland's major highways and freeways) is routinely congested during the morning and evening rush hour, and drivers know their trip will be slower during this period. Transit service is also affected by congestion. Transit providers can adjust schedules, service frequencies and the number of buses available on a congested route to improve on-time performance. But the traffic incidents and other non-routine events are difficult to plan for, and make it more difficult for drivers to plan commutes, for businesses to plan shipments and for transit providers to plan for getting people to their destinations on time.

Focusing on system reliability

Efforts to address congestion in our growing region focus on improving reliability, or the degree to which congestion in a given travel corridor is affected by these non-routine events. Reliability is about predictability and dependability – and being able to count on knowing about how long it will take to get to school, work or activities. Improving reliability means that travelers don't have to budget as much extra time in order to arrive on time at their destinations, even when routine congestion exists on our major throughways.

While it is impossible to eliminate congestion, congestion needs to be actively managed in order to provide a reliable transportation system for users and better connect goods to market and support travel across the region. Because the addition of throughway and arterial capacity is constrained by financial resources as well as physical factors and environmental resources, strategies to manage capacity, such as travel demand reduction, increased transit access, making
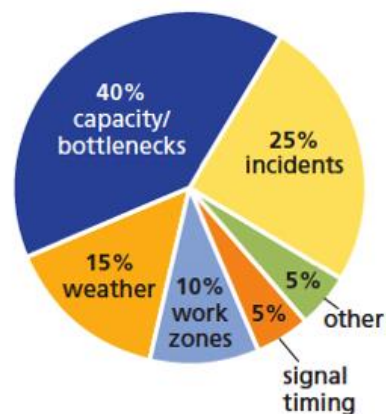
it easy for people to walk or bike instead of drive, and operational management of the existing and future transportation system, should be prime strategies to increase the capacity of a roadway, as they are often more effective in the long-term, and often less expensive to implement.

The next section describes the federally-required Congestion Management Process that has been cooperatively developed and implemented by Metro and regional partners since the 2000 RTP to:

- monitor, measure and diagnose the causes of congestion on the regional transportation system;
- evaluate and recommend cost-effective strategies to manage regional congestion; and
- evaluate and monitor the performance of strategies implemented to manage congestion.

Overview of Federal Requirements and Regional CMP Process

The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) required metropolitan planning organizations (MPO) to develop a congestion management system (CMS) to integrate congestion management into the regional transportation planning process. The 2005 Safe, Accountable, Flexible, Efficient Transportation Equity Act: a Legacy for Users (SAFETEA-LU), expanded the CMS requirements through the creation of the Congestion Management Process (CMP) in regions with more than 200,000 people. Subsequent federal transportation reauthorizations, including the MAP-21 in 2012, FAST Act in 2015 and the Bipartisan Infrastructure Law (BIL) in 2021 reaffirmed the congestion management process and expanded strategies for managing travel demand.

First developed in the 1990s, Metro has maintained the CMP for the greater Portland region as required by federal law. The CMP is "a systematic process for managing congestion that provides information on transportation system performance and on alternative strategies to alleviate congestion and enhance the mobility of persons and goods to levels that meet state and local needs."[6]

Since the 2000 RTP, the region's CMP has been an integral component of the RTP, helping to inform the planning and investment decisions embedded in the plan and subsequent implementation of the plan through the Metropolitan Transportation Improvement Program (MTIP), local transportation system plans, regional corridor refinement planning and other implementation activities.

Federal regulation 23 CFR 450.320(c)2 identifies the required components for a CMP:

1. Methods to monitor and evaluate the performance of the multimodal transportation system, identify the causes of recurring and non-recurring congestion, identify and evaluate alternative strategies, provide information supporting the implementation of actions and evaluate the effectiveness of implemented actions.

2. Definition of congestion management objectives and appropriate performance measures to assess the extent of congestion and support the evaluation of the effectiveness of congestion reduction and mobility enhancement strategies for the movement of people and goods. Since levels of acceptable system performance may vary among local communities, performance measures should be tailored to the specific needs of the area and established cooperatively by the State(s), affect MPO(s), and local officials in consultation with the operators of major modes of transportation in the coverage area.

3. Establishment of a coordinated program for data collection and system performance monitoring to define the extent and duration of congestion to contribute in determining the causes of congestion, and evaluate the efficiency and effectiveness of implemented actions. To the extent possible, this data collection program should be coordinated with existing data sources (including archived operational/ITS data) and coordinated with operations managers in the metropolitan area.

4. Identification and evaluation of the anticipated performance and expected benefits of appropriate congestion management strategies that will contribute to the more effective use and improved safety of existing and future transportation systems based on the established performance measures. The following categories of strategies, or combination of strategies, are some examples of what should be appropriately considered for each area:

    -   land use and growth management strategies

    -   demand management strategies

    -   traffic operational improvements

    -   public transportation improvements

    -   active transportation improvements

    -   ITS technologies as related to the regional ITS architecture

    -   street network connectivity improvements

    -   where necessary, strategic widening of existing roads and throughways to add system capacity.

5. Identification of an implementation schedule, implementation responsibilities, and possible funding sources for each strategy (or combination of strategies) proposed for implementation.

6. Implementation of a process for periodic assessment of the effectiveness of implemented strategies, in terms of the area's established performance measures. The results of this evaluation shall be provided to decision-makers and the public to provide guidance on selection of effective strategies for future implementation.

The CMP includes a performance monitoring system that informs needed capital investments, such as new or improved transit and road capacity as well as demand and system management strategies to actively manage and optimize performance of the existing infrastructure. The RTP calls for increasing street network connectivity, expanding travel options and using system and

demand management strategies to help improve reliability and better connect goods to market and support travel across the region, before moving to strategic widening of existing roads and throughways to address bottlenecks. This policy was implemented in recognition of limited financial resources, potential community and environmental impacts and research that demonstrated you cannot build your way out of congestion, as well as the expected ancillary benefits of supporting the region's land use, air quality, water quality, and greenhouse gas emissions goals.

In 23 CFR Part 450 Section 322(a) the Federal Highway Administration defines a CMP as:

> *"…a process that provides for safe and effective integrated management and operation of the multimodal transportation system, based on a cooperatively developed and implemented metropolitan-wide strategy, of new and existing transportation facilities…through the use of travel demand reduction (including intercity bus operators, employer-based commuting programs such as a carpool program, vanpool program, transit benefit program, parking cash-out program, shuttle program, or telework program), job access projects and operational management strategies."*

Further, 23 CFR Part 450 Section 322(h):

> *A MPO…may develop a [congestion management] plan that includes projects and strategies that will be considered in the TIP of such MPO.*
> *(1) Such plan shall: (i) Develop regional goals to reduce vehicle miles traveled during peak commuting hours and improve transportation connections between areas with high job concentration and areas with high concentrations of low-income households; (ii) Identify existing public transportation services, employer based commuter programs, and other existing transportation services that support access to jobs in the region; and (iii) Identify proposed projects and programs to reduce congestion and increase job access opportunities.*
> *(2) In developing the congestion management plan, an MPO shall consult with employers, private and nonprofit providers of public transportation, transportation management organizations, and organizations that provide job access reverse commute projects or job-related services to low-income individuals.*

The framework shown in Figure 1 illustrates the overall CMP process used by Metro and regional partners through the metropolitan transportation planning process.

Figure 1. Elements of the Region's Congestion Management Process
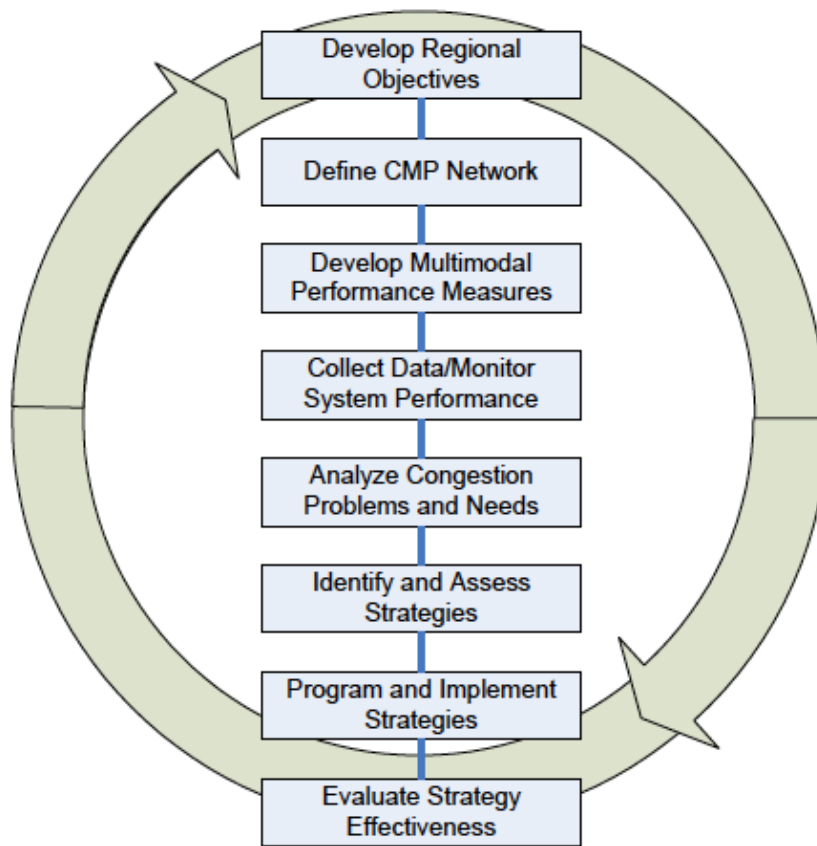
Source: FHWA [Congestion Management Process: A Guidebook](#) (2011).

The CMP process shown in Figure 1 is not intended to be a step-by-step method but is intended to convey the general approach that builds on the policy foundation of the RTP goals and objectives to monitor the system performance and identify, evaluate and implement strategies to manage congestion in the region.

In particular, Chapter 2 of the RTP establishes the vision, goals, objectives, performance measures and targets that define a comprehensive performance-based policy framework. The framework supports the region's ability to identify strategies and investment priorities to help people and products get where they need to go as while ensuring the planning process is able to address, air pollution, climate change and other issues increasingly impact our daily lives. Chapter 3 of the RTP defines specific policies for planning and investing in the region's transportation system for all modes of travel as well as management and operations of the system. Chapter 6 describes the strategies (projects) recommended for implementation. Chapter 4 and Chapter 7 of the RTP describe current and future performance of the transportation system. Chapter 8 of the RTP defines how the plan will be implemented, including future planning. This appendix summarizes ongoing data collection and monitoring activities.

Table 2 documents where key elements of the region's CMP are addressed in the RTP and/or this appendix, followed by a discussion of each element.

Table 2. Key Elements of the Region's Congestion Management Process (CMP)

Regional Congestion Management Process	Associated RTP/MTIP Activities
Develop congestion management objectives and policies	RTP Goals and Objectives (Chapter 2), RTP Policies (Chapter 3)
Define geographic area and network of interest	RTP (Appendix L – Figures 3 and 5)
Establish multimodal performance measures	RTP Performance Measures and Targets (Chapter 2), RTP Mobility Policy (Chapter 3), RTP Federal Performance Measures and Targets (Appendix L)
Collect data and monitor system performance	RTP Existing Conditions (Chapter 4), ODOT Traffic Performance Report (2020),[7] Mobility Corridor Atlas (2015), Metro and ODOT Federal Performance Monitoring Reports (Baseline, 2-year and 4-year reports), RTP Appendix I Throughway travel speed reliability performance analysis for 2019
Analyze congestion problems and needs	RTP Existing Conditions (Chapter 4), ODOT Traffic Performance Report (2020), RTC CMP Monitoring Report (2022), RTP Performance Evaluation (Chapter 7), RTP Appendix I Throughway travel speed reliability performance analysis
Identify and evaluate effectiveness of strategies	RTP Investment Priorities (Chapter 6), RTP Performance Evaluation (Chapter 7), RTP (Appendix F – Environmental Analysis and Potential Mitigation Strategies), RTP (Appendix J – Climate Smart Strategy Implementation and Monitoring), RTP (Appendix V – future corridor refinement planning), area studies, local transportation system plans, ODOT facility plans
Implement selected strategies and manage transportation system	MTIP, Metro, local jurisdictions, ODOT, TriMet, SMART, TransPort, Regional Transportation Functional Plan, RTP (Chapter 8)
Monitor strategy effectiveness[8]	Scheduled RTP updates, CMAQ Performance Plan, RTP (Appendix J – Climate Smart Strategy Implementation and Monitoring), RTC CMP Monitoring Report (2022), Metro and ODOT Federal Performance Monitoring Reports (Baseline, 2-year and 4-year reports)

Develop Congestion Management Goals, Objectives and Policies

This RTP continues the region's outcomes- and performance-based approach to regional transportation planning and investment decisions. Chapter 2 of the RTP outlines this approach through a series of five goals, objectives, performance measures and performance targets that describe the overall vision of the plan and direct future planning and investment decisions. Chapter 3 defines specific policies for planning and investment in the region's transportation system for all modes of travel as well as management and operations of the system. The 2023

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[7] ODOT, "Portland Region 2020 Traffic Performance Report." (December 2021). Available on-line at https://www.oregon.gov/odot/Projects/Project%20Documents/TPR-2020.pdf

[8] USDOT, "Guidebook on the Congestion Management Process in Metropolitan Transportation Planning." Pg. 1-1 (April 2011). Available on-line at https://www.fhwa.dot.gov/planning/congestion_management_process/cmp_guidebook/cmpguidebk.pdf

RTP includes a new regional mobility policy that includes three performance measures: household-based vehicle miles traveled per capita, system completion for all modes (including TSMO and TDM) and throughway reliability using travel speed.

Together, the plan's goals, objectives and policies provide an overarching policy framework for transportation planning and investment and the region's CMP, while the performance measures and targets in Chapter 2 of the RTP provide a method for expected performance of the plan in the long-term as shown in Figure 2. The measures and targets in this appendix will help track progress towards meeting the goals and objectives in the shorter-term, between and during scheduled updates to the RTP.

Figure 2. RTP Performance-Based Planning and Decision-making Framework
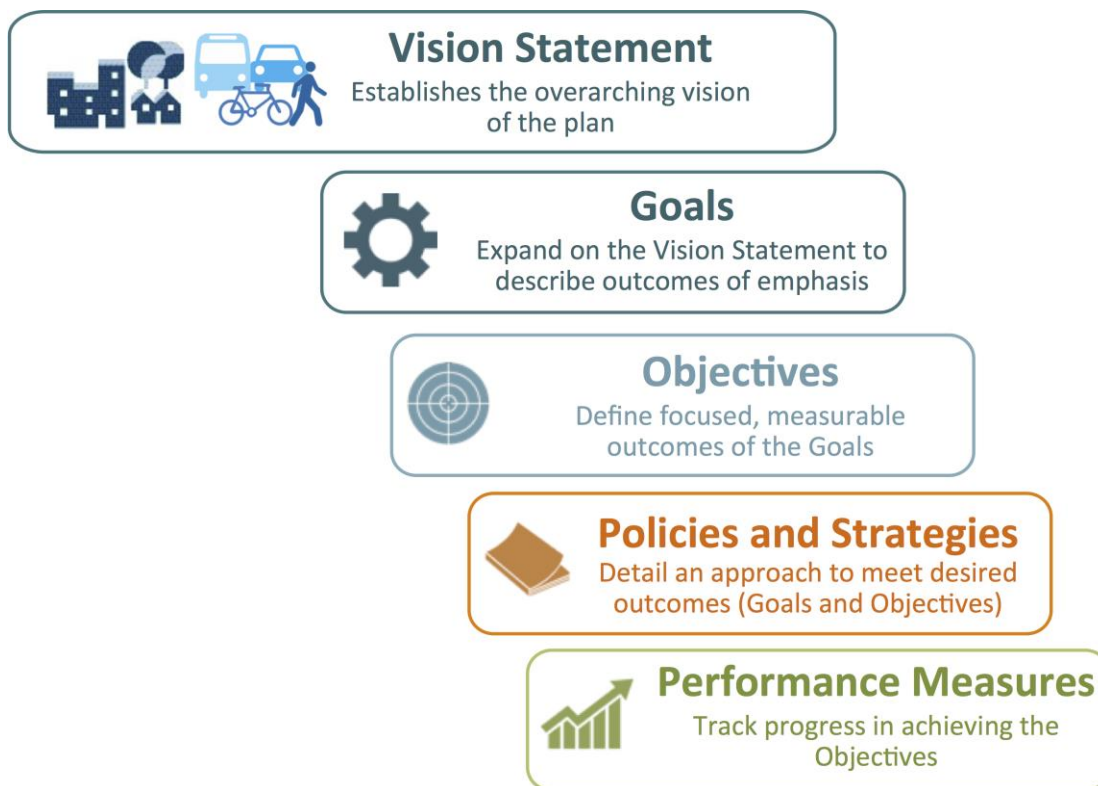
Source: Regional Transportation Plan (Chapter 2)

While all facets of regional transportation planning are covered in the RTP goals and objectives, the goals and objectives specific to the CMP are shown in Table 3.

Table 3. RTP Congestion Management Process Related Goals and Objectives

Goal 1. Mobility Options

- **Objective 1.1 Travel Options** – Plan communities and design and manage the transportation system to increase the proportion of trips made by walking, bicycling, shared rides and use of transit, and reduce per capita vehicle miles traveled.
- **Objective 1.2 System Completion** – Complete all gaps in planned regional networks.
- **Objective 1.3 Access to Transit** – Increase household and job access to current and planned frequent transit service.
- **Objective 1.4 Regional Mobility** – Maintain reliable person-trip and freight mobility for all modes in the region's mobility corridors, consistent with the designated modal functions of each facility and planned transit service within each corridor.

Goal 2. Safe System

- **Objective 2.1 Vision Zero** – Eliminate fatal and severe injury crashes for all modes of travel by 2035.

Goal 3. Equitable Transportation

- **Objective 3.1 Transportation Equity** – Eliminate disparities related to access, safety, affordability and health outcomes experienced by people of color and other marginalized communities.
- **Objective 3.2 Barrier Free Transportation** – Eliminate barriers that people of color, people with low incomes, youth, older adults, people with disabilities and other marginalized communities face to meeting their travel needs.

Goal 4. Thriving Economy

- **Objective 4.1 Connected Region** – Focus growth and transportation investment in designated 2040 growth areas to build an integrated system of throughways, arterial streets, freight routes and intermodal facilities, transit services and bicycle and pedestrian facilities, with efficient connections between modes and communities that provide access to jobs, markets and community places within and beyond the region.
- **Objective 4.2 Access to Industry and Freight Intermodal Facilities** – Maintain access to industry and freight intermodal facilities by a reliable and seamless freight transportation system that includes air cargo, pipeline, trucking, rail, and marine services to facilitate efficient and competitive shipping choices for goods movement in, to and from the region.
- **Objective 4.3 Access to Jobs and Talent** – Attract new businesses and family-wage jobs and retain those that are already located in the region while increasing the number and variety of jobs that households can reach within a reasonable travel time.
- **Objective 4.4 Transportation and Housing Affordability** – Reduce the share of income that households in the region spend on transportation to lower overall household spending on transportation and housing.
- **Objective 4.5 State of Good Repair** – Maintain or bring facilities up to a state of good repair and avoid deferred maintenance to prevent future, more costly and resource intensive repairs to the system and impediments to moving people and goods.

Goal 5. Climate Action and Resilience

- **Objective 5.1 Climate Change Mitigation** – Meet adopted targets for reducing transportation-related greenhouse gas emissions and vehicle miles traveled per capita in order to slow climate change.
- **Objective 5.2 Climate-Friendly Communities** – Increase the share of jobs and households in walkable, mixed-use areas served by current and planned frequent transit service.

Source: 2023 Regional Transportation Plan (Chapter 2)

Figure 3. Metropolitan Planning Area Boundary and Other Regional Planning Boundaries
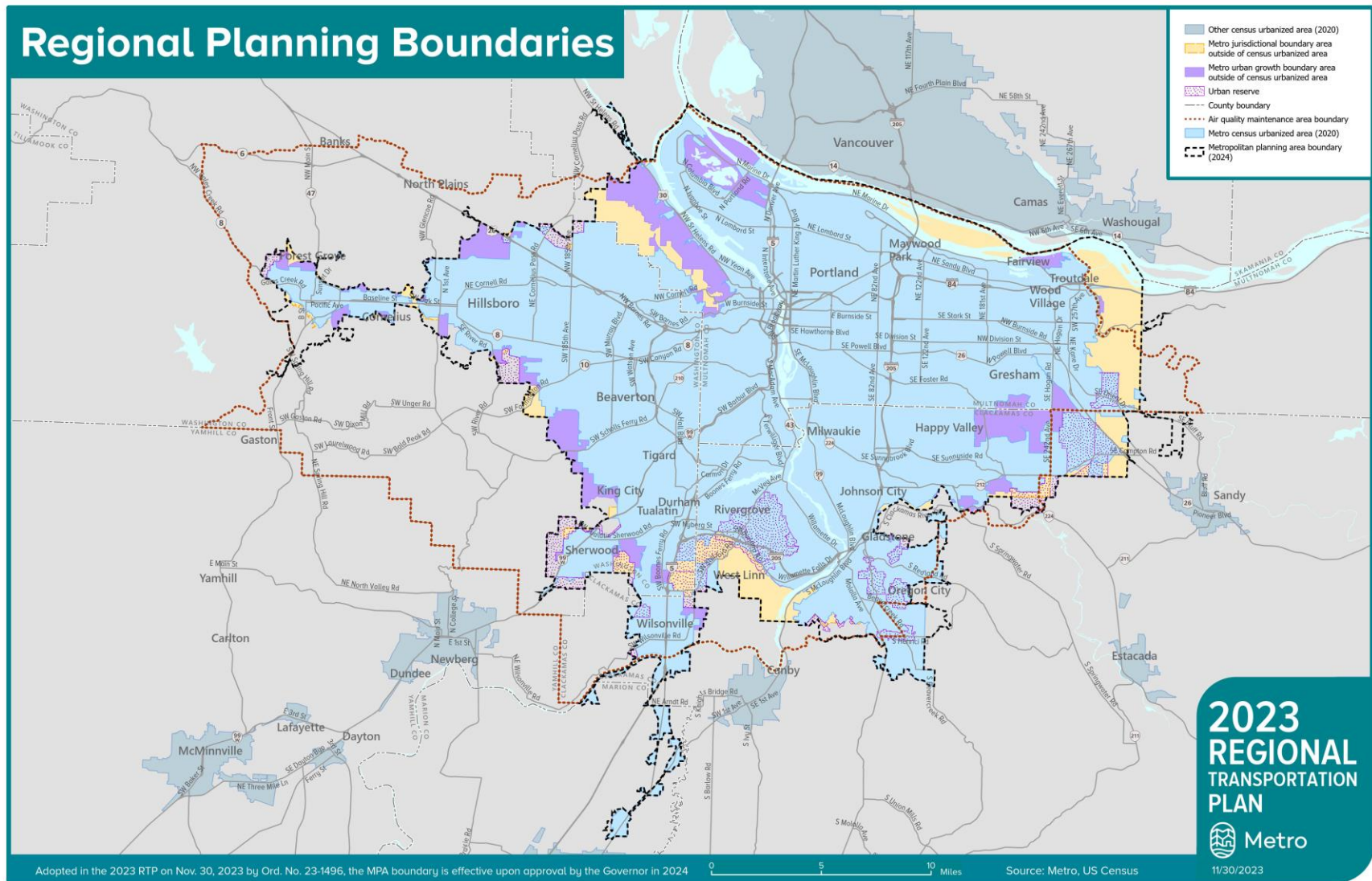
Identify Area of Application and Transportation Network of Interest

Background on regional planning boundaries

The greater Portland region has several planning boundaries with different purposes. These boundaries are shown in Figure 3.

First, Metro's jurisdictional boundary encompasses the urban portions of Multnomah, Washington and Clackamas counties.

Second, under Oregon law, each city or metropolitan area in the state has an urban growth boundary (UGB) that separates urban land from rural land.

Third, there is the federal census Urbanized Area (UA) boundary, which outlines areas that are urban in nature and those areas that are largely rural in nature. The Portland-Vancouver metropolitan region is somewhat unique in that it is a single urbanized area that is located in two states and served by two MPOs. The federal census urbanized area boundary for the Oregon-portion of the Portland-Vancouver metropolitan region is distinct from the Metro urban growth boundary. The UA boundary is described in the legend of Figure 3 as "Metro Census Urbanized Area (2020)."

Fourth, MPOs are required to establish a Metropolitan Planning Area (MPA) boundary, which marks the geographic area to be covered by MPO transportation planning activities. At a minimum, the MPA boundary must include the urbanized area and areas expected to be urbanized within the next twenty years. The boundary is updated after each U.S. Decennial Census. The updated Metropolitan Planning Area boundary in Figure 3 reflects urban areas as defined by the 2020 Census and represents the Metro region recommendation to the Oregon Department of Transportation. The updated MPA will be effective upon approval of the boundary by the Governor in 2024.

Fifth, the federally designated Air Quality Maintenance Area (AQMA) boundary is the area subject to State Implementation Plan (SIP) regulations. Shown in Figure 3as a dotted brown line, the Portland region's AQMA boundary was developed as part of the ozone and carbon monoxide SIP regulations. The region had previously violated national air quality standards related to ozone and carbon monoxide pollutants. In October 2017, the region achieved attainment status under the Clean Air Act Amendments. Reaching this milestone means that transportation conformity no longer is required to be performed in this region. The region continues to comply with other obligations and requirements outlined in the SIP, including tracking per capita vehicle miles traveled.

A sixth boundary, the Federal Aid Urban Boundary, is used to determine urban or rural designations for federally-funded projects. Roadways inside the FAUB have urban classifications while those outside the FAUB have rural classifications. This, in part, identifies the federal functional classification of a roadway which determines eligibility for most FHWA roadway and bridge Federal Aid funding. After each U.S. Decennial Census, the FHWA requires states to review and update their FAUB. Urban boundary data from the 2020 Census was released in late 2022. At

that time, FHWA requested jurisdictions to work with the State transportation departments to complete adjustments to FAUBs by the end of 2023. Following its own approval, FHWA will consider all urban area boundaries final as of April 15, 2025. The final map was not available for inclusion in this appendix.

Congestion Management Network

The region's CMP applies to defined components of the regional transportation network located within the MPA boundary for the Oregon portion of the Portland-Vancouver, Washington urbanized area.

Figure 4 identifies the multimodal network of transportation facilities that will be the focus of monitoring and reporting through the region's CMP. The congestion management network includes all state and local facilities designated as part of the National Highway System and the high capacity transit routes designated in the RTP. The designated NHS includes most regional freight routes.

Performance of the CMP network and individual transportation components is evaluated and monitored using observed data from a variety of sources, including ODOT, TriMet and the National Performance Management Research Data Set (NPMRDS). In addition to monitoring safety and congestion, the region also monitors overall people and goods movement by all modes on these facilities. This includes vehicles miles traveled, transit ridership, regional active transportation system completion, non-drive alone mode share and freight reliability. As a result, throughways, arterials, high capacity transit routes, enhanced transit and frequent transit routes and regional bicycle and pedestrian facilities are part of the data collection and monitoring for the region's CMP.

Figure 4. Regional Congestion Management Network

Appendix L | Federal Performance-Based Planning and Congestion Management Processes
2023 Regional Transportation Plan | November 30, 2023

L-17
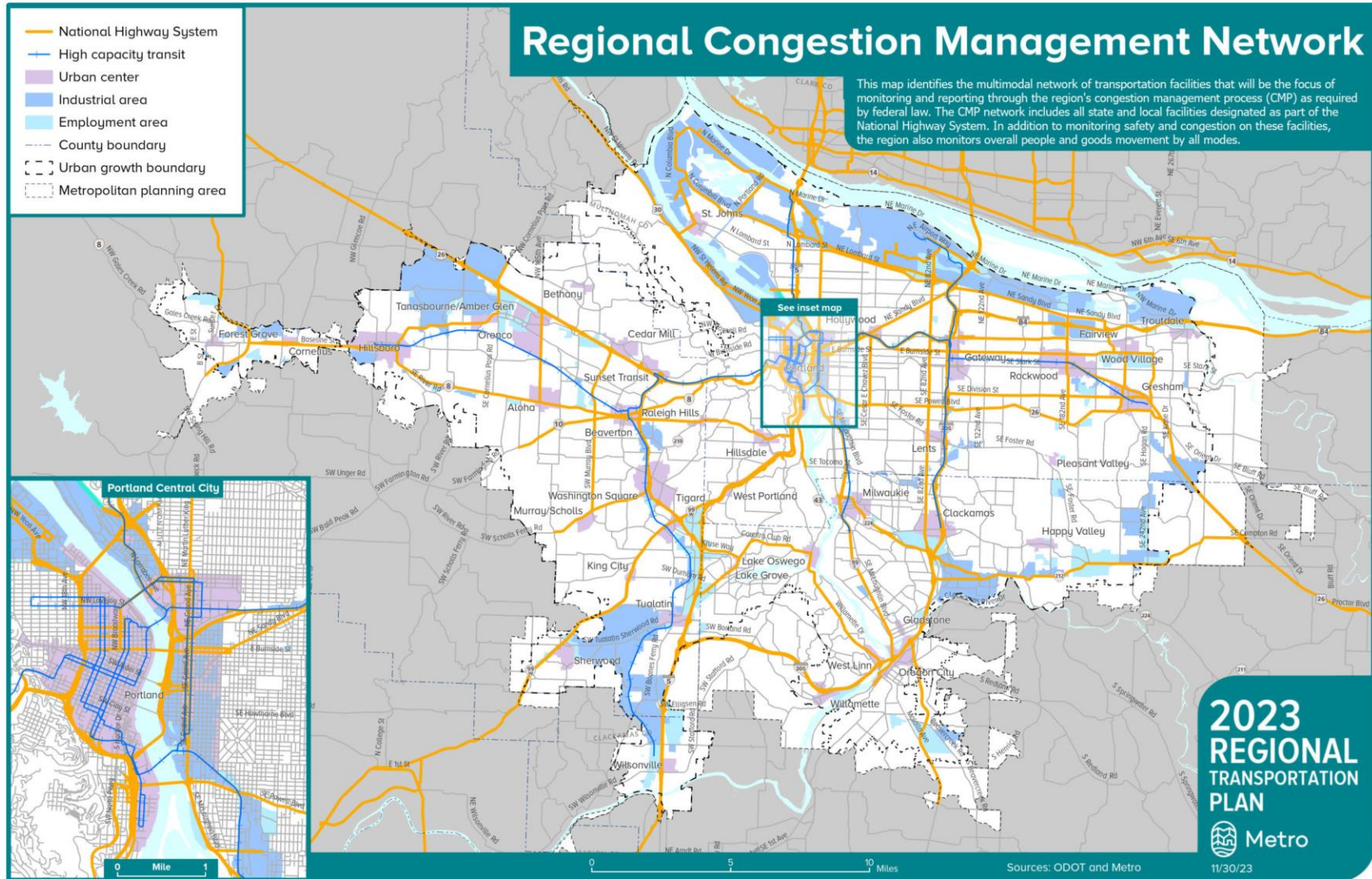
Establish Multimodal Performance Measures

First established in the 2010 RTP, the 2023 RTP continues to rely on the on-going performance evaluation and monitoring process shown in Figure 5. Performance measures serve as the dynamic link between RTP goals and plan implementation by formalizing the process of evaluation and monitoring to ensure investments and strategies in the RTP make adequate progress toward achievement of the region's mobility, safety, equity, economic and climate goals.

Figure 5. RTP Performance Measurement System
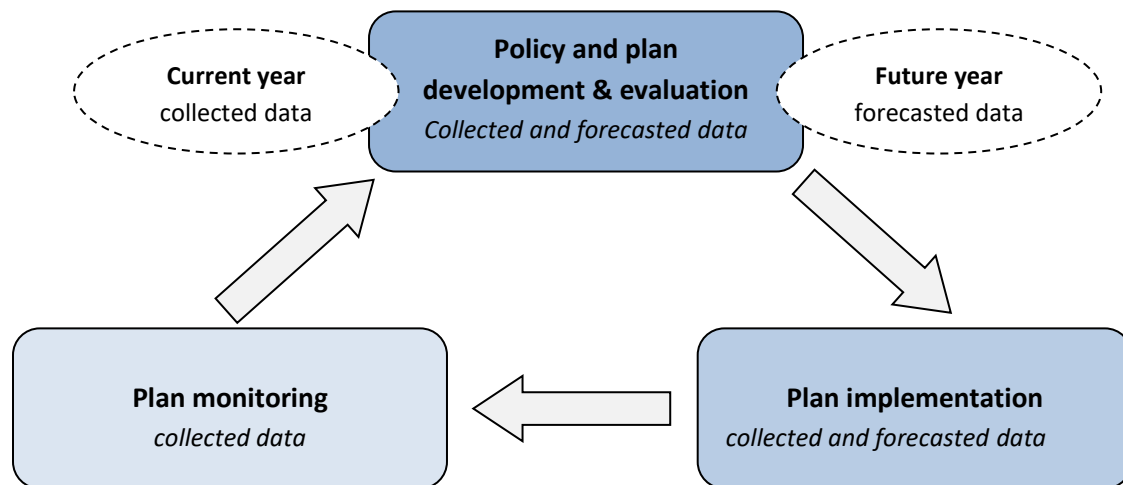
The following multimodal performance measures provide Metro the ability to monitor transportation system performance specific to the CMP network using observed data. Data sources are identified. Federal MAP 21 measures are noted with an asterisk (*).

System-wide performance monitoring measures (MPA boundary, CMP network)

1. Vehicle miles traveled (total and per capita)

2. Fatal and serious injury crashes*

3. Person-miles traveled on the Interstate System and the non-Interstate NHS that are reliable*

4. Freight truck travel time reliability index*

5. Non-SOV mode share - Average daily shared ride, walking, bicycling, transit and carpool commute trips*

6. Transit ridership

7. Transit revenue hours and boarding rides per revenue hour

8. Regional active transportation network completion

9. Pavement and bridge condition*

<u>Corridor-level performance monitoring measures</u> (CMP network corridors)

10. Daily vehicle miles traveled (total)

11. Vehicle volumes, speeds, peak period travel times and throughway travel reliability

12. Fatal and serious injury crashes highlighting regional high injury corridors on the CMP network

13. Transit ridership

14. Household and job access to transit

15. Transit on-time performance

16. Regional active transportation network completion

Collect Data and Monitor System Performance

Reporting of data will be done using the regional mobility corridor framework defined in the RTP. The 24 regional mobility corridors identified in the RTP are overlapping subareas of the region. Each regional mobility corridor subarea includes existing and planned land uses and the existing and planned multimodal transportation system of arterial streets, throughways, high capacity transit, frequent bus routes, freight/passenger rail, and bicycle and pedestrian parkways.

The function of this network of integrated transportation corridors is metropolitan mobility – moving people and goods between different parts of the region and, in some corridors, connecting the region with the rest of the state and beyond. The regional mobility corridor concept calls for consideration of multiple facilities, modes and land uses when identifying needs and the most effective mix of land use and transportation solutions to improve mobility within a specific corridor.

In April 2009, Metro published the first [Mobility Corridors Atlas](). The Atlas was conceived as a way to visualize current land use and multi-modal transportation data for each of the region's 24 mobility corridors in support of the region's CMP. For each corridor, the atlas presents a series of maps and charts showing demographic, land use and transportation network characteristics and "current" system performance, including gaps and deficiencies by travel mode. The information documents land use and transportation needs and helps identify potential solutions for each corridor. The breadth of information is useful for understanding individual corridors on corridor-by-corridor basis as well as for making comparisons between corridors. The atlas is useful for identifying strategies and investment priorities, and provides a framework for tracking change over time. Recommended strategies and investment priorities are then documented in the RTP Regional Mobility Corridor Strategies Appendix. The atlas serves as a tool for monitoring system performance over time in support of the region's congestion management process and related performance-based planning efforts.

Figure 6 is a conceptual representation of the 24 mobility corridors and the locations they connect.

Figure 6. RTP Regional Mobility Corridor Index Map
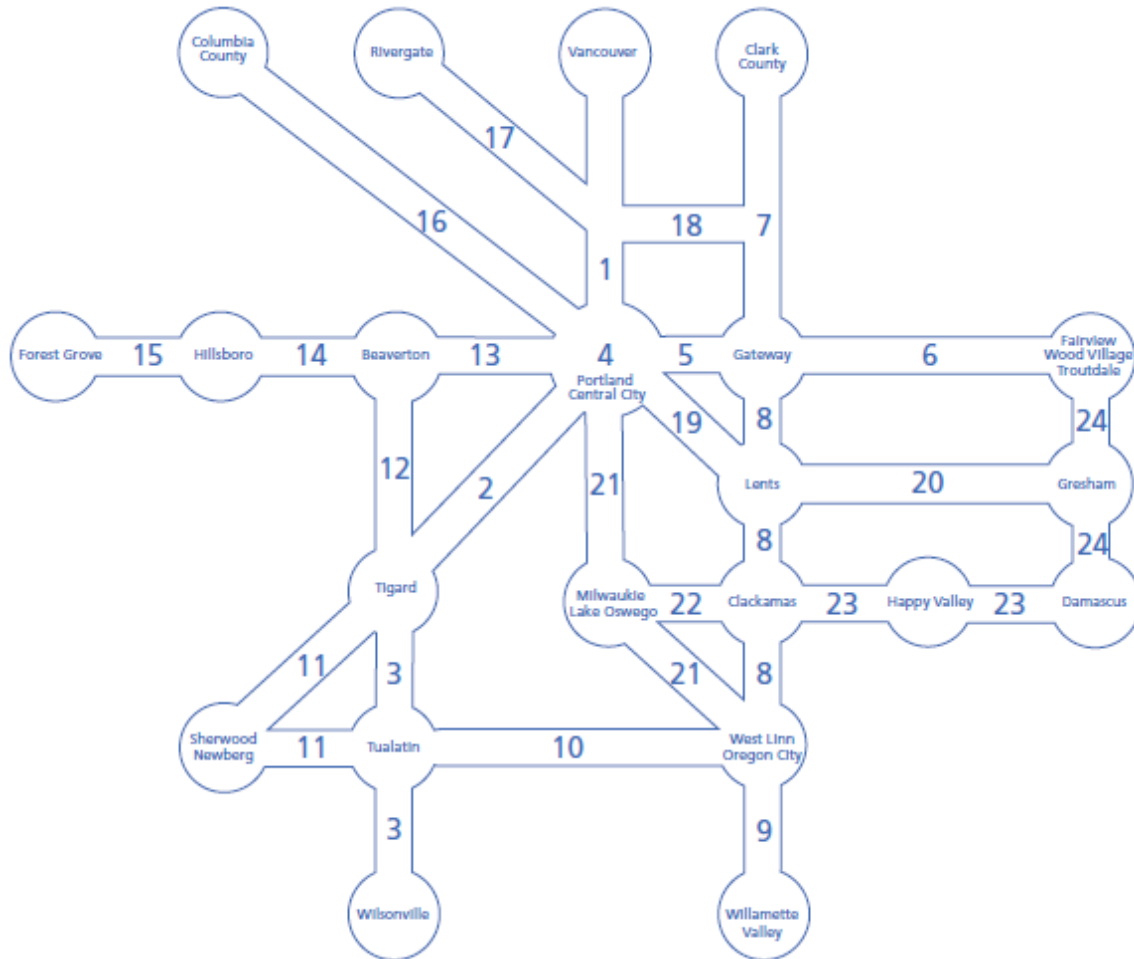
Source: 2023 Regional Transportation Plan (Chapter 3)

Both the 2009 Atlas of Mobility Corridors and an updated online Atlas of Mobility Corridors published on Metro's website in 2015 have relied primarily on model data given a lack of readily available observed data that is maintained and updated on a regular basis and challenges with establishing adequate data collection and management systems. As a result, an update to the Atlas and 2014 RTP Regional Mobility Corridor Strategies was not completed during the 2023 RTP update. A longer-term approach to maintain and update the Regional Mobility Corridor Strategies will addressed as part of the next RTP update (due in 2028).

How we monitor performance

The CMP monitoring program will report out current conditions using observed data for the region, at a system-level, and as appropriate for each of the 24 mobility corridors. The system performance report will be part of the reporting that Metro, as the MPO, will do to meet federal transportation performance management requirements. A system performance report will be developed at least every two years, aligned closely to federal transportation performance

reporting and other MPO efforts, including the development of the metropolitan transportation improvement program and future updates to the RTP.

The report will also inform the existing conditions assessment that is prepared in advance of RTP updates to assess how the transportation system is performing and identify possible policy or strategy adjustments that may be needed.

Table 4 summarizes available transportation data to support ongoing CMP monitoring and reporting.

Table 4. Transportation Data to Support On-Going CMP Monitoring and Reporting

Measure	Data source(s)
Daily vehicle miles traveled	ODOT Highway Performance Monitoring System (HPMS)
System Reliability*	National Performance Management Research Data Set (NMPRDS)
Freight Reliability*	National Performance Management Research Data Set (NMPRDS)
Vehicle classification traffic count and speed data	ODOT Highway Performance Monitoring System (HPMS), PORTAL
Crash data*	ODOT Crash Data
Non-Single Occupancy Vehicle Mode Share	American Community Survey Data on Journey to Work, Oregon Household Activity Survey (OHAS)
Transit ridership	TriMet, SMART and C-TRAN Transit Performance Reports
Transit revenue hours and boarding rides per revenue hour	TriMet, SMART and C-TRAN Transit Performance Reports
Household and job access to transit	Metro RLIS
Transit on-time performance	TriMet, SMART and C-TRAN Transit Performance Reports
Regional Bike and Pedestrian Network Completion	Metro RLIS
Pavement and Bridge Condition*	ODOT bridge and pavement programs
Transit assets State of Good Repair*	TriMet, SMART and C-TRAN Transit Asset Management Plans

* indicates a MAP-21/FAST Act required performance measure

Additionally, other system monitoring efforts and reporting undertaken by the region's partners including ODOT, Port of Portland, and transit agencies (TriMet, SMART and C-TRAN) will help support expansion of the region's performance monitoring to include more components of the regional transportation system as resources and data allow. For example, ODOT produced a Region 1 traffic performance report (2020) that provided key congestion related information for the Portland metropolitan region's freeways and state highways. The report informed ODOT's investment priorities for the 2023 RTP.

Metro's Research Center and Transportation System Management and Operations (TSMO) Program continue to evaluate new datasets that could allow for the expansion of future monitoring activities to include the arterial system. In addition, the Metro Research Center developed an agency-wide performance measurement system – called the Regional Barometer – that incorporated observed data from the NPMRDS and U.S. Census data for key CMP measures. Regular updates to this online system have proved challenging due to the COVID pandemic, staffing changes and limited resources.

Data Collection and Methodology

Metro's takes a coordinated approach to data collection to support regional transportation planning and analysis, including federal congestion management process analysis and performance-based planning target setting and monitoring. The majority of Metro's data is maintained in Metro's Regional Land Information System (RLIS). This database is comprised of over 150 different (primarily geospatial) data sets. Nonetheless, the RLIS database is not comprehensive and requires coordination with various local governments and other regional partners in gathering different types of transportation data to monitor system performance.

The following agencies are principal partners in collecting and/or evaluating CMP data. These principal partners have developed data collection and management systems that Metro has utilized for the purposes of understanding current-day system performance. Other agencies are also involved in the system, with their efforts coordinated through various regional committees, including the Transportation Policy Alternatives Committee (TPAC) and TransPort, a sub-committee of TPAC that coordinates regional transportation system management and operations activities, including data collection.

- **Federal agencies** make available several transportation related data sources, including FHWA's National Performance Management Research Data Set (NPMRDS), Highway Performance Monitoring System data submitted by ODOT and other DOTs, and the U.S. Census and American Community Survey data.

- **ODOT** has installed a comprehensive data collection, management and monitoring system across the region and state. ODOT's Transportation Operations Center (TOC) collects ITS data using roadway sensors to conduct real-time management of the transportation system. The ongoing development of the system is overseen by TransPort, which monitors and updates the regional TSMO plan and ITS architecture. ODOT reports Highway Performance Monitoring System data to FHWA. ODOT makes use of FHWA's NPMRDS when reporting traffic performance on the region's state-owned facilities. ODOT also collects, geocodes and archives crash data that supports statewide, regional and local safety planning efforts and related monitoring and reporting activities.

- **Portland State University** collects, archives and visualizes transportation data for the Portland-Vancouver metropolitan area through PORTAL in partnership with ODOT, TriMet, Metro and local agencies. Starting in 2008, the region approved ongoing funding for implementation, including an annual allocation to fund PORTAL. Metro will continue to work with ODOT and other regional partners to expand existing data

collection and performance monitoring capabilities, in order to evaluate system performance for all modes of travel and support the region's CMP through on-going RTP and MTIP monitoring. Currently data available from PORTAL includes: travel time reliability, travel speeds, travel volume, vehicle length (primarily used to identify freight vehicles), arterial signals, weigh-in motion, transit on-board capacity, transit reliability, weather and incidents. PORTAL is working to expand its capabilities to include data for more arterials, bicycles and pedestrians. Corridor ranking will be applied to highlight travel delay, providing input for discussion on areas of congestion.

- **TriMet** reports ridership and performance statistics on the agency's website and to the National Transit Database, including boardings and on-time performance for the high capacity transit network and other fixed-route transit service. TriMet also reports traffic operations data from its GPS-equipped bus fleet. TriMet is in the process of equipping light-rail vehicles with GPS.

- **Metro's Regional Travel Options (RTO) Program**, the region's demand management program, conducts and funds marketing, education, outreach and demand management services throughout the region, including ongoing evaluation of the program's effectiveness. In this role, Metro evaluates commute options survey data, neighborhood-based residential travel diary data and other data sources to estimate changes in non-SOV travel, summarizing outcomes for program activities in the region every two years.

- **Metro's Research Center** conducts household activity surveys, freight counts and other surveys to monitor and model the region's transportation performance for all modes. The Research Center serves as the region's clearinghouse for forecast data and other data collected by federal, state, local and academic sources. Work is underway to streamline current and future data collection, maintenance and reporting in support of the CMP and other Metro programs.

- The **Southwest Washington Regional Transportation Council** (Vancouver, WA MPO) maintains a CMP for the greater Vancouver area. Its efforts are coordinated with the Metro, using the same technical coordination that is employed in archiving data with PSU PORTAL, sharing travel forecasting and demographic data. The Metro TSMO program funded a portion of a larger bi-state travel time signage project for investment on I-84 as it makes and east-west connection for travelers going north-south on I-205 and I-5. This bi-state travel time project allows cars and freight vehicles to increase travel time reliability for changing conditions as they navigate between Wilsonville, Oregon and Vancouver, Washington. Metro continues to work in close partnership with agencies in Washington State to create additional strategic connections with ITS networks across the Columbia River. This bi-state coordination will allow for more fluid management and assessment of the regional transportation system.

Identify and Evaluate Strategies

Metro works collaboratively with partner agencies to identify and evaluate appropriate strategies for managing congestion. This section describes the toolbox of strategies used in the region.

Objectives of Strategies

Reducing congestion in the region will require accomplishing the following objectives:

- Preservation and maintenance of the existing system
- Maintaining a compact urban form and focusing growth in areas that can be served by multiple travel options
- Reducing person trips or vehicle miles traveled
- Shifting automobile trips to other modes or off-peak travel periods
- Shifting drive alone trips to shared trips
- Improving roadway and transit operations through system management and operations
- Adding vehicle capacity at key bottlenecks

The identification and selection of strategies for a particular segment or corridor should be tied to the specific congestion issue, the travel options available in that corridor and land uses served.

CMP Toolbox of Strategies

One component of Metro's Congestion Management Process is a toolbox of congestion management and mobility strategies as shown in Table 5. This toolbox identifies a suite of strategies to manage congestion and address mobility needs prior to utilizing traditional roadway widening and other capacity projects. Prior to adding single occupant vehicle (SOV) capacity, agencies and jurisdictions should give consideration to the various strategies identified in this section, consistent with FHWA direction and RTP and OTP policies. Usually, multiple strategies are applicable within a corridor, while other strategies are intended to be applied region wide.

The CMP toolbox strategies were assembled to provide a wide range of strategies that could be used to manage congestion region-wide or within congested mobility corridors. They are arranged so that the strategies are considered in order from first to last. Even with the addition of capacity, many of the strategies can be implemented with the project to ensure the long-term management of a capacity project.

The CMP Toolbox of Strategies shown in Table 5.

Table 5. Toolbox of Strategies to Address Congestion in the Region

1 — **Community design strategies**
- Walkable communities and job centers facilitated by compact land use in combination with walking, biking and transit connections
- Mixed-used areas and transit-oriented development
- Parking management and pricing

2 — **Travel Information and Incentives strategies**
- Commuter travel options programs
- Household individualized marketing programs
- Car-sharing and eco-driving techniques
- Safe Routes to School programs
- Ridesharing (carpool, vanpool) services

3 — **System management and operations strategies**
- Real-time variable message signs and speed limits
- Signal timing and ramp metering
- Transit signal priority, bus-only lanes, bus pull-outs
- Incident response detection and clearance
- Access management (e.g., turn restrictions, medians)

Emerging — **Pricing strategies**
- Congestion pricing
- Managed lanes
- High occupancy toll (HOT) lanes

4 — **Active Transportation strategies**
- New biking and walking connections to schools, jobs, downtowns and other community places
- Bicycle infrastructure (e.g., bicycle racks, lockers and other bicycle amenities at transit stations and other destinations)
- Separated pathways and trails

5 — **Transit strategies**
- High capacity transit
- Expanded transit coverage
- Expanded frequency of service
- Improvements in right-of-way to increase speed and reliability of buses and MAX
- Community and job connector shuttles
- Park-and-ride lots in combination with transit service

6 — **Street and throughway capacity strategies**
- Local and arterial street connectivity to spread out travel
- Addition of turn lanes at intersections, driveway restrictions and other geometric designs such as roundabouts
- Road widening to add new lane miles of capacity (e.g, adding auxiliary lanes, additional general purpose lanes); pricing is considered when adding new throughway capacity in the region

The intent of the CMP system Toolbox follows FHWA's direction to consider all available solutions before recommending additional roadway capacity in transportation system planning, corridor refinement planning and subarea studies. This direction is reflected in the RTP goals and policies (Chapters 2 and 3) and Regional Transportation Functional Plan (Section 3.08.220). It is also consistent with the Oregon Transportation Plan adopted in July 2023 and Oregon Highway Plan Major Improvements Policy 1G.

RTP Mobility Corridor Strategies

The 2014 RTP Mobility Corridors Strategies identified system needs, function(s) and solutions for improved mobility for regional transportation facilities within each of the 24 mobility corridors. It also identified investments to work towards over life of the RTP. Each mobility corridor contains investment strategies broken into two time periods: near term (1-10 years) and long term (10-25 years). The process of developing each corridor strategy included:

- Scoping analysis that identifies current and planned land uses, pedestrian, bike, management and operations, freight, highway, road and transit needs and issues.

- Integrated statement of mobility function defined at a corridor area level.

- Potential land use and transportation solutions identified.

Jurisdictional partners updated the investment priorities as part of the 2023 RTP update to reflect Oregon Legislative priorities, adopted local plan priorities and regional policy priorities identified during the 2023 RTP update for mobility, safety, transportation equity, climate, and economic vitality. The updated investment priorities were evaluated using Metro's regional travel demand forecast model as documented in Chapter 7 of the 2023 RTP. CMP-related system-wide measures used to forecast potential effectiveness of the package of recommended investment strategies in 2045 are shown in Table 6.

Table 6. RTP Performance Measures Used to Forecast Potential Effectiveness of Strategies

RTP System-Level Performance Measures
Multi-modal travel (total and per capita)   - vehicle miles traveled

Mode Share (total)
    - walking trips and mode share
    - biking trips and mode share
    - transit trips and mode share
    - shared ride trips and mode share
    - drive alone trips mode share

Transit and auto travel times (change from 2020 base year systemwide)
Transit ridership (total and by service type)
Transit revenue hours (total)
Household and job access to transit (total by frequency of service)
Regional Bike and Pedestrian Network Completion (miles and share completed)
Throughway reliability   - percent and location of facilities not meeting the mobility policy threshold for throughways

Source: 2023 Regional Transportation Plan (Chapter 7)

Other CMP measures that cannot be forecasted at this time and, as a result, were not evaluated in the 2023 RTP system analysis, include:

- safety
- reliability
    - freight reliability
    - arterial reliability
    - transit on-time performance
- access to industry and freight intermodal facilities
- pavement and bridge condition
- transit assets state of good repair

While certain mobility corridors have seen a tremendous amount of work and progress towards implementation, others still need further analysis and investment. The region will continue efforts to transition to an online atlas, as resources allow, that provides up-to-date information to inform transportation planning and decision-making in the region.

Implement Selected Strategies

Metro's congestion management process provides an important tool for monitoring and addressing the region's traffic congestion. The congestion management process provides information to help guide the investment of transportation funding toward addressing congestion. Information developed through the congestion management process is applied through the regional transportation planning process.

In coordination with ODOT, TriMet, SMART and local agencies, Metro uses the congestion management process as one tool to help identify regional transportation system needs. This effort is supported by regional studies, including corridor refinement plans (described in Appendix W), development of local transportation system plans and capital improvement plans, regional transportation modeling, and other planning and engagement efforts which all feed into the development of the RTP.

Needs are developed based on a system-planning level analysis that considers how various strategies can address throughway reliability and other transportation needs prior to adding capacity consistent with the RTP policies in Chapter 3, the Regional Transportation Functional Plan and Oregon Highway Plan Major investment Policy 1G, which states "It is the policy of the State of Oregon to maintain highway performance and improve safety by improving system efficiency and management before adding capacity." ODOT works in partnership with Metro, local governments and other transportation agencies to address highway performance and safety needs. Identified transportation needs are then incorporated into RTP recommendations. Transportation agencies then must give consideration to the various strategies from the CMP Toolbox as projects are identified for inclusion in the RTP and move forward to implementation.

Many locally-funded transportation projects move forward to implementation through local processes. ODOT administers its own prioritization and funding allocation processes and those priorities selected for funding are programmed in the State Transportation Improvement Program and in the Metropolitan Transportation Improvement Program (MTIP) if the priority is in the Portland metropolitan area.

Local and state project priorities are also submitted to Metro and selected through the Regional Flexible Fund Allocation (RFFA) process and incorporated in the MTIP. The RFFA process selects priority projects for implementation based on criteria that support RTP goals and objectives and the region's CMP in combination with public and jurisdictional input on priorities. The 2025-27 RFFA cycle, for example, included criteria for projects to receive additional points to help make the region's transportation system more equitable, safer, cleaner and more reliable, consistent with the 2018 RTP goals. The next RFFA cycle will include criteria that address the updated 2023 RTP goals and policies.

Monitor Strategy Effectiveness

FHWA identifies congestion monitoring as just one of the several aspects of transportation system performance that leads to more effective investment decisions for transportation improvements. Safety, infrastructure condition, environmental quality, economic development, quality of life, and customer satisfaction are among the aspects of performance that also require monitoring.

The metropolitan transportation planning process is required to have "a coordinated program for data collection and system performance monitoring to assess the extent of congestion, to contribute in determining the causes of congestion, and evaluate the efficiency and effectiveness of implemented actions." In addition, it also indicates that "to the extent possible, this data collection program should be coordinated with existing data sources and coordinated with operations managers in the metropolitan area."

As a result, the goal of the Metro's CMP system monitoring plan is to develop an ongoing system of monitoring and reporting that relies primarily on data already collected or planned to be collected in the region. The components of the monitoring plan include roadways designated on the National Highway System. This includes throughways and arterial streets that also serve as regional freight and transit routes, and support bicycle and pedestrian travel.

- **Roadway performance** is monitored to collect traffic volumes, vehicle miles traveled, vehicle speed and other related data to identify extent of congestion and travel time reliability and safety issues.

- **Fatal and serious injury crashes** are monitored using ODOT crash data for all modes of travel to identify high injury corridors and potential areas of non-recurring congestion.

- **Freight truck travel time reliability** on regional freight routes that are on the Interstate System is evaluated to identify mobility needs of goods movement.

- **Transit performance** is monitored continuously by TriMet, SMART and C-TRAN through various operating and capital plans and federally-required reporting to the National Transit

Database. This includes transit ridership as well as boarding rides per revenue hour to measure the efficiency and effectiveness of transit service.

- **Bicycle/pedestrian/trail facility inventory and count data** are monitored and updated in various databases (as resources are available). The regional trail inventory was updated in 2022. Updates to the regional bikeway and regional sidewalk inventories now occur quarterly as part of RLIS updates provided by cities and counties in the region. This information is monitored to measure progress completing gaps in the RTP regional bike and pedestrian networks.

- **Mode share** in the region is monitored using U.S. Census data and periodic household travel behavior surveys conducted jointly by Metro, ODOT and other partners. This information is monitored to identify the extent to which people are using available travel options in the region. Measuring this over time can reveal whether the region is successfully managing travel demand and the transportation system.

Implementation of the updated regional mobility policy as well as implementation of the federal transportation performance management program are anticipated to result in future updates to the region's CMP process and monitoring approach as part of the next RTP update (due in 2028). In order to meet federal performance management requirements, performance evaluations take place in two- and/or four-year cycles and are aligned closely with other key on-going MPO activities, including the development of future MTIPs and RTP updates. The monitoring program will guide, inform, and help prioritize subsequent Metro funding allocations, including the Regional Flexible Fund Allocation process.

Metro continues to look for ways to streamline performance measure monitoring and reporting efforts agency-wide to improve transparency and support decision-making. This effort will also define longer-term measure ownership, collection standards, data maintenance and governance – key areas that will provide more clarity and certainty in support of Metro's CMP and performance-based planning efforts.

FEDERAL TRANSPORTATION PERFORMANCE MANAGEMENT: SYSTEM PERFORMANCE MEASURES AND TARGETS

This section reports on the region's federal transportation performance management measures and targets and for the first four-year performance period and establishes targets for the second 4-year performance period for:

- Safety

- National Highway System Asset Management

- National Highway System Performance

- National Freight Movement on the Interstate System

- Congestion Mitigation and Air Quality Program

- Transit Asset Management

- Transit Safety Performance

The information reported has been cooperatively developed by Metro, the Oregon Department of Transportation (ODOT), TriMet, South Metro Area Regional Transit (SMART), Portland Streetcar, Inc., Ride Connection, and C-TRAN and was submitted to ODOT as required for federal monitoring and reporting purposes in Fall 2022. The first 4-year system performance report (September 30, 2022) findings are reported in this appendix in Tables 7 through 13 and the supporting text description of the tables. Targets for the second 4-year performance period are established in Exhibit A to this appendix.

The performance targets in this appendix do not set regional policy for the RTP. Instead they are solely for the purpose of meeting federal requirements. This appendix provides useful system performance information to satisfy federal monitoring and reporting requirements and inform each update to the RTP (including the 2023 RTP update). First adopted in 2018, the targets were developed in coordination with the Transportation Policy Alternatives Committee (TPAC), the Oregon Department of Transportation (ODOT), TriMet, South Metro Area Regional Transit (SMART), C-TRAN and the SW Washington Regional Transportation Advisory Committee (RTAC). These measures and targets support the region's Congestion Management Process and are considered with a broader set of performance measures and targets contained in Chapter 2 of the 2023 RTP.

The safety measures and targets (see Table 7) are also contained in the 2018 Regional Transportation Safety Strategy developed as a component of the 2018 RTP. The National Highway System Performance, and Freight Movement on the Interstate System - Reliability measures and targets are contained in the 2018 Regional Freight Strategy, which is also a component of the RTP.

Four updates were made in the Mid Performance Report in 2020 which came after adoption of the baseline performance, targets and measures in the 2018 RTP:

- Adjusted the 2017 baseline numbers and some targets to reflect changes in data and federal guidance for use of the National Performance Management Research Dataset (NPMRDS) version 2.

- Adjusted the 2017 baseline numbers for Truck Travel Time Reliability (TTTR) to better reflect updated federal guidance.

- Expanded Transit Asset Management measures and targets to include Portland Streetcar Inc. and Ride Connection, which were not available in 2018.

- Added transit safety performance measures and targets as adopted by TriMet, Ride Connection, SMART, Portland Streetcar Inc., and C-TRAN in 2020.

On May 17, 2018, the Oregon Transportation Commission first adopted performance measures and statewide targets for pavement and bridge condition and traffic congestion and on-road mobile source emissions for the Congestion Mitigation and Air Quality Program as an amendment to the Oregon Transportation Plan for federal monitoring and reporting purposes. The statewide targets were subsequently amended in 2022 to establish a new 2022 performance baseline and performance targets for each measure for 2023 and 2025.[9] ODOT's performance measures and targets addressing safety statewide are contained in the [Oregon Transportation Safety Action Plan (last updated in 2021)](). The transit asset management measures and targets are contained and reported in the TriMet Transit Asset Management (TAM) Plan, the C-TRAN TAM plan and [Group TAM Plan]() prepared by ODOT on behalf of SMART and other smaller transit providers.[10]

Individual tables that follow (Tables 7- 14) further document the region's federal TPM measures, the most recent actual performance and targets within the Portland area metropolitan planning area boundary (MPA).

Safety – Fatalities and Serious Injuries

In 2018, Metro set ambitious targets for safety within the region's Metropolitan Planning Area (MPA) boundary in the RTP:

- a sixteen percent reduction in fatalities and serious injuries by 2020,

- a fifty percent reduction by 2025, and

- zero fatalities and serious injuries by 2035.

To be on track to meet these goals, fatalities and serious injuries needed to decline nearly 29 percent and 43 percent respectively from the base year 2015 to the federal performance target reporting years 2022 and 2024. However, fatalities increased 50 percent, and serious injuries increased 12 percent. The greater Portland region did not meet any of the five safety targets the

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[9] [https://www.oregon.gov/odot/PerformMang/Documents/2022-2025%20Baseline%20Performance%20Period.pdf]() and [https://www.oregon.gov/odot/PerformMang/Documents/FHWA%20Performance%20Management%20Areas%20Targets%202024.pdf]()

[10] Visit ODOT's performance measure website for more information and links to required reporting at [https://www.oregon.gov/odot/performmang/pages/index.aspx]().

region set for the federal transportation performance measures or improve over the baseline from 2015. The only safety targets the region met are for number of serious bicycle injuries, and the rate of serious bicycle injuries per 100 thousand people and per 100 million vehicle miles traveled. Based on the results of the performance measures, the region is not on track for achieving its Vision Zero goal as shown in Table 7.

Table 7. Safety Targets and Performance – Fatalities and Serious Injuries

Safety – Fatalities and Serious Injuries*									
Performance Measure	First Performance Period Jan. 1, 2018 to Dec. 31, 2021						Second Reporting Period Jan. 1, 2022 to Dec. 31, 2025		
	2018 Baseline (2011-2015 performance)	2016-2020 Target	2016-2020 Actual	Target achieved?	Better than baseline?	On track to Vision Zero?	2022 Baseline (2016-2020 Performance)	2023 Target	2025 Target
Number of fatalities	62	52	93	No	No	No	93	40	31
Fatalities per 100 million vehicle miles traveled	0.6	0.5	0.9	No	No		0.9	0.4	0.3
Number of serious injuries	458	384	512	No	No		512	293	229
Serious injuries per 100 million vehicle miles traveled	4.5	3.6	4.8	No	No		4.8	2.6	2.0
Number of non-motorized fatalities and serious injuries	113	95	129	No	No		129	72	57
The 2018 Regional Transportation Plan and 2018 Regional Transportation Safety Strategy set a target of zero traffic deaths and serious injuries by 2035. At the time, Metro developed annual targets to reach the 2035 target using the same methodology used by the Oregon Department of Transportation in the Oregon Transportation Safety Action Plan. These measures reflect people killed or seriously injured rather than fatal or serious injury crashes. Serious injuries do not include fatalities. The Vision Zero target is unchanged in the 2023 RTP.									

*Data Source: Oregon Department of Transportation

While data trends continue to show that the region is moving in the opposite direction for the five MAP-21 safety performance measures, the public awareness and the number of fatalities resulting from crashes in the region has increased the urgency to do more to prevent these fatalities. The 2023 RTP reflects investments that look to address aspects of the roadway to reduce crashes, particularly severe crashes that lead to serious injuries and fatalities. These investments and proposed spending on safety is the described in Chapter 6 and Chapter 7 of the 2023 RTP.

Asset Management – Pavement and Bridge Condition

Table 8. Asset Management – Pavement Condition Targets and Performance

Asset Management – Pavement Condition*										
Performance measure	**First Performance Period Jan. 1, 2018 to Dec. 31, 2021**						**Second Performance Period Jan. 1, 2022 to Dec. 31, 2025**			
	2018 Baseline Actual	**2020 Actual**	**2021 Actual**	**2022 Target**	**2022 Target achieved?**	**Better than baseline?**	**2022 Baseline**	**2023 Actual**	**2023 Target**	**2025 Target**
Percent of pavement on the Interstate System in good condition	46.5%	50.9%	61.8%	35%	yes	yes	39.9%***	16.5%	30%	30%
Percent of pavement on the Interstate System in poor condition	0.8%	0.5%	0.3%	0.5%	yes	yes	1.0%***	1.3%	1.5%	1.5%
Percent of pavement on the non-Interstate NHS in good condition	17.5%**	13.4%**	Not available	32%**	no	no	10.0%***	Not available	12%	12%
Percent of pavement on the non-Interstate NHS in poor condition	10.4%**	11.8%**	Not available	25%**	no	no	20.5%***	Not available	20%	20%

*Data Source: Oregon Department of Transportation
** ODOT changed the metrics for calculating percent of pavement on non-Interstate NHS in good and poor condition after adoption of the 2022 targets.
 *** ODOT changed pavement data collection vendors in 2022. ODOT believes that the new vendor has an ability to better evaluate the level of rutting in the pavement, which impacts pavements that were near thresholds and went from good to fair conditions, or from fair to poor conditions.

The percentage of pavement on the Interstate Highway System in the Portland region classified in good condition increased from 50.9 percent in 2020 to 61.8 percent in 2021. The percentage of pavement on the Interstate Highway System in poor condition decreased slightly between 2020 and 2021 and was less than one half of one percent. For the new 2022 Baseline, ODOT changed pavement data collection vendors, which significantly reduced the percentage in good condition and increased the percentage in poor condition compared to the 2021 percentages. The percentage of pavement on the Interstate National Highway System (NHS) in good condition decreased between 2021 and 2022, from 61.8 to 39.9 percent. The percentage of pavement on the Interstate National Highway System (NHS) in poor condition increased from 0.3 percent in 2021 to 1.0 percent in 2022. The percentage of pavement in good or poor condition on the non-Interstate National Highway System (NHS) for 2021 and 2023 is not currently available. The percentage of pavement on the non-Interstate National Highway System (NHS) in good condition decreased between 2020 and 2022, from 13.4 to 10.0 percent. The percentage of pavement on the non-Interstate National Highway System (NHS) in poor condition increased from 11.8 percent in 2020 to 20.5 percent in 2022.

In 2022 ODOT changed pavement data collection vendors to one that ODOT staff believes has an ability to better evaluate the level of rutting in the pavement. The rutting numbers for 2022 are just different enough from 2021 that many pavements that were near thresholds went from good to fair conditions, or from fair to poor conditions. ODOT staff believes that the earlier data may have been under-reporting pavement conditions in the 'fair' category. Using percentages from the new vendor, the percentage of pavement on the Interstate National Highway System (NHS) in good condition decreased between 2022 and 2023, from 39.9 percent to 16.5 percent. The percentage of pavement on the Interstate National Highway System (NHS) in poor condition increased between 2022 and 2023, from 1.0 percent to 1.3 percent.

Based on the new 2021, 2022 and 2023 data from ODOT on pavement conditions in the Metro area, Metro staff is changing the 2023 and 2025 Targets to account for ODOT changing pavement data collection vendors in 2022. Metro based new 2023 and 2025 targets on the 2022 and 2023 interstate data and 2022 non-interstate data for the Metro region. Based on that evaluation, we changed the 2023 and 2025 targets for the interstate system in good condition from 45% to 30% (close to the mid-point between 2022 and 2023 numbers); and we changed the 2023 and 2025 targets for the interstate system in poor condition from 0.5% to 1.5%. Metro also changed the 2023 and 2025 targets for the non-interstate system in good condition from 14% to 12%; and we changed the 2023 and 2025 targets for the non-interstate system in poor condition from 10.8% to 20%. These new 2023 and 2025 targets are more conservative but are still looking to improve the 2022 non-interstate numbers.

Since establishing the 2018 baseline and first performance target for 2018, the region has met or exceeded its target for percentage of pavement in good condition and poor condition on the interstate system for all subsequent years through 2022. The reasons for meeting the asset management performance targets for the interstate system can be attributed to several reasons. First and likely the most impactful is that ODOT and the Portland region have a longstanding policy around preserving and maintaining the existing transportation system. The Oregon

Transportation Commission reaffirmed the "fix-it first" policy direction through the approval of its strategic action plan which continues policy direction to maintain the existing system first. Another reason pavement asset management performance targets for the interstate system have been met is because of criteria which restrict funding for or favors the interstate system. Some federal funding programs, like the Interstate Maintenance program is restricted funding for preservation and maintenance activities, while some ODOT funding programs allocate funds based on criteria that favor the interstate system (e.g. high volumes). While this supports preservation and maintenance upkeep on the interstate system, it also creates disadvantages on the maintenance and preservation needs of the non-interstate highway system. Lastly, as it pertains to pavement asset management, ODOT elected to set targets that are less aggressive than those set for Oregon statewide. This is because in general, the Portland region's roadways and have a much higher usage than in the rest of the state and makes keeping up with the pavement conditions target very challenging when recognizing the many competing transportation system needs, including the pavement asset management needs of the non-interstate system.

Nonetheless, the biggest driver towards the region's pavement asset management performance is due to the application of the "fix-it first" policy direction. That policy direction continues through 2024-2027 STIP revenue allocation strategy to funding programs which continues to provide the greatest amount of funding towards fixing existing assets. Funding for asset management was further bolstered by the infusion of funding from the Bipartisan Infrastructure Law (BIL). Additionally, the OTC also created new funding programs to support the comprehensive needs – including maintenance of the state-owned district highways, which comprise the non-interstate highway system.

Table 9. Asset Management – Bridge Condition Targets and Performance

Asset Management – Bridge Condition*										
Performance measure	**First 4-year Performance Period Jan. 1, 2018 to Dec. 31, 2021**						**Second 4-year Performance Period Jan. 1, 2022 to Dec. 31, 2025**			
	2017 Baseline	**2020 Actual**	**2021 Actual**	**2022 Target**	**2022 Target achieved?**	**Better than baseline?**	**2022 Baseline**	**2023 Actual**	**2023 Target**	**2025 Target**
Percent of NHS bridges classified in good condition	6%	6%	6%	5%	yes	same	6%	6%	5%	5%
Percent of NHS bridges classified in poor condition	1%	1%	1%	5%	yes	same	1%	2%	1%	1%

 *Data Source: Oregon Department of Transportation

Shown in Table 9, the percentage of NHS bridges in the Portland region classified in good condition remained at 6 percent in 2020, the same as the 2017 baseline. The percentage of NHS bridges classified in poor condition remained at 1 percent in 2020, the same as the 2017 baseline. The region achieved the 2022 targets for both bridge condition performance measures.

The percentage of bridge deck area in good condition did not change at all from 2021-2023; and remained at 6% in good condition on NHS bridges in the Portland region.

The percentage of bridge deck area in poor condition did show a significant increase in 2023. In 2022, 1% of the bridge deck area was in poor condition and that doubled to 2% in 2023. This is due to the small number of bridges in poor condition in 2022, and the addition of a large bridge being in poor condition in 2023. This added bridge has more deck area than all the deck area of all the poor bridges reported in 2022. Metro staff has dropped the 2023 and 2025 targets for the percentage of bridge deck area in poor condition to 1 percent, from a 5 percent target in 2022, to be more in line with recent actual results from 2017 to 2022.

National Highway System Performance

Table 10. National Highway System Performance Targets and Performance

National Highway System Performance *												
Performance measure	**First 4-year Performance Period Jan. 1, 2018 to Dec. 31, 2021**								**Second 4-year Performance Period Jan. 1, 2022 to Dec. 31, 2025**			
	2017 Base-line	**2018 Actual**	**2019 Actual**	**2020 Actual**	**2021 Actual**	**2020/ 2022 Targets**	**2020/ 2022 Targets achieved?**	**Better than base-line?**	**2022 Base-line**	**2023 Actual**	**2023 Target**	**2025 Target**
Percent of person-miles traveled on the Interstate System that are reliable	46%	47%	49%	82.3%	63.4%	43%	yes	yes	59.4%	52.1%	43%	43%
Percent of person-miles traveled on the non-Interstate NHS that are reliable	72%	75%	77%	90.3%	85.0%	66%	yes	yes	82.4%	82.8%	66%	66%

*Data Source: National Performance Management Research Dataset (NPMRDS)

Metro set 2020 and 2022 regional targets for National Highway System Performance within the region's MPO boundary in the 2018 RTP (Table 10. National Highway System Performance Targets and Performance). The percentage of person-miles traveled on the Interstate System in the region that are reliable was 46 percent in 2017 (baseline). That percentage increased to 47 percent in 2018 and 49 percent in 2019 and achieved the 2020 and 2022 targets of 43 percent. The percentage of person-miles traveled on the non-Interstate NHS that are reliable was 72 percent in the 2017 baseline. That percentage increased to 75 percent in 2018 and 77 percent in 2019 and achieved the 2020 and 2022 targets of 66 percent. Not only are the percentage of person-miles traveled (on the Interstate and non-Interstate system) in the region that are reliable exceeding the 2020 and 2022 targets, but the trend from 2017 to 2019 shows an overall improvement in reliability.

The results of the monitoring data are not surprising, since the development of the 2017 baseline, the region has seen the opening of a couple of major roadway and transit capital investments, including the Interstate 5 south auxiliary lanes near Lower Boones Ferry Road, the Interstate 205 auxiliary lanes from Glen Jackson Bridge to Johnson Creek Boulevard, OR 217 auxiliary lanes from Beaverton-Hillsdale Highway and OR 99W, the Better Red project which extends the MAX red line to Hillsboro Airport and fixes a MAX bottleneck at the Gateway Transit Center, and the Division Transit frequent express bus project. These investments, included in previous MTIPs, were likely significant contributors to the percent of person-miles traveled on the interstate and non-interstate NHS that are reliable.

Primarily due to the COVID-19 pandemic, the percentage of person-miles traveled on the Interstate System in the region that are reliable increased to 82.3 percent in 2020, with shutdowns for businesses resulting in a dramatic decrease in traffic and creating a more reliable interstate system. In 2021 and 2022, the percentage of person-miles traveled on the Interstate System in the region that are reliable decreased to 63.4 percent and 59.4 percent respectively, with the lingering pandemic still having positive impacts on reliability compared to pre-pandemic levels. In 2023, the percentage of person-miles traveled on the Interstate System in the region that are reliable decreased again to 52.1 percent, which represents a return to pre-pandemic levels.

The percentage of person-miles traveled on the non-Interstate National Highway System (NHS) in the region that are reliable increased to 90.3 percent in 2020, with shutdowns for businesses resulting in a decrease in traffic and creating a more reliable non-interstate system. In 2021 the percentage of person-miles traveled on the non-Interstate NHS in the region that are reliable decreased to 85 percent, primarily due to the lingering pandemic. In 2022 that number reduced slightly to 82.4 percent; and seemed to be leveling off in 2023. This trend could be providing a new normal that is somewhat better that the 77 percent in 2019 (pre-pandemic).

Due to the uncertainty of the post-pandemic traffic increases and reliability impacts on the system, Metro staff has decided to not change the 2023 and 2025 targets for Second 4-year Performance Period. The 2023 and 2025 targets remain at 43 percent for the person-miles traveled on the Interstate System in the region that are reliable; and remain at 66 percent for person-miles traveled on the non-Interstate NHS in the region that are reliable. The National Highway System

Performance continued to meet their respective regional target values for the entire First 4-year Performance Period, and during the 2022 and 2023 reporting period.

Freight Reliability on the Interstate System

Table 11. Freight Movement on the Interstate System – Freight Reliability Targets and Performance

Freight Movement on the Interstate System – Freight Reliability Targets												
Performance measure	First 4-year Performance Period Jan. 1, 2018 to Dec. 31, 2021								Second 4-year Performance Period Jan. 1, 2022 to Dec. 31, 2025			
	2017 Baseline	2018 Actual	2019 Actual	2020 Actual	2021 Actual	2020/ 2022 Target	2020/ 2022 Target achieved ?	Better than baseline ?	2022 Baseline	2023 Actual	2023 Target	2025 Target
Truck Travel Time Reliability (TTTR) Index	2.93	2.88	2.84	2.30	2.44	3.10	yes	yes	2.52	2.67	3.10	3.10

Data Source: National Performance Management Research Dataset (NPMRDS)

Metro set 2020 and 2022 regional targets for freight reliability within the region's MPO boundary in the 2018 RTP (Freight Reliability on the Interstate System Freight Reliability on the Interstate System

Table 11). The region continued to make progress towards truck time reliability. The Truck Travel Time Reliability (TTTR) Index was 2.93 within the region in the 2017 Baseline. This means that the amount of additional time that was needed for a truck trip to arrive on time 19 out of 20 times (buffer time) was almost 3 times as long as a truck trip that needed no additional time to arrive on time 95 percent of the time. The Truck Travel Time Reliability (TTTR) Index improved slightly to 2.88 in 2018 and 2.84 in 2019, which achieves the 2020 and 2022 targets of 3.10. While slight, the progress shown in the monitoring data for 2018 and 2019 is notable, recognizing the region continued to grow in population and employment. But the diverse array of transportation investments made previously have helped improve the TTTR index. Nonetheless, 2.84 continued to represent a significant amount of buffer time needed for freight reliability and presented a continuous opportunity to invest in an assortment of transportation management strategies and investments to support mobility for people and goods.

With a 2020 global pandemic that closed many businesses and shifted shopping to online, the region experienced better TTTR, with a 2.30 TTTR Index in 2020, and 2.44 in 2021. With an increase in traffic that impacted reliability, the TTTR Index increased in 2022 to 2.52. In 2023 the TTTR Index increased to 2.67, which represents a TTTR Index that is approaching pre-pandemic levels.

Due to the uncertainty of the post-pandemic traffic increases and reliability impacts on the system, Metro staff made no change the 2023 and 2025 targets for Second 4-year Performance Period. The 2023 and 2025 targets for the TTTR Index remain at 3.1.

Congestion Mitigation and Air Quality (CMAQ)

Metro set 2020 and 2022 regional targets for Congestion Mitigation and Air Quality (CMAQ) measures within the region's MPO boundary in the 2018 RTP. The Portland metropolitan region reached the end of its second ten-year maintenance plan for carbon monoxide on October 2, 2017. As a result, starting on October 3, 2017, the region is in attainment status for all national ambient air quality standards. Subsequently, the Federal Highway Administration (FHWA) determined in October 2019, the Portland metropolitan region is not subject to reporting on the Congestion Mitigation and Air Quality federal performance measures and targets as a result of its attainment status. Therefore, Metro is no longer required to report on the CMAQ Peak-Hour Excessive Delay and the Non-Single Occupancy Vehicle Mode Share performance targets.

Transit Asset Management

Transit agencies that provide service in the Portland region report their Transit Asset Management (TAM) performance and targets to Metro and are included in reporting of the federal transportation performance management (TPM) requirements. Metro used this information to establish a 2018 baseline and set 2020 targets for TAM performance within the region's MPO boundary in the 2018 RTP.

The region's transit agencies continue to make progress towards their annual transit asset management (TAM) targets. Slightly different from the majority of the MAP-21 performance targets, the TAM performance targets are re-evaluated annually to determine and if necessary update or adjust their TAM targets. The 2023 RTP identifies 2021 targets and sets 2023 targets for TAM performance within the region's MPO boundary.

In general, the region's transit agencies – TriMet, SMART, and City of Portland Streetcar – are making progress towards their TAM targets as shown in Table 12, but no single transit agency met all TAM targets set forth. As the largest transit service provider in the region, TriMet's performance on the TAM targets is vital because transit plays a significant role in the region's implementation strategy to achieve the Regional Transportation Plan goals. For previous TAM targets set for 2020, 2021 or 2022, TriMet has not been able to meet all the individual targets across the four major categories: rolling stock, equipment, facilities, and infrastructure. In most cases, TriMet met many of the individual targets, but with each year the actual performance does not meet one or two. There is not a consistent pattern of where underperformance of the TAM target occurs. One year it is the rolling stock TAM targets not met, then in another year it is infrastructure, and in another year it is the equipment. For 2023, TriMet's TAM targets are set to levels TriMet views as likely achievable.

For the smaller transit providers, namely SMART, City of Portland Streetcar and Ride Connection, TAM targets are generally achieved (and/or adjustments were made to address underperformance). However, SMART and the City of Portland Streetcar have consistently not met TAM performance targets set for rolling stock. For SMART that underperformance has held

steady for buses since 2020 but recently declined in 2022 for cutaway buses. For Streetcar that underperformance is small with a slight increase in 2022 by 4 percent.

A summary of each transit provider follows:

TriMet's Rolling Stock performance measure is the percent of revenue vehicles that have met or exceeded their useful life benchmark (ULB). For the 2018 Baseline, the percent of buses (which are revenue vehicles) that have met or exceeded their ULB was 15.3 percent, increasing to 16.2 percent in 2019. In 2020 the percent of buses that had met or exceeded their ULB was 10 percent, which is better than the 2020 target of 18 percent. In 2021 the percent of buses that had met or exceeded their ULB was 6.1 percent, which almost met the 2021 target of 5.9 percent. For 2022 the percent of buses that met or exceeded their ULB is 0 percent, which meets the 2022 target of 0 percent. For the 2018 Baseline, the percent of revenue vehicles that were cutaways (used for para-transit) that have met or exceeded their ULB was 9.0 percent which increased to 16.2 percent in 2019. In 2020 and 2021 the percent of revenue vehicles that were cutaways that had met or exceeded their ULB was 45.2 percent, which generally matched the 2020 target of 45 percent and the 2021 target of 45.2 percent. For 2022 the percent of revenue vehicles that are cutaways that met or exceeded their ULB is 52.2 percent, which does not meet the 2022 target of 43.2 percent. For both the 2018 Baseline and in 2019, no light rail vehicles had met or exceeded their ULB. For both the 2020 and 2021 light rail vehicles that had met or exceeded their ULB was 17.6 percent, which met the 2020 target of 18 percent and 2021 target of 17.6 percent. For 2022 light rail vehicles that had met or exceeded their ULB met the 2022 target of 17.7 percent (see Table 12).

TriMet's Equipment performance measure is the percent of non-revenue service vehicles that have met or exceeded their useful life benchmark (ULB). For the 2018 Baseline, the percent of automobiles that have met or exceeded their ULB was 28.6 percent which held constant in 2019. This represents a new categorization for the types of equipment that are considered automobiles, or trucks and other rubber tire vehicles, that was not used in TriMet's original 2018 Transit Asset Management performance measure for equipment. While performance held constant, it did not meet the 2020 target of 17 percent. TriMet changed the 2021 target to 28.6 percent for automobiles in light of the new way of categorizing what is an auto; and the 2021 percent of automobiles that had met or exceeded their ULB met that target. In 2022 the percent of automobiles that met or exceeded their ULB was 25 percent, which is better that the new target for 2022 of 40 percent. For the 2018 Baseline the percent of trucks and other rubber tire vehicles that have met or exceeded their ULB was 34.4 percent, which decreased to 29.0 percent in 2019. In 2020, the percent of automobiles that met or exceeded their ULB was 24.3 percent, which did not meet the 2020 target of 23 percent. In 2021 the percent of trucks and other rubber tire vehicles that have met or exceeded their ULB was 24.3 percent; which met the new 2021 target of 24.3 percent. For 2022, the percent of trucks and other rubber tire vehicles that have met or exceeded their ULB is 34.1 percent, which does not meet the 2022 target of 27.8 percent (see Table 12).

TriMet's Facilities performance measure is the percent of facilities rated below 3 on the Transit Economic Requirements Model (TERM) condition scale (1=Poor to 5=Excellent). For the

2018 Baseline, the percent of Passenger/Parking facilities rated below 3 on the condition scale was 1.03 percent, which increased to 1.22 percent in 2019. In 2020 and 2021 the percent of Passenger/Parking facilities rated below 3 on the condition scale was 0.9 percent. 2020 met the target of 1 percent, but 2021 did not meet the new 2021 target of 0.7 percent. For 2022, the percent of Passenger/Parking facilities rated below 3 on the condition scale is 0.6 percent, which meets the 2022 target (see Table 12).

TriMet's Infrastructure performance measure is the percent of track segments with performance restrictions. For the 2018 Baseline, the percent of TriMet's light rail track with performance restrictions was 4.7 percent which decreased to 4.2 percent in 2019. In 2020 and 2021 the percent of light rail track with performance restrictions was 5.9 percent, and 7.6 percent respectively. Neither 2020 or 2021 performance met the 2020 and 2021 targets of 4.0 and 5.0 percent. For 2022, the percent of light rail track with performance restrictions is 7.3 percent, which does not meet the 2022 target of 5.0 percent. For the 2018 Baseline, the percent of TriMet's Hybrid rail track with performance restrictions was 3 percent, which largely improved to 0.4 percent in 2019. For 2020 the percent of TriMet's Hybrid rail track with performance restrictions was 1.6 percent; for 2021 it was 0.1%; and in 2022 it is 0 percent. The performance for all three of these years is far better than the 3.0 percent target in all three years (see Table 12).

Ride Connection's Rolling Stock performance measure is the percent of revenue vehicles that have met or exceeded their useful life benchmark (ULB). For the 2018 Baseline, the percent of revenue vehicles that were cutaways that have met or exceeded their ULB was 19 percent which held constant in 2019. For 2020, the percent of revenue vehicles that were cutaways that had met or exceeded their ULB was 28 percent, which exceeded the 2020 target of 20 percent. For the 2018 Baseline, the percent of revenue vehicles that were minivans that have met or exceeded their ULB was 26 percent which increased to 33 percent in 2019. However, in 2020 this decreased again, and performance matched the target of 25 percent. This trend continued as performance improved to 19 percent in 2021 and 18% in 2022 well above the respective targets of 32 and 34 percent. For the 2018 Baseline, the percent of revenue vehicles that were automobiles that have met or exceeded their ULB was 20 percent which increased to 40 percent in 2019. However, performance improved to 33 percent which met the 2020 target of 48 percent. Performance continued to improve in 2021 to 3 percent, though there was a slight increase again in 2022 to 8 percent, with performance in both years well within the 2021 and 2022 targets of 50 percent (see Table 12).

Ride Connection's Facilities performance measure is the percent of facilities rated below 3 on the condition scale (1=Poor to 5=Excellent). For the 2018 Baseline, 2019, and 2020 the percent of all facilities rated below 3 on the condition scale was 0 percent or none, which meet the 2020 target of 0 percent. While the 2021 and 2022 targets for administrative and maintenance facilities were increased to 1.5 percent, performance for those years remained at 0 percent.

SMART's Rolling Stock performance measure is the percent of revenue vehicles that have met or exceeded their useful life benchmark (ULB). For the 2018 Baseline, the percent of all revenue vehicles that have met or exceeded their ULB was 33 percent which increased slightly to 35 percent in 2019. For 2020 the percent of buses that had met or exceeded their ULB was 43

percent and 47 percent for cutaway buses, large increases that did not meet the 2020 target of 33 percent. For 2021 performance held constant but did not meet the 20 percent target for bus and 32 percent target for cutaway bus. Though the targets increased in 2022 to 25 and 38 percent respectively, bus performance held constant at 43 percent and cutaway bus performance declined to 63 percent, neither meeting the target (see Table 12).

SMART's Equipment performance measure is the percent of service vehicles that have met or exceeded their useful life benchmark (ULB). For the 2018 Baseline, the percent of all service vehicles that have met or exceeded their ULB was 20 percent, which quickly rose to 38 percent in 2019. For 2020 the percent of all service vehicles that had met or exceeded their ULB dropped to 10 percent, a large decrease that easily met the 2020 target of 20 percent. In 2021, the Oregon Group TAM Plan set separate targets for automobiles (12 percent) and truck and other rubber tire vehicles (44%), which SMART met (at 0 and 25 percent respectively). In 2022, these targets increased more substantially for automobiles at 8 percent and slightly for truck and other rubber tire vehicles to 45 percent. SMART again met both targets and increased performance for the latter equipment to 14 percent (automobiles held constant with 0 percent of vehicles meeting or exceeding their ULB) (see Table 12).

SMART's facilities performance measure is the percent of parking and maintenance facilities rated below 3 on the condition scale (1=Poor to 5=Excellent). For the 2018 Baseline, the percent of all facilities rated below 3 on the condition scale was 0 percent which held constant in 2019. For 2020, 2021, and 2022 the percent of parking facilities rated below 3 was 0 percent, matching the targets. For 2020 the percent of maintenance facilities rated below 3 was 3 percent, above the target of 0 percent; but in 2021 improved to 0 percent even though the target rose to 1.5 percent in both years (see Table 12).

C-TRAN's Rolling Stock performance measure is the percent of revenue vehicles that have met or exceeded their useful life benchmark (ULB). For the 2018 Baseline, the percent of all revenue vehicles that have met or exceeded their ULB was 14.5 percent which increased to 18 percent in 2019. . For 2020 the percent of all revenue vehicles that had met or exceeded their ULB was 19 percent, which met the 2020 target of 20 percent. For 2021 the percent of all revenue vehicles that had met or exceeded their ULB was 22 percent, which was slightly short of meeting the 2021 target of 20 percent. In 2022, C-TRAN set separate targets for articulated buses (0 percent) and buses (27 percent), meeting the target for articulated buses (0 percent) but not meeting the target for buses (43 percent) (see Table 12).

C-TRAN's Equipment performance measure is the percent of non-revenue service vehicles that have met or exceeded their useful life benchmark (ULB). For the 2018 Baseline, the percent of all service vehicles that have met or exceeded their ULB was 17.1 percent, rising to 25 percent in 2019. However, by 2020 equipment performance improved to 6 percent, well within the 2020 target of 30 percent. For 2021 the percent of all service vehicles that have met or exceeded their ULB again rose to 43 percent, which did not meet the 2021 target of 30 percent. However, by 2022 equipment performance once again improved to 6 percent, well within the 2022 target of 30 percent. (see Table 12).

C-TRAN's Facilities performance measure is the percent of facilities rated below 3 on the condition scale (1=Poor to 5=Excellent). For the 2018 Baseline, the percent of all facilities rated below 3 on the condition scale was 0 percent or none. In 2019, 2020, 2021, and 2022 there were also no facilities rated below 3 on the condition scale (0 percent), which met the target of 30 percent each year (see Table 12).

Portland Streetcar's Rolling Stock performance measure is the percent of revenue vehicles that have met or exceeded their useful life benchmark (ULB). For the 2018 Baseline, the percent of all revenue vehicles that have met or exceeded their ULB was 0 percent. In 2019 also 0 percent, which meets the 2020 target of 0 percent or none. In 2020 and 2021 the percent of revenue vehicles that are streetcars that had met or exceeded their ULB was 2 percent, slightly above the target of 0 percent. In 2022, this increased to 6 percent but the agency is currently receiving three new revenue vehicles towards meeting the 2023 target. In 2020 and 2021 the percent of revenue vehicles that are bogies that had met or exceeded their ULB was 0 percent, which met the 2020 and 2021 targets (see Table 12).

Portland Streetcar's Equipment performance measure is the percent of non-revenue service vehicles that have met or exceeded their useful life benchmark (ULB). For the 2018 Baseline, the percent of all service vehicles that have met or exceeded their ULB was 40 percent. In 2019 the percent of all service vehicles that had met or exceeded their ULB was 17 percent, which demonstrates a significant improvement, but does not meet the 2020 target of 0 percent or none. However, the one vehicle that had exceeded its ULB was replaced in 2020. In 2020 the percent of all service vehicles that had met or exceeded their ULB was 4 percent, which was another significant improvement, but does not meet the 2020 target of 0 percent. In 2021 and 2022 the target of 0 percent was met. (see Table 12).

Portland Streetcar's Facilities performance measure is the percent of facilities rated below 3 on the condition scale (1=Poor to 5=Excellent). For the 2018 Baseline, the percent of all facilities rated below 3 on the condition scale was 0 percent or none. In 2019 the percent of all facilities rated below 3 on the condition scale was also 0 percent, which meets the 2020 target of 0 percent. For 2020, 2021 and 2022 the targets of 0 percent were met (see Table 12).

Portland Streetcar's Infrastructure performance measure is the percent of track segments with performance restrictions. For the 2018 Baseline, no Portland Streetcar rail track had performance restrictions. In 2019 the percent of rail track with performance restrictions was 0 percent, which meets the 2020 target of less than 2.0 percent. For 2020, 2021, and 2022 the targets of 0 percent were met (see Table 12).

Table 12. Transit Asset Management Targets and Performance

Transit Asset Management Targets [1]									
Performance measure	**2018 Baseline Performance**	**2019 Performance**	**2020 Target**	**2020 Performance**	**2021 Target**	**2021 Performance**	**2022 Target**	**2022 Performance**	**2023 Target**
TriMet Rolling Stock – Percent of revenue vehicles that have met or exceeded their useful life benchmark (ULB)									
BU – Bus	15.3%	16.2%	18%	0.0%	5.9%	**6.1%**	5.8%	0%	0%
CU – Cutaway (used for LIFT para-transit)	9.0%	16.6%	45%	45.2%	45.2%	45.2%	43.2%	52.2%	60%
LR – Light rail vehicles	0%	0%	18%	17.6%	17.6%	17.6%	17.6%	17.7%	17.7%
RP – Commuter rail passenger coach	0%	0%	0%	0%	0%	0%	0%	0%	0%
RS – Commuter rail self-propelled passenger car	0%	0%	0%	0%	0%	0%	0%	0%	0%
VN – Van (used for LIFT para-transit)	0%	0%	0%	0%	0%	0%	16.5%	23.8%	25.3%[3]
TriMet Equipment – Percent of service vehicles that have met or exceeded their useful life benchmark (ULB)									
Automobiles	28.6%	28.6%	17%	28.6%	28.6%	28.6%	40%	25%	25%
Trucks and other rubber tire vehicles	34.4%	29.0%	23%	24.3%	24.3%	24.3%	27.8%	34.1%	25.3%
Steel wheel vehicles	30%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TriMet Facilities – Percent of facilities rated below 3 on the condition scale (1=Poor to 5=Excellent)									
Passenger/Parking facilities	1.03%	1.22%	1%	0.9%	0.7%	**0.9%**	0.6%	0.6%	0.7%
Administrative/Maintenance facilities	0%	0%	0%	0%	0%	0%	0%	0%	0%

Transit Asset Management Targets [1]									
Performance measure	2018 Baseline Performance	2019 Performance	2020 Target	2020 Performance	2021 Target	2021 Performance	2022 Target	2022 Performance	2023 Target
TriMet Infrastructure – Percent of track segments with performance restrictions									
LR – light rail	4.7%	4.24%	4.0%	5.9%	5.0%	**7.6%**	5%	7.3%	7%
YR – Hybrid rail	3.0%	0.42%	3.0%	1.6%	3.0%	0.1%	3%	0%	3%
Ride Connection Rolling Stock – Percent of revenue vehicles that have met or exceeded their useful life benchmark (ULB)									
CU – Cutaway Bus	19%	19%	20%	28%	32%[2]	23%	38%[2]	32%	N/A
MV – Minivan	26%	33%	25%	25%	32%[2]	19%	34%[2]	18%	N/A
AO – Automobiles	20%	40%	48%	33%	50%[2]	3%	50%[2]	8%	N/A
Ride Connection Facilities – Percent of facilities rated below 3 on the condition scale (1=Poor to 5=Excellent)									
Passenger/Parking	0%	0%	0%	0%	0%[2]	0%	0%[2]	0%	N/A
Administrative/Maintenance	0%	0%	0%	0%	1.5%[2]	0%	1.5%[2]	0%	N/A
SMART Rolling Stock – Percent of revenue vehicles that have met or exceeded their useful life benchmark (ULB)									
BU – Bus	33%	35%	33%	43%	20%	43%	25%[2]	43%	N/A
CU – Cutaway Bus				47%	32%[2]	47%	38%[2]	63%	N/A
SMART Equipment – Percent of service vehicles that have met or exceeded their useful life benchmark (ULB)									
Automobiles	20%	38%	20%	10%	12%	0%	8%[2]	0%	N/A
Truck and other rubber tire vehicles					44%	25%	45%[2]	14%	N/A

Transit Asset Management Targets [1]									
Performance measure	2018 Baseline Performance	2019 Performance	2020 Target	2020 Performance	2021 Target	2021 Performance	2022 Target	2022 Performance	2023 Target
SMART Facilities – Percent of facilities rated below 3 on the condition scale (1=Poor to 5=Excellent)									
Passenger/Parking	0%	0%	0%	0%	0%[2]	0%	0%[2]	0%	N/A
Administrative/Maintenance	0%	0%	0%	3%	1.5%[2]	0%	1.5%[2]	0%	N/A
C-TRAN Rolling Stock – Percent of revenue vehicles that have met or exceeded their useful life benchmark (ULB)	14.5%	18%	20%	19%	20%	**22%**			
AB - Articulated Bus							0%	0%	0%
BU – Bus							27%	43%	0%
CU – Cutaway Bus							24%	27%	16%
MV - Minivan							0%	43%	43%
VN - Van							19%	16%	26%
C-TRAN Equipment – Percent of service vehicles that have met or exceeded their useful life benchmark (ULB)	17.1%	25%	30%	6%	30%	**43%**	30%	6%	
Automobiles									33%
Rubber Tire Vehicles									5%
C-TRAN Facilities – Percent of facilities rated below 2.5 on the condition scale (1=Poor to 5=Excellent)	0%	0%	30%	0%	30%	0%	30%	0%	0%
Portland Streetcar Rolling Stock – Percent of revenue vehicles rated below 2.5 on the condition scale (1=Poor to 5=Excellent)									
Streetcars	0%	0%	0%	**2%**	0%	**2%**	0%	6%	0%
Bogies	0%	0%	0%	0%	0%	0%	0%	0%	0%

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Transit Asset Management Targets [1]									
Performance measure	2018 Baseline Performance	2019 Performance	2020 Target	2020 Performance	2021 Target	2021 Performance	2022 Target	2022 Performance	2023 Target
Portland Streetcar Equipment – Percent of service vehicles that have met or exceeded their useful life benchmark (ULB)	40%	17%	0%	**4%**	0%	0%	0%	0%	0%
Portland Streetcar Facilities – Percent of facilities rated below 3 on the condition scale (1=Poor to 5=Excellent)	0%	0%	0%	0%	0%	0%	0%	0%	0%
Portland Streetcar Infrastructure – Percent of track mileage operating below design speed	0%	0%	<2%	0%	0%	0%	0%	0%	0%

[1] Each transit provider must update State of Good Repair targets annually and the agency's Transit Asset Management (TAM) Plan must be updated at least every 4 years covering a horizon period of at least 4 years. Performance measures and targets are monitored and reported in agency TAM Plans adopted by TriMet, C-TRAN, Ride Connection, SMART and Portland Streetcar.

[2] Ride Connection and SMART's performance measures and targets are monitored and reported in ODOT's Group TAM Plan – targets are statewide encompassing all small providers. As of August, the 2023 targets were not yet available.

[3] Additional vans will reach the useful life benchmark for the year covered by RY2023.

Transit Safety

Transit agencies that provide service in the Portland region reflect their Transit Safety performance and targets in their respective Public Transportation Agency Safety Plans (PTASPs) and provide them to Metro as part of meeting federal TPM requirements. Transit agencies are required to establish their targets and share them with their MPO and State by December 31, 2020. Transit safety measures from agencies' PTASPs are provided below, along with the 2019 baseline performance, and 2020, 2021 and 2022 performance where available. Metro used this information to establish a baseline and set initial targets for transit safety performance (Table 13).

The region's transit agencies continue to make progress towards their PTASP targets. Similar to the TAM performance targets, these may be re-evaluated annually to determine and if necessary to update or adjust targets. In areas applicable, Metro's regional safety performance target of Vision Zero is the established regional target. In categories which the region's Vision Zero safety target is not consistent with the public transit agency safety performance target, Metro accepted as the regional target the transit agencies safety performance targets.

In general, the region's transit agencies – TriMet, SMART, and City of Portland Streetcar – are making progress towards their PTASP targets as shown in Table 13, but only SMART met all the PTASP targets set forth. As the largest transit service provider in the region, TriMet's performance on the PTASP targets is vital because transit plays a significant role in the region's implementation strategy to achieve the Regional Transportation Plan goals. For commuter/light rail fatalities and injuries, deviated/fixed route bus and demand response injuries, and commuter/light rail and deviated/fixed route bus safety events, TriMet did not meet the performance targets for both 2021 and 2022. However, the rate of these type of events did decrease over the same period. In 2022, TriMet also did not meet system reliability targets for deviated/fixed route bus or demand response. C-TRAN in comparison, has met all its targets in these areas, but did not meet some of the system reliability targets in either 2021 or 2022.

The smaller transit providers, namely SMART and City of Portland Streetcar, generally met the safety performance targets established for 2021 and 2022 and/or saw improvement in subsequent years with the exception of Ride Connections demand response injury and system reliability performance. The trend for the City of Portland Streetcar is particularly interesting in recognizing the streetcar shares the right-of-way with motor vehicles and therefore presents more opportunities for conflicts and safety incidents. However, the rate of safety events and injuries generally trend downwards.

The newly established public transit agency safety performance targets represent a wide breath of safety considerations for both the riders of public transit as well as the day-to-day operators. Safety events and injuries can interpreted as collisions (vehicles, person, object), derailment, hazardous materials spills, fire, "acts of god"/evacuations for safety, system security events, injury to the bus or train operator, or other events such as non-injury slips, trips, and falls when using bus or station stairs or mobility tie down malfunction, smoke or shock, power failure, maintenance issues.

Table 13. Transit Agency Safety Targets

Transit Agency Safety Targets												
Performance measure	2019 Baseline Performance		2020 Performance		2021 Target		2021 Performance		2022 Target		2022 Performance	
	Total	Rate	Total	Rate	Total	Rate	Total	Rate	Total	Rate	Total	Rate
TriMet Fatalities – per 1 million VRM	1	0.1119	3	0.3384	0	0	7	0.7897	0	0	4	0.4947
Commuter/Light Rail	1	0.0469	0	0	0	0	1	0.0455	0	0	0	0
Deviated/Fixed Route Bus	0	0	0	0	0	0	0	0	0	0	0	0
Demand Response												
TriMet Injuries – per 1 million VRM	113	12.6505	97	10.9429	--[1]	<1.9	66	7.4457	--[1]	<1.9	27	3.3397
Commuter/Light Rail	111	5.2045	152	6.9198	--[1]	<1.9	120	5.4630	--[1]	<1.9	96	4.9355
Deviated/Fixed Route Bus	13	1.8189	5	0.9055	--[1]	<1.9	6	1.0865	--[1]	<1.9	0	0
Demand Response												
TriMet Safety Events – per 1 million VRM												
Commuter/Light Rail	114	12.7625	111	12.5222	--[2]	<1.3	98	11.0557	--[2]	<1.3	53	6.5558
Deviated/Fixed Route Bus	112	5.2514	164	7.4661	--[2]	<2.6	141	6.4190	--[2]	<2.6	118	6.0666
Demand Response	11	1.5391	4	0.7244	--[2]	--[2]	5	0.9055	--[2]	--[2]	3	0.7070
TriMet System Reliability – rate of in-service vehicle failures (miles)***	N/A	120,234	N/A	27,905	N/A	>10,000	N/A	28,054	N/A	>10,000	N/A	34,408
Commuter/Light Rail	(rate	31,000	(rate	8,912	(rate	>15,000	(rate	10,698	(rate	>15,000	(rate	9,188
Deviated/Fixed Route Bus	only)	22,840	only)	4,973	only)	>15,000	only)	2,435	only)	>15,000	only)	3,313
Demand Response												
Ride Connection Fatalities – per 100k VRM**												
Deviated Fixed Route Bus	0	0	0	0	0	0	0	0	0	0	0	0
Demand Response/NEMT	0	0	0	0	0	0	0	0	0	0	0	0
Travel Training	0	0	0	0	0	0	0	0	0	0	0	0
Ride Connection Injuries[3] – per 100k VRM**	0	0	0	0	0	0	0	0				
Deviated Fixed Route Bus	0	0	0	0	0	0	0	0	0	0	0	0

Transit Agency Safety Targets												
Performance measure	**2019 Baseline Performance**		**2020 Performance**		**2021 Target**		**2021 Performance**		**2022 Target**		**2022 Performance**	
	Total	Rate	Total	Rate	Total	Rate	Total	Rate	Total	Rate	Total	Rate
Demand Response/NEMT Travel Training	0	0	0	0	0	0	0	0	0 / 0	0 / 0	2 / 0	0.0038 / 0
Ride Connection Safety Events[4] – per 100k VRM**												
Deviated Fixed Route Bus	0	0	0	0	<5.25	--[6]	1	0.2802	<5.25	--[6]	0	0
Demand Response/NEMT	0	0	0	0	<15.75[5]	--[6]	0	0	<15.755	--[6]	3	0.0057
Ride Connection System Reliability[7] – rate of in-service vehicle failures (miles)***	N/A (rate only)		N/A (rate only)		N/A (rate only)		N/A (rate only)		N/A (rate only)		N/A (rate only)	
Deviated Fixed Route Bus	N/A (rate only)	N/A[7]	N/A (rate only)		N/A (rate only)	16,500	N/A (rate only)	10,969	N/A (rate only)	16,500	N/A (rate only)	40,968
Demand Response/NEMT		N/A[5]				28,500[5]		15,824		28,500[5]		10,531
SMART Fatalities – per 100k VRM**												
Deviated/Fixed Route Bus	0	0	0	0	0	0	0	0	0	0	0	0
Demand Response	0	0	0	0	0	0	0	0	0	0	0	0
SMART Injuries – per 100k VRM												
Deviated/Fixed Route Bus	0	0	0	0	0	0	0	0	0	0	0	0
Demand Response	0	0	0	0	0	0	0	0	0	0	0	0
SMART Safety Events – per 100k VRM**												
Deviated/Fixed Route Bus	0	0	0	0	0	0	0	0	0	0	0	0
Demand Response	0	0	0	0	0	0	0	0	0	0	0	0
SMART System Reliability – rate of in-service vehicle failures (miles)***	N/A (rate only)		N/A (rate only)		N/A (rate only)		N/A (rate only)		N/A (rate only)		N/A (rate only)	
Deviated/Fixed Route Bus	N/A (rate only)	21,324[8]	N/A (rate only)	57,200	N/A (rate only)	21,324	N/A (rate only)	51,140	N/A (rate only)	21,324	N/A (rate only)	46,707
Demand Response		14,206[8]		86,399		14,206		37,958		14,206		46,058

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Transit Agency Safety Targets												
Performance measure	**2019 Baseline Performance**		**2020 Performance**		**2021 Target**		**2021 Performance**		**2022 Target**		**2022 Performance**	
	Total	Rate	Total	Rate	Total	Rate	Total	Rate	Total	Rate	Total	Rate
C-TRAN Fatalities[9] – per 1 million VRM*												0
Deviated/Fixed Route Bus	0	0	0	0	0	0	0	0	0	0	0	0
Demand Response	0	0	0	0	0	0	0	0	0	0	0	0
Vanpool	0	0	0	0	0	0	0	0	0	0	0	
C-TRAN Injuries[9] – per 1 million VRM*												
Deviated/Fixed Route Bus	27	6.811	11	2.905	<25.7	<6.5842	24	6.428	<23.7	<6.107	13	3.488
Demand Response	8	4.833	2	2.539	<7.6	<4.8993	0	0	0	0	2	1.469
Vanpool	0	0	0	0	0	0	0	0	0	0	0	0
C-TRAN Safety Events[9] – per 1 million VRM*												
Deviated/Fixed Route Bus	32	8.072	39	10.300	<28.5	<7.3159	36	9.642	<34.2	<9.16	32	8.587
Demand Response	8	4.833	4	5.077	0	0	0	0	0	0	5	3.672
Vanpool	0	0	0	0	0	0	0	0	0	0	0	0
C-TRAN System Reliability – rate of in-service vehicle failures (miles)**												9
Deviated/Fixed Route Bus	N/A (rate only)	0.6371	N/A (rate only)	0.2073	N/A (rate only)	>0.2177	N/A (rate only)	0.2226	N/A (rate only)	10,398	N/A (rate only)	,937
Demand Response		0.2306		7.8785		>8.2724		1.1685		23,370		28,968
Vanpool		0.0943		0.0693		>0.0728		0.1149		12,065		4,179
Portland Streetcar Fatalities – per 100k VRM* (Rail)	0	0	0	0	0	0	0	0	0	0	0	0
Portland Streetcar Injuries – per 100k VRM* (Rail)	14	3.27	14	3.27	12	3.05	8	2.04	12	3.06	0	0
Portland Streetcar Safety Events – per 100k VRM* (Rail)	14	3.27	14	3.27	19	4.83	17	4.34	13	3.32	25	6.5
Portland Streetcar System Reliability – rate of in-service vehicle failures (miles) (Rail)**	N/A (rate only)	0.2933	N/A (rate only)	0.2933	N/A (rate only)	0.2933	N/A (rate only)	0.2361	N/A (rate only)	0.2361	N/A (rate only)	0.3683
[1]TriMet did not adopt performance targets for total injuries in its PTASP, but did adopt a target of less than 200 OSHA recordable injuries for employees.												

Transit Agency Safety Targets												
Performance measure	2019 Baseline Performance		2020 Performance		2021 Target		2021 Performance		2022 Target		2022 Performance	
	Total	Rate	Total	Rate	Total	Rate	Total	Rate	Total	Rate	Total	Rate

[2]TriMet did not adopt performance targets for total safety events in its PTASP. Instead the agency adopted target of less than 1.3 for light rail and less than 2.6 for bus per 100,00 miles. TriMet also adopted performance targets of less than 5.4 lost time employee injuries per 200,000 hours worked.

[3]Ride Connection also sets a boarding and alighting injury target of less than 2.25.

[4]Ride Connection also set workers' compensation claim targets of 0 for deviated fixed route bus and less than 1.5 for demand response service.

[5]NEMT is a new program as of March 2020 with no historical data from the previous brokerage and only a few months of actual data that is heavily skewed by COVID-19. Ride Connection will adopt specific NEMT targets once adequate data has been compiled. In the interim, the NEMT targets are the same as those for demand response.

[6]Instead of a safety event rate target, Ride Connection adopted a preventable collision rate of less than 1.2334 per 100,000 vehicle revenue miles for deviated fixed route bus and less than 0.9000 per 100,000 vehicle revenue miles for demand response service.

[7]Ride Connection does not have historical system reliability data available.

[8]SMART used FY 2018 data as a baseline for system reliability performance setting.

[9]C-TRAN adopted the performance targets of achieving a 5 percent reduction from the 2019 baseline. The values included as 2021 targets in this table are those estimated values based on 2019 data reported to the National Transit Database. In 2020, C-TRAN switched to reporting this value as average miles between major events

* VRM stands for Vehicle Revenue Miles.

** System reliability is defined by FTA as the mean distance between major mechanical failures—measured as revenue miles operated divided by the number of major mechanical failures.

IMPLEMENTATION STRATEGIES IN SUPPORT OF PERFORMANCE-BASED PLANNING

This section summarizes key regional implementation policies, programs and strategies that support Metro's performance-based planning and congestion management processes.

Policy

Land Use

2040 Growth Concept – In 1995, the Portland region adopted the 2040 Growth Concept, the long-range plan for managing growth that integrates land use and transportation planning to reinforce the objectives of both. The unifying theme of the 2040 Growth Concept is to preserve the region's economic health and livability and plan for growth in the region in an equitable, environmentally-sound and fiscally-responsible manner. The RTP is a key tool for implementing the 2040 Growth Concept with an approach that views transportation as an integrated and interconnected system that must be completed over time to support planned land uses. The plan shifts the emphasis from moving vehicles to moving people and goods and connecting people and places. This integrated system provides for the movement of people by private vehicle, public transit, ridesharing, walking and biking as well as the movement of goods and services by roads, air, water and rail.

Urban Growth Boundary – Metro is responsible for managing the Portland metropolitan region's urban growth boundary required by Oregon state law. The boundary controls urban expansion onto farms and forests. Land inside the urban growth boundary supports urban services such as roads, water and sewer systems, parks, schools and fire and police protection that create thriving places to live, work and play. Metro is required by state law to have a 20-year supply of land for future residential development inside the boundary. Every five years, the Metro Council is required to conduct a review of the land supply and, if necessary, expand the boundary to meet that requirement. The next urban growth management decision is scheduled for Fall 2024.

Urban and Rural Reserves – In 2007, the Oregon Legislature approved Senate Bill 1011. This legislation enabled Metro to identify and designate areas outside the current urban growth boundary as urban and rural reserves. Urban reserves are lands currently outside the urban growth boundary that are suitable for accommodating urban development over the next 50 years. Rural reserves are lands outside the current urban growth boundary that are high value working farms and forests or have important natural features like rivers, wetlands, buttes and floodplains. These areas will be protected from urbanization for the next 50 years.

Transportation

2023 Regional Transportation Plan – Metro is responsible for updating and maintaining the region's long-range transportation plan under federal and state law. In addition, Metro maintains several supporting mode and topic plans, which, together with the RTP, guide transportation planning, investments and decision-making. The RTP establishes goals, policies and strategies that address the key challenges and opportunities facing the region. The goals, policies and strategies of the RTP guide transportation decision making across the region and set the stage for performance management to occur in the specific mode and topic plans and programs associated with the RTP. The mode and topic plans associated with the RTP include:

- Regional High Capacity Transit Strategy (2023)
- Transit Oriented Development Program Strategic Plan (2023)
- Regional Transportation System Management and Operations (TSMO) Plan (2022)
- Regional Travel Options Strategy (2018)
- Regional Transportation Safety Strategy (2018)
- Regional Transit Strategy (2018)
- Regional Freight Strategy (2018)
- Emerging Technology Strategy (2018)
- Climate Smart Strategy (2014)
- Regional Active Transportation Plan (2014)

In addition, TriMet leads periodic updates to the Coordinated Transportation Plan for Seniors and People with Disabilities. Last updated in 2020, the plan is in Appendix G to the RTP. The next update is due by June 30, 2025.

Infrastructure and programs

Regional Active Transportation Program

The Regional Active Transportation Program manages updates to and implementation of pedestrian, bicycle and access to transit in the Regional Transportation Plan (RTP) and the Regional Active Transportation Plan. The program provides guidance to jurisdictions in planning for safe, efficient and comfortable active transportation access and mobility on the regional transportation system (including regional trails and multi-use paths). The program is closely coordinated with other regional transportation programs and region-wide planning activities, and with Metro's Parks and Nature Department. Additionally, the program supports coordination with local, regional, state, and federal plans to ensure consistency in approach to active travel needs and issues across the region. The program ensures that prioritized regional bicycle and pedestrian projects are competitively considered within federal, state, and regional funding programs. Ongoing data collection, analysis, education, and stakeholder coordination are also key elements of Metro's active transportation program.

Regional Transit Program

The Regional Transit Program conducts long-range transit planning for the Portland Metro region, managing updates to and implementation of the transit elements in the Regional Transportation Plan (RTP) and supporting Regional Transit Strategy and its components like the High-Capacity Transit Strategy. Together, these provide the roadmap for making transit investments over time in collaboration with our transit providers and local government partners in the region and ensure that prioritized transit projects are competitively considered within federal, state, and regional funding programs. The Regional Transit Strategy will need to be amended to reflect the High Capacity Transit Strategy adopted in 2023 and the Connecting First and Last Mile Study anticipated to be complete in 2025.

Program work includes ongoing coordination with transit providers, cities and counties to ensure implementation of these strategies through plans and capital projects, periodic support for major transit planning activities in the region and coordination with state transit planning officials. Ongoing data collection, analysis, education, and stakeholder coordination are also key elements of Metro's transit program. The program is closely coordinated with other regional transportation programs and region-wide planning activities.

Additionally, Metro and TriMet will be developing a Bus Rapid Transit (BRT) Strategic Plan as part of regional transit planning efforts. The Plan will further advance work in the High-Capacity Transit Plan and will outline a vision for how Frequent Express (FX) investments can enhance existing and future frequent bus service corridors to serve our region's goals. It will identify a network of BRT routes, prioritize routes for implementation, and identify potential regional funding strategies.

Better Bus Program

The Better Bus program is a joint Metro and TriMet endeavor that identifies transit priority and access treatments to improve the speed, reliability, and capacity of TriMet frequent service bus lines or streetcar lines, building on the previous Enhanced Transit Concepts (ETC) Program. Better Bus treatments are relatively low-cost to construct, context-sensitive, and can be implemented quickly to improve transit service in congested corridors. The program develops partnerships with local jurisdictions and transit agencies to design and implement Better Bus capital and operational investments.

Transportation System Management and Operations (TSMO) Program

With the intent of supporting broad Transportation System Management and Operations (TSMO) investment and activity in the greater Portland metropolitan region, the TSMO program encompasses regional strategy development, implementation, grant management, project management and system performance monitoring (includes support to the region's Congestion Management Process). The program facilitates a variety of approaches to reliable, equitable, accessible, safe transportation related to TSMO. These include intelligent transportation systems (ITS), Mobility on Demand (MOD) and related mobility, freight technologies and operations.

The program maintains and periodically updates the regional TSMO Strategy. Strategy updates incorporate RTP policy and develops actions and work plans for implementation. Implementation involves convening operations leaders, engineers and technical experts to share procedures and protocols such as the regional Intelligent Transportation System (ITS) Architecture. ITS Architecture is needed to comply with the FHWA rule for federally funded transportation projects and their compliance with the National ITS Architecture. The program also guides implementation of the region's ITS data communications assets and networks, representing coordination of shared digital infrastructure. The regional role for program implementation supports opportunities for inclusion, research, education, and training on TSMO.

The program manages the sub-allocation of Regional Flexible Funding for TSMO. These projects are prioritized through criteria that is consistent with the adopted Regional TSMO Strategy. The TSMO program will provide support for regional ITS projects by helping to apply systems engineering, ITS Architecture, standards and procedures.

The program supports system performance monitoring including the federal mandates to maintain a Congestion Management Process (CMP). The program implements actions identified in the Arterial Performance Management Regional Concept of Traffic Operations (RCTO) to advance the region's performance measurement capabilities on arterial streets. CMP performance monitoring will continue in order to support development of the RTP, local Transportation System Plans and MTIP programming. The program partners with PORTAL, a regional archived data user service managed by Portland State University. PORTAL will continue to expand the collection, visualization and uses of multimodal performance data in a way that will enhance the region's ability to diagnose and address mobility and support multimodal operations consistent with the region's CMP.

The TSMO program is closely coordinated with other regional transportation programs and region-wide planning activities.

Regional Travel Options (RTO) and Safe Routes to Schools Programs and Regional Travel Options Strategy

The Regional Travel Options Program implements RTP policies and the Regional Travel Options Strategy to reduce drive-alone auto trips and personal vehicle miles of travel and to increase use of travel options. The program improves mobility and reduces greenhouse gas emissions and air pollution by carrying out the transportation demand management components of the RTP through three primary program areas: Commute trip reduction, Community-based travel options, and Safe Routes to School. Each RTO program area works to advance RTP goals through the following strategies:

- Regional policy development
  - The RTO program advances travel options policy through policies in the RTP and developing the Regional Travel Options Strategy; as well as supporting local and state policy development and implementation.

- Funding local program implementation

- o The RTO program provides ongoing funding to local programs and partners to deliver critical TDM services across the region and seeks out new partnerships to ensure the travel needs of all residents are prioritized.

- Technical assistance & regional program administration

  - o The RTO program provides technical assistance to program providers through trainings, resource development and peer networking and learning. In addition, the RTO program administers regional programming to advance the goals of the RTP and RTO strategy in collaboration with local partners.

The program maximizes investments in the transportation system and eases traffic congestion by managing travel demand, particularly during peak commute hours. Specific RTO activities include promoting transit, shared trips, bicycling, walking, telecommuting and the Regional Safe Routes to School Program. The program is closely coordinated with other regional transportation programs and region-wide planning activities.

Regional Safe Streets for All Program and Regional Transportation Safety Strategy

Metro's regional Safe Streets for All program activities support advancing the Safe System approach to achieve regional safety goals, policies and targets, including zero serious crashes by 2035. Program activities are consistent with strategies and actions in the 2018 Regional Transportation Safety Strategy, the Regional Safe Routes to School Program, and local and state safety plans. Following adoption of the 2023 RTP, Metro will coordinate with regional partners and communities to implement the regional Safe Streets for All Federal grant. The grant supports development of the regional safety program and local Transportation Safety Action Plans. Efforts will focus on managing speeds for safety, increasing pedestrian safety, and eliminating disparities for Black, Hispanic, Native American, people with low income, and other populations disproportionately impacted by serious traffic crashes.

Program activities include periodic updates on the state of safety to the Metro Council, Metro technical and policy advisory committees and other interested parties; technical assistance and coordination with local, regional, state, and federal partners in planning and project development; support for the development and updates to local and regional safety plans and policies; updates to safety data and analysis; updates to safety plans and policies; safety data collection, maintenance, analysis and interpretation; encouraging best practices in transportation safety and roadway design with funding and programmatic support identifying legislative priorities, and collaborating on efforts to highlight safety in materials, messaging and campaigns. The program will be closely coordinated with other regional transportation programs and region-wide planning activities.

Regional Freight Program and Regional Freight Strategy

The Regional Freight Program manages updates to and implementation of multimodal freight elements in the Regional Transportation Plan (RTP) and supporting Regional Freight Strategy. The program provides guidance to jurisdictions in planning for freight movement on the regional transportation system. The program supports coordination with local, regional, state, and federal

plans to ensure consistency in approach to freight-related needs and issues across the region. Metro's coordination activities include ongoing participation in the Oregon Freight Advisory Committee (OFAC), and Portland Freight Committee (PFC). The program ensures that prioritized freight projects are competitively considered within federal, state, and regional funding programs. Ongoing freight data collection, analysis, education, and stakeholder coordination are also key elements of Metro's freight program. The program is closely coordinated with other regional transportation programs and region-wide planning activities.

Investment Areas Program

Metro's Investment Areas program helps communities build their downtowns, main streets and corridors and leverage public and private investments that implement the region's 2040 Growth Concept. Projects include:

- Supporting compact, transit-oriented development in the region's mixed-use areas.

- Evaluating high capacity transit and other transportation improvements that cross city and county lines.

- Strengthening bi-state partnerships.

- Integrating freight and active transportation projects into multimodal corridors.

Major public infrastructure investments do not stop at city or county lines. Our transportation system connects the communities within greater Portland with the rest of the state and the rest of the world. When our region spends billions of dollars on expanding our road, transit and highway system to keep up with the continued population and employment growth, those public investments can both benefit and burden nearby communities. Over time, the region has become more strategic at linking together our transportation, housing, economic, racial equity and environmental goals, policies, and investments so that we can intentionally preserve and create great places that serve all people throughout the region, even as change and growth occurs.

The Investment Areas program completes system planning and develops multimodal projects in transportation corridor refinement plans identified in the Regional Transportation Plan. It also works on finance plans to align public investments in areas that support the region's growth economy. It includes ongoing involvement in local and regional transit and roadway project conception, funding, and design. Metro provides assistance to local jurisdictions for the development of specific projects as well as corridor-based programs identified in the RTP.

Metro's Investment Areas program has been connecting planning for major transportation projects with the community's broader goals and needs. While each area's conditions and needs are different, the approach of bringing together government, community, and business partners provides a framework to produce a shared plan of action to guide the investments and decisions of multiple agencies. Including a broader set of stakeholders in a collaborative decision-making process allows for decisions that once seemed unclear or unfair to stakeholders to be more transparent. This approach improves our ability to involve and include those who are affected by these decisions and investments.

Investment areas can set the stage for a range of major capital investments beyond high capacity transit. Other Metro investment areas have focused on freight routes connecting major highways through small communities, redevelopment of brownfields in employment areas, and leveraging the opportunities of a regionally significant riverfront destination. The program is closely coordinated with other regional transportation programs and region-wide planning activities, including corridor refinement planning activities.

Regional Transit-Oriented Development Program

Since 2001, Metro's Transit-Oriented Development (TOD) program has had a unique and critical role in implementing the 2040 Growth Concept vision for vibrant, walkable centers and station areas linked by transit. The program invests in compact mixed-use projects near light rail stations, along frequent service bus corridors and in regional and town centers throughout the region increasing opportunities for people live, work and shop in neighborhoods with easy access to high-quality transit. The program provides financial incentives for TOD projects to increase transit ridership, stimulate private development of mixed-use buildings that would otherwise not proceed, and increase affordable housing opportunities near transit in high cost and gentrifying neighborhoods through land acquisition and project investments. With an increased focus on affordable housing, the program supports construction of housing near transit and services that is more affordable for older adults and lower- income households compared to what would otherwise be built on a property. Related program activities include opportunity site acquisition, investment in urban living infrastructure, and technical assistance to communities and developers.

Regional Congestion Pricing Program

The Regional Congestion Pricing Program ensures coordination and alignment between the RTP and state and federal pricing policies and regulations, including the Oregon Transportation Plan, the Oregon Highway Plan, the federal Value Pricing Pilot Program, Section 129 of Title 23 of the U.S. Code, and ODOT's future low-income tolling program. The program includes application of the findings and recommendations from the 2021 Metro Regional Congestion Pricing Study in the RTP and the MTIP. The program also:

- Coordinates tolling with regional planning efforts and corridor development work, including ODOT's Regional Toll Advisory Committee, Statewide Toll Rulemaking Advisory Committee, and Equity and Mobility Advisory Committee.

- Tracks, participates in, and/or advises on pricing programs and projects such as ODOT's Regional Mobility Pricing Project or City of Portland's Pricing Options for Equitable Mobility Task Force.

- Monitors changes in federal and state rulemaking that may impact regional or local pricing policies or programs.

- Tracks recommended actions defined in Section 8.2.2.13 in Chapter 8 of the RTP related to future MTIP actions for toll projects in the region.

DATA AND TOOLS TO SUPPORT PERFORMANCE BASED PLANNING AND IMPLEMENTATION

This section summarizes data and tools that support Metro's performance-based planning and congestion management processes.

Performance-based planning and programming

Over the past two decades, Metro and other transportation agencies have increasingly been applying "performance management" – a strategic approach that uses performance data to support decisions to help achieve desired performance outcomes. Performance management is credited with improving project and program delivery, informing investment decision-making, focusing staff on leadership priorities and providing greater transparency and accountability to the public.

Performance-based planning and programming (PBPP) applies this strategic approach within the planning and programming processes of MPOs, like Metro, and other transportation agencies to achieve desired performance outcomes for the multimodal transportation system. This includes a range of activities and products undertaken by a MPO together with other agencies, stakeholders, and the public as part of a 3C (cooperative, continuing, and comprehensive) process. It includes development of: long-range regional transportation plans, the Congestion Management Process, other plans and processes developed by ODOT and transit providers, such as Strategic Highway Safety Plans, Asset Management Plans, Transit Agency Asset Management Plans and Transit Agency Safety Plans, and programming documents, including State and Metropolitan Transportation Improvement Programs (STIPs and MTIPs).

PBPP attempts to ensure that transportation investment decisions are made – both in long-term planning and short-term programming of projects – based on their ability to meet established goals.

This section summarizes data and research activities to address existing and emerging planning and policy priorities and innovative practices in transportation planning and analysis. These activities help ensure that the region has the resources to fulfill its state and federal transportation performance measurement, monitoring and reporting responsibilities.

Data Collection and Coordination

This section summarizes data collection and coordination to support regional transportation planning and analysis, including regional travel model calibration and validation, and federal congestion management process analysis and performance based planning target setting and monitoring. The majority of Metro data is maintained in Metro's Regional Land Information System (RLIS). This database is comprised of over 150 different (primarily geospatial) data sets, and most of the data sets identified in the sections below are elements. Metro publishes RLIS on a quarterly basis, but many data sets are on different cycles and come from different sources. All data sets are available for review at rlisdiscovery.oregonmetro.gov, along with a date of last

publication. The associated metadata should be consulted in advance to understand how the data were generated and to determine the appropriateness of its use.

Growth Data

Metro Research Center will continue to refine its recently developed Land Development Monitoring System (LDMS) as a component of RLIS. LDMS tracks the location cost and use-type of residential and employment land utilization to inform regional growth management and transport planning. Metro will work to enhance LDMS and RLIS with more equity-related data.

Travel Activity Data

Metro Research Center staff is leading coordination efforts for the next regional travel behavior survey (Oregon Travel Study, Spring 2023-Spring 2024). Additional research will be necessary to ensure that the survey captures traditionally relevant as well as emerging behavior (e.g., extent of Uber/Lyft utilization in place of other travel modes, working from home, and online shopping), and be conducted in a comprehensive and cost-effective manner. One outcome was a shift from traditional one-day travel diaries to smartphone-based weeklong surveys as the primary collection method. The new survey also includes revised sampling, recruitment, and outreach strategies to improve participation among hard to reach and historically marginalized groups.

New and emerging data collection methods (e.g. location-based services data, longitudinal or rolling surveys, emerging needs follow up surveys, mobile phone apps, personal GPS devices, etc.) will also be investigated to help ensure that the survey effort is well positioned to capture rapidly changing trends in personal travel behavior. Metro will partner with other Oregon modeling agencies (via the Oregon Modeling Statewide Collaborative, OMSC) as well as the Southwest Regional Transportation Council (SWRTC) to maximize the geographic span and cross agency utility of the data.

Transportation Safety Data

Metro staff will coordinate with federal, state, regional and local partners to acquire, collect and maintain the data currently used for transportation safety related analysis. This data includes, but is not limited to, crash data provided by ODOT and roadway network, traffic volume and vehicle mile traveled data. Additionally, new data required to provide more in-depth analysis will be pursued, including race and ethnicity of crash victims, posted speed and pedestrian crossing data to name a few.

Multi-Modal Network Data

Metro Research Center will continue to update multimodal data in RLIS. RLIS street centerlines, sidewalks, bike routes and off-street trails networks are updated quarterly and comprise the basis of the multimodal network.

Research staff will also continue to develop and maintain high-resolution multimodal modeling networks. The modeling networks support long-range planning, project evaluation, and system performance monitoring needs. Staff will coordinate with other state agencies via the OMSC as

new modeling networks are developed (e.g. the statewide OpenStreetMap-based network and the statewide multimodal network).

Analysis Tool Maintenance and Enhancement

This section summarizes planned maintenance and enhancement of the regional travel model and MOVES, and the development of a replacement land use model for the now defunct MetroScope model to address existing and emerging planning and policy priorities and innovative practices in regional transportation planning and analysis.

Growth Forecast

Metro Council is required to make its next urban growth boundary decision by the end of 2024. That decision will adopt a Regional Economic Forecast of total future jobs and employment. Upon adoption of those regional control totals Metro will work to create the next generation Distributed Forecast (the Traffic-Analysis-Zone-level growth forecasts used in transportation planning and forecasting). The distributed forecast (likely to be released in 2026) will be available to support future MTIP and RTP update cycles.

Growth Forecast Tools

A replacement land use model will not be in place for the 2026 Distributed Forecast. The Metro Planning, Development and Research Department will work closely with local jurisdictions to modify and prepare a revision to the most recent land use forecast with available methods and best available Regional Economic Forecast information. Metro Research Center is now working to scope and implement a replacement for the MetroScope land use allocation model but it will not be ready in time for the anticipated 2024 Urban Growth Management cycle. We will consider a wide variety of traditional and next-generation tool options to replace Metro Scope with the goal to have such a land use model operational by the subsequent growth management cycle in 2030. This work will directly improve the means of producing future distributed forecasts.

Regional Transportation Model Tools

Metro staff will continue to maintain and enhance the current trip-based travel model. Recent enhancements to the model include the transition from a 2015 to a (pre-COVID) 2020 base year; implementation of a new regional freight model that considers commodity flows associated with supply chains at the global, national, and regional scales; and improvements to the model's ability to represent the effects of roadway pricing across varying user segments. Future activities include incorporation of the results of an updated regional household travel survey and refinements to the bicycle assignment algorithm. Metro staff will stay current with updated versions of the EPA's Motor Vehicle Emission Simulator (MOVES) for estimating emissions of criteria pollutants, greenhouse gases and air toxics.

Analysis Tool Development

This section summarizes development of new analysis tools to address existing and emerging planning and policy priorities and innovative practices in regional transportation planning and analysis. It includes visualization tools, housing and transportation cost tool, project-level evaluation, piloting the multi-criteria evaluation (MCE) tool, and crash prediction modeling tools.

Regional Activity-Based Model

The statewide estimation of the ActivitySim platform will begin in FY23-24, with scoping and design to begin in April 2023. Upon completion of the Oregon Household Survey in 2024, estimation of the activity-based model will begin (FY24-25). Key efforts during 2024-2025 will include the development of staff expertise and a common, statewide estimation of ActivitySim that will be the basis for local deployment of the toolset. FY25-26 will see the deployment of ActivitySim to local jurisdictions—including Metro—and will require further estimation and calibration work to customize for the Portland region. Travel Forecasting staff will coordinate closely with Metro planning to ensure that the activity-based model framework is analytically aligned with anticipated policy questions and will be ready for deployment for the 2028 Regional Transportation Plan.

Regional Freight Model

Development of the freight model is complete and the model is integrated with the trip-based travel demand model. The freight model will be integrated with the ActivitySim activity-based model as that model is implemented at Metro.

Housing and Transportation Expenditure Tool

During the 2018 RTP, the Metro Research Center began development of the framework for a Housing and Transportation Expenditure tool to assess out-of-pocket expenditure for housing and transportation and to project the effects of future transportation investments on housing and transportation costs. Both current and forecast states of the regional land markets and transportation system will be represented in a final tool after further development, testing and refinement. The tool will help to respond to various questions pertaining to gentrification and displacement when assessing transportation investment scenarios.

Economic Value Atlas Decision-Support Mapping Tool

Development of the Economic Value Atlas (EVA) established tools and analysis that align planning, infrastructure, and economic development to build agreement on investments to strengthen our economy. This work:

- Provides mapping and insight into our regional economic landscape.

- Links investments to local and regional economic conditions and outcomes.

- Informs policy and investment – providing a foundation for decision-makers to understand the impacts of investment choices to support growing industries and create access to family-wage jobs and opportunities for all.

The EVA provides a solid data foundation for key regional activities such as:

- outlining a path to pursue policy, actions and investment that help support growing industries and family-wage jobs;

- defining potential areas for partners to collaborate and develop shared investment strategies;

- pinpointing areas of focus for regional investment to bridge local and regional economic development aspirations; and

- providing a data picture of the regional economy to align investments that achieve the coordinated vision of Greater Portland 2020, the 2040 Growth Concept and the Regional Transportation Plan.

This work supports regional transportation planning and investment decisions by:

- Highlighting key intersects between transportation + economic conditions that can guide project prioritization criteria incorporated into the next 3-year RFFA cycle.

- Building a granular understanding of relative economic strengths and challenges among communities in the region to inform local transportation system plans and area studies, regional investment areas, corridor refinement planning and planning studies, and advance more strategic transportation project prioritization and investment based on surrounding economic conditions.

- Supporting multiple applications by ongoing regional programs in Metro's Planning, Development and Research Department.

Displacement Monitoring Tool

First identified as a key priority for the RTP transportation equity evaluation in 2017, involuntary displacement continues to be of concern in the region. Specifically, policymakers and marginalized communities desired to understand the potential displacement impacts to result in investment as well as what proactive mitigation strategies may be put into effect in advance to address the displacement risk. Through development of the 2018 RTP transportation equity system evaluation method, it was determined the RTP system analysis would not be able to look at displacement risk due to the limitations of the forecasting tool.

Nonetheless, to honor the input received and recognize the concern about displacement risk from public investment in the transportation system, the 2018 RTP recommended development of a streamlined displacement risk tool, which can help inform plans, project designs, and other components of transportation investment. Since 2018, the Southwest Equitable Development Strategy (SWEDS) developed a displacement risk method that is informing development of a displacement risk monitoring tool in the future.

Metro's Data Resource Center (DRC) is currently researching methods of monitoring displacement risk in the region, which will likely include some of the demographic, housing, and business data that Metro already collects or compiles. Metro's displacement research is evolving alongside other analytical areas, including monitoring geographic changes in land use and demographics in the region. A displacement monitoring tool will help policy makers understand where displacement risk is heightened in the region, as well as understand what indicators are increasing the risk. This information will in turn help policy makers work with stakeholders and constituents to identify policies that can help mitigate displacement, especially in areas where public investment is occurring.

Crash Prediction Modeling Tool

Better understanding and evaluation of how projects, programs and strategies impact transportation safety system wide are key elements to effectively planning for safety and achieving safe system programs such as Vision Zero. Metro staff will coordinate with federal partners and other MPOs to develop and pilot the use of crash prediction modeling tools to assess safety performance system wide.

Social Vulnerability Explorer

Metro's Data Resource Center has developed a Social Vulnerability Explorer[11], which provides an introductory point of access to regional indices and indicators related to potential social vulnerability in the five-county Portland metropolitan region, including Clackamas, Columbia, Multnomah, and Washington counties in Oregon and Clark County in Washington. The application enables exploratory data analysis and visualization, as well as comparisons of user-specified areas to regional averages.

The online explorer was built as part of a larger Social Vulnerability Tools project[12], which sought to identify which communities in the region experience barriers to emergency services and programs before, during, and after disasters. Besides helping to craft a common understanding of social vulnerability in the region, the Social Vulnerability Tools project also helped to create a set of social vulnerability data, including input indicators and output indices.

The Social Vulnerability Explorer was specifically built for the purpose of allowing those that do not have access to or experience with mapping software to use an online internet browser to explore and visualize the geographic distribution of and relationship between indicators and indices in the Social Vulnerability Tools project.

Potential use cases of the Social Vulnerability Explorer include:

- Emergency management and human or health services professionals can understand the demographic composition of service territories or investment areas, as well as the various types of vulnerabilities that may be reflected in their respective constituencies.

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[11] https://gis.oregonmetro.gov/social-vulnerability-explorer/
[12] https://rdpo.net/social-vulnerability-tools-project

- GIS professionals can conduct exploratory visualization and analysis, specifically as it relates to the intersection of multiple indicators, which can be done more quickly and efficiently with the online tool than with traditional desktop-based mapping software.

- Community-based organizations can quantify the demographic composition of their service areas – perhaps for grant writing.

- Academics or researchers can compare demographics between neighborhoods and other areas of interest, such as transportation corridors, municipalities or the region.

VisionEval (VE-RSPM) Climate Analysis and Implementation Monitoring Tool

The VisionEval framework is built on the "GreenSTEP family" of models developed by the Oregon Department of Transportation (ODOT) to assist in the development of plans to reduce greenhouse gas (GHG) emissions from light-duty vehicles in order to meet Oregon State statutory goals. The RSPM (Regional Strategic Planning Model) was developed by ODOT as an offshoot of the GreenSTEP model to support the preparation of metropolitan area scenario plans. The name reflects a broadening of the policies, beyond state statutory requirements. Metro and consulting staff are using and enhancing Metro's VE-RSPM to monitor our progress toward our climate goals achieved by RTP projects and policies.

Monitoring and Reporting Tools

Performance monitoring measures identified in Chapter 4, Appendix J and Appendix L are used to track changes in system performance and implementation progress over time and between scheduled updates to the RTP. Reporting these changes provides valuable information on trends and conditions using actual empirical or observed data to the extent possible in advance of RTP updates to assess how the transportation system is performing and identify possible policy or strategy adjustments that may be needed.

This section summarizes information systems and data resource coordination efforts that Metro is doing or will do to ensure that the region has the resources to fulfill its transportation performance-based planning, programming and reporting responsibilities.

Monitoring Data and Information Systems

In order to monitor and evaluate the regional transportation system, Metro is working with regional partners to refine and implement future performance measurement systems. Expanded data collection is a critical part of this effort. Metro Research Center staff will continue to investigate new and emerging data sources and data collection methods (e.g., location-based services data, longitudinal or rolling surveys, mobile phone apps, personal GPS devices, etc.) to support future monitoring and reporting. Research Center staff will also continue to collect and process National Performance Management Research Data Set (NPMRDS) data for federally-required performance monitoring purposes. Staff will also continue to explore and support the ODOT-provided auto travel speed and volume data available via the Regional Integrated Transportation Information System (RITIS) platform.

Congestion Management Process Data Collection and Monitoring

This section summarizes the region's approach to monitoring and reporting on the progress implementing the RTP through the regional Congestion Management Process (CMP). The great challenge for establishing and maintaining a monitoring program has been the availability of data. Historically, collecting and managing data has been expensive and difficult. With advancements in Intelligent Transportation Systems (ITS) in the region, more and better data is available today and will continue to grow with implementation of data collection projects identified in the Regional Transportation System Management and Operations (TSMO) plan (last updated in 2021).

PORTAL

PORTAL is a traffic information system developed by Portland State University's ITS Lab. The purpose of the system is to implement the U.S. National ITS Architecture's Archived Data User Service (ADUS) for the Portland Metro area. PORTAL shares U.S. Department of Transportation's vision to improve transportation decisions through the archiving and sharing of ITS generated data. As the regional traffic information data warehouse for the Portland Metro area, PORTAL requires continuous support, maintenance and upgrades. Currently PORTAL is integrated with Google maps and provides facility specific information on:

- Real time traffic speeds
- 15-minute average speeds of last five weekdays
- Live camera images
- Locations of incidents
- Total vehicle miles traveled
- Total vehicle hours traveled
- Average travel time
- Average traffic speed
- 95th percentile travel time
- 95th percentile traffic speed

The next stage in PORTAL development is to link GIS data with PORTAL to increase its capabilities. Future plans call for PORTAL reporting levels of congestion, travel time index, and additional freight, transit, and non-motorized data.

Arterial Performance Measurement

A substantial portion of the region's congestion is experienced on the regional arterial network. However, many of the region's arterials lack the traffic detection and communications infrastructure to adequately measure arterial system performance. As a result, Metro has made it a high priority goal to expand traffic monitoring and transportation system condition data collection capabilities on arterials throughout the region. Arterial performance measurement in the form of travel times, travel speeds, mode use, and potentially origin-destination data will

support engineering and planning decision-makers, enabling more efficient investments of limited funds. Provision of this data in real-time or near real-time makes the data even more useful for transportation professionals and the traveling public. Today, TSMO partners around the region make use of media access control (MAC) address reading technology at strategic locations to cover major arterials region wide. This data is stored and used in PORTAL. The arterial performance data, such as real-time speeds, is made available to the public. The data will be used to help predict travel times under recurring or non-recurring events.

Climate Smart Strategy Monitoring

Appendix J contains a complementary set of performance measures and performance monitoring targets specific to tracking implementation of the Climate Smart Strategy adopted by JPACT and the Metro Council in 2014 and report on progress. The Climate Smart Strategy performance measures and targets are used to monitor and assess whether key elements or actions that make up the strategy are being implemented, and whether the strategy is achieving expected outcomes. The Climate Smart Strategy performance monitoring targets are not policy targets, but instead reflect a combination of the planning assumptions used to evaluate the Climate Smart Strategy and outputs from the evaluation of the adopted strategy.

EXHIBIT A: FEDERAL PERFORMANCE MANAGEMENT MEASURES AND TARGETS FOR THE PORTLAND REGION FOR THE SECOND REPORTING PERIOD (2022-2025)

These measures and targets were adopted in Appendix L of the 2023 Regional Transportation Plan on November 30, 2023.

Federal TPM Measures and Targets Second Reporting Period (2022-2025)	2022 performance baseline	2023 (2-year performance target)	2025 (4-year performance target)
Safety – Fatalities and Serious Injuries[1]*			
Number of fatalities	93	40	31
Fatalities per 100 million vehicle miles traveled	0.9	0.4	0.3
Number of serious injuries	512	293	229
Serious injuries per 100 million vehicle miles traveled	4.8	2.6	2.0
Number of non-motorized fatalities and serious injuries	129	72	57
Asset Management – Pavement Condition*			
Percent of pavement on the Interstate System in good condition	39.9%	30%	30%
Percent of pavement on the Interstate System in poor condition	1.0%	1.5%	1.5%
Percent of pavement on the non-Interstate NHS in good condition	10.0%	12%	12%
Percent of pavement on the non-Interstate NHS in poor condition	20.5%	20%	20%
Asset Management – Bridge Condition*			
Percent of NHS bridges classified in good condition	6%	5%	5%
Percent of NHS bridges classified in poor condition	1%	1%	1%
National Highway System Performance**			
Percent of person-miles traveled on the Interstate System that are reliable	59.4%	43%	43%
Percent of person-miles traveled on the non-Interstate NHS that are reliable	82.4%	66%	66%
Freight Movement on the Interstate System – Freight Reliability Targets**			
Truck Travel Time Reliability (TTTR) Index	2.52	3.10	3.10

[1] The 2022 safety performance baseline is the 2016-2020 time period.
*Data Source: Oregon Department of Transportation
** Data Source: National Performance Management Research Dataset (NPMRDS)

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If you picnic at Blue Lake or take your kids to the Oregon Zoo, enjoy symphonies at the Schnitz or auto shows at the convention center, put out your trash or drive your car – we've already crossed paths.

So, hello. We're Metro – nice to meet you.

In a metropolitan area as big as Portland, we can do a lot of things better together. Join us to help the region prepare for a happy, healthy future.

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