BEFORE THE METRO COUNCIL

FOR THE PURPOSE OF ADOPTING THE 2021 REGIONAL TRANSPORTATION SYSTEM MANAGEMENT AND OPERATIONS STRATEGY, REPLACING THE 2010 REGIONAL 2010-2020 TRANSPORTATION SYSTEMS MANAGEMENT AND OPERATIONS ACTION PLAN	)))))))	RESOLUTION NO. 21-5220 Introduced by Chief Operating Officer Marissa Madrigal in concurrence with Council President Lynn Peterson

WHEREAS, the Regional Transportation Plan (RTP) is the federally-recognized metropolitan transportation plan for the greater Portland region, and must be updated every five years; and

WHEREAS, the Metro Council adopted the 2010 RTP by Ordinance No. 10-1241B on June 10, 2010, which included the region's first Regional Transportation Systems Management and Operations (TSMO) Action Plan as a component of the RTP; and

WHEREAS, the 2010 TSMO Action Plan gave direction to the regional TSMO program partners to collaborate and invest in multimodal traffic management, traveler information, traffic incident management and transportation demand management strategies to effectively and efficiently manage the region's transportation system; and

WHEREAS, the Metro Council adopted the 2018 RTP by Ordinance No. 18-1421 on December 6, 2018, which identified four overarching policies for improving our regional transportation system – equity, safety, climate and congestion relief– and reaffirmed the need to effectively and efficiently manage our regional transportation system; and

WHEREAS, federal law requires metropolitan planning organizations such as Metro to adopt a Congestion Management Process with performance measures and targets; and

WHEREAS, ongoing efforts to address congestion in the region include directing growth in designated centers and corridors served by high-quality transit in combination with investments in system and demand management strategies, improving transit service and reliability, increasing bicycle and pedestrian connections and adding roadway capacity in targeted ways; and

WHEREAS, in 2021 Metro convened an 11-member TSMO Stakeholder Advisory Committee (SAC) consisting of Metro's Planning and Development Deputy Director, transportation engineers, planners, operators, researchers, transportation agency leaders and community leaders tasked with applying an equity focus to the TSMO vision, goals, objectives, performance measures, targets and actions; and

WHEREAS, Metro and the Oregon Department of Transportation (ODOT) and consultants formed a project team that engaged stakeholders through a survey, an online workshop, interviews, focus groups, and discussions with the Metro Council and regional technical and policy advisory committees, including the TSMO SAC, the Transportation Policy Alternatives Committee (TPAC), TransPort (a subcommittee of TPAC) and the Joint Policy Advisory Committee on Transportation (JPACT) between December 2020 through August 2021; and

WHEREAS, the 2021 TSMO Strategy establishes a new regional vision, goals, objectives, performance measures, targets and actions to provide reliable, agile, and connected travel choices so that all users are free from harm, and to eliminate the disparities experienced by Black, Indigenous, people of color and people with low incomes; and

WHEREAS, the 2021 TSMO Strategy will replace the 2010 TSMO Action Plan and inform development of the 2023 RTP; and

WHEREAS, Metro held a 30-day public comment period on the 2021 TSMO Strategy from September 24 to October 25, 2021; and

WHEREAS, on November 18, 2021, JPACT recommended approval of the 2021 TSMO Strategy by the Metro Council; now therefore,

BE IT RESOLVED THAT:

1. The Metro Council hereby adopts as a component of the 2018 RTP the 2021 TSMO Strategy, as shown in the attached Exhibit A and amended by the "Summary of Comments Received and Recommended Actions" in Exhibit C.

2. The "Summary of Comments Received and Recommended Actions," attached as Exhibit C, is incorporated by reference and any amendments reflected in the recommended actions are included in Exhibit A.

ADOPTED by the Metro Council this sixth day of January, 2022.

Lynn Peterson, Council President

Approved as to Form:

Carrie MacLaren, Metro Attorney

Adopted January 6, 2022
Resolution 21-5220

2021 Transportation System Management & Operations (TSMO) Strategy

Portland Metro Region

Metro

FEHR & PEERS

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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 strives for 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. JPACT serves as the MPO board for the region in a unique partnership that requires joint action with the Metro Council on all MPO decisions.

Project website:
https://www.oregonmetro.gov/tsmo

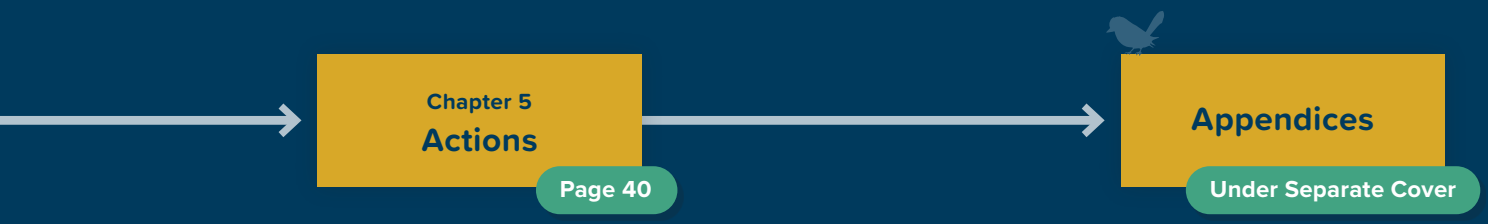
The preparation of this report was financed in part by the U.S. Department of Transportation, Federal Highway Administration and Federal Transit Administration. The opinions, findings and conclusions expressed in this report are not necessarily those of the U.S. Department of Transportation, Federal Highway Administration and Federal Transit Administration.

Table of Contents

For operators of greater Portland's roads, highways, transit, shared-use mobility services, freight and active transportation facilities, this TSMO Strategy will bolster partnerships to achieve a shared vision.

With increased coordination, we will effectively and efficiently manage publicly funded transportation assets, optimize operations for reliability, innovate through technology research and advance the Regional Transportation Plan policy priorities.

The actions in this strategy will help people connect to more transportation options that are **equitable, safe, reliable and climate-friendly**.



Executive Summary

This transportation system management and operations (TSMO) strategy is an innovative, holistic, multimodal, and cost-effective approach to managing the region's transportation system. An effective TSMO Strategy prioritizes optimization of the existing transportation system by improving business practices and collaboration, encouraging behavior changes through travel demand management, and using technology to understand and manage how the system operates.

Process

This Strategy's **Vision** and **Goals** define what the transportation system in the region should provide.

The **Objectives** define how progress towards the desired outcomes will be achieved over the next 10 years.

Performance Measures and Targets define how progress will be measured.

Lastly, the **Actions** present time constrained and achievable actions needed to achieve the Goals and Vision.

Equity

This Strategy is rooted in equity with both Goals and Objectives that aim to correct past disparities and undue burdens experienced by **Black, Indigenous, people of color, and people with low incomes**. The Strategy planning process began with an equity focus, developing an assessment tool called the **Equity Tree** that will now apply to TSMO decision making in the region for years to come. The Equity Decision Tree is a tool for widening perspectives from "solving congestion" to "solving disproportional impacts of congestion and transportation" by including the context, choices, and voices that lead to well-defined problems, solutions and is accountable for outcomes.

Vision Statement

Collaborate to provide reliable, agile, and connected travel choices so that all users are free from harm, and to eliminate the disparities experienced by Black, Indigenous, people of color, and people with low incomes.

Goals

Free From Harm

Create a transportation system where all users are free from harm.

Collaboration & Partnerships

Collaborate as effective stewards of the transportation system.

Eliminate Disparities

Eliminate the disparities in the transportation system experienced by Black, Indigenous, people of color, and people with low incomes

Prepare for Change

Manage the system to be agile in the face of growth, disruptions, and changing technology.

Reliable Travel Choices

Provide a transportation system that is reliable for all users.

Connected Travel Choices

Connect all people to the goods, services, and destinations they need through a variety of travel choices.

Performance Measures

Vehicle Miles Traveled (VMT) per Capita

A measure of the average number of auto miles driven per person.

Number of Crashes by Severity

A measure of transportation safety and performance.

Buffer Index

The extra time a traveler adds to their trip (buffer) to ensure on-time arrival.

Agency Collaboration and Communication Events

Frequency of staff collaborating and communicating progress towards TSMO Goals.

System Connectivity

How complete and connected the infrastructure system is for each travel mode.

Targeted TSMO Investments

Distribution of investments regionally and on key corridors for modal efficiency.

Timely Traveler Information

How effectively information is being relayed to travelers to reduce delay associated with planned or unexpected events.

Actions

Planning

- 03 Develop a Mobility on Demand strategy and policy.
- 05 Pilot Origin-Destination data to prioritize TSMO investments.
- 18 Participate in regional public outreach to assist in guiding, listening and learning through TSMO-focused conversations.
- 21 Update the regional ITS Architecture.

Listening & Accountability

- 06 Track and prioritize TSMO Investments for and with Black, Indigenous, people of color, and people with low incomes.
- 13 Create a community listening program.
- 19 Improve TSMO data availability to aid in traveler decisions and behavior.

Data Needs

- 01 Establish TSMO performance measures baseline.
- 12 Explore new TSMO data sources.

Concepts, Capabilities, and Infrastructure

- 02 Inventory and manage regional signal and ITS Communication infrastructure.
- 04 Manage transportation assets to secure the network.
- 07 Continue freight technology and ITS deployment.
- 08 Facilitate ground truthing of emerging technologies.
- 09 Establish a Regional Transit Operators TSMO Group.
- 10 Unify and standardize fare subsidies for transit and MOD.
- 11 Develop an ITS travel time information data collection and distribution plan for RDPO regional emergency routes.
- 14 Create continuous improvement process for existing and new signal systems and related performance.
- 15 Deploy regional traveler information systems.
- 16 Implement integrated corridor management and mainstream into corridor planning.
- 17 Create a TSMO safety toolbox.
- 20 Build and use a TSMO Toolbox to connect gaps in bicycle and pedestrian infrastructure.

Beaverton, OR

Chapter 1

Overview

TSMO focuses on making the most of the existing system.

A Strategy that supports a systems approach must build on existing efforts, align with other regional efforts to manage the transportation system and move the region towards desired outcomes.

1.1 Metro

Metro works with communities, businesses and residents in the Portland metropolitan area to chart a course for the future while protecting the things we love about the place. The region has experienced consistent growth in population, jobs, and housing in the last decade. As the region grows, it brings an influx of new ideas, new opportunities, and new technology, but this growth also strains our transportation system. As the federally designated Metropolitan Planning Organization (MPO) for Clackamas, Multnomah and Washington counties, Metro is tasked with coordinating and planning the transportation system for the area. Metro's elected Council engages community to develop transportation policy that lead to strategies for on expanding transportation options, making the most of existing streets, and improving public transit services, efforts aligned with the goals of Transportation System Management & Operations (TSMO).

1.2 What is TSMO?

TSMO is making the most of what we have, to make the system more efficient and effective for users.

TSMO is a way for transportation professionals to be good stewards of the transportation system by managing and operating the system as efficiently and effectively as possible. TSMO strategies provide alternatives to chasing capacity growth by continuously building more lanes, miles of roadways, and larger intersections. Instead, TSMO aims to get the most out of the existing system by managing demand, improving business practices and collaboration across jurisdictional boundaries, using technology to measure and manage transportation operations and track progress towards regional goals.

TSMO is...

A holistic systems approach

A broad set of strategies

Innovative, cost-effective solutions

TSMO is not...

Large and costly construction projects

1.3 Who is Responsible for TSMO?

Metro partners with the Oregon Department of Transportation (ODOT), counties, and cities in the Portland region to create a TSMO strategy that establishes a shared set of goals, objectives and actions that will advance TSMO in the region.

When it comes to implementing TSMO, it is the responsibility of the agency that owns and operates the system to complete the actions outlined in the regional plan. On state owned roadways, ODOT is responsible for implementing TSMO while responsibility for implementing these strategies on local roadways lies with the City or County. Transit operators, Washington State partners, federal partners and Metro also have roles and responsibilities through TSMO implementation.

Transportation Planning Rule (TPR)

OAR 660.012, the Oregon's Transportation Planning Rule (TPR), stipulates that coordinated land use and transportation plans should increase transportation choices and make more efficient use of the existing transportation system through transportation system management and demand management measures. This approach is core to TSMO.

Many of the transportation plans and strategies within the region include TSMO-related actions and strategies. These plans, developed by Metro and their partner agencies, were used to inform the 2021 TSMO Strategy. Specifically, these plans were used a source for developing goals and actions that are consistent with ongoing efforts across the region.

Transportation Policy Alternatives Committee (TPAC):

TPAC reviews area plans and advises area leaders on transportation investment areas and policies. The group consists of technical staff from several local governments, agencies, and community groups, The goals of this group are aligned with TSMO, as they advise elected officials on policies and projects that will help the region be better stewards of the transportation system.

TransPort

TransPort is a subcommittee of Metro's Transportation Policy Alternatives Committee (TPAC). The group is charged with advancing the TSMO Strategy and providing a forum for cooperative planning and deployment. Broad TransPort participation is encouraged. Core membership consists of seven agencies:

- ODOT
- TriMet
- Metro
- Clackamas County
- Multnomah County
- Washington County
- City of Portland

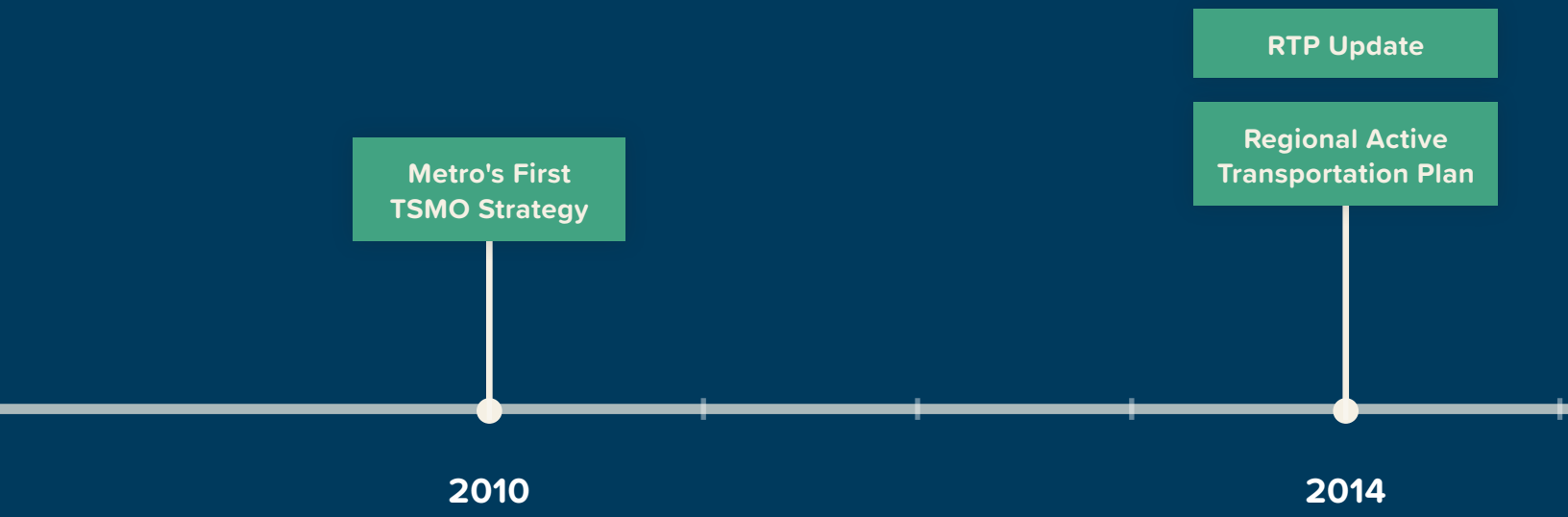
This group, comprised primarily of transportation system operators and engineers who play a key part in coordinating and advancing TSMO in the region.

Multidisciplinary

TSMO participation is multidisciplinary, and requires collaboration across several disciplines, including planners, engineers, emergency responders, demand management specialists, operators, and maintenance professionals. Through the TSMO project development process, these disciplines will each fill different role. Regardless of the stage of the overall TSMO strategy, each role remains engaged to ensure the successful implementation of the plan, or to help redirect the progress to a more successful conclusion.

1.4 History of Regional TSMO Planning

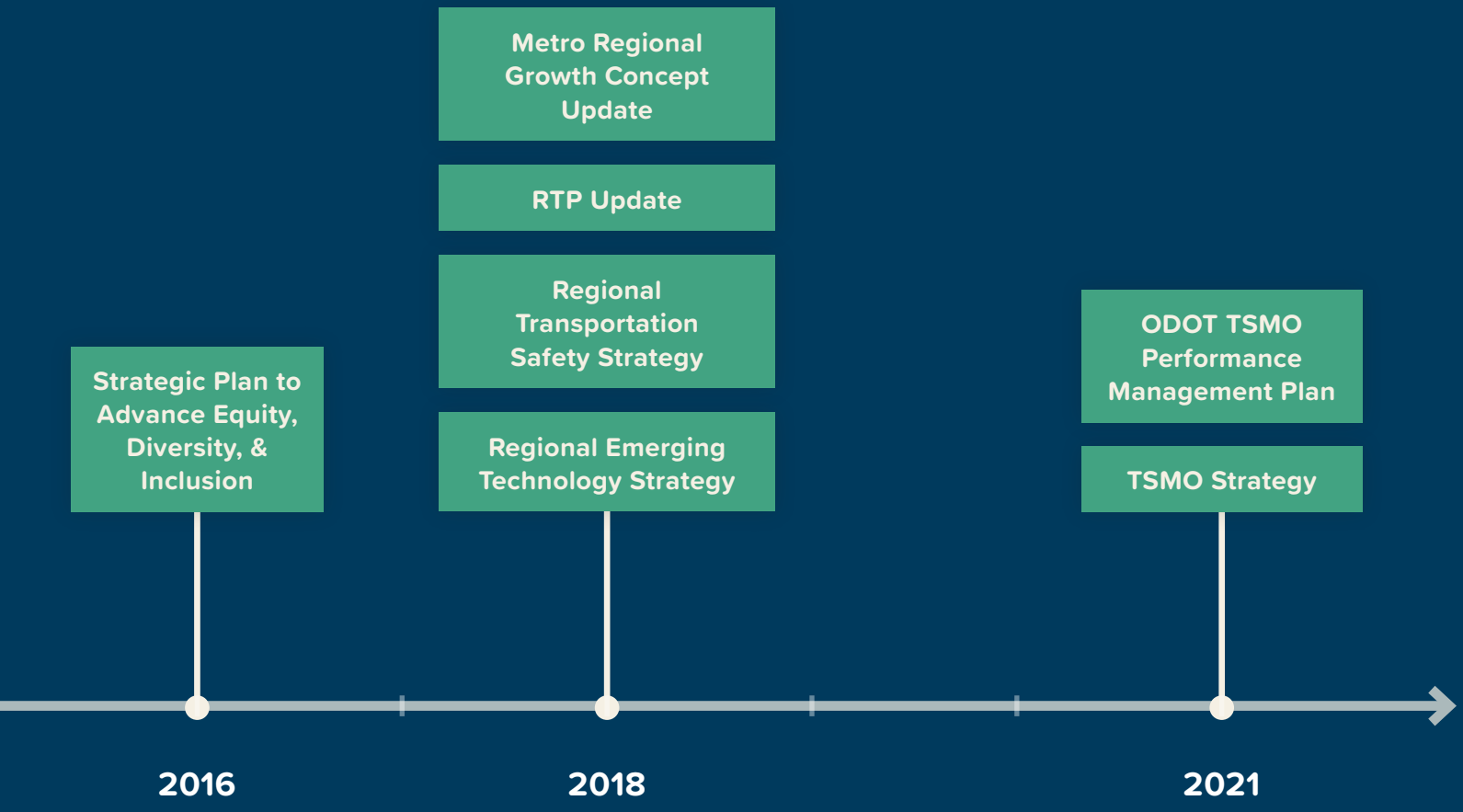
TSMO is not new to the Metro region. The first TSMO Strategy was developed in 2010. Over the last 10 years goals identified in that plan have been supported by other planning efforts including the 2018 Regional Transportation Plan (RTP), Metro's Safety Strategy, and ODOT's TSMO Performance Management Plan. The timeline below depicts the history of TSMO planning in the region and identifies key plans that inform and support this Strategy.



2010: Metro's First TSMO Plan

This plan established the region's first TSMO goals and guiding principles, applied through a list of projects ranging from ITS to travel demand management, which guided regional implementation between 2010 and 2020. A summary of projects included in the 2010 TSMO Plan can be found in **Appendix A**.

- **Reliability**: Provide reliable travel times for people and goods movement.
- **Safety & Security**: Enhance transportation safety and security for all modes.
- **Quality of Life**: Enhance the environment and quality of life by supporting state and regional greenhouse gas reduction and air quality goals.
- **Traveler Information**: Provide comprehensive multimodal traveler information to people and businesses.



2018: RTP Update

The plan is an outcomes-based framework and identifies the following desired outcomes:

- **Equity**: The benefits and burdens of growth and change are distributed equitably.
- **Vibrant Communities**: People live, work, and play in vibrant communities where their everyday needs are easily accessible.
- **Economic Prosperity**: Current and future residents benefit from the region's sustained economic competitiveness and prosperity.
- **Clean Air and Water**: Current and future generations enjoy clean air, clean water, and healthy ecosystems.
- **Climate Leadership**: The region is a leader in minimizing contributions to global warming.

1.5 2021 TSMO Strategy

The 2021 Strategy update created an opportunity to engage a more diverse set of stakeholders and expand the TSMO focus to address the disproportionate impacts of the transportation system on Black, Indigenous, people of color, and people with low incomes.

The 2021 TSMO Strategy is a joint collaboration between Metro and ODOT and benefited from input provided by a diverse set of stakeholders through the Stakeholder Advisory Committee (SAC). The SAC was made up of individuals representing various agencies, community based organizations, and the community at-large. For a full list of SAC members, see **Appendix B**.

The planning process used to create the 2021 TSMO Strategy is shown on this page. This process allowed for input from the SAC and other leadership groups in the region including the Transportation Policy Alternatives Committee (TPAC) and TransPort at the key milestones shown to the right.

The Planning Process

Vision & Goals

The vision for the 2021 TSMO Strategy is an aspirational statement that defines what TSMO should achieve over the life of this strategy. The goals provide strategic direction for collaboration and investments decisions to make progress towards the vision. The priorities and needs that shape the vision and goals for the 2021 TSMO Strategy were shaped by considering three key questions about the region's transportation system:

What do we want to protect?

What do we want to create?

What do we want to avoid?

Objectives

Objectives clarify what each goal should achieve. The 26 objectives in this Strategy are specific, measurable, actionable, and realistic. Over the life of this Strategy, Metro and their partner agencies will track progress towards these objectives and make changes to ensure progress is made.

Performance Measures and Targets

To track progress towards the vision and goals, Metro and their agency partners will rely on the performance measures and targets developed for this Strategy. Throughout the life of the Strategy, the performance measures will indicate how successful the actions are at moving the region towards the vision for the transportation system, including progress on many RTP performance measures.

Actions

The Actions for this Strategy map how stakeholders will achieve the vision and goals over the life of this Strategy. Actions presented in this Strategy reflect input from partner agencies and key stakeholders. Each Action also includes a timeline for achievement, including who will track and report on progress over the next 10 years.

Oregon City, OR

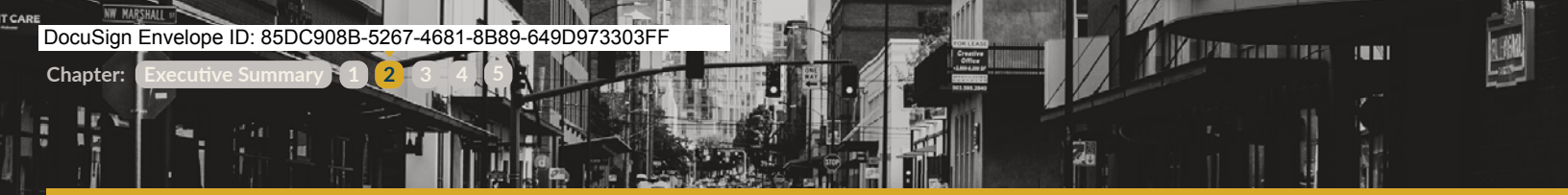
Chapter 2

Equity in TSMO

> By addressing the barriers experienced by Black, Indigenous, people of color, and people with low incomes, we will effectively also identify solutions and remove barriers for other disadvantaged groups.

— Metro's Strategic Plan to Advance Equity, Diversity, & Inclusion.

Equity in transportation means improving equitable outcomes by creating a transportation system that removes barriers and eliminates disparities faced by Black, Indigenous, people of color, and people with low incomes. By defining Transportation System Management & Operations (TSMO) solutions through an equity lens, this Strategy will focus solutions on those most impacted by the negative impacts of the transportation system and improve transportation equity in the region.



TSMO strategies and implementation historically focused on reliability, safety, traveler information, and congestion management. While these elements are not forgotten in this Strategy, the Metro region recognized that equity implications should be incorporated into all of their transportation planning efforts.

In 2016 Metro published their Strategic plan to advance racial equity, diversity and inclusion. This guiding document establishes racial equity "as the approach to ensure that all people who live, work and recreate in the Portland region have the opportunity to share in and help define a thriving, livable and prosperous region.... By addressing the barriers experienced by all of their people of color, we will effectively also identify solutions and remove barriers for other disadvantaged groups." This approach influenced the vision, goals, and projects included in the 2018 Regional Transportation Plan (RTP) update and served as the foundation of the equity focus woven throughout this Strategy.

So how can TSMO address equity issues? The first step is reframing the discussion from focusing on the problem locations, to who is being affected by the problems and how solutions can remove barriers for people who are most burdened. Instead of jumping straight into identifying congestion bottlenecks and solutions to fix them, instead we should ask whether there are certain groups who bear the greatest burden of congestion, do they have access to other reliable modes of travel, and what solutions do they say would be most helpful?

These questions were the basis for creating the Vision, Goals, Objectives, Performance Measures, Targets, and Actions that make up this Strategy.

Navigating the Equity Tree

1. Start at the root and **define a problem**
2. Follow the branches and leaves of the through the Plans level to **identify keys** to solving a problem
3. Continue through the Strategies level to **develop a solution step** to a problem
4. At the tree top, **evaluate and refine** actions, being accountable to the result

Why Equity?

More than **1 in 10** Americans have a mobility disability such as serious difficulty walking or climbing stairs.

People who are Black, Asian, Native American, Pacific Islander or Latino-origin are **4 times more likely** to rely on transit for their work commute than people who are White.

Households in the bottom 90% income bracket spend **twice the amount on transportation** than households in the top 10% income bracket spend each year

Pedestrian Fatality Rates

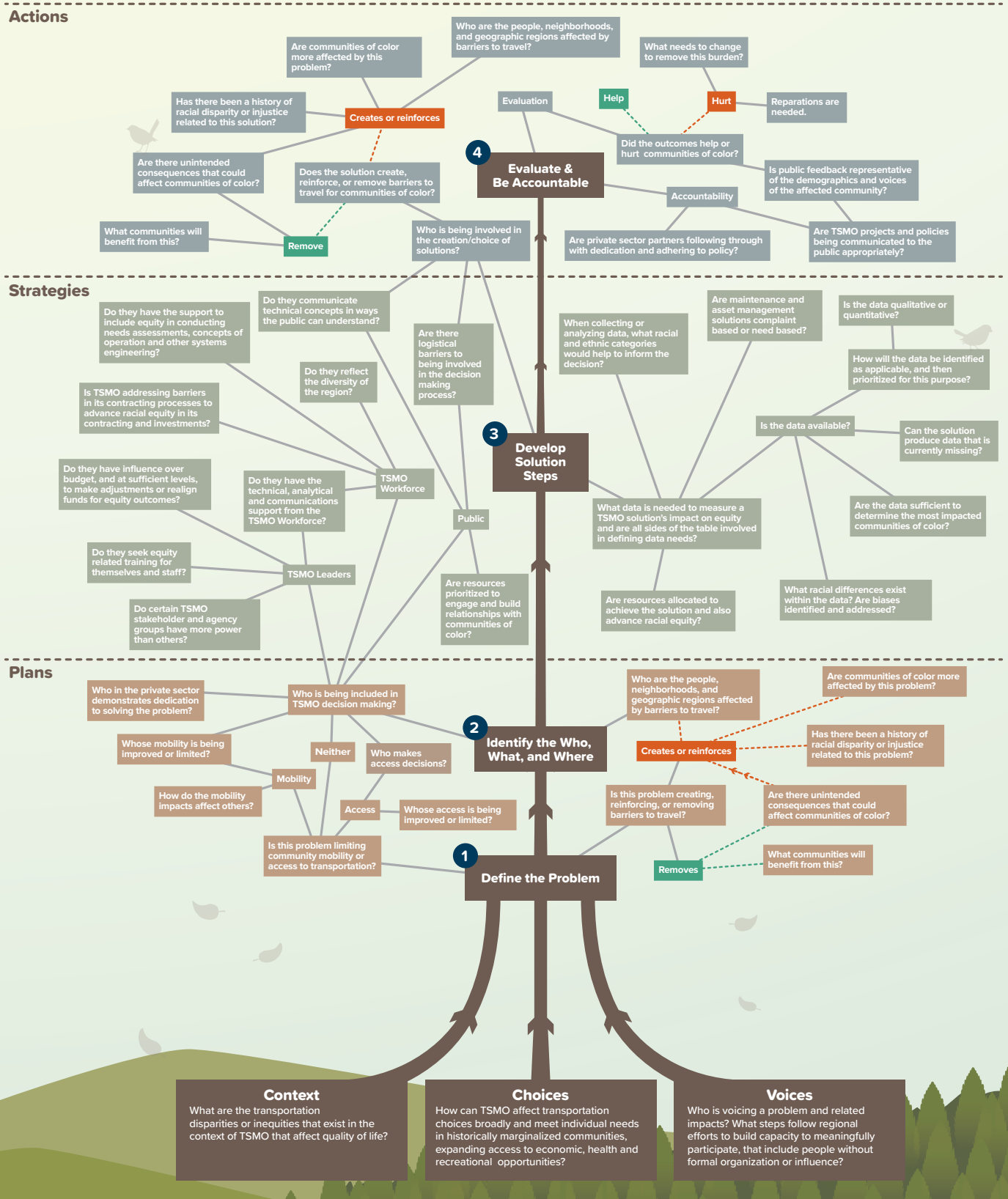
Households Without a Car

Sources: Smart Growth America; Centers for Disease Control and Prevention; Census; Treasury

TSMO Equity Tree

oregonmetro.gov/tsmo

As a user moves up the tree from root to branches, they 1 define the problem, 2 identify keys to solving the problem, 3 develop a solution, and then 4 evaluate and refine the actions to be accountable for the result.



Chapter 3

Vision, Goals, & Objectives

Vision, Goals, and Objectives illustrate what the Transportation System we desire to create looks like.

The Vision for the future of the greater Portland region's Transportation System Management & Operations (TSMO) strategy was created by asking three questions: What do we want to protect? What do we want create? What do we want to avoid? Together the Vision, Goals, and Objectives illustrate what the TSMO Strategy advances for the transportation system. This is the system the region wants to move towards over the lifetime of this Strategy.

More information on the development of the Vision, Goals, and Objectives is included in **Appendix C.**

3.1 The Vision

The vision for the Strategy is an aspirational statement that defines what implementation of the Strategy should achieve over of the next ten years.

Collaborate to provide reliable, agile, and connected travel choices so that all users are free from harm, and to eliminate the disparities experienced by Black, Indigenous, people of color, and people with low incomes.

Pearl District, Portland

3.2 Goals & Objectives

The six goals for the Strategy provide direction for collaboration and investment decisions that will result in progress towards the Vision. These goals will move the region towards a transportation system that travelers can use without harm, that provides access for all travelers, reflects the needs and desires of all voices, and that supports travelers to access and choose different modes when traveling.

Each goal has a set of objectives that reflect collaboration with the Stakeholder Advisory Committee (SAC). These objectives define how the region will achieve the six goals.

1. Free From Harm

Create a transportation system where all users are free from harm.

Objectives

1.1 Manage the transportation system to reduce negative health impacts so that public health risk does not adversely affect people's mode choice.

1.2 Ensure Black, Indigenous, people of color, and people with low incomes benefit from safety improvements.

1.3 Provide a transportation system where human error does not result in serious injury or loss of life.

1.4 Ensure people of color and low income individuals can safely access multiple low stress mode choices and routes within the transportation system by improving access to and accessibility of transit stops, pedestrian, and bicycle facilities.

2. Regional Partnerships & Collaboration

Collaborate as effective stewards of the transportation system.

Objectives

2.1 Collaborate to provide consistent travel experiences across jurisdictional boundaries through knowledge-sharing on best approaches to multimodal traffic signal timing integrated payment and scheduling systems, integrated corridor management, and data sharing between agencies.

2.2 Collaborate with emergency management when prioritizing investments on key emergency response routes.

2.3 Collaborate with and educate travelers.

2.4 Improve interagency collaboration to ensure efficient operations by identifying and addressing barriers in communication when making decisions about network operation or expansion.

3. Eliminate Disparities

Eliminate the disparities in the transportation system experienced by Black, Indigenous, people of color, and people with low incomes.

Objectives

3.1 Prioritize reaching underrepresented groups when providing traveler information and community outreach and ensure that modal access and traveler information is free from technological and financial barriers.

3.2 Identify and correct disparities when planning, operating, and maintaining the transportation system (e.g., transit access, exposure to air toxics, allocation of funds).

3.3 Identify and increase awareness of the unique travel experiences of Black, Indigenous, people of color, and people with low incomes.

3.4 Reduce the transportation cost burden experienced by Black, Indigenous, people of color, and people with low incomes.

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4. Connected Travel Choices

Connect all people to the goods, services, and destinations they need through a variety of travel choices.

Objectives

4.1 Connect decentralized travel options to facilitate viable destinations in Regional Centers, Town Centers, and employment areas outside downtown Portland.

4.2 Prioritize the completion and expansion of planned transit and active mode networks when investing discretionary revenues especially to destinations with limited travel choices.

4.3 Connect goods and delivery services to people and businesses by providing for and managing last mile connections for goods delivery.

4.4 Increase availability and accessibility of low-cost transportation options for Black, Indigenous, people of color, and people with low incomes and acknowledgement that a significant percentage of people will not have access to an automobile.

5. Reliable Travel Choices

Provide a transportation system that is reliable for all users.

Objectives

5.1 Manage recurring and non-recurring congestion to improve travel time reliability for all users, including active transportation, transit, and freight.

5.2 Expand travel time reliability improvements for Black, Indigenous, people of color, and people with low incomes burdened with long travel distances.

5.3 Manage critical freight corridors to create reliable routes for freight movement between key destinations.

5.4 Communicate expected changes in reliability so that travelers can make informed travel choices.

6. Prepare for Change

Manage the system to be agile in the face of growth, disruptions, and changing technology.

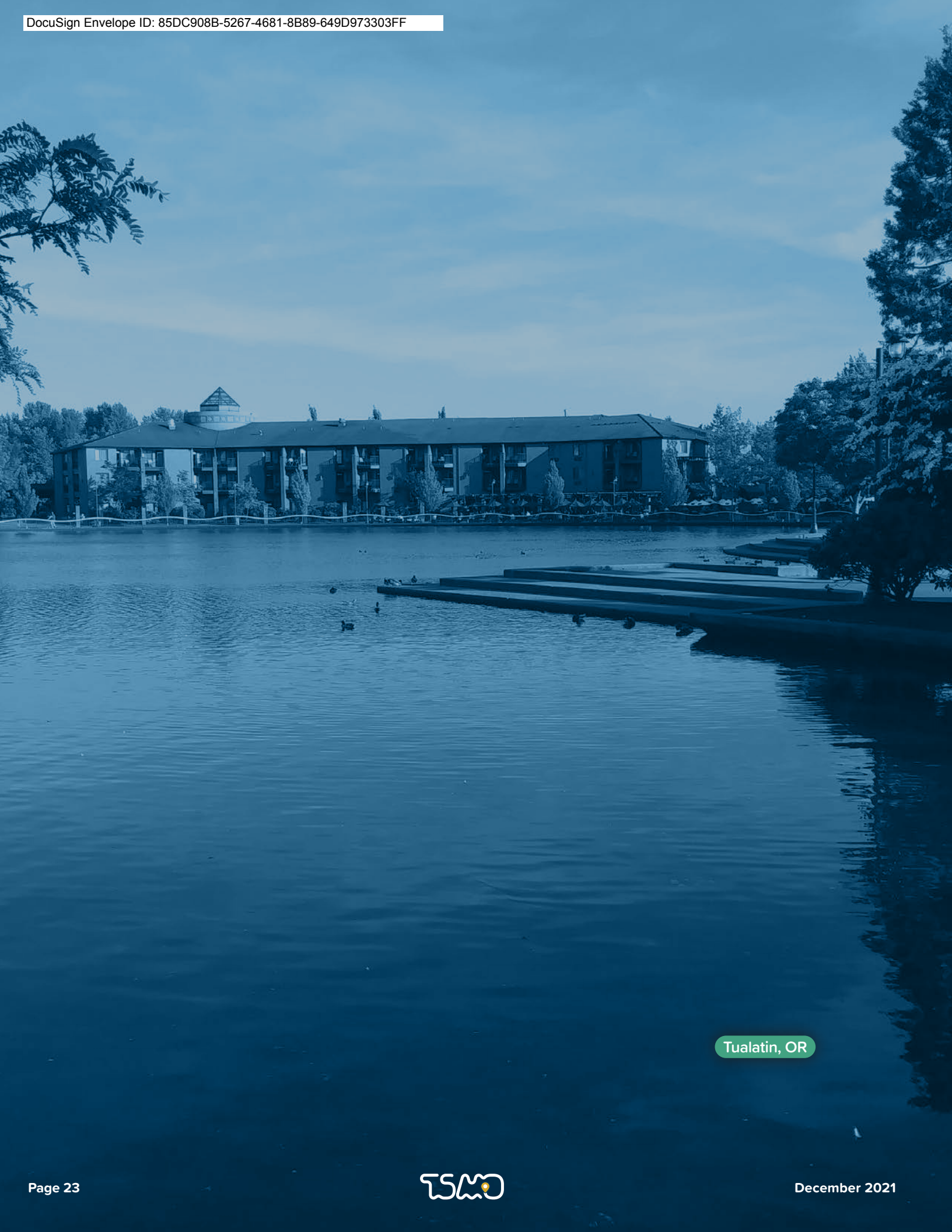
Objectives

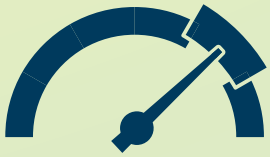
6.1 Plan and design a flexible transportation network that can adapt to new technology and travel choices that are consistent with the region's desired land use and transportation outcomes.

6.2 Manage projects and resources to be responsive to changes in land use planning and growth patterns.

6.3 Minimize long term disruptions to the transportation system by creating resiliency to climate change and economic shifts.

6.4 Provide public agency staff with the data, tools, models, and training needed to assess long-term disruptive transportation trends.





Chapter 4

Performance Measures & Targets

Seven performance measures were identified that will be used to measure progress toward the Strategy's Goals & Objectives. These measures are Transportation System Management & Operations (TSMO):

- → Vehicle Miles Traveled (VMT) per Capita
- → Number of Crashes by Severity
- → Buffer Index
- → Agency Collaboration & Communication Events
- → System Connectivity
- → Targeted TSMO Investments
- → Timely Traveler Information

More information on the development of these Performance Measures and Targets are included in **Appendix D**.

Vehicle Miles Traveled (VMT) per Capita

A measure of the average number of auto miles driven per person.

This performance measure supports the following TSMO goals:

Free From Harm | Collaboration & Partnerships | Eliminate Disparities | Prepare for Change | Reliable Travel Choices | Connected Travel Choices

Key Performance Metrics

Regional VMT per Capita measures how much travelers are driving in the region.

- The measure is related to air toxics and greenhouse gas emissions, but does not account for vehicle electrification. Historically, VMT responded to land use context and economic changes (as the economy grew, so did VMT). However, as gas prices rose in 2008, VMT and the economy began to separate. VMT is still related to economics, and can represent upward economic movement, but new technology, higher seat utilization, and greater mobility choices can help reduce overall VMT, reducing recurring and non-recurring congestion. VMT can also be measured by geography determining an area's VMT generation and exposure.

VMT Exposure per Capita is an indicator of the transportation systems impact.

- Exposure to VMT can result in increased exposure to air toxics and higher crash risk. Historically, major routes have been constructed in Black, Indigenous, people of color, and low income neighborhoods, disproportionately exposing those communities. Measuring VMT exposure tracks these impacts.

VMT Generation per Capita is an indicator of transportation choices and economic activity.

- VMT per capita is a measure of land use efficiency and travel choice. Areas with higher densities, mixed uses, and robust networks for walking, bicycling, and transit produce lower VMT per capita. However, VMT per capita may also be low due to low incomes, high unemployment, and a lack of travel choices. Comparing VMT per capita across the region can help identify areas with disparate outcomes.

Exploratory Metrics

Number of Coordination Events and Number of Agencies Involved.

- Coordination between agencies can take a variety of forms. Making connections across departments and agency boundaries deepens the level of knowledge and empathy for the work and challenges staff face across the region.
- Coordination events build relationships and communication paths that lead to information sharing that allow agencies to be more agile and responsive in a rapidly changing environment.

Performance Measures & Targets

Vehicle Miles Traveled (VMT) per Capita	» Reduce average vehicle miles traveled per person by 10 percent from 2021.
Number of Crashes by Severity	» Show progress toward meeting the 2035 Vision Zero Goal (Eliminate Fatal and Severe Injury crashes), and collisions in Equity Focus Areas are equal to or less than the regional average.
Buffer Index	» Buffer Index (vehicle or transit, calculated as noted) is below 50% for all identified routes.
Agency Collaboration & Communication Events	» 100% of engagement activities involve Black, Indigenous, people of color, and people with low incomes and 100% of agencies are sharing data annually.
System Connectivity	» 100% of signals on identified routes have communications. » There is a 10% increase (from 2021) in the connectivity index and percent of households/employers within 10 minutes of transit, and a 15% increase in these metrics in Equity Focus Areas
Targeted TSMO Investments	» TSMO investments benefiting the identified key corridors/geographies make up at least 50% of total TSMO investments in the region.
Timely Traveler Information	» 50% of transit shelters, and 100% of shelters in Equity Focus Areas have real-time arrival displays. » 100% of agencies have a traveler information system plan.

Direct Relationships

As **VMT per Capita** goes up ↑, **increases** ↑ are expected for:

- Tailpipe air toxics and greenhouse gases
- Economic activity
- Volume of cut-through traffic
- Crash risk

Inverse Relationships

As **VMT per Capita** goes up ↑, **decreases** ↓ are expected for:

- Use of non-auto modes such as walking, biking, and transit
- Seat utilization

Number of Crashes by Severity

A measure of transportation safety and performance.

This performance measure supports the following TSMO goals:

Free From Harm | Collaboration & Partnerships | Eliminate Disparities | Prepare for Change | Reliable Travel Choices | Connected Travel Choices

Key Performance Metrics

Total Crashes per MVMT

» Total Crashes per Million Vehicle Miles Traveled (MVMT). Metro's Safety Strategy aims to eliminate severe crashes (crashes with major injuries or fatalities) by 2035. Crashes on the transportation network cause non recurring congestion, and fatal crashes result in longer incident response times with sustained impacts. The TSMO Strategy aims to reduce harm and reduce the non-recurring congestion created by incident by improving the safety of the system overall. Therefore, tracking total crashes should be evaluated inthe following subsets:

- Crash rate by severity (crashes/MVMT/per100,000 capita).
- Crash rate by mode (crashes/MVMT/per100,000 capita).
- Crash frequency of fatal, pedestrian, andbicycle related crashes (number of crashes).
- Ratio of crashes that occur in equity focus areasto total regional crashes (percent).

Exploratory Metrics

Crash Demographics

» Current crash demographics is not readily available. Metro's Safety Strategy identifies that "Traffic deaths are increasing and are disproportionately impacting people of color, people with low incomes and people over age 65." This metric would improve the region's understanding of the disproportional impacts of crashes, and how to correct them.

Secondary Crashes

» Secondary crashes are those that occur at the scene of the original crash or in the queue, even in the opposite direction. Current crash reporting documents do distinguish between a primary and secondary crash. This metric would help Metro measure the region's ability to manage, clear, and reopen facilities following an incident.

Crash Risk

» Crash analysis is currently conducted using historical data and is therefore reactive. Technology and data sources are available to identify locations of increased crash risk before crashes occur but can be costly and privately owned. This metric would help the region be proactive in transportation safety improvements.

Average Miles Biked or Walked

» Pedestrian and Bicycle miles traveled are lower than the total vehicle miles traveled. Therefore, when evaluating pedestrian and bicycle crash rates per miles traveled data on the average trip length or total miles walked or biked, better correlates than the total miles traveled by vehicles in the region. A data source for this measurement needs to be researched and determined for this work. These could include traveler surveys or data from a third-party provider.

Performance Measures & Targets

Vehicle Miles Traveled (VMT) per Capita	» Reduce average vehicle miles traveled per person by 10 percent from 2021.
Number of Crashes by Severity	» Show progress toward meeting the 2035 Vision Zero Goal (Eliminate Fatal and Severe Injury crashes), and collisions in Equity Focus Areas are equal to or less than the regional average.
Buffer Index	» Buffer Index (vehicle or transit, calculated as noted) is below 50% for all identified routes.
Agency Collaboration & Communication Events	» 100% of engagement activities involve BIPOC and low income communities and 100% of agencies are sharing data annually.
System Connectivity	» 100% of signals on identified routes have communications. » There is a 10% increase (from 2021) in the connectivity index and percent of households/employers within 10 minutes of transit, and a 15% increase in these metrics in Equity Focus Areas
Targeted TSMO Investments	» TSMO investments benefiting the identified key corridors/geographies make up at least 50% of total TSMO investments in the region.
Timely Traveler Information	» 50% of transit shelters, and 100% of shelters in Equity Focus Areas have real-time arrival displays. » 100% of agencies have a traveler information system plan.

Direct Relationships

As **Number of Crashes by Severity** goes up ↑, **increases** ↑ are expected for:

- Black, Indigenous, people of color, and people with low incomes that are seriously injured or killed while using the transportation system
- Non-recurring congestion events related to crashes
- Resources needed for incident management
- Tailpipe air toxics & greenhouse gases

Inverse Relationships

As **Number of Crashes by Severity** goes up ↑, **decreases** ↓ are expected to any progress toward reducing:

- Disproportional impacts of transportation on neighborhood safety

Buffer Index

The extra time a traveler adds to their trip (buffer) to ensure on-time arrival.

This performance measure supports the following TSMO goals:

- Free From Harm
- Collaboration & Partnerships
- **Eliminate Disparities**
- Prepare for Change
- **Reliable Travel Choices**
- **Connected Travel Choices**

Key Performance Metrics

Buffer Index

» Travel time reliability is measured by taking the ratio of the longest to shortest duration trips for trips of the same distance on the network. Buffer index measures is the variability between 90th percentile and 10th-percentile or run time for transit, or between the 90th percentile and average travel time for vehicles, as calculated by the following equation:

$$\frac{90\text{th-Percentile} - 10\text{th-Percentile}}{10\text{th-Percentile}} = \textit{Transit Buffer Index (\%)}$$

$$\frac{90\text{th-Percentile} - 50\text{th-Percentile}}{50\text{th-Percentile}} = \textit{Vehicle Buffer Index (\%)}$$

A higher percent value indicates a higher degree of variability during congested hours. Buffer index can measure by mode, and the TSMO strategy will report on changes to Transit Buffer Index and Vehicle Buffer Index:

- Transit Buffer Index for Frequent Bus Routes & Light Rail
- Transit Buffer Index for BIPOC and Low-Income Service Routes
- Vehicle Buffer Index for Throughway Segments and Arterials
- Freight Buffer Index for Regional Intermodal Connectors

Performance Measures & Targets

Vehicle Miles Traveled (VMT) per Capita	» Reduce average vehicle miles traveled per person by 10 percent from 2021.
Number of Crashes by Severity	» Show progress toward meeting the 2035 Vision Zero Goal (Eliminate Fatal and Severe Injury crashes), and collisions in Equity Focus Areas are equal to or less than the regional average.
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Direct Relationships

As **Buffer Index** goes up ↑, **increases** ↑ are expected for:

- Reliability of transit routes and on time performance
- Transit run time variability
- Reliability of routes in a corridor
- Congested areas that delay transit

Inverse Relationships

As **Buffer Index** goes up ↑, **decreases** ↓ are expected for:

- Total elapsed time in which responders are able to clear incidents from roadways, railroads, and transit tracks

Agency Collaboration and Communication Events

Frequency of staff collaborating and communicating progress towards TSMO Goals.

This performance measure supports the following TSMO goals:

Free From Harm | **Collaboration & Partnerships** | **Eliminate Disparities** | **Prepare for Change** | Reliable Travel Choices | **Connected Travel Choices**

Key Performance Metrics

Number of Agencies with a public participation plan that includes Black, Indigenous, people of color, and people with low incomes.

- Metro and their agency partners develop transportation solutions that serve the entire community. The solutions aim to correct historically disproportional impacts to Black, Indigenous, people of color, and people with low incomes. This relies on creating strategic opportunities for these communities to participate in the decision making. This metric is a pass/fail for each agency represented by Metro.

Number of Agencies Attending TransPort

- Transport is a group of engineers and planners representing partner agencies that coordinate TSMO and Intelligent Transportation Systems projects regionally. Continuing this coordination is key to TSMO's success in the region.

Percent of Key Operating Agreements Executed.

- Metro and their partner agencies create agreements for collecting and sharing data, managing systems, and traffic incident management. These agreements are key to TSMO's success. This metrics ensure that agencies are following through on agreements or modifying them as needed for interagency coordination.

Exploratory Metrics

Number of Coordination Events and Number of Agencies Involved.

- Coordination between agencies can take a variety of forms. Making connections across departments and agency boundaries deepens the level of knowledge and empathy for the work and challenges staff face across the region.
- Coordination events build relationships and communication paths that lead to information sharing that allow agencies to be more agile and responsive in a rapidly changing environment.

Performance Measures & Targets

Vehicle Miles Traveled (VMT) per Capita	» Reduce average vehicle miles traveled per person by 10 percent from 2021.
Number of Crashes by Severity	» Show progress toward meeting the 2035 Vision Zero Goal (Eliminate Fatal and Severe Injury crashes), and collisions in Equity Focus Areas are equal to or less than the regional average.
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Timely Traveler Information	» 50% of transit shelters, and 100% of shelters in Equity Focus Areas have real-time arrival displays. » 100% of agencies have a traveler information system plan.

Direct Relationships

As **Agency Collaboration and Communication Events** goes up ↑, **increases** ↑ are expected for:

Economic activity | Crash risk

Inverse Relationships

As **Agency Collaboration and Communication Events** goes up ↑, **decreases** ↓ are expected for:

Use of non-auto modes

System Connectivity

How complete and connected the infrastructure system is for each travel mode.

This performance measure supports the following TSMO goals:

- Free From Harm
- Collaboration & Partnerships
- Eliminate Disparities
- Prepare for Change
- Reliable Travel Choices
- Connected Travel Choices

Key Performance Metrics

Percent of Signals with Communications.

» Installing communications across signals allows for connection to a central signal system, improved data collection, and signal management and operations. These connections should be prioritized for signals on regionally-designated and other important routes, including:

- Frequent bus routes
- Arterials serving equity focus areas
- Freeway Segments and Mobility Corridors
- Regional Intermodal Freight Connectors

Percent of Households and Employers within 10-minute Walk or Bike Travel Shed from Transit.

» This measurement determines how easily travelers can access and interface with transit by low-stress bicycle and walking routes. The 10-minute walk or bike travel shed shows how far from transit a traveler can live but still have reasonable access to the system. The walk and bike travel shed connectivity using the existing system, assuming travelers are only able to use identified lowstress and accessible bike and walking routes. The metrics should be measured by census block, breaking out equity focus areas, regional centers, and town centers.

Connectivity Index of Infrastructure.

» A connectivity index is the comparison of 30-minute travel shed on the existing network as compared to an ideal grid network. A high connectivity index represents redundancy in the transportation network that can reduce the impacts of unforeseen events and the non-recurring congestion those events can cause. For example, a high connectivity index for bicycles represents an alternative route when trails are flooded, or bridges are raised. A high connectivity index for vehicles could present shorter trips through neighborhoods, or alternative routes in regions impacted by natural disasters such as forest fire or mudslides. Connectivity Index should be measured mode and geography, including:

- for active modes (pedestrian, bicycle) by route level of stress;
- for vehicular modes; and
- measured by census block, breaking out equity focus areas, regional centers, and town centers.

Performance Measures & Targets

Vehicle Miles Traveled (VMT) per Capita	» Reduce average vehicle miles traveled per person by 10 percent from 2021.
Number of Crashes by Severity	» Show progress toward meeting the 2035 Vision Zero Goal (Eliminate Fatal and Severe Injury crashes), and collisions in Equity Focus Areas are equal to or less than the regional average.
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Direct Relationships

As **System Connectivity** goes up ↑, **increases** ↑ are expected for:

- Miles of infrastructure by mode in Equity Focus Areas where field devices are connected to centers
- Geographic transit coverage
- Systems infrastructure such as transit signal priority or stop amenities
- Transit, jobs, and services
- Walking and biking network completeness

Inverse Relationships

As **System Connectivity** goes up ↑, **decreases** ↓ are expected for:

- Sidewalk and bicycle system gaps

Targeted TSMO Investments

Distribution of investments regionally and on key corridors for modal efficiency.

This performance measure supports the following TSMO goals:

- Free From Harm
- Collaboration & Partnerships
- Eliminate Disparities
- Prepare for Change
- Reliable Travel Choices
- Connected Travel Choices

Key Performance Metrics

Percent of TSMO Investments benefiting key corridors.

» Where TSMO investments are made is an indication of who is benefiting from the efficiencies that result from this strategy. To ensure those efficiencies are realized in an equitable way, and to match the priorities and values of the region, the distribution of the investments should be measured through the life of the strategy. This strategy will track where investment benefit the following types of corridors as defined by other regional plans.

- Frequent bus routes
- Arterials serving equity focus areas
- Freeway Segments and Mobility Corridors
- Regional Intermodal Freight Connectors

Performance Measures & Targets

Vehicle Miles Traveled (VMT) per Capita	» Reduce average vehicle miles traveled per person by 10 percent from 2021.
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Direct Relationships

As **Targeted TSMO Investments** goes up ↑, **increases** ↑ are expected for:

- Equitable distribution of resources and ensuring that Equity Focus Areas are receiving equal or greater investment than the regional average
- Collaboration across jurisdictions as Mobility Corridors cross jurisdictional boundaries and connect cities.
- Transit signal priority investments
- Transportation operator's ability to integrate corridor management
- Economic gains from greater freight access
- Reliability, access, and safety on intermodal connectors and other freight routes.
- Resiliency of key facilities such as bridges
- Truck drivers finding places to park for required rest periods
- Preparation for short- and long-term disruptions
- Improving reliability for high frequency transit

Timely Traveler Information

How effectively information is being relayed to travelers to reduce delay associated with planned or unexpected events.

This performance measure supports the following TSMO goals:

Free From Harm | **Collaboration & Partnerships** | **Eliminate Disparities** | **Prepare for Change** | **Reliable Travel Choices** | Connected Travel Choices

Key Performance Metrics

Percent of transit shelters with functional real-time arrival displays.

» Travelers without access to smart phones or online data sources at bus stop locations may not be aware of transit delays or missed buses. Shelters are installed at high frequency and high ridership locations as identified by the transit operators. Ensuring these locations have on-time arrival displays can provide travelers with needed information. Ensuring that these displays are functional and continue to operate is key to ensuring the maintenance of the system moving forward. These should be reported as a total forthe region and for equity focus areas.

Number of Agencies with a Traveler Information System (TIS) plan.

» Metro and their partner agencies regularly provide information to the public around both planned and unexpected incidents. The creation of a TIS plan will help agencies to be prepared to rapidly distribute information to travelers about detours, closures, and hazardous conditions. The plan should at a minimum include standards for communication in a variety of languages and an equitable variety ofcommunication channels.

Exploratory Metrics

Non-recurring delay associated with incidents.

» It is currently difficult to quantify and report non-recurring delay that is associated with specific incidents such as a crash. Exploring new data sources that can measure this delay would enable Metro to better understand whether their travel notifications are successful rerouting drivers and what share of delay is associated with recurring vs non-recurring congestion.

Data sharing with Connected & Automated Vehicles (CAV), Smart Phones, and Mobility Devices.

» CAV technology enables a new level of traveler communication through in-vehicle data sharing. That data sharing also extends to specific Smart Phone apps, and other smart mobility devices. Applications include Mobility on Demand, Mobility as a Service, on-board notifications of traffic incidents, dangerous queues, or other roadway hazards. Mobility data can also be used to identify and report hard braking and other behaviors related to unexpected delays and non-recurring congestion. These data sources should be researched, with specific attention given to impacts to equity, safety, reliability, and cost.

Performance Measures & Targets

Vehicle Miles Traveled (VMT) per Capita	» Reduce average vehicle miles traveled per person by 10 percent from 2021.
Number of Crashes by Severity	» Show progress toward meeting the 2035 Vision Zero Goal (Eliminate Fatal and Severe Injury crashes), and collisions in Equity Focus Areas are equal to or less than the regional average.
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Timely Traveler Information	» 50% of transit shelters, and 100% of shelters in Equity Focus Areas have real-time arrival displays. » 100% of agencies have a traveler information system plan.

Direct Relationships

As **Timely Traveler Information** goes up ↑, **increases** ↑ are expected for:

- Traveler happiness and comfort using the system

Inverse Relationships

As **Timely Traveler Information** goes up ↑, **decreases** ↓ are expected for:

- Non-recurring congestion associated with both planned and unexpected events

Tigard, OR

Chapter 5

Actions

Twenty-one Transportation System Management & Operations (TSMO) Actions were identified by the Regional TSMO Stakeholders. Each action was categorized with one of four activity areas:

- → Planning
- → Concepts, Capabilities, & Infrastructure
- → Listening & Accountability
- → Data Needs

Each action was given a priority and completion timeline, as well as an agency that would track and report the action progress over the life of the plan.

These actions are meant to be a starting direction for the Regional TSMO Strategy. Over the course of the plan, if progress is not being measured on the strategy's objectives, the actions should be revised to better meet the region's needs.

More information on the development of these actions is included in **Appendix E**.

1. Establish TSMO performance measures baseline.

Planning | Concepts, Capabilities, & Infrastructure | Listening & Accountability | **Data Sources**

Action Description

Create a baseline for measuring regional TSMO performance and advancement by:

- Mapping regionally significant routes as identified in other Metro planning documents where TSMO Performance Measures will be reported. These should include state routes, freight routes, transit routes, emergency transportation routes, and Mobility Corridors.
- Summarize findings from TSMO project before/after studies.
- Establish a standard calculation for VMT exposure and generation by census block and calculate a baseline for census blocks within the region.
- Extend bicycle and pedestrian Level of Traffic Stress (LTS) threshold and inventory existing LTS for through corridors and arterials.
- Calculate a 2021 baseline connectivity index for all census block groups, downtowns (Regional and Town Centers) and mainstreets, informed by community-identified barriers to connectivity.
- Calculate a 2021 baseline of total households and employment within a 10-minute walk or bike from transit for all census block groups and Regional/Town Centers.
- Identify gaps in travel time information available for identified routes needed calculating buffer index. Identify gaps on routes where travel time information is needed for calculating reliability (e.g., buffer index).
- Establish benchmarks, milestones and/or estimte costs for Actions. Complete this as early as possible in the scoping of each Action and communicate this information throughout the life of this Strategy.

Advancing TSMO Objectives

This data is needed to track the identified TSMO Performance Measures

References to other Plans and Projects

NCHRP 17-87 Enhancing Pedestrian Volume Estimation and Developing HCM Pedestrian Methodologies for Safe and Sustainable Communities: *https://trec.pdx.edu/research/project/1366*

Priority

Low | Medium | High

Required but not urgent

Timeline

Near: '21 | '22 | '23 | '24 | '25 | '26 | '27 | '28 | '29 | '30 | '31

Milestone: Complete in coordination with RTP update

Tracked By

Metro and ODOT

2. Inventory and manage regional signal and ITS Communication infrastructure.

Planning | **Concepts, Capabilities, & Infrastructure** | Listening & Accountability | Data Sources

Action Description

- Create a regional inventory of traffic signal capabilities by location and operator (e.g., connected to central signal system for traffic signal timing updates, utilizing Next Generation Transit Signal Priority, serving freight, sensing bike and pedestrian movements).
- Using the inventory, develop a high quality, reliable, and redundant signal communication, and fiber network by identifying gaps, prioritizing high need projects, and completing high priority projects.

  Upgrade traffic signals and communication networks on regionally significant corridors to meet the needs of advanced applications such as Next-Generation Transit Signal Priority (NextGen TSP) and Automated Traffic Signal Performance Measures (ATSPM) that require Advanced Transportation Controllers (ATCs) and fiber optic communication.
- Monitor and address signal performance on regionally significant corridors by identifying performance issues such as freight delay, transit delay, or high pedestrian and bicycle traffic stress.

Advancing TSMO Objectives

5.1 Manage recurring and non-recurring congestion to improve travel time reliability for all users, including active transportation, transit, and freight.

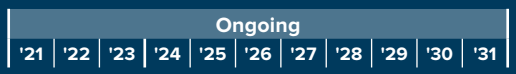
6.2 Manage projects and resources to be responsive to changes in land use planning and growth patterns.

Priority

Low | Medium | **High**

Ensure the benefits of Next Generation Transit Signal Priority are extended region-wide

Timeline



Milestone: September 2022 Division Transit Project

Tracked By

TransPort's Central Signal System Subcommittee and PBOT

3. Develop a Mobility on Demand strategy and policy.

Planning | Concepts, Capabilities, & Infrastructure | Listening & Accountability | Data Sources

Action Description

Create a Regional Mobility on Demand (MOD) Working Group consisting of agency staff, transportation demand management non-profits (e.g., Transportation Management Associations), private partners, and community based organizations and stakeholders representing and helping to solve accessibility issues common to online services, to:

- Build on existing regional policy conversations in support of mobility partnerships, and technology solutions for last-mile connections.
- Participate in expanding access through micro freight delivery (curb side delivery such as on-line purchases, food delivery apps, etc).
- Coordinate with parking managers to improve operations particularly in downtowns and along main streets (e.g., Regional and Town Centers).
- Examine regulations for shared mobility. Examine benchmarks set for shared mobility services (such as the PBOT Scooter Policy) by partner agencies and establish regional minimum level of service benchmarks for MOD service in equity focus areas connecting to opportunities, to Black, Indigenous, people of color, and people with low incomes.
- Evaluate unified payment strategy and related policies, including congestion pricing, as they function to provide demand and system management through MOD, transit and connected travel options.
- Establish a strategy for connecting people to recreational destinations not well served by traditional transit during off-peak service hours.
- Identify opportunities for pilots to connect people to MOD and support them through programs with MOD service providers.
- Develop a pilot package delivery hub program for the “last 50 feet freight delivery”, focusing on equity focus areas, incorporating guidance on siting package lockers, and the ability to co-locate with transit and other services.
- Develop communications with travelers inclusive of people with app or online services accessibility needs, to inform more travelers about these choices.
- Establish public-agency person-to-person lines of communication, formal agreements as necessary, pre-planned emergency needs and information flows supportive of MOD operations.
- Use information flows with forecast models to optimize traveler’s experience and MOD operator logistics.

Priority

Low | Medium | **High**

Timeline

'21	Near '22	'23	'24	'25	'26	'27	'28	'29	'30	'31

Milestone: Form the working group in 2022.

Responsibility

Metro convenes across planners and operators

Advancing TSMO Objectives

2.1 Ensure Black, Indigenous, people of color, and people with low incomes benefit from safety improvements.

2.4 Improve inter-agency & intra-agency collaboration to ensure efficient operations by identifying and addressing barriers in communication when making decisions about network operation or expansion.

4.1 Connect decentralized travel options to facilitate viable destinations in Regional Centers, Town Centers, and employment areas outside downtown Portland.

4.2 Prioritize the completion and expansion of planned transit and active mode networks when investing discretionary revenues especially to destinations with limited travel choices.

4.3 Connect goods and delivery services to people and businesses by providing for and managing last mile connections for goods delivery.

4.4 Increase availability and accessibility of low-cost transportation options by Black, Indigenous, people of color, and people with low incomes.

6.1 Plan and design a flexible transportation network that can adapt to new technology and travel choices that are consistent with the region's desired land use and transportation outcomes.

6.2 Manage projects and resources to be responsive to changes in land use planning and growth patterns.

6.4 Provide public agency staff with the data, tools, models, and training needed to assess long-term disruptive transportation trends.

References to other Plans and Projects

TriMet Mobility on Demand Sandbox Grant 2017-2019: *https://trimet.org/mod/*

TriMet Integrated Mobility Innovation: *https://trimet.org/imi/*

City of Portland Transportation Wallet: *https://www.portland.gov/transportation/wallet*

4. Manage transportation assets to secure the network.

Planning | **Concepts, Capabilities, & Infrastructure** | Listening & Accountability | Data Sources

Action Description

Secure the network from natural disasters, cyber attacks, and other disruptions by physically securing signal cabinets, junction box, and other infrastructure on critical communication corridors to reduce unscheduled downtime. Identifying end of life equipment, and replacing it proactively.

Further Objectives

2.2 Collaborate with emergency management when prioritizing investments on key emergency response routes.

6.3 Minimize long term disruptions to the transportation system by creating resiliency to climate change and economic shifts.

Priority

Low | Medium | **High**

Timeline

Ongoing

'21 | '22 | '23 | '24 | '25 | '26 | '27 | '28 | '29 | '30 | '31

Tracked By

Individual Agency Responsibilities and TransPort's ITS-NMT Group

5. Pilot Origin-Destination data to prioritize TSMO investments.

Planning | Concepts, Capabilities, & Infrastructure | Listening & Accountability | Data Sources

Action Description

- Identify data sources and obtain Origin-Destination (OD) data to determine the highest use trip pairs in the region, pairs with the greatest trip lengths, pairs with a trip end in an equity focus area, and pairs without existing transit connections for use in planning and project prioritization.
- Use the data to identify TSMO upgrades that benefit multiple modes and are adaptable to emerging technologies (i.e. charging stations for e-bikes and EVs, controller upgrades that allow for varying communication systems).
- Create an active system of OD collection, monitoring, and reporting.

Further Objectives

4.2 Prioritize the completion and expansion of planned transit and active mode networks when investing discretionary revenues especially to destinations with limited travel choices.

5.2 Expand travel time reliability improvements for Black, Indigenous, people of color, and people with low incomes burdened with long travel distances.

6.1 Plan and design a flexible transportation network that can adapt to new technology and travel choices that are consistent with the region's desired land use and transportation outcomes.

6.4 Provide public agency staff with the data, tools, models, and training needed to assess long-term disruptive transportation trends.

Priority

Low | **Medium** | High

Timeline

'21	'22	Near '23	'24	'25	'26	'27	'28	'29	'30	'31

Tracked By

Metro considers pilot with partners

6. Track and prioritize TSMO Investments for and with Black, Indigenous people of color, and people with low incomes.

Planning | Concepts, Capabilities, & Infrastructure | **Listening & Accountability** | Data Sources

Action Description

- Create a priority process that identifies TSMO solutions for identified needs and guides funding for and with Black, Indigenous people of color, and people with low incomes.
- Review and update TSMO discretionary revenue prioritization to reflect the 2021 TSMO Strategy's updated Goals and Objectives.
- Evaluate TSMO prior investments from the last 10 years and identify disparities for Black, Indigenous, people of color, and people with low incomes.
- Identify and multimodal connectivity disparities to target future TSMO investments.
- Track TSMO investments in equity focus areas and report bi-annually.

Advancing TSMO Objectives

1.4 Ensure Black, Indigenous, people of color, and people with low incomes can safely access multiple low stress mode choices and routes within the transportation system by improving access to transit stops, pedestrian, and bicycle facilities.

3.2 Identify and correct past disparities when planning, operating, and maintaining the transportation system (e.g., transit access, exposure to air toxics, allocation of funds).

4.2 Prioritize the completion and expansion of planned transit and active mode networks when investing discretionary revenues especially to destinations with limited travel choices.

Priority

Low | Medium | **High**

Timeline

Near: '21 | '22 | '23 | '24 | '25 | '26 | '27 | '28 | '29 | '30 | '31

Milestone: RTP Update

Tracked By

Metro, ODOT, and a third-party.

7. Continue freight technology and ITS deployment.

Planning | **Concepts, Capabilities, & Infrastructure** | Listening & Accountability | Data Sources

Action Description

- Utilize existing and pilot new freight ITS technologies that identifies solutions to optimize freight operations and improve safety on critical corridors, such as optimizing progression for trucks, progress to pilot programs, freight dilemma zone detection and green extension.
- Share TSMO-generated data resources broadly with start-ups and established freight services.

Advancing TSMO Objectives

4.3 Connect goods and delivery services to people and businesses by providing for and managing last mile connections for goods delivery.

5.3 Manage critical freight corridors to create reliable routes for freight movement between key destinations.

References to other Plans and Projects

Metro Regional Freight Plan: *https://www.oregonmetro.gov/regional-freight-plan*

City of Portland convened a Freight Committee: *https://www.portlandoregon.gov/transportation/54899*

ODOT Commercial Truck Parking Study: *https://www.oregon.gov/odot/Projects/Pages/Commercial-Truck-Parking-Study.aspx*

Priority

Low | **Medium** | High

Timeline

Near/Mid: '21 | '22 | '23 | '24 | '25 | '26 | '27 | '28 | '29 | '30 | '31

Tracked By

All Agency Operators

8. Facilitate Ground Truthing of Emerging Technologies.

Planning | **Concepts, Capabilities, & Infrastructure** | Listening & Accountability | Data Sources

Action Description

Respond to community-voiced needs to initiate agency partnerships to test emerging technologies. Consider efforts in context provided by the forthcoming Metro Emerging Trends Study. Consider these as examples, recognizing that more pilots are needed to keep pace with technology advancements:

- Collaborate with ODOT on the connected vehicle infrastructure environment to reduce pedestrian related collisions.
- Explore best practices for collision avoidance systems, policy implications, and implementation.
- Create a readiness training program for the region to evaluate and prepare for risks from technology, economic, and ecological disruptions.
- Identify solutions to changes in growth patterns, travel behavior, and other non-emergency travel trends.
- Partner to increase mobility with electric vehicle (EV) adoption, including e-bikes, shared vehicles and fleets. EVs relate to connectivity index in equity focused areas, downtowns (Regional and Town Centers), main streets and employment areas.

  Collect and evaluate safety and operational performance metrics for multimodal users (including pedestrians, bicyclists, and transit) through emerging detection technologies.

  Partner with regional university transportation research centers in identifying and implementing projects exploring emerging technologies and data sources.
- Collaborate with ODOT Public Transit Division, transit agencies and rail operators to identify technologies for safe, efficient and reliable operations.

Priority

Low | **Medium** | High

Timeline

Ongoing

'21 | '22 | '23 | '24 | '25 | '26 | '27 | '28 | '29 | '30 | '31

Milestone: Metro Emerging Trends Study

Tracked By

Washington County, ODOT, PBOT, and Portland State University (PSU) Transportation Research & Education Center (TREC)

Advancing TSMO Objectives

1.1 Manage the transportation system to reduce negative health impacts so that public health risk does not adversely affect people's mode choice.

1.3 Provide a transportation system where human error does not result in serious injury or loss of life.

4.4 Increase availability and accessibility of low-cost transportation options for Black, Indigenous, people of color, and people with low incomes.

6.1 Plan and design a flexible transportation network that can adapt to new technology and travel choices that are consistent with the region's desired land use and transportation outcomes.

6.4 Provide public agency staff with the data, tools, models, and training needed to assess long-term disruptive transportation trends.

References to other Plans and Projects

ODOT Office of Innovation: *https://www.oregon.gov/odot/Programs/Pages/OfficeOfInnovation.aspx*

FHWA Office of Research, Development, and Technology: *https://highways.dot.gov/research*

FHWA Experimental Features Program

9. Establish a Regional Transit Operators TSMO Group.

Planning | **Concepts, Capabilities, & Infrastructure** | Listening & Accountability | Data Sources

Action Description

Establish a Metro Regional Transit Operators TSMO Group as a subcommittee of Transport consisting of representation from local and regional transit operators. Collaborate with the group to:

- Identify transit stops on high frequency routes without real time bus information technology, prioritize improvements, and complete high priorities.
- Coordination with ODOT Rail Crossing Safety Unit to identify and implement mitigations at transit and train at grade rail crossing locations with a history of collisions.
- Review and Regional NextGen Transit Signal Priority (TSP) projects and develop a coordination standard for deploying TSP throughout the region.
- Coordinate with transit operators to identify TSMO solutions to support a bus on shoulder implementation plan, building on lessons learned from I-5/I-205 pilot program.
- Inform and review speed and reliability project need and solutions.
- Create a standard for reviewing and deploying new technology.

Advancing TSMO Objectives

1.3 Provide a transportation system where human error does not result in serious injury or loss of life

2.3 Collaborate with emergency management when prioritizing investments on key emergency response routes.

5.1 Manage recurring and non-recurring congestion to improve travel time reliability for all users, including active transportation, transit, and freight.

5.2 Expand travel time reliability improvements for Black, Indigenous, people of color, and people with low incomes burdened with long travel distances.

5.4 Communicate expected changes in reliability so that travelers can make informed travel choices.

Priority

Low | Medium | **High**

Timeline

Ongoing

'21 | '22 | '23 | '24 | '25 | '26 | '27 | '28 | '29 | '30 | '31

TriMet

10. Unify and standardize fare subsidies for transit and MOD.

Planning | **Concepts, Capabilities, & Infrastructure** | Listening & Accountability | Data Sources

Action Description

- Create a policy that includes standardized eligibility criteria with regard for ADA, Medicaid, and other assistance programs. Utilize existing efforts such as the General Transit Feed Specification for Eligibilities and Capabilities.
- Expand low or free fare/price subsidies to include MOD and transit for Black, Indigenous, people of color, and people with low incomes.
- Evaluate feasibility of implementing City of Portland's Transportation Wallet pilot program for connecting affordable transportation options with people living in affordable housing.

Advancing TSMO Objectives

2.1 Collaborate to provide consistent travel experiences across jurisdictional boundaries through integrated payment and scheduling systems, integrated corridor management, and data sharing between agencies.

4.4 Increase availability and accessibility of low-cost transportation options for Black, Indigenous, people of color, and people with low incomes.

References to other Plans and Projects

ODOT General Transit Feed Specification (GTFS) Eligibilities and Capabilities Project: *https://github.com/full-path/gtfs-eligibilities/blob/main/project_summary.md*

Portland BIKETOWN for all: *https://www.biketownpdx.com/pricing/biketown-for-all?utm_medium=email&utm_source=govdelivery*

Priority

Low | Medium | **High**

Timeline

Near: '21 | '22 | '23 | '24 | '25 | '26 | '27 | '28 | '29 | '30 | '31

Tracked By

TriMet

11. Develop an ITS travel time Information Data Collection and Distribution Plan for RDPO Regional Emergency Routes.

Planning | **Concepts, Capabilities, & Infrastructure** | Listening & Accountability | Data Sources

Action Description

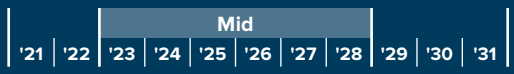
- Coordinate with agency partners to identify bottlenecks on Regional Disaster Preparedness Organization (RDPO) Regional Emergency Transportation Routes, Oregon State Seismic Lifeline Routes and routes lacking redundancy and develop TSMO solutions to address these.
- Model strategies to reduce emergency response times and evacuation scenarios through technology or other actions.
- Create an Emergency Route travel time data collection plan. The plan should:
  - Identify Intelligent Transportation Systems (ITS) travel time information data collection and distribution gaps on RDPO Regional Emergency Transportation Routes and Oregon State Seismic Lifeline Routes to inform detour routing decisions and provide alternative route information during evacuations.
  - Prioritize data collection and distribution gaps on RDPO Regional Emergency Transportation Routes and Oregon State Seismic Lifeline Routes.
  - Install data collection and distribution infrastructure on RDPO Regional Emergency Transportation Routes and Oregon State Seismic Lifeline Routes.

Priority

Low | **Medium** | High

8 SAC Votes

Timeline



Tracked By

ODOT

Advancing TSMO Objectives

6.2 Manage projects and resources to be responsive to changes in land use planning and growth patterns.

6.3 Minimize long term disruptions to the transportation system by creating resiliency to climate change and economic shifts.

References to other Plans and Projects

PORTAL Archive: *https://portal.its.pdx.edu/home*

Regional Emergency Transportation Route (RETR) Phase 1: *https://rdpo.net/emergency-transportation-routes*

12. Explore new TSMO data sources.

Planning | Concepts, Capabilities, & Infrastructure | Listening & Accountability | Data Sources

Action Description

» Explore new sources to measure identified exploratory TSMO performance measures. Exploratory metrics include:

- Average miles walked and biked
- Frequency of secondary crashes
- Collision risk
- Transportation cost burden for Black, Indigenous, people of color, and people with low incomes
- Non-recurring delay associated with incidents
- Freight travel time and movement data

» Develop a National Highway Traffic Safety Administration Fatality Analysis Reporting System data reporting policy and incorporate into annual reporting.

Priority

Low | Medium | High

SAC did not vote on this

Timeline

Ongoing

'21 | '22 | '23 | '24 | '25 | '26 | '27 | '28 | '29 | '30 | '31

Responsibility

PSU TREC

Advancing TSMO Objectives

1.2 Ensure Black, Indigenous, people of color, and people with low incomes benefit from safety improvements.

1.3 Provide a transportation system where human error does not result in serious injury or loss of life.

1.4 Ensure Black, Indigenous, people of color, and people with low incomes can safely access multiple low stress mode choices and routes within the transportation system by improving access to transit stops, pedestrian, and bicycle facilities.

3.2 Identify and correct past disparities when planning, operating, and maintaining the transportation system (e.g., transit access, exposure to air toxics, allocation of funds).

5.1 Manage recurring and non-recurring congestion to improve travel time reliability for all users, including active transportation, transit, and freight.

5.3 Manage critical freight corridors to create reliable routes for freight movement between key destinations.

References to other Plans and Projects

Portal: *http://portal.its.pdx.edu/*

BikePed Portal: *http://bikeped.trec.pdx.edu/*

NHTSA FARS Data: *https://www.nhtsa.gov/research-data/fatality-analysis-reporting-system-fars*

13. Create a community listening program.

Planning | Concepts, Capabilities, & Infrastructure | **Listening & Accountability** | Data Sources

Action Description

Build capacity for a community listening program to reduce barriers for travelers to report experiences related to TSMO. Tactics may involve but are not limited to partnering with large-scale public outreach to facilitate a breakout group specific to TSMO, supporting equity-focused consultants and Community Based Organizations (CBOs) to share input, initiating a study of agency customer feedback (including social media), piloting an anonymous feedback system generated by and for Black, Indigenous people of color, and people with low incomes to report travel experiences related to operations. Build capacity at CBOs to share an understanding of this Strategy and to guide partnership. Collaborate with CBOs using a culturally specific model and approach to reach out to non-English speakers or limited-English-proficiency groups.

As part of the listening program, create a pilot where Black, Indigenous people of color, and people with low incomes are paid to provide feedback and share their traveler experiences/stories with agency staff. Support efforts with service providers to add capacity. Participate to listen for TSMO-related issues and follow up on previous efforts, identifying TSMO-related solutions.

Priority

Low | Medium | **High**

Timeline

Near										
'21	'22	'23	'24	'25	'26	'27	'28	'29	'30	'31

Responsibility

ODOT, Metro, and PSU TREC

Advancing TSMO Objectives

3.1 Prioritize reaching underrepresented groups when providing traveler information and community outreach and ensure that modal access and traveler information is free from technological and financial barriers.

3.3 Identify and increase awareness of the unique travel experiences for Black, Indigenous, people of color, and people with low incomes.

References to other Plans and Projects

TriMet Reimagine Transportation

ODOT Office of Social Equity

Metro Regional Travel Options Program.

14. Create continuous improvement process for existing and new signal systems and related performance.

Planning | **Concepts, Capabilities, & Infrastructure** | Listening & Accountability | Data Sources

Action Description

Outline and begin continuous improvement process for signal systems and new concepts that serve major arterials and high-injury corridors. The continuous improvement process will utilize systems engineering from concept of operations through retirement of legacy systems and prioritize solutions based on effectiveness and costs.

In coordination with asset managers, inventory automatic traffic recorder stations, Advanced Transportation Controllers, and detection sensors (location, status, age, and operability). Identify through corridors and major arterials that do not currently have travel time information collection by mode to identify gaps existing system. Create a plan to mitigate identified gaps by completing high priority projects targeted for either technological upgrades (sensors, automatic traffic recorders, etc.) or crowd sourced data.

Advancing TSMO Objectives

2.1 Collaborate to provide consistent travel experiences across jurisdictional boundaries through integrated payment and scheduling systems, integrated corridor management, and data sharing between agencies.

5.1 Manage recurring and non-recurring congestion to improve travel time reliability for all users, including active transportation, transit, and freight.

6.1 Plan and design a flexible transportation network that can adapt to new technology and travel choices that are consistent with the region's desired land use and transportation outcomes.

6.4 Provide public agency staff with the data, tools, models, and training needed to assess long-term disruptive transportation trends.

References to other Plans and Projects

ODOT ITS Master Communication Plan.

Priority

Low | Medium | High

Timeline

Ongoing

'21 | '22 | '23 | '24 | '25 | '26 | '27 | '28 | '29 | '30 | '31

Responsibility

TransPort's Center Signal System Users Group and PBOT

15. Deploy regional traveler information systems.

Planning | **Concepts, Capabilities, & Infrastructure** | Listening & Accountability | Data Sources

Action Description

Create a traveler information and educational campaign with Black, Indigenous, people of color, people with low incomes, and people with limited English proficiency. The campaign should also start deploying traveler information systems (TIS) where community-voiced need and multiple transportation options are present, building into a methodology TIS priorities that may involve transit stops, public buildings, major destinations within regional centers and on-vehicle displays. The TIS should incorporate a broad cross section of traveler needs which may include travel time, route, and real-time transit and shared-use mobility information.

Further Objectives

2.3 Collaborate with and educate travelers.

3.1 Prioritize reaching underrepresented groups when providing traveler information and community outreach and ensure that modal access and traveler information is free from technological and financial barriers.

References to other Plans and Projects

ODOT's TripCheck Program: ***https://tripcheck.com***

TriMet Third Party Apps: ***https://trimet.org/apps/***

Priority

Low | Medium | **High**

Timeline

Ongoing

'21 | '22 | '23 | '24 | '25 | '26 | '27 | '28 | '29 | '30 | '31

Responsibility

Metro for convening and scoping

16. Implement Integrated Corridor Management and mainstream into corridor planning.

Planning | **Concepts, Capabilities, & Infrastructure** | Listening & Accountability | Data Sources

Action Description

Provide tools for regional partners based on I-84 Multimodal Integrated Corridor Management (ICM) Deployment Plan including:

- Establish a multimodal detour policy across agencies. Define lines of communication and pre-plan emergency needs by rehearsing scenarios for a variety of events impacting operations. Provide job-shadow and training experiences.
- Create a data sharing policy and inter-agency(s) agreement with agency partners to incorporate data into PORTAL or another identified internal sharing system. Share construction schedules across agencies. Implement a decision support system, employing forecast models as useful
- Participate in all phases of a corridor project listening for needs voiced by communities, considering disruptions and proposing TSMO-related solutions where applicable. Keeep communication lines open post-project to recognize ongoing burdens and participate in adjustments

Beginning with the next Regional Transportation Plan update, consider corridor needs that can be met through ICM based on regional efforts and Federal Highway Administration guidance and local operators.

Priority

Low | Medium | High

Timeline

Near										
'21	'22	'23	'24	'25	'26	'27	'28	'29	'30	'31

Milestone: RTP Update

Responsibility

Metro

Advancing TSMO Objectives

1.1 Collaborate to provide consistent travel experiences across jurisdictional boundaries through integrated payment and scheduling systems, integrated corridor management, and data sharing between agencies.

2.2 Collaborate with emergency management when prioritizing investments on key emergency response routes.

2.4 Improve inter-agency & intra-agency collaboration to ensure efficient operations by identifying and addressing barriers in communication when making decisions about network operation or expansion.

5.1 Manage recurring and non-recurring congestion to improve travel time reliability for all users, including active transportation, transit, and freight.

6.4 Provide public agency staff with the data, tools, models, and training needed to assess long-term disruptive transportation trends.

References to other Plans and Projects

I-84 Multimodal ICM Deployment Plan

17. Create a TSMO Safety Toolbox.

Planning | **Concepts, Capabilities, & Infrastructure** | Listening & Accountability | Data Sources

Action Description

Create a TSMO Safety Toolbox to advance actions identified in the Metro Regional Safety Strategy. The toolbox should utilize the Safe Systems Approach. Include guidance for the deployment of new technologies and create policy for evaluating their effectiveness.

Create a Speed Management Plan in coordination with Statewide Policy, and collaborate with local agencies to provide guidance and implementation program for active speed management and feedback including, automated speed feedback signs, changeable speed limits, automated enforcement, and traffic calming solutions. Evaluate speed limits and identify opportunities to apply a safe systems approach to speeds in regional and town centers, high pedestrian, and bicycle corridors, and in equity focus areas. Apply Automated Traffic Signal Performance Measures (ATSPMs), including speeds, to emerging research related to speed reduction through signal timing strategies.

The toolbox should respond to context and point out where overlapping road functions or classifications have potential for creating risk and/or preventing implementation of TSMO safety tools.

Advancing TSMO Objectives

1.2 Ensure Black, Indigenous, people of color, and people with low incomes benefit from safety improvements.

1.3 Provide a transportation system where human error does not result in serious injury or loss of life.

References to other Plans and Projects

Metro's Regional Transportation Safety Strategy: ***https://www.oregonmetro.gov/regional-transportation-safety-plan***

Priority

Low | Medium | **High**

Timeline

'21	Near '22	'23	'24	'25	'26	'27	'28	'29	'30	'31

Milestone: Achieve Vision Zero by 2035.

Responsibility

18. Participate in regional public outreach to assist in guiding, listening and learning through TSMO-focused conversations.

Planning | Concepts, Capabilities, & Infrastructure | Listening & Accountability | Data Sources

Action Description

TSMO-focused public outreach should include traveler safety information and be focused on Black, Indigenous, people of color, people with low incomes, and people with limited English proficiency. Work with local agencies to create/update public outreach that specifically include equity focused TSMO that include Black, Indigenous, people of color, people with low incomes, and people with limited English proficiency.

Advancing TSMO Objectives

1.2 Ensure Black, Indigenous, people of color, and people with low incomes benefit from safety improvements.

2.3 Collaborate with and educate travelers.

3.1 Prioritize reaching underrepresented groups when providing traveler information and community outreach and ensure that modal access and traveler information is free from technological and financial barriers.

5.4 Communicate expected changes in reliability so that travelers can make informed travel choices.

Priority

Low | **Medium** | High

Timeline

Near: '21 | '23 | '23 | '24

'25 | '26 | '27 | '28 | '29 | '30 | '31

Responsibility

Metro, ODOT, and a Third Party

19. Improve TSMO data availability to aid in traveler decisions and behavior.

Planning | Concepts, Capabilities, & Infrastructure | **Listening & Accountability** | Data Sources

Action Description

- Unify multimodal trip planning by coordinating among transit service providers' and riders' needs, creating opportunities for TriMet and other Open Trip Planner partners.
- Create an external facing dashboard for TSMO metrics accountability connecting each metrics' relevance to travelers.
- Communicate TSMO to raise awareness in the need for travelers to participate to improve transportation system outcomes and metrics. For example, signage about moving over for emergency vehicles, merging, or moving property-damage-only crashes out of the travel lane will help with overall system management and clearance metrics.
- Increase communication about how the system could operate safer and more efficiently using signage and coordinating agency Public Service Announcements (PSAs.)

Priority

Low | **Medium** | High

Timeline

'21	'22	'23	'24	'25	'26	'27	'28	'29	'30	'31
			Mid							

Responsibility

Metro, Trimet, and ODOT

Advancing TSMO Objectives

2.1 Collaborate to provide consistent travel experiences across jurisdictional boundaries through integrated payment and scheduling systems, integrated corridor management, and data sharing between agencies.

2.3 Collaborate with and educate travelers.

5.4 Communicate expected changes in reliability so that travelers can make informed travel choices.

References to other Plans and Projects

TBD

20. Build and use a TSMO Toolbox to connect gaps in bicycle and pedestrian infrastructure.

Planning | **Concepts, Capabilities, & Infrastructure** | Listening & Accountability | Data Sources

Action Description

Create a connected bicycle and pedestrian infrastructure with TSMO tools. Start with a Connectivity Index of existing pedestrian and bicycle infrastructure that includes community-voiced barriers, inventories of low stress facilities, and other identified gaps in the system. The toolbox should consider how pedestrian and bicycle modes interact with signals, illumination, and transit connections, while also the disparities experienced by Black, Indigenous, people of color, and people with low incomes. Investments made using the toolbox should afford complete treatment to address these disparities.

Advancing TSMO Objectives

1.4 Ensure Black, Indigenous, people of color, and people with low incomes can safely access multiple low stress mode choices and routes within the transportation system by improving access to transit stops, pedestrian, and bicycle facilities.

4.1 Connect decentralized travel options to facilitate viable destinations in Regional Centers, Town Centers, and employment areas outside downtown Portland.

4.2 Prioritize the completion and expansion of planned transit and active mode networks when investing discretionary revenues especially to destinations with limited travel choices.

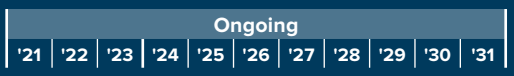
References to other Plans and Projects

ODOT Active Transportation Needs Inventory (ATNI): *https://www.oregon.gov/odot/RPTD/Pages/Statewide-Active-Transportation-Needs-Inventory.aspx*

Priority

Low | Medium | **High**

Timeline



Milestone: ODOT Pedestrian and Bicycle Priority Routes

Responsibility

All Agencies, and PSU TREC

21. Update the Regional Intelligent Transportation Systems (ITS) Architecture.

Planning | Concepts, Capabilities, & Infrastructure | Listening & Accountability | Data Sources

Action Description

Collaborate on updates to the Regional ITS Architecture by reviewing changes on a quarterly basis and adjusting every two years to include innovations in the national and statewide architecture.

Advancing TSMO Objectives

2.4 Improve inter-agency & intra-agency collaboration to ensure efficient operations by identifying and addressing barriers in communication when making decisions about network operation or expansion.

6.1 Plan and design a flexible transportation network that can adapt to new technology and travel choices that are consistent with the region's desired land use and transportation outcomes.

References to other Plans and Projects

Metro's Regional ITS Architecture 2016 Update: ***https://www.oregonmetro.gov/public-projects/regional-tsmo-strategy/2010-2020-tsmo***

Priority

Low | Medium | High

Timeline

'21	Near '22	'23	'24	'25	'26	'27	'28	'29	'30	'31

Responsibility

Metro, ITS Architecture Group

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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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Adopted January 6, 2022
December 2021

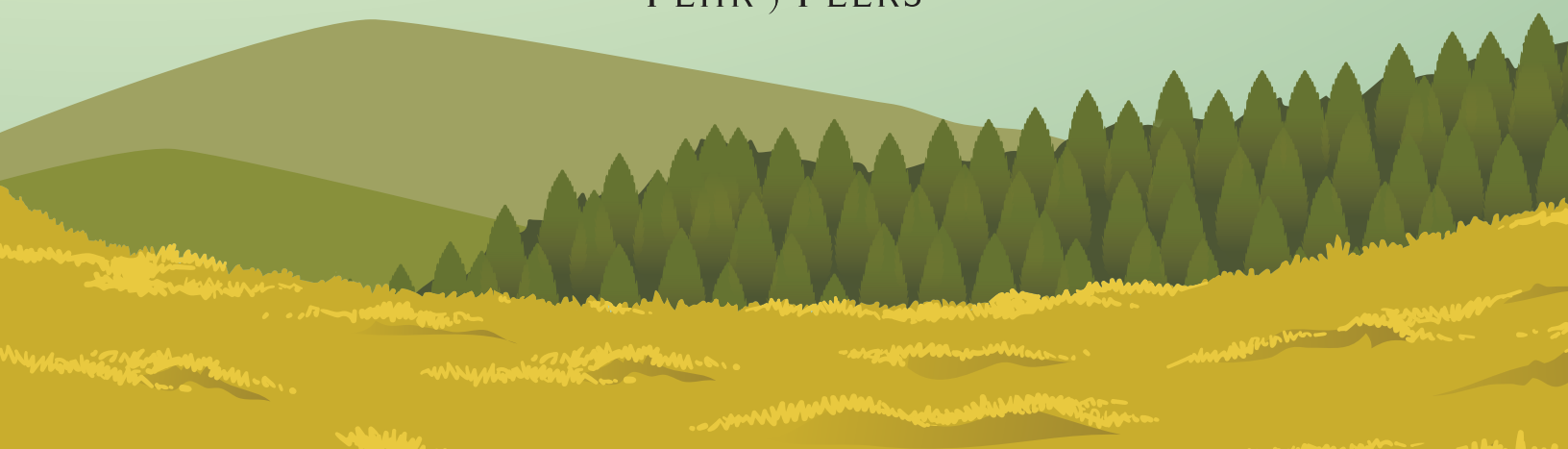
2021 Transportation System Management & Operations (TSMO) Strategy

Portland Metro Region

TSMO
Portland Metro Region

Metro

FEHR & PEERS



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Final Draft

Exhibit B

2021 TSMO Strategy Appendices

December 2021

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Appendix A

List of TSMO Projects Planned in 2010

2010 TSMO Planned Projects

Project	Timeframe	Goals				Capital $ Planned by 2020	OM $ Planned by 2020
		Reliability	Safety and Security	Quality of Life	Traveler Information		
Region Wide Projects							
Operate and Maintain Regional ITS Communications Network	Ongoing	x				$ -	$ 1,000,000
Active Traffic Management RCTO	1-5 years	x				$ 350,000	$ -
Transit Priority Treatment Performance Measurement	1-5 years	x				$ 200,000	$ 2,000,000
Region-wide Access Management Strategies	6-10years		x			$ 500,000	$ -
Enhance Regional Traffic Signal System	1-5 years	x				$ 12,000,000	$ 500,000
Implement Freight Data Collection System	6-10years	x				$ 50,000	$ 500,000
Congestion Pricing/ High Occupancy Toll Lanes	1-5 years			x		$ 5,000,000	$ -
Active Traffic Management Pilot Project	6-10years	x				$ 5,000,000	$ 500,000
Next Generation Transit Signal Priority System	6-10years	x				$ 500,000	$ 500,000
24-Hour Transportation Operations Coverage	Beyond 10 years	x			x	$ -	$ -
Automated Speed Enforcement	Beyond 10 years		x			$ 1,000,000	$ -
Portland OR Regional Transportation Data Archive Listing (PORTAL) Enhancements	Ongoing				x	$ -	$ 1,000,000
Multi-modal traveler data and tools	Ongoing				x	$ -	$ 1,500,000
Park & Ride Traveler Information	Ongoing				x	$ 500,000	$ 1,500,000
TripCheck Travel Information Portal (TTIP) Enhancement	1-5 years				x	$ 3,000,000	$ 20,000,000
Arterial Performance Measure	1-5 years	x				$ 750,000	$ 1,000,000
Transit Performance Measurement System	1-5 years			x		$ 350,000	$ 500,000
Incident Management	1-5 years	x				$ 2,000,000	$ 2,000,000
Expand Incident Management Teams/Training	1-5years		x			$ -	$ 5,000,000
Integrate Voice and Data Networks	6-10years		x			$ 10,000,000	$ 2,500,000
Emergency Responders GIS System Upgrades	6-10years		x			$ 200,000	$ 250,000
Dynamic Routing and Preemption Pilot Project	Beyond 10 years	x				$ 500,000	$ -
Collaborative Marketing	Ongoing			x		$ -	$ 9,750,000
Employer Services	Ongoing			x		$ -	$ 10,000,000
Rideshare Services	Ongoing			x		$ -	$ 3,600,000
Measurement	Ongoing	x				$ -	$ 1,500,000
TSMO Program	Ongoing	x				$ -	$ 3,350,000
Parking Management Strategy	1-5 years			x		$ 100,000	$ -
Parking Management Pilot Program	1-5 years			x		$ -	$ 1,000,000
Smartcard fare system RCTO	1-5 years	x				$ 100,000	$ -
Smartcard fare system pilot project	1-5 years	x				$ 12,000,000	$ -
Youth transit pass program	6-10years			x		$ -	$ 500,000
Youth transit pass program	1 year (6-10 years)			x		$ -	$ 15,000,000
Regional Incentive/Disincentive System	Beyond 10 years	x				$ 9,000,000	$ -
				Region-Wide Totals		**$ 63,100,000**	**$ 84,950,000**

2010 TSMO Planned Projects

Project	Timeframe	Goals				Capital $ Planned by 2020	OM $ Planned by 2020
		Reliability	Safety and Security	Quality of Life	Traveler Information		
Corridor Projects							
1. Portland Central City to Vancouver	Varies	x	x	x	x	$ 7,030,000	$ 43,210,000
2. Portland Central City to Tualatin		x	x	x	x	$ 15,760,000	$ 17,302,000
3. Tualatin to Wilsonville		x	x	x	x	$ 2,900,000	$ 10,448,000
4. Portland City Central Loop		x	x	x	x	$ 7,615,000	$ 14,705,900
5. Portland Central City to Gateway		x	x	x	x	$ 17,830,000	$ 9,828,330
6. Gateway to Troutdale, Wood Village, and Fairview		x	x	x	x	$ 20,650,000	$ 17,507,000
7. Tualatin to Oregon City		x	x	x	x	$ 650,000	$ 1,262,000
8. Oregon City to Gateway		x	x	x	x	$ 13,900,000	$ 21,247,000
9. Gateway to Clark County		x	x	x	x	$ 6,420,000	$ 3,510,000
10. Portland Central City to Milwaukie		x	x	x	x	$ 4,480,000	$ 9,175,000
11. Milwaukie to Clackamas		x	x	x	x	$ 1,400,000	$ 3,847,000
12. Intersate 205 to Rock Creek Junction		x	x	x	x	$ 4,160,000	$ 4,097,000
13. Rock Creek Junction to US 26		x	x	x	x	$ 3,400,000	$ 1,172,000
14. Oregon City to Willamette Valley		x	x	x	x	$ 5,390,000	$ 792,000
15. Troutdale/Wood Village/Fairview to Damascus		x	x	x	x	$ 15,400,000	$ 2,060,000
16. Rivergate to Interstate 5		x	x	x	x	$ 10,475,000	$ 4,735,000
17. Interstate 5 to Columbia Shore South		x	x	x	x	$ 8,300,000	$ 5,183,330
18. Portland Central City to Columbia County		x	x	x	x	$ 600,000	$ 3,752,000
19. Beaverton to Tigard		x	x	x	x	$ 11,200,000	$ 22,595,000
20. Tirgard/Tualatin to Sherwood		x	x	x	x	$ 13,000,000	$ 4,800,000
21. Portland Central City to Beaveron		x	x	x	x	$ 15,410,000	$ 10,020,000
22. Beaverton to North Plains		x	x	x	x	$ 29,150,000	$ 7,417,000
23. Forest Grove to North Plains		x	x	x	x	$ 950,000	$ 2,667,000
					Corridor Totals	**$ 216,070,000**	**$ 221,332,560**

Notes:
Costs do not include projects in the 11+ year timeframe
Assumes projects in timeframe "1-5 years" and "through 10 years" were all active for 10 years, and projects in the timeframe "6-10 years" were active for 5 years. Projects in the "11+ years" timeframe were not included in this total.

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Appendix B

SAC Member List

2021 TSMO Strategy Stakeholder Advisory Committee

Margi Bradway, Metro's Deputy Director of Planning & Development

Kate Freitag, ODOT's Region 1 Traffic Engineer, TransPort Chair

Millicent Williams, former Portland Bureau of Transportation's Deputy Director

Wendy Cawley, Portland Bureau of Transportation's City Engineer

Joe Marek, Clackamas County's Transportation Safety Program Manager

Lisha Shrestha, Division Midway Alliance's Executive Director

Debra Dunn, Synergy Resources Group's President and Founder, Oregon Environmental Council Board Member

Avi Unnikrishnan, Ph.D., Portland State University's Professor, Dept. of Civil and Environmental Engineering

Matt Ransom, Southwest Washington Regional Transportation Council's Executive Director

Geoff Bowyer, ODOT's Region 1 Traffic Management Operations Center

Jon Santana, TriMet's Interim Executive Director of Transportation

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Appendix C

Vision & Goals Memo + Objectives Memo

Portland Metro Region

Memorandum

Date: March 16, 2021

To: Caleb Winter, Metro and Scott Turnoy, ODOT

From: Briana Calhoun, Kara Hall, and Chris Grgich, Fehr & Peers

Subject: DRAFT Vision & Goals for the 2021 Transportation Systems Management and Operations Strategy

PT20-0045 ODOT Key 21411

Metro, the Oregon Department of Transportation (ODOT), and their partner agencies are collaborating to develop the 2021 Regional Transportation Systems Management and Operations Strategy (2021 TSMO Strategy).

The 2021 TSMO Strategy will position the region to collaboratively manage the transportation system in a rapidly changing environment while achieving regional goals such as safety, equity, vibrant communities, shared prosperity, and a healthy environment.

This memorandum presents two components essential to creating a Strategy that meets the needs of the region, the vision and goals.

The **vision** presented below, is an aspirational statement that is clear on what TSMO stakeholders are trying to achieve through investments and collaboration.

This is followed by six **goals**, which provide strategic direction for collaboration and investment decisions to make progress toward the vision over the next 10 years.

Input gathered during the first Stakeholder Advisory Committee (SAC) workshop was used to inform development of the draft vision and goals. During the meeting, committee members were asked to share what components of the existing transportation system the Strategy should protect, what it should create, and what it should avoid. Input provided during the workshop resulted in the identification of four themes that the vision and goals should address:

- **Equity**: all people can travel and all voices are heard
- **Safety**: all people can travel without harm
- **Access** and **Choice**: all people can access and choose different modes when traveling
- **Coordination** and **Collaboration**: continued communication across agencies and state lines, within agency departments, and with the public

Portland Metro Region

2021 TSMO Strategy Vision

Following the SAC workshop, several vision statements were developed for consideration by the Project Management Team (PMT). Collaboration with the PMT, resulted in selection of the draft vision statement below as the aspirational statement that sets the path for what this strategy will achieve over the long-term.

> **Collaborate to provide reliable, agile, and connected travel choices so that all users are free from harm, and to eliminate the disparities experienced by people of color and historically marginalized communities.**

2021 TSMO Strategy Goals

With Metro staff input, Fehr & Peers developed six goals to provide broad strategic direction for what TSMO stakeholders are trying to achieve through investments and collaboration. The goal themes and statements are presented in **Table 1**. We drafted these goals to advance the vision for the 2021 TSMO Strategy and show they align with other regional plans, contributing to consistent policy within the region. Two goals, **Eliminate Disparities** and **Plan for the Future** were not part of the 2010-2020 TSMO Plan; however, they are supported by ODOT's Oregon Transportation Plan (OTP) and Oregon Highway Plan (OHP) and/or Metro's Regional Transportation Plan (RTP).

Portland Metro Region

Table 1. Draft Goals

2021 TSMO Strategy Goals	Similar Goals	2018 RTP Pillar
Free from Harm: Create a transportation system where all users are free from harm.	• 2010 TSMO Plan • Metro RTP • ODOT OTP	• Safety & Equity
Regional Partnerships/Collaboration: Collaborate as effective stewards of the transportation system.	• 2010 TSMO Plan • Metro RTP • ODOT OTP	• Accountability, Safety, & Reliability
Eliminate Disparities: Eliminate the disparities in the transportation system experienced by people of color and historically marginalized communities.	• Metro RTP	• Equity
Connected Travel Choices: Connect all people to the goods, services, and destinations they need through a variety of travel choices.	• Metro RTP • ODOT OTP • ODOT OHP	• Congestion & Climate
Reliable Travel Choices: Provide a transportation system that is reliable for all users.	• 2010 TSMO Plan • Metro RTP • ODOT OHP	• Reliability & Congestion
Prepare for Change: Manage the system to be agile in the face of growth, disruptions, and changing technology.	• Metro RTP • ODOT OTP	• Climate & Resilience

Portland Metro Region

Memorandum

Date: July 28, 2021

To: Caleb Winter, Metro and Scott Turnoy, ODOT

From: Briana Calhoun, Kara Hall, and Chris Grgich, Fehr & Peers

Subject: Objectives for the 2021 Transportation Systems Management and Operations Strategy

PT20-0045 ODOT Key 21411

Introduction

Metro, the Oregon Department of Transportation (ODOT), and their partner agencies are collaborating to develop the 2021 Regional Transportation Systems Management and Operations Strategy (2021 TSMO Strategy).

The 2021 TSMO Strategy will position the region to collaboratively manage the transportation system in a rapidly changing environment while achieving regional goals such as safety, equity, vibrant communities, shared prosperity, and a healthy environment.

This memorandum introduces the objectives developed for the six goals of the 2021 TSMO Strategy. The objectives, presented below, are the first step in defining how the region will achieve the goals. Development of the objectives will be followed by the identification of Performance Metrics, Targets, and Actions.

2021 TSMO Strategy Goals

With input from the Stakeholder Advisory Committee**,** the Project Management Team (PMT), and Metro staff**,** six goals were drafted for the 2021 TSMO Strategy. The goals, which provide strategic direction for collaboration, network operation, and investment decisions to make progress toward the vision for the next 10 years are presented in Table 1. See Table A1, included as an attachment to this memorandum, for more detail on how the six goals align with other regional plans and contribute to consistent policy within the region.

Portland Metro Region

Table 1. 2021 TSMO Strategy Draft Goals

2021 TSMO Strategy Goals
Free from Harm: Create a transportation system where all users are free from harm.
Regional Partnerships/Collaboration: Collaborate as effective stewards of the transportation system.
Eliminate Disparities: Eliminate the disparities in the transportation system experienced by black, indigenous, (and) people of color and low income individuals.
Connected Travel Choices: Connect all people to the goods, services, and destinations they need through a variety of travel choices.
Reliable Travel Choices: Provide a transportation system that is reliable for all users.
Prepare for Change: Manage the system to be agile in the face of growth, disruptions, and changing technology.

Portland Metro Region

2021 TSMO Objectives

To initiate development of objectives for the 2021 TSMO Strategy, Fehr & Peers compiled existing objectives and policies documented in regional and statewide plans that aligned with the six goals developed for the strategy update. Plans reviewed include:

- 2010 Regional TSMO Plan (Metro)
- 2018 Regional Transportation Plan (Metro)
- Oregon Transportation Plan (ODOT, 2006)
- Oregon Highway Plan (ODOT, 1999)

This review of other regional and statewide plans served as a source of example policies and facilitated a comparison between existing policy and objectives to confirm that objectives being developed for the 2021 TSMO Strategy contribute to consistent policy within the region and state. To see how existing policies and objectives align with the goals for the 2021 TSMO Strategy see **Tables B1-3** in **Attachment B**.

The draft objectives, presented below, were informed by input from the Stakeholder Advisory Committee (SAC) through two workshops. Each workshop focused on three goals and provided the opportunity for the SAC members to collaborate and draft objectives for each goal. This input was then compiled by Fehr & Peers to develop draft objectives that capture the key themes that emerged during the SAC workshop.

The final objectives will reflect collaboration with Metro Staff and the PMT before being presented back to the SAC.

Portland Metro Region

Free from Harm

Goal	Draft Objectives
Create a transportation system where all users are free from harm.	Manage the transportation system to reduce negative health impacts so that public health risk does not adversely effect people's mode choice.
	Ensure black, indigenous, (and) people of color and low income individuals benefit from safety improvements.
	Provide a transportation system where human error does not result in serious injury or loss of life.
	Ensure people of color and low income communities can safely access multiple low stress mode choices and routes within the transportation system by improving access to transit stops, pedestrian, and bicycle facilities.

Regional Partnerships/Collaboration

Goal	Draft Objectives
Collaborate as effective stewards of the transportation system.	Collaborate to provide consistent travel experiences across jurisdictional boundaries through integrated payment and scheduling systems, integrated corridor management, and data sharing between agencies.
	Collaborate with emergency management when prioritizing investments on key emergency response routes.
	Collaborate with and educate travelers.
	Improve interagency collaboration to ensure efficient operations by identifying and addressing barriers in communication when making decisions about network operation or expansion.

Portland Metro Region

Eliminate Disparities

Goal	Draft Objectives
Eliminate the disparities in the transportation system experienced by black, indigenous, (and) people of color and low income individuals.	Prioritize reaching underrepresented groups when providing traveler information and community outreach and ensure that modal access and traveler information is free from technological and financial barriers.
	Identify and correct disparities when planning, operating, and maintaining the transportation system (e.g., transit access, GHG exposure, allocation of funds).
	Identify and increase awareness of the unique travel experiences of people of color and low income individuals.
	Reduce the transportation cost burden experienced by black, indigenous, (and) people of color and low income individuals.

Connected Travel Choices

Goal	Draft Objectives
Connect all people to the goods, services, and destinations they need through a variety of travel choices.	Connect decentralized travel options to facilitate viable destinations in Regional Centers, Town Centers, and employment areas outside downtown Portland.
	Prioritize the completion and expansion of planned transit and active mode networks when investing discretionary revenues especially to destinations with limited travel choices.
	Connect goods and delivery services to people and businesses by providing for and managing last mile connections for goods delivery.
	Increase availability and accessibility of low-cost transportation options for low income individuals and people of color.

Portland Metro Region

Reliable Travel Choices

Goal	Draft Objectives
Provide a transportation system that is reliable for all users.	Manage recurring and non-recurring congestion to improve travel time reliability for all users, including active transportation, transit and freight.
	Expand travel time reliability improvements for people of color and historically marginalized communities burdened with long travel distances.
	Manage critical freight corridors to create reliable routes for freight movement between key destinations.
	Communicate expected changes in reliability so that travelers can make informed travel choices.

Prepare for Change

Goal	Draft Objectives
Manage the system to be agile in the face of growth, disruptions, and changing technology.	Plan and design a flexible transportation network that can adapt to new technology and travel choices that are consistent with the region's desired land use and transportation outcomes.
	Manage projects and resources to be responsive to changes in land use planning and growth patterns.
	Minimize long term disruptions to the transportation system by creating resiliency to climate change and economic shifts.
	Provide public agency staff with the data, tools, models, and training needed to assess long-term disruptive transportation trends.

Portland Metro Region

Table A1. Goals Summary

2021 TSMO Strategy Goals	Similar Goals	2018 RTP Pillar
Free from Harm: Create a transportation system where all users are free from harm.	• 2010 TSMO Plan • Metro RTP • ODOT OTP	• Safety & Equity
Regional Partnerships/ Collaboration: Collaborate as effective stewards of the transportation system.	• 2010 TSMO Plan • Metro RTP • ODOT OTP	• Accountability, Safety, & Reliability
Eliminate Disparities: Eliminate the disparities in the transportation system experienced by black, indigenous, (and) people of color and low income individuals.	• Metro RTP	• Equity
Connected Travel Choices: Connect all people to the goods, services, and destinations they need through a variety of travel choices.	• Metro RTP • ODOT OTP • ODOT OHP	• Congestion & Climate
Reliable Travel Choices: Provide a transportation system that is reliable for all users.	• 2010 TSMO Plan • Metro RTP • ODOT OHP	• Reliability & Congestion
Prepare for Change: Manage the system to be agile in the face of growth, disruptions, and changing technology.	• Metro RTP • ODOT OTP	• Climate & Resilience

Portland Metro Region

Table B1. 2010 Regional TSMO Plan

2021 TSMO Strategy Goals	2010 Regional TSMO Plan Objective	2010 Regional TSMO Plan Goal	Objective #
Create a transportation system where all users are free from harm.	Reduce crashes at signalized intersections.	Safety & Security	1
	Reduce crashes resulting from weather, construction, and secondary crashes from incidents.	Safety & Security	2
	Reduce crashes involving vulnerable road users (pedestrians and bicycles).	Safety & Security	3
	Provide a safe environment for transit, bicycling and walking.	Safety & Security	4
Collaborate as effective stewards of the transportation system.	Integrate arterial and freeway roadway systems and operate the transportation system from the overall system perspective.	Reliability	5
	Improve communication and coordination between transportation agencies and emergency management agencies.	Safety & Security	6
	Continue a regional collaborative marketing campaign to increase awareness and use of travel options and reduce drive-alone trips.	Quality of Life	6
	Support initiatives to reduce greenhouse gas emissions from vehicles.	Quality of Life	3
	Enhance regional multi-modal trip planning tools.	Traveler Information	3
Eliminate the disparities in the transportation system experienced by black, indigenous, (and) people of color and low income individuals.	Encourage transit ridership by providing safe and secure public transportation facilities.	Safety & Security	5
	Support equitable distribution of transportation services and investment.	Quality of Life	4
Connect all people to the goods, services, and destinations they need through a variety of travel choices.	Improve connections between modes to enhance traveler mobility and reduce reliance on the automobile.	Quality of Life	2
	Market and provide travel options services to employers and commuters.	Reliability	6
	Enhance pre-trip and en-route traveler information tools.	Traveler Information	2
Provide a transportation system that is reliable for all users.	Expand traffic incident and event management capabilities to restore roadway capacity reduced by incidents, weather and construction.	Reliability	1
	Enhance regional traffic signal coordination systems and support systems that respond to current conditions.	Reliability	2
	Implement and expand systems that improve reliability for transit, pedestrians, and bicycles.	Reliability	3
	Implement systems that reduce delays through known bottlenecks.	Reliability	4
	Encourage transit ridership by improving transit travel times and services	Quality of Life	1
	Provide current information that may affect roadway users and travel choices across all modes.	Traveler Information	1
Operate the system to be resilient to growth and disruptions.	Protect physical infrastructure and transportation communication networks from harm or misuse.	Safety & Security	7
	Support systems that implement future pricing strategies (e.g., congestion, tolls, parking).	Quality of Life	5

	Expand traffic surveillance and transportation system condition data collection capabilities.	Traveler Information	4

Table B2. 2018 Metro Regional Transportation Plan

2021 TSMO Strategy Goals	2018 RTP Objective	2018 RTP Goal	Objective #
Create a transportation system where all users are free from harm.	Eliminate fatal and severe injury crashes for all modes of travel.	Safety and Security	1
	Reduce the vulnerability of the public and critical passenger and freight transportation infrastructure to crime and terrorism.	Safety and Security	2
	Improve public health by providing safe, comfortable and convenient transportation options that support active living and physical activity to meet daily needs and access services.	Healthy People	1
Collaborate as effective stewards of the transportation system.	Focus growth and transportation investment in designated 2040 growth areas (the Portland central city, regional and town centers, corridors, main streets, and employment and industrial areas).	Vibrant Communities	1
	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 that provide access to jobs, markets and community places within and beyond the region.	Shared Prosperity	1
	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 vehicle miles traveled.	Transportation Choices	1
	Complete all gaps in regional bicycle and pedestrian networks.	Transportation Choices	2
	Minimize unnecessary light pollution to avoid harm to human health, farms and wildlife, increase safety and improve visibility of the night sky.	Healthy Environment	4
	Improve wildlife and habitat connectivity in transportation planning and design to avoid, minimize and mitigate barriers resulting from new and existing transportation infrastructure.	Healthy Environment	5
	Reduce transportation-related air pollutants, including criteria pollutants and air toxics emissions.	Healthy People	2
	Minimize air, water, noise, light and other transportation-related pollution health impacts.	Healthy People	3
	Reduce transportation-related consumption of energy and reliance on sources of energy derived from petroleum and gasoline.	Climate Leadership	5
	Meet adopted targets for reducing transportation-related greenhouse gas emissions.	Climate Leadership	2
	Improve coordination and cooperation among the owners and operators of the region's transportation system.	Transparency and Accountability	3

	Make transportation investment decisions using a performance-based planning approach that is aligned with the RTP goals and supported by meaningful public engagement, multimodal data and analysis.	Transparency and Accountability	2
	Increase the number of households and businesses with access to outreach, education, incentives and other tools that increase shared trips and use of travel options.	Reliability and Efficiency	5
Eliminate the disparities in the transportation system experienced by black, indigenous, (and) people of color and low income individuals.	Increase the number and variety of community places that households, especially households in historically marginalized communities, can reach within a reasonable travel time for all modes of travel.	Vibrant Communities	4
	Increase the number and diversity of regulated affordable housing units within walking distance of current and planned frequent transit service.	Vibrant Communities	3
	Reduce the share of income that households in the region spend on transportation to lower overall household spending on transportation and housing.	Shared Prosperity	4
	Protect historic and cultural resources from the negative impacts of transportation.	Healthy Environment	2
	Plan, build and maintain regional transportation assets to maximize their useful life, minimize project construction and maintenance costs and eliminate maintenance backlogs.	Fiscal Stewardship	1
	Engage more and a wider diversity people in providing input at all levels of decision-making for developing and implementing the plan, particularly people of color, English language learners, people with low income and other historically marginalized communities.	Transparency and Accountability	1
	Eliminate disparities related to access, safety, affordability and health outcomes experienced by people of color and other historically marginalized communities.	Equitable Transportation	1
	Eliminate barriers that people of color, low-income people, youth, older adults, people with disabilities and other historically marginalized communities face to meeting their travel needs.	Equitable Transportation	2
Connect all people to the goods, services, and destinations they need through a variety of travel choices.	Increase the share of households in walkable, mixed-use areas served by current and planned frequent transit service.	Vibrant Communities	2
	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.	Shared Prosperity	3
	Increase household and job access to current and planned frequent transit service.	Transportation Choices	3
	Increase household and job access to planned regional bike and walk networks.	Transportation Choices	4

	Implement policies, investments and actions identified in the adopted Climate Smart Strategy, including coordinating land use and transportation; making transit convenient, frequent, accessible and affordable; making biking and walking safe and convenient; and managing parking and travel demand.	Climate Leadership	1
Provide a transportation system that is reliable for all users.	Increase 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.	Shared Prosperity	2
	Maintain reasonable person-trip and freight mobility and reliable travel times for all modes in the region's mobility corridors, consistent with the designated modal functions of each facility and planned transit service within the corridor.	Reliability and Efficiency	1
	Increase the use of real-time data and decision-making systems to actively manage transit, freight, arterial and throughway corridors.	Reliability and Efficiency	2
	Increase the number of travelers, households and businesses with access to real-time comprehensive, integrated, and universally accessible travel information.	Reliability and Efficiency	3
	Reduce incident clearance times on the region's transit, arterial and throughway networks through improved traffic incident detection and response.	Reliability and Efficiency	4
	Expand the use of pricing strategies to manage vehicle congestion and encourage shared trips and use of transit.	Reliability and Efficiency	6
	Manage the supply and price of parking in order to increase shared trips and use of travel options and to support efficient use of urban land.	Reliability and Efficiency	7
Operate the system to be resilient to growth and disruptions.	Reduce the vulnerability of regional transportation infrastructure to natural disasters, climate change and hazardous incidents.	Safety and Security	3
	Protect fish and wildlife habitat and water resources from the negative impacts of transportation.	Healthy Environment	1
	Integrate green infrastructure strategies in transportation planning and design to avoid, minimize and mitigate adverse environmental impacts.	Healthy Environment	3
	Promote green infrastructure that benefits both climate and other environmental objectives, including improved stormwater management and wildlife habitat.	Climate Leadership	6
	Reduce vehicle miles traveled per capita.	Climate Leadership	3

	Support state efforts to transition Oregon to cleaner, low carbon fuels and increase the adoption of more fuel-efficient vehicles and alternative fuel vehicles, including electric and hydrogen vehicles.	Climate Leadership	4
	Develop new revenue sources to prepare for increased demand for travel on the transportation system as our region grows.	Fiscal Stewardship	2

Portland Metro Region

Table B3. Oregon Transportation Plan

2021 TSMO Strategy Goals	OTP Policy	OTP Goal	Objective #
Create a transportation system where all users are free from harm.	Provide access to healthy lifestyle options by supporting the ability of people to reach goods and services such as groceries, recreation, parks and natural areas, health care, and social opportunities via public transportation.	Health	1
	Plan for, design, and locate transit stops and stations to support safe and user-friendly facilities, including providing safe street crossings.	Safety and Security	1
	Provide for passenger and operator security on public transportation vehicles and at stops and stations through investments in facility design, amenities, appropriate security systems and personnel, and coordination with law enforcement staff.	Safety and Security	2
	Enhance the safety of public transportation through personnel training and education programs.	Safety and Security	3
	Promote public transportation as a safe travel option through public outreach campaigns and rider education programs.	Safety and Security	4
Collaborate as effective stewards of the transportation system.	Coordinate and enhance mobility management services and strategies to better coordinate services to enable riders and potential riders to use public transportation.	Mobility	4
	Encourage employers, educational institutions, and others to provide opportunities for employees' and clients' use of public transportation, carpool, vanpool, shuttles, and other shared rides.	Accessibility and Connectivity	4
	Integrate health considerations into public transportation planning and decision making at the local, regional, and state level.	Health	2
	Integrate public transportation agencies and personnel into emergency response and recovery planning and training activities to support resilience during and after natural disasters and other emergencies.	Safety and Security	6
	Support public transportation investments as a key approach to reducing greenhouse gas (GHG) emissions, as emphasized in state policy.	Environmental Sustainability	1
	Increase the use of public transportation by fully integrating public transportation with other community plans including transportation, land use, and economic development plans.	Land Use	1
	Invest strategically in maintenance, planning, transit service, and capital improvements to preserve and enhance public transportation.	Strategic Investment	1
	Foster creative investments and partnerships among public agencies and private organizations to improve the efficiency and effectiveness of public transportation services	Strategic Investment	2
	Pursue stable and consistent funding for public transportation operations and capital investments that maintain services and address identified needs.	Strategic Investment	3
	Coordinate communication and marketing to promote knowledge and understanding of available public transportation services.	Communication, Collaboration, and Coordination	1

Portland Metro Region

Table B3. Oregon Transportation Plan

2021 TSMO Strategy Goals	OTP Policy	OTP Goal	Objective #
	Collaborate and share costs for resources, supplies, and services that can be used by multiple agencies.	Communication, Collaboration, and Coordination	2
	Identify and advance opportunities to share data resources and collection methods.	Communication, Collaboration, and Coordination	3
	Collaborate with various agencies, jurisdictions, and transportation providers in support of effective public transportation that is reliable and easy to use and helps meet state, regional, and community goals.	Communication, Collaboration, and Coordination	4
Eliminate the disparities in the transportation system experienced by black, indigenous, (and) people of color and low income individuals.	Enact fare policies that reflect the needs of the community served; ensure that public transportation fares are understandable and easy to pay	Mobility	3
	Enhance access to education and employment via public transportation.	Community Livability and Economic Vitality	1
	Promote the use of public transportation to foster greater community livability	Community Livability and Economic Vitality	3
	Engage populations recognized as transportation disadvantaged in public transportation service decision making.	Equity	1
	Understand and communicate how disparities, barriers, and needs affect the ability of people to access and use public transportation, especially those who are transportation disadvantaged.	Equity	2
	Identify disparities, barriers, and needs that impact people's ability to access and use public transportation.	Equity	3
	Address the disparities, barriers, and needs that impact people's ability to access and use public transportation.	Equity	4
	Integrate equity criteria into funding decisions.	Equity	5
Connect all people to the goods, services, and destinations they need through a variety of travel choices.	Increase the share of households in walkable, mixed-use areas served by current and planned frequent transit service.	Mobility	2
	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.	Accessibility and Connectivity	3
	Increase household and job access to current and planned frequent transit service.	Community Livability and Economic Vitality	3
	Increase household and job access to planned regional bike and walk networks.	Community Livability and Economic Vitality	4

Portland Metro Region

Table B3. Oregon Transportation Plan

2021 TSMO Strategy Goals	OTP Policy	OTP Goal	Objective #
	Implement policies, investments and actions identified in the adopted Climate Smart Strategy, including coordinating land use and transportation; making transit convenient, frequent, accessible and affordable; making biking and walking safe and convenient; and managing parking and travel demand.	Land Use	1
Provide a transportation system that is reliable for all users.	Increase 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.	Accessibility and Connectivity	2
	Maintain reasonable person-trip and freight mobility and reliable travel times for all modes in the region's mobility corridors, consistent with the designated modal functions of each facility and planned transit service within the corridor.	Equity	1
	Increase the use of real-time data and decision-making systems to actively manage transit, freight, arterial and throughway corridors.	Equity	2
	Increase the number of travelers, households and businesses with access to real-time comprehensive, integrated, and universally accessible travel information.	Equity	3
	Reduce incident clearance times on the region's transit, arterial and throughway networks through improved traffic incident detection and response.	Equity	4
	Expand the use of pricing strategies to manage vehicle congestion and encourage shared trips and use of transit.	Equity	6
	Manage the supply and price of parking in order to increase shared trips and use of travel options and to support efficient use of urban land.	Equity	7
Operate the system to be resilient to growth and disruptions.	Reduce the vulnerability of regional transportation infrastructure to natural disasters, climate change and hazardous incidents.	Health	3
	Protect fish and wildlife habitat and water resources from the negative impacts of transportation.	Safety and Security	1
	Integrate green infrastructure strategies in transportation planning and design to avoid, minimize and mitigate adverse environmental impacts.	Safety and Security	3
	Promote green infrastructure that benefits both climate and other environmental objectives, including improved stormwater management and wildlife habitat.	Land Use	6
	Reduce vehicle miles traveled per capita.	Land Use	3
	Support state efforts to transition Oregon to cleaner, low carbon fuels and increase the adoption of more fuel-efficient vehicles and alternative fuel vehicles, including electric and hydrogen vehicles.	Land Use	4
	Develop new revenue sources to prepare for increased demand for travel on the transportation system as our region grows.	Communication, Collaboration, and Coordination	2

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Appendix D

Performance Measures Memo

Memorandum

Date: September 22, 2021

To: Caleb Winter, Metro and Scott Turnoy, ODOT

From: Briana Calhoun, Kara Hall, and Chris Grgich, Fehr & Peers

Subject: DRAFT Performance Measures for the 2021 Transportation Systems Management and Operations Strategy

PT20-0045 ODOT Key 21411

Introduction

Metro, the Oregon Department of Transportation (ODOT), and their partner agencies are collaborating to develop the 2021 Regional Transportation Systems Management and Operations Strategy (2021 TSMO Strategy).

The 2021 TSMO Strategy will be a key tool for implementing the Regional Transportation Plan and position the region to collaboratively manage the transportation system in a rapidly changing environment while advancing the RTP priorities for safety, equity, vibrant communities, shared prosperity, congestion management, and a healthy environment.

This memorandum introduces the performance measures developed for the six goals and 24 objectives for the 2021 TSMO Strategy. These performance measures make up the path the TSMO strategy will follow to achieve its vision, goals, and objectives. Development of the performance measures will be followed by the identification of targets to reach in ten years, and then discussions of supportive actions.

2021 TSMO Strategy Performance Measures

Seven performance measures were identified that will be used to measure progress toward the six goals and 24 objectives:

- VMT per Capita
- Number of Crashes by Severity
- Buffer Index
- Agency Collaboration and Communication Events

- System Connectivity
- Targeted TSMO Investments
- Timely Traveler Information

Rather than identifying a performance measure for each objective, these seven will help Metro to measure how well the TSMO strategy is advancing its goals without becoming a burden to track and report. Several of these measures are not restricted to TSMO planning but are broader indicators for the transportation system as a whole. The TSMO actions identified in the next steps of this process are ones that will be able to move the needle on these measures and indicate progress towards meeting the Strategy's goals.

The following section provides for each measure:

- A brief definition
- Which of the six TSMO goals the measure supports
- The key performance indicators (KPIs) that would be regularly tracked and reported by Metro.
- How these KPIs can be an indicator or proxy for other measures that will not be tracked or are outside of the scope of TSMO, and how they may relate to other measures in the document. Many measures are shown to correlate in a positive direction or negative direction to another measure. We refer to these as Direct (positive or upward) or Inverse (negative or downward)
- Related measures that are recommended for Metro and other agencies to consider tracking or do not have data available at this time.
- Whether the measure is already being used in other regional planning or monitoring efforts.

Portland Metro Region

Vehicle Miles Traveled (VMT) per Capita

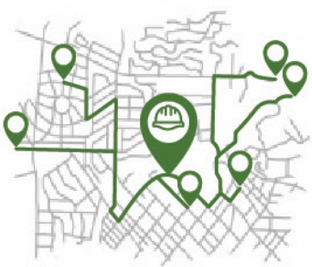
Vehicle Miles Traveled (VMT) per capita is a measure of the average number of auto miles driven per person within a given geography.

Free From Harm | Collaboration & Partnerships | Eliminate Disparities | Connected Travel Choices | Prepare for Change

Key Performance Indicators

Regional VMT per Capita. Regional VMT measures how much travelers are driving in the region. The measure is related to air toxins and greenhouse gas emissions, but does not account for vehicle electrification. Historically, VMT responded to economic changes (as the economy grew, so did VMT). However, as gas prices rose in 2008, VMT and the economy began to separate. VMT is still related to economics, and can represent upward economic movement, but new technology, higher seat utilization, and greater mobility choices can help reduce overall VMT, reducing recurring and non-recurring congestion. VMT can also be measured by geography determining an area's VMT generation and exposure.

VMT Exposure per Capita by Census Block Group. Exposure to VMT can result in increased air toxin exposure and higher crash risk. Historically, major routes have been constructed in BIPOC and Low-Income neighborhoods, disproportionately exposing those communities. Measuring VMT exposure tracks these impacts.



VMT Generation per Capita by Census Block Group. VMT generation can show that an area has grown economically, is attracting more employment, or that households that were transit dependent have the ability to choose an auto. VMT generation maybe much higher in locations where households own multiple vehicles, or in central business districts. Measuring generation by area will help identify what improvements are needed where.

Relationships

- Directly related to economic activity.
- Inversely related to the use of non-auto modes such as walking, biking, and transit.
- Directly related to crash risk.
- Directly related to the volume of cut through traffic.
- Inversely related to seat utilization.
- Directly related to total tailpipe air toxins and greenhouse gases.

Regional Use

This measure is used by numerous agencies, including Metro and PBOT[1], with the long-term target to reduce VMT in the region.[2] The Oregon Transportation Planning Rule (TPR) establishes VMT reduction targets for Transportation System Plans and Metro's Regional Transportation Plan (RTP) established a target of 10% reduction in VMT by 2040. VMT is currently not being reported by Transportation Analysis Zone[3] or Census Block. Additional work is needed to determine exposure and generation by these metrics.

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[1] Portland's TSP Policy 9.49.c aims to reduce the number of miles Portlanders travel by car to 11 miles per day or less, on average, by 2035.

[2] Greater Portland Area Daily VMT Per Capita 1990-2020: https://www.oregonmetro.gov/transportation-system-monitoring-daily-vehicle-miles-travel

[3] A Transportation Analysis Zone (TAZ) is a unit of geography used in transportation planning and transportation models for aggregating traffic related data.

Number of Crashes by Severity

The number and rate of crashes by severity is a measure of transportation safety.

Key Performance Indicators

Total Crashes per Million Vehicle Miles Traveled (MVMT) and per 100,000 Capita. Metro's Safety Strategy aims to eliminate serious crashes (crashes with life-changing injuries or fatalities) by 2035. Crashes on the transportation network cause non-recurring congestion, and fatal and serious injury crashes result in longer incident response times with sustained impacts. The TSMO Strategy aims to reduce harm and reduce the non-recurring congestion created by crashes by improving the safety of the system overall. Therefore, tracking total crashes should be evaluated in the following subsets:

- Crash rate by severity (crashes/MVMT/per 100,000 capita)[4].
- Crash rate by mode (crashes/MVMT/per 100,000 capita).
- Crash frequency of fatal, pedestrian, and bicycle related crashes (number of crashes).
- Ratio of crashes that occur in equity focus areas to total regional crashes (percent) by severity.

Exploratory Metrics

Crash Demographics. Current crash demographics are not readily available.[5] Metro's Safety Strategy identifies that "Traffic deaths are increasing and are disproportionately impacting people of color, people with low incomes and people over age 65." This metric would improve the region's understanding of the disproportional impacts of crashes, and how to correct them.

Crash Risk. Crash analysis is currently conducted using historical data and is therefore reactive. Technology and data sources are available to identify locations of increased crash risk before crashes occur but can be costly and privately owned. ODOT has recently conducted research on crash risk factors[6] and these findings could be incorporated into future crash metrics. This metric would help the region be proactive in transportation safety improvements.

Secondary Crashes. Secondary crashes are those that occur at the scene of the original crash or in the queue, even in the opposite direction. Current crash reporting documents do distinguish between a primary and secondary crash. This metric would help Metro measure the region's ability to manage, clear, and reopen facilities following an incident.

Average Miles Biked or Walked. Pedestrian and Bicycle miles traveled are lower than the total vehicle miles traveled. Therefore, when evaluating pedestrian and bicycle crash rates per miles traveled data on the average trip length or total miles walked or biked, better correlates than the total miles traveled by vehicles in the region. A data source for this measurement needs to be researched and determined for this work. These could include traveler surveys or data from a third-party provider.

Relationships

- Inversely related to disproportional impacts of transportation on neighborhood safety.
- Directly related to the number BIPOC and people with lower incomes seriously injured or killed while using the transportation system.
- Directly related to the number of non-recurring congestion events related to crashes.
- Directly related to the amount of resources needed for incident management.

Regional Use

[4] Consistent with the Regional Transportation Safety Strategy's annual reporting (see Chapter 6 Measuring Progress).
[5] Demographics are not reported in ODOT crash reports. NHTSA Fatality Analysis Reporting System (FARS) include race and ethnicity, analyzed in ODOT's memo on Pedestrian Injury and Social Equity in Oregon: https://www.oregon.gov/odot/Safety/Documents/Pedestrian_Safety_and_Social_Equity.pdf
[6] NCHRP 20-44(13) Implementation of NCHRP Research Report 893: The Oregon DOT Statewide Pedestrian and Bicycle Plan. http://onlinepubs.trb.org/onlinepubs/nchrp/docs/NCHRP20-44-13FinalReport.pdf

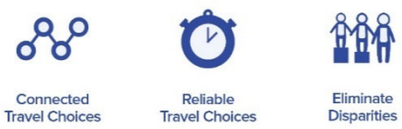
Metro reports traffic fatalities and serious injuries regionally and by equity focus area in an annual safety performance report[7] and the Metro Regional Transportation Plan and Regional Transportation Safety Strategy targets eliminating all fatalities and serious injury crashes by 2035. The City of Portland's Transportation System Plan aims to eliminate deaths and serious injuries for all who share Portland streets by 2025[8]. While demographics are not reported in the existing DMV crash reports, the National Highway Traffic Safety Administration (NHTSA) Fatality Analysis Reporting System (FARS) includes race and ethnicity.

[7] https://www.oregonmetro.gov/sites/default/files/2021/03/04/Metro-safety-annual-performance-report-2015-2019.pdf

[8] TSP Policy 9.49.a https://www.portland.gov/sites/default/files/2020-05/chapter2.tsp_.03.06.2020.pdf

Buffer Index

The extra time a traveler adds to their trip (buffer) to ensure on-time arrival.



Key Performance Indicators

Buffer Index. Travel time reliability is measured by taking the ratio of the longest to shortest duration trips for trips of the same distance on the network. Buffer index measures is the variability between 90th-percentile and 10th-percentile or run time for transit, or between the 95th percentile and average travel time for vehicles[9], as calculated by the following equation:

$$\frac{90th\text{-}Percentile - 10th\text{-}Percentile}{10th\text{-}Percentile} = Transit\ Buffer\ Index\ (\%)$$

$$\frac{95th\text{-}Percentile - 50th\text{-}Percentile}{50th\text{-}Percentile} = Vehicle\ Buffer\ Index\ (\%)$$

A higher percent value indicates a higher degree of variability during congested hours. Buffer index can measure by mode, and the TSMO strategy will report on changes to Transit Buffer Index and Vehicle Buffer Index:

- Transit Buffer Index for Frequent Bus Routes & Light Rail[10]
- Transit Buffer Index for BIPOC and Low-Income Service Routes
- Vehicle Buffer Index for Throughway Segments and Major Arterials[11]
- Freight Buffer Index for Regional Intermodal Connectors[12]

Relationships

- Directly related to the reliability of transit routes and on time performance.
- Directly related to congested areas that delay transit.
- Directly related to transit run time variability
- Directly related to the reliability of routes in a corridor.
- Inversely related to elapsed total time in which responders are able to clear incidents from roadways, railroads and transit tracks.

Regional Use

ODOT reports buffer time in their traffic performance report[13], with breakdowns by time of day and for major highway corridors designated as Throughwasy in the Metro Regional Transportation Plan. They also report the average and percentile travel times on key ODOT facilities as part of their TSMO performance measures[14].

TriMet reports on-time performance for their vehicles[15], and the Enhanced Transit Concept from PBOT includes peak delay and run time variability as key performance measures for enhanced transit. Metro reports excessive delay and travel time reliability in their regional barometer[16], and the City of Portland

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[9] FHWA recommends a number of reliability metrics including the ones listed above. https://ops.fhwa.dot.gov/publications/tt_reliability/ttr_report.htm

[10] As defined by TriMet, Frequent Service bus lines and MAX Light Rail run every 15 minutes or less most of the day, every day. https://trimet.org/schedules/frequentservice.htm

[11] Throughways and Major Arterials are defined on the RTP Motor Vehicle Network Map: https://drcmetro.maps.arcgis.com/apps/MapSeries/index.html?appid=9057331682354a188ecec2688071239f

[12] As defined in Chapter 3 the Metro RTP (2018) and Metro Regional Freight Strategy (2018). https://www.oregonmetro.gov/sites/default/files/2019/09/20/Regional-Freight-Strategy-FINAL-091919.pdf

[13] https://www.oregon.gov/ODOT/Projects/Project%20Documents/2018TrafficPerformanceReport.pdf

[14] https://www.oregon.gov/odot/Maintenance/Documents/ITS%20Plans%20and%20Reports/ODOT-Operations%20Program%20Performance%20Management%20Plan-June%202021_r6.pdf

[15] TriMet's FY 2021-2025 Business Plan has a target of time performance of 85% for bus, 90% for Max, 93.5% for LIFT, and 95% for WES for FY2022. They also have a target that the on-time performance on minority and low-income lines is better than or within 5 percent of non-minority and non-low income lines https://trimet.org/about/dashboard/index.htm

[16] https://regionalbarometer.oregonmetro.gov/pages/transportation-reliability

reports truck minutes of delay and the ratio of congested speed to posted speed in the Freight Master Plan.

Agency Collaboration and Communication Events

How often agency staff are collaborating and communicating progress towards TSMO Goals.

Key Performance Indicators

Percent of Public Engagement Activities that Involved BIPOC, Low Income, and Historically Marginalized Communities. Metro and their agency partners develop transportation solutions that serve the entire community. The solutions aim to correct historically disproportional impacts to BIPOC and Low-Income neighborhoods. This relies on creating meaningful opportunities for these communities to participate in the decision making.

Percent of Agencies Reporting & Sharing Data Metrics Annually. Data sharing is vital to collaboration across jurisdictional boundaries. Data should easily be available and in stored a central system (like the PDX Data Portal) to public and agencies within the region.

Average number of agencies and community groups involved in completed TSMO projects. Agency involvement is defined as participation in a management team, stakeholder groups, and/or technical reviews.

Exploratory Metrics

Number of Coordination Events and Number of Agencies Involved. Coordination between agencies can take a variety of forms. Making connections across departments and agency boundaries deepens the level of knowledge and empathy for the work and challenges staff face across the region. Coordination events build relationships and communication paths that lead to information sharing that allow agencies to be more agile and responsive in a rapidly changing environment.

Relationships

- Directly related to documenting agreed upon data standards, data collection and active (i.e., time-based) data sharing
- Directly related to improved collaboration & coordination.
- Coordination events can be inter-agency, or intra-agency across department lines

Regional Use

No regional agencies use this metric at this time. Federal Highway Administration Operations offers Capability Maturity Frameworks[17] and supports collaboration through regional workshops. Several agencies have public involvement plans or policies, and TransPort is a regularly well attended meeting.

[17] FHWA Capability Maturity information and links: https://ops.fhwa.dot.gov/publications/fhwahop16031/index.htm

System Connectivity

How complete and connected the infrastructure system is for each travel mode.

Key Performance Indicators

Percent of Signals with Communications. Installing communications across signals allows for connection to a central signal system, improved data collection, and signal management and operations. These connections should be prioritized for signals on regional important routes, including:

- Frequent service bus lines
- Arterials serving equity focus areas[18]
- Throughway Segments and Major Arterials
- Regional IntermodalConnectors

Connectivity Index of Infrastructure. A connectivity index is the comparison of 30-minute travel shed on the existing network as compared to an ideal grid network. A high connectivity index represents redundancy in the transportation network that can reduce the impacts of unforeseen events and the non-recurring congestion those events can cause. For examples, a high connectivity index for bicycles represents an alternative route when trails are flooded, or bridges are raised. A high connectivity index for vehicles could present shorter trips through neighborhoods, or alternative routes in regions impacted by natural disasters such as forest fire or mudslides. Connectivity Index should be measured mode and geography, including:

- for active transportation modes (pedestrian, bicycle) by route level of stress;
- for vehicular modes; and
- measured by census block, breaking out equity focus areas, regional centers, and town centers.

Percent of Households and Employers within 10-minute Walk or Bike Travel Shed from Transit. This measurement determines how easily travelers can access and interface with transit by low-stress bicycle and walking routes. The 10-minute walk or bike travel shed shows how far from transit a traveler can live but still have reasonable access to the system. The walk and bike travel shed connectivity using the existing system, assuming travelers are only able to use identified low-stress and accessible bike and walking routes. The metrics should be measured by census block, and affordability breaking out equity focus areas, regional centers, and town centers.

Relationships

- Indirectly related to sidewalk and bicycle system gaps.
- Directly related to access to transit, jobs, and services.
- Directly related to miles of infrastructure by mode in Equity Focus Areas where field devices are connected to centers.
- Directly related to systems infrastructure such as bicycle, pedestrian, and transit signal priority or stop amenities.
- Directly related to walking and biking network completeness
- Directly related to geographic transit coverage

Regional Use

[18] https://www.oregonmetro.gov/sites/default/files/2019/03/13/Transportation-Equity-Evaluation-Final-3.12.19.pdf

The Metro RTP has specific targets for system completeness[19]. TriMet's Business Plan also has targets for the percent of housing and employment within walking distance of transit[20]. ODOT's Operations Program Performance Management Plan aims to connect all ODOT signals by 2026.

[19] The 2018 RTP target for system completeness is to complete 100 percent of the regional network of sidewalks, bikeways and trails by 2040.

[20] The FY2021-2025 target is that the percentage of housing development and employment within walking distance of MAX, Division Transit Project, and Frequent Service bus is greater than or equal to the previous year.

Targeted TSMO Investments

How investments are distributed regionally and on key corridors for modal efficiency.

Key Performance Indicators

Percent of TSMO Investments benefiting key corridors. Where TSMO investments are made is an indication of who is benefiting from the efficiencies that result from this strategy. To ensure those efficiencies are realized in an equitable way, and to match the priorities and values of the region, the distribution of the investments should be measured through the life of the strategy. This strategy will track where investment benefit the following types of corridors as defined by other regional plans.

- Regional Emergency Transportation Routes[21]
- Enhanced Transit Corridors[22] & Frequent Bus Routes[23]
- Equity Focus Areas
- Regional Intermodal Connectors
- Throughway Segments and Major Arterials

Relationships

- Directly related to increasing reliability, access, and safety on intermodal connectors and other freight routes
- Directly related to economic gains from greater freight access
- Directly related to truck drivers finding places to park for required rest periods[24]
- Directly related to collaboration across jurisdictions as Mobility Corridors cross jurisdictional boundaries and connect cities and counties.
- Directly related to transportation operator's ability to integrate corridor management[25]
- Directly related to an equitable distribution of resources and ensuring that Equity Focus Areas are receiving equal or greater investment than the regional average.
- Directly related to resiliency of key facilities such as bridges
- Directly related to preparation for short- and long-term disruptions
- Directly related to improving reliability for high frequency transit
- Directly related to transit signal priority investments

Regional Use

No regional agencies use this metric at this time, though Metro's Regional Flexible Funding Allocation evaluates projects in part based on whether they develop specific arterial freight routes or make improvements on a travel corridor.

[21] https://rdpo.net/emergency-transportation-routes
[22] PBOT's Enhanced Transit Corridors documentation. https://www.portlandoregon.gov/transportation/73684
[23] The RTP Regional Transit Network concept is section 3.6.2
[24] Oregon Commercial Truck Parking Study in 2020: https://www.oregon.gov/odot/Projects/Pages/Commercial-Truck-Parking-Study.aspx
[25] An example is the I-84 Multimodal ICM study: https://www.oregonmetro.gov/multimodal-integrated-corridor-management

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Timely Traveler Information

How effectively information is being relayed to travelers to reduce delay associated with planned or unexpected events.

Key Performance Indicators

Percent of transit shelters with functional real-time arrival displays. Travelers without access to smart phones or on-line data sources at bus stop locations may not be aware of transit delays or missed buses. Shelters are installed at high frequency and high ridership locations as identified by the transit operators. Ensuring these locations have on-time arrival displays can provide travelers with needed information. Ensuring that these displays are functional and continue to operate is key to ensuring the maintenance of the system moving forward. These should be reported as a total for the region and for equity focus areas.

Number of Agencies with a Traveler Information System (TIS) plan. Metro and their partner agencies regularly provide information to the public around both planned and unexpected incidents. The creation of a TIS plan will help agencies to be prepared to rapidly distribute information to travelers about detours, closures, and hazardous conditions. The plan should at a minimum include standards for communication in a variety of languages and an equitable variety of communication channels.

Exploratory Metrics

Non-recurring delay associated with incidents. It is currently difficult to quantify and report non-recurring delay that is associated with specific incidents such as a crash. Exploring new data sources that can measure this delay would enable Metro to better understand whether their travel notifications are successful rerouting drivers and what share of delay is associated with recurring versus non-recurring congestion.

Data Sharing with Connected & Automated Vehicles (CAV), Smart Phones, and Mobility Devices. CAV technology enables a new level of traveler communication through in-vehicle data sharing. That data sharing also extends to specific Smart Phone apps, and other smart mobility devices. Applications include Mobility on Demand, Mobility as a Service, on-board notifications of traffic incidents, dangerous queues, or other roadway hazards. Mobility data can also be used to identify and report hard braking and other behaviors related to unexpected delays and non-recurring congestion. These data sources should be researched, with specific attention given to impacts to equity, safety, reliability, and cost.

Number of Buildings in Town Centers and Regional Centers with Real Time Traveler Information. Several third-party vendors provide systems with real time traveler information that is often available through smart phone applications or other mobility devises. Not all travelers have access to smart phones or other personal mobility technology, therefore providing real time traveler information can help notify travelers of conditions of closures before they begin their journey.

Relationships

- Directly related to the non-recurring congestion associated with both planned and unexpected events.
- Directly related to traveler happiness and comfort using the system.

Regional Use

TriMet's Business Plan includes a key strategic action to "implement enhanced information to customers through technology advances and communications strategies", which includes expanding digital

information displays at stops and on-board transit vehicles[26]. ODOT reports four performance measures for traveler information: number of people visiting ODOT communication outlets, ATIS notification delay, major incidents with no message (ATIS), and critical station on-time report[27].

[26] https://trimet.org/businessplan/pdf/TriMet_BusinessPlan_FY21_FINAL.pdf
[27] https://www.oregon.gov/odot/Maintenance/Documents/ITS%20Plans%20and%20Reports/ODOT-Operations%20Program%20Performance%20Management%20Plan-June%202021_r6.pdf

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Appendix E

Actions Memo

Portland Metro Region

Memorandum

Date: September 22, 2021

To: Caleb Winter, Metro and Scott Turnoy, ODOT

From: Briana Calhoun, Kara Hall, and Chris Grgich, Fehr & Peers

Subject: DRAFT Actions for the 2021 Transportation Systems Management and Operations Strategy

PT20-0045 ODOT Key 21411

Introduction

Metro, the Oregon Department of Transportation (ODOT), and their partner agencies are collaborating to develop the 2021 Regional Transportation Systems Management and Operations Strategy (2021 TSMO Strategy).

The 2021 TSMO Strategy will be a key tool for implementing the Regional Transportation Plan and position the region to collaboratively manage the transportation system in a rapidly changing environment while advancing the RTP priorities for safety, equity, vibrant communities, shared prosperity, congestion management, and a healthy environment.

This memorandum introduces the actions developed for the 2021 TSMO Strategy. These actions are the final step in the strategy creation and lay out practical, concrete steps for Metro and the regional partners to undertake during the ten year timeframe of the plan to meet the TSMO goals.

Development of the Actions

The project team worked with the stakeholders to develop and evaluate several actions related to the identified objectives for the project. To begin, a list of actions was developed to accomplish each of the strategy's objectives. This draft list of actions was refined by working with the stakeholder group. They stake holders were also given 3 votes actions related to each goal, in order to help the group determine the priority of actions given limited resources. The group also had the option to rewrite, remove, and or add to the actions initially drafted.

The process led to nearly 100 draft actions for the strategy. The stakeholder group noted that several of these actions were related, redundant, or supported each other. Following the stakeholder workshops, the project team them resorted the draft actions that were similar or redundant, to create a single overall action that included the aspects of the smaller more pointed actions. This was accomplished by physically cutting and pasting the actions into groups, listing what objectives each sub-action was meant to accomplish. Figure 1 shows some key points of the refinement process.

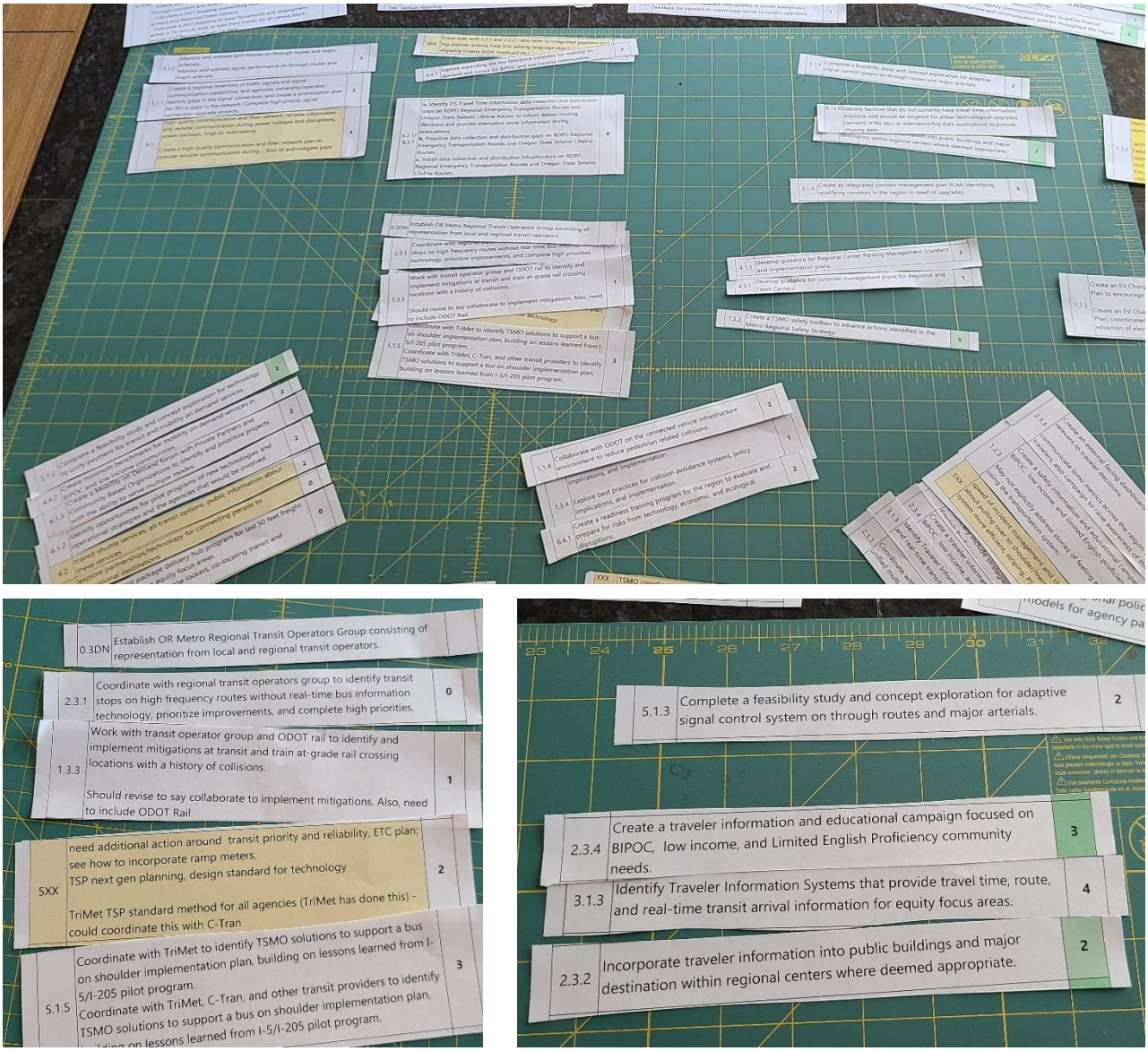

Figure 1: TSMO Action Development Process

These actions continued to be refined with input from TransPort, agency partners, and Metro staff.

2021 TSMO Strategy Actions

21 TSMO Actions were identified by the Regional TSMO Stakeholders. These actions were sorted into:

- Planning
- Concepts, Capabilities, & Infrastructure
- Listening & Accountability
- Data Needs

Each action was given a priority and completion timeline, as well as an agency that would track and report the action progress over the life of the plan.

These actions are meant to be a starting direction for the Regional TSMO Strategy. Over the course of the plan, if progress is not being measured on the strategy's objectives, the actions should be revised to better meet the region's needs.

The TSMO Strategy Actions are:

1. Establish TSMO performance measures baseline.
2. Inventory and manage regional signal and ITS communication infrastructure.
3. Develop a Mobility on Demand strategy and policy.
4. Manage transportation assets to secure the network.
5. Pilot Origin-Destination data to prioritize TSMO investments.
6. Track and prioritize TSMO Investments in BIPOC and low-income communities.
7. Continue freight technology and ITS deployment.
8. Facilitate Ground Truthing of Emerging Technologies.
9. Establish a Regional Transit Operators TSMO Group.
10. Unify and standardize fare subsidies for transit and MOD.
11. Develop an ITS travel time Information Data Collection and Distribution Plan for RDPO Regional Emergency Routes.
12. Explore new TSMO data sources.
13. Create a community listening program.
14. Create continuous improvement process for existing and new signal systems and related performance.
15. Deploy regional traveler information systems.
16. Implement Integrated Corridor Management and mainstream into corridor planning.
17. Create a TSMO Safety Toolbox.
18. Participate in regional public outreach to assist in guiding, listening, and learning through TSMO-focused conversations.
19. Improve TSMO data availability to aid in traveler decisions and behavior.
20. Plan for and use a TSMO Toolbox to connect gaps in bicycle and pedestrian infrastructure.
21. Update the Regional ITS Architecture.

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1. Establish TSMO performance measures baseline.

Planning

Action Description:

Create a baseline for measuring regional TSMO performance and advancement by:

- Mapping regionally significant routes as identified in other Metro planning documents where TSMO Metrics will be reported. These should include state routes, freight routes, transit routes, emergency transportation routes, and Mobility Corridors.
- Summarize findings from TSMO project before/after studies.
- Establish a standard calculation for VMT exposure and generation by census block and calculate a baseline for census blocks within the region.
- Extend bicycle and pedestrian Level of Traffic Stress (LTS) threshold and inventory existing LTS for through corridors and arterials.
- Calculate a 2021 baseline connectivity index for all census block groups, downtowns (Regional and Town Centers) and main streets, informed by community-identified barriers to connectivity.
- Calculate a 2021 baseline of total households and employment within a 10-minute walk or bike from transit for all census block groups and Regional/Town Centers.
- Identify gaps on routes where travel time information is needed for calculating reliability (e.g., buffer index).

Priority:

Low: required but not urgent
(SAC did not vote on this item)

Timeline:

Near: 2021-2023; in coordination with RTP update

Tracked by:

Metro and ODOT

Furthers Objectives:

This data is needed to track the identified TSMO performance metrics.

References to other Plans and Projects:

Subcontract: NCHRP 17-87 Enhancing Pedestrian Volume Estimation and Developing HCM Pedestrian Methodologies for Safe and Sustainable Communities

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2. Inventory and manage regional signal and ITS communication infrastructure.

Concepts, Capabilities, and Infrastructure

Action Description:

- Create a regional inventory of traffic signal capabilities by location and operator (e.g., connected to central signal system, utilizing Next Generation Transit Signal Priority, serving freight, sensing bike and ped movements).
- Using the inventory, plan for a high quality, reliable, and redundant signal communication network by identifying gaps and prioritizing projects.
- Upgrade traffic signals and communication networks on regionally significant corridors to meet the needs of advanced applications such as Next-Generation Transit Signal Priority (NextGen TSP) and Automated Traffic Signal Performance Measures (ATSPM) that require Advanced Transportation Controllers (ATCs) and fiber optic communication.
- Monitor and address signal performance on regionally significant corridors by identifying performance issues such as freight delay, transit delay, or high pedestrian and bicycle traffic stress.

Priority:

10 Stakeholder Advisory Committee (SAC)

High – to ensure the benefits of Next Generation Transit Signal Priority are extended region-wide

Timeline:

Ongoing

Milestone: September 2022 Division Transit Project

Tracked by:

PBOT (TransPort's Central Signal TransPort Subcommittee) – led by Chair

Furthers Objectives:

5.1) Manage recurring and non-recurring congestion to improve travel time reliability for all users, including active transportation, transit, and freight.

6.2) Manage projects and resources to be responsive to changes in land use planning and growth patterns.

References to other Plans and Projects:

Road User Understanding of Bicycle Signal Faces on Traffic Signals

Improved Safety and Efficiency of Protected/Permitted Right Turns in Oregon

Improving Walkability Through Control Strategies at Signalized Intersections

Addressing Bicycle-Vehicle Conflicts with Alternate Signal Control Strategies

Incorporating Pedestrian Considerations into Signal Timing

Operational Guidance for Bicycle-Specific Traffic Signals

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3. Develop a Mobility on Demand strategy and policy.

Planning

Action Description:

Create a Regional Mobility on Demand (MOD) Working Group consisting of agency staff, transportation demand management non-profits (e.g., Transportation Management Associations), private partners, university researchers, and community---based organizations to:

- Build on existing regional policy conversations in support of mobility partnerships, and technology solutions for last-mile connections.
- Participate in expanding access through micro-freight delivery (curb side delivery such as on-line purchases, food delivery apps, etc.).
- Coordinate with parking managers to improve operations particularly in downtowns and along main streets (e.g., Regional and Town Centers).
- Examine benchmarks set for shared mobility services (such as the PBOT Scooter Policy) by partner agencies and establish regional minimum level of service benchmarks for MOD service in equity focus areas connecting to opportunities, BIPOC, and low-income communities.
- Evaluate unified payment strategy and related policies, including congestion pricing, as they function to provide demand and system management through MOD, transit and connected travel options.
- Establish a strategy for connecting people to recreational destinations not well served by traditional transit during off-peak service hours.
- Identify opportunities for pilots to connect people to MOD and support them through programs with MOD service providers.
- Develop a pilot package delivery hub program for the "last 50 feet freight delivery", focusing on equity focus areas, incorporating guidance on siting package lockers, and the ability to co-locate with transit and other services.
- Develop communications with travelers to inform more travelers about these choices.
- Establish public-agency person-to-person lines of communication, formal agreements as necessary, pre-planned emergency needs, and information flows supportive of MOD operations.
- Use information flows with forecast models to optimize traveler's experience and MOD operator logistics.

Priority:

10 SAC Votes

High

Timeline:

Near: 2022-2024

Milestone: forming working group

Responsibility:

Metro convenes across planners and operators

Identify appropriate ODOT contacts for tasks to act in a supporting role.

Furthers Objectives:

2.1) Ensure historically marginalized communities and people of color benefit from safety improvements.

2.4) Improve inter-agency & intra-agency collaboration to ensure efficient operations by identifying and addressing barriers in communication when making decisions about network operation or expansion.

4.1) Connect decentralized travel options to facilitate viable destinations in Regional Centers, Town Centers, and employment areas outside downtown Portland.

4.2) Prioritize the completion and expansion of planned transit and active mode networks when investing discretionary revenues especially to destinations with limited travel choices.

Portland Metro Region

4.3) Connect goods and delivery services to people and businesses by providing for and managing last mile connections for goods delivery.

4.4) Increase availability and accessibility of low-cost transportation options in historically marginalized communities.

6.1) Plan and design a flexible transportation network that can adapt to new technology and travel choices that are consistent with the region's desired land use and transportation outcomes.

6.2) Manage projects and resources to be responsive to changes in land use planning and growth patterns.

6.4) Provide public agency staff with the data, tools, models, and training needed to assess long-term disruptive transportation trends.

References to other Plans and Projects:

Evaluation of Portland Shared E-Scooter Pilot Program Goals and Outcomes

Delivering Packages at Transit Stations: Considering Accessibility and Equity in Site Placement

New Mobility For All: Can Targeted Information and Incentives Help Underserved Communities Realize The Potential of Emerging Mobility Options?

Marginalized Populations' Access to Transit: Journeys from Home and Work to Transit

NSF Collaborative Research: RAPID: Maintain Mobility and Reduce Infection Through a Resilient Transit and Micromobility System

National Scan of Bike Share Equity Programs

Novel Approaches to Model Travel Behavior and Sustainability Impacts on E-Bike Use

The E-Bike Potential: How E-Bikes Can Improve Sustainable Transportation

How Technology Can Affect the Demand for Bicycle Transportation: The state of technology and projected applications of connected bicycles

ODOT TripCheck

Portland Metro Region

4. Manage transportation assets to secure the network.

Concepts, Capabilities, and Infrastructure

Action Description:

Secure the network from natural disasters and other disruptions by physically securing the infrastructure, identifying end of life equipment, and replacing it proactively.

Priority:

5 SAC Votes

High

Timeline:

Ongoing

Responsibility:

Individual Agency Responsibilities

(ITS-NMT group TransPort subcommittee), depending on assets included in this task

Furthers Objectives:

2.2) Collaborate with emergency management when prioritizing investments on key emergency response routes.

6.3) Minimize long term disruptions to the transportation system by creating resiliency to climate change and economic shifts.

References to other Plans and Projects:

Smart, Shared, and Social: Enhancing All-Hazards Transportation Recovery Plans with Demand Management Strategies and Technologies

Rapid Transportation Structure Evaluation Toolkit

Integrate Socioeconomic Vulnerability for Resilient Transportation Infrastructure Planning

Portland Metro Region

5. Pilot Origin-Destination data to prioritize TSMO investments.

Planning

Action Description:

- Identify data sources and obtain Origin-Destination (OD) data to determine the highest use trip pairs in the region, pairs with the greatest trip lengths, pairs with a trip end in an equity focus area, and pairs without existing transit connections for use in planning and project prioritization.
- Use the data to identify TSMO upgrades that benefit multiple modes and are adaptable to emerging technologies (i.e., charging stations for e-bikes and EVs, controller upgrades that allow for varying communication systems).
- Create an active system of OD collection, monitoring, and reporting.

Priority:

7 SAC Votes

Medium

Timeline:

Mid: 2023-2025

Responsibility:

Metro considers pilot with partners

Supportive role for ODOT

Furthers Objectives:

4.2) Prioritize the completion and expansion of planned transit and active mode networks when investing discretionary revenues especially to destinations with limited travel choices.

5.2) Expand travel time reliability improvements for people of color and historically marginalized communities burdened with long travel distances.

6.1) Plan and design a flexible transportation network that can adapt to new technology and travel choices that are consistent with the region's desired land use and transportation outcomes.

6.4) Provide public agency staff with the data, tools, models, and training needed to assess long-term disruptive transportation trends.

References to other Plans and Projects:

Reducing VMT, Encouraging Walk Trips, and Facilitating Efficient Trip Chains through Polycentric Development

Revisiting TODs: How Subsequent Development Affects the Travel Behavior of Residents in Existing Transit-Oriented Developments

Portland Metro Region

6. Track and prioritize TSMO Investments in BIPOC and low-income communities.

Listening & Accountability

Action Description:

- Create a priority process that listens for TSMO needs, projects, and guides funding allocation to prioritize investments for and/or in BIPOC and people with lower income.
- Review and update TSMO discretionary revenue prioritization to reflect the 2021 TSMO Strategy's updated goals and objectives.
- Evaluate TSMO prior investments from the last 10 years and identify disparities for BIPOC and low-income communities.
- Identify and multimodal connectivity disparities to target future TSMO investments.
- Track TSMO investments in equity focus areas and report bi-annually.

Priority:

6 SAC Votes

High

Timeline:

Near: 2021-2023

Milestone: RTP Update

Responsibility:

Metro, ODOT, and a third-party

Furthers Objectives:

1.4) Ensure people of color and historically marginalized communities can safely access multiple low stress mode choices and routes within the transportation system by improving access to transit stops, pedestrian, and bicycle facilities.

3.2) Identify and correct past disparities when planning, operating, and maintaining the transportation system (e.g., transit access, air toxins exposure, allocation of funds).

4.2) Prioritize the completion and expansion of planned transit and active mode networks when investing discretionary revenues especially to destinations with limited travel choices.

References to other Plans and Projects:

Addressing Changing Demographics in Environmental Justice Analysis, State of Practice

Portland Metro Region

7. Continue freight technology and ITS deployment.

Concepts, Capabilities, and Infrastructure

Action Description:

- Utilize existing and pilot new freight ITS technologies that identifies solutions to optimize freight operations and improve safety on critical corridors, such as optimizing progression for trucks, progress to pilot programs, freight dilemma zone detection and green extension.
- Share TSMO-generated data resources broadly with start-ups and established freight services.

Priority:

2 SAC Votes

Medium

Timeline:

Medium: 2021-2027

Responsibility:

All Agency Operators

Furthers Objectives:

4.3) Connect goods and delivery services to people and businesses by providing for and managing last mile connections for goods delivery.

5.3) Manage critical freight corridors to create reliable routes for freight movement between key destinations.

References to other Plans and Projects:

Delivering Packages at Transit Stations: Considering Accessibility and Equity in Site Placement

Application of Smart Phone Truck Data for Freight Performance Measures and Transportation Planning

Real-Time Stochastic Matching Models for Freight Electronic Marketplace

Metro convenes regional freight planning https://www.oregonmetro.gov/regional-freight-plan and City of Portland convenes a Freight Committee https://www.portlandoregon.gov/transportation/54899.

Safety measures for commercial vehicle drivers now include limitations that can cause issues including semi-trucks parking in undesignated areas. This was studied statewide with recommendations for the Portland region https://www.oregon.gov/odot/Projects/Pages/Commercial-Truck-Parking-Study.aspx

Portland Metro Region

8. Facilitate Ground Truthing of Emerging Technologies.

Concepts, Capabilities, and Infrastructure

Action Description:

Respond to community-voiced needs to initiate agency partnerships to test emerging technologies. Consider efforts in context provided by the forthcoming Metro Emerging Trends Study. Consider these as examples, recognizing that more pilots are needed to keep pace with technology advancements:

- Collaborate with ODOT on the connected vehicle infrastructure environment to reduce pedestrian related collisions.
- Explore best practices for collision avoidance systems, policy implications, and implementation.
- Create a readiness training program for the region to evaluate and prepare for risks from technology, economic, and ecological disruptions.
- Identify solutions to changes in growth patterns, travel behavior, and other non-emergency travel trends.
- Partner to increase mobility with electric vehicle (EV) adoption, including e-bikes, shared vehicles, and fleets. EVs relate to connectivity index in equity focused areas, downtowns (Regional and Town Centers), main streets and employment areas.
- Collect and evaluate safety and operational performance metrics for multimodal users (including pedestrians, bicyclists, and transit) through emerging detection technologies
- Partner with regional university transportation research centers in identifying and implementing projects exploring emerging technologies and data sources.

Priority:

7 SAC Votes

Medium

Timeline:

Ongoing

Milestone: Metro Emerging Trends Study

Responsibility:

Washington County, ODOT, PBOT, and Portland State University (PSU) Transportation Research & Education Center (TREC)

Furthers Objectives:

1.1) Manage the transportation system to reduce negative health impacts so that public health risk does not adversely affect people's mode choice.

1.3) Provide a transportation system where human error does not result in serious injury or loss of life.

4.4) Increase availability and accessibility of low-cost transportation options in historically marginalized communities.

6.1) Plan and design a flexible transportation network that can adapt to new technology and travel choices that are consistent with the region's desired land use and transportation outcomes.

6.4) Provide public agency staff with the data, tools, models, and training needed to assess long-term disruptive transportation trends.

Portland Metro Region

References to other Plans and Projects:

Exploring Data Fusion Techniques to Derive Bicycle Volumes on a Network

New Mobility For All: Can Targeted Information and Incentives Help Underserved Communities Realize The Potential of Emerging Mobility Options?

Integrate Socioeconomic Vulnerability for Resilient Transportation Infrastructure Planning

Exploring the Use of Crowdsourced Data Sources for Pedestrian Count Estimations

The Federal Highway Administration supports research and innovation at the national level https://highways.dot.gov/research and in partnership with FHWA's Oregon Division. This includes testing new devices in the context of the Manual on Uniform Traffic Control Devices (MUTCD). ODOT's Office of Innovation is also leading on connected vehicle technology, road usage charging and more. https://www.oregon.gov/odot/Programs/Pages/OfficeOfInnovation.aspx

Portland Metro Region

9. Establish a Regional Transit Operators TSMO Group.

Concepts, Capabilities, and Infrastructure

Action Description:

Establish a Metro Regional Transit Operators TSMO Group as a subcommittee of Transport consisting of representation from local and regional transit operators. Collaborate with the group to:

- Identify transit stops on high frequency routes without real-time bus information technology, prioritize improvements, and complete high priorities.
- Identify and implement mitigations at transit and train at- grade rail crossing locations with a history of collisions.
- Review and Regional NextGen Transit Signal Priority (TSP) projects and develop a coordination standard for deploying TSP throughout the region.
- Coordinate with TriMet to identify TSMO solutions to support a bus on shoulder implementation plan, building on lessons learned from I-5/I-205 pilot program.
- Inform and review speed and reliability project need and solutions.
- Create a standard for reviewing and deploying new technology.

Priority:

6 SAC Votes

High

Timeline:

Ongoing

Responsibility:

TriMet

ODOT has supporting role focused on rail crossings, passenger rail, signal prioritization

Furthers Objectives:

1.3) Provide a transportation system where human error does not result in serious injury or loss of life

2.3) Collaborate with emergency management when prioritizing investments on key emergency response routes.

5.1) Manage recurring and non-recurring congestion to improve travel time reliability for all users, including active transportation, transit, and freight.

5.2) Expand travel time reliability improvements for people of color and historically marginalized communities burdened with long travel distances.

5.4) Communicate expected changes in reliability so that travelers can make informed travel choices.

References to other Plans and Projects:

Evaluation of Road User Comprehension and Compliance with Red Colored Transit Priority Lanes

The Connection Between Investments in Bus Stops, Ridership, and ADA Accessibility

Portland Metro Region

10. Unify and standardize fare subsidies for transit and MOD.

Concepts, Capabilities, and Infrastructure

Action Description:

- Create a policy that includes standardized eligibility criteria with regard for ADA, Medicaid, and other assistance programs. Utilize existing efforts such as the General Transit Feed Specification for Eligibilities and Capabilities.
- Expand low fare/price subsidies to include MOD and transit for BIPOC and low-income communities.
- Evaluate feasibility of implementing City of Portland's Transportation Wallet pilot program for connecting affordable transportation options with people living in affordable housing.

Priority:

8 SAC Votes

High

Timeline:

Near

Responsibility:

TriMet

Furthers Objectives:

2.1) Collaborate to provide consistent travel experiences across jurisdictional boundaries through integrated payment and scheduling systems, integrated corridor management, and data sharing between agencies.

4.4) Increase availability and accessibility of low-cost transportation options in historically marginalized communities.

References to other Plans and Projects:

New Mobility For All: Can Targeted Information and Incentives Help Underserved Communities Realize The Potential of Emerging Mobility Options?

Portland's Transportation Wallet Increases Access to New Mobility Services

Applying an Equity Lens to Automated Payment Solutions for Public Transportation

Do Travel Costs Matter?: Using Psychological and Social Equity Perspectives to Evaluate the Effects of a Low-Income Transit Fare Program on Low-Income Riders

TriMet, Metro, ODOT and USDOT have supported grants for improved trip planning for demand responsive transit (DRT). In 2021, two new data specifications were introduced to handle eligibility and service provider capability. https://github.com/full-path/gtfs-eligibilities

BIKETOWN offers income based discounts including college students receiving financial aid. https://www.portland.gov/transportation/news/2021/9/16/biketown-expands-e-bike-service-portland-state-university-students

Portland Metro Region

11. Develop an ITS travel time Information Data Collection and Distribution Plan for RDPO Regional Emergency Routes.

Concepts, Capabilities, and Infrastructure

Action Description:

- Coordinate with agency partners to identify bottlenecks on RDPO Regional Emergency Transportation Routes, Oregon State Seismic Lifeline Routes and routes lacking redundancy and develop TSMO solutions to address these.
- Model strategies to reduce emergency response times and evacuation scenarios through technology or other actions.
- Create an Emergency Route travel time data collection plan. The plan should:
  - Identify ITS travel time information data collection and distribution gaps on RDPO Regional Emergency Transportation Routes and Oregon State Seismic Lifeline Routes to inform detour routing decisions and provide alternative route information during evacuations.
  - Prioritize data collection and distribution gaps on RDPO Regional Emergency Transportation Routes and Oregon State Seismic Lifeline Routes.
  - Install data collection and distribution infrastructure on RDPO Regional Emergency Transportation Routes and Oregon State Seismic Lifeline Routes.

Priority:

8 SAC Votes

Medium

Timeline:

Mid: 2023-2028

Responsibility:

ODOT

Furthers Objectives:

6.2) Manage projects and resources to be responsive to changes in land use planning and growth patterns.

6.3) Minimize long term disruptions to the transportation system by creating resiliency to climate change and economic shifts.

References to other Plans and Projects:

Integrate Socioeconomic Vulnerability for Resilient Transportation Infrastructure Planning

Rapid Transportation Structure Evaluation Toolkit

Smart, Shared, and Social: Enhancing All-Hazards Transportation Recovery Plans with Demand Management Strategies and Technologies

Emergency Routes Planning work (Metro)PORTAL Archive https://portal.its.pdx.edu/home

Regional Emergency Transportation Route (RETR) Phase 1 https://rdpo.net/emergency-transportation-routes will be followed by Phase 2.

Portland Metro Region

12. Explore new TSMO data sources.

Planning

Action Description:

- Explore new sources to measure identified exploratory TSMO performance measures. Exploratory metrics include:
  - Average miles walked and biked
  - Frequency of secondary crashes
  - Collision risk
  - Transportation cost burden for BIPOC and low-income communities
  - Non-recurring delay associated with incidents
  - Freight travel time and movement data
- Develop a NHTSA FARS data reporting policy and incorporate into annual reporting.

Priority:

SAC did not vote on this

Low

Timeline:

Ongoing

Responsibility:

PSU TREC

Furthers Objectives:

1.2) Ensure historically marginalized communities and people of color benefit from safety improvements.

1.3) Provide a transportation system where human error does not result in serious injury or loss of life.

1.4) Ensure people of color and historically marginalized communities can safely access multiple low stress mode choices and routes within the transportation system by improving access to transit stops, pedestrian, and bicycle facilities.

3.2) Identify and correct past disparities when planning, operating, and maintaining the transportation system (e.g., transit access, air toxins exposure, allocation of funds).

5.1) Manage recurring and non-recurring congestion to improve travel time reliability for all users, including active transportation, transit, and freight.

5.3) Manage critical freight corridors to create reliable routes for freight movement between key destinations.

References to other Plans and Projects:

PORTAL

BikePed Portal

Portland Metro Region

13. Create a community listening program.

Listening & Accountability

Action Description:

Build capacity for a community listening program to reduce barriers for travelers to report experiences related to TSMO. Tactics may involve but are not limited to partnering with large-scale public outreach to facilitate a breakout group specific to TSMO, supporting equity-focused consultants and Community Based Organizations to share input, initiating a study of agency customer feedback (including social media), piloting an anonymous feedback system generated by and for BIPOC and people with lower income to report travel experiences related to operations.

As part of the listening program, create a pilot where BIPOC and low-income travelers are paid to provide feedback and share their traveler experiences/stories with agency staff.

Support efforts with service providers to add capacity. Participate to listen for TSMO-related issues and follow up on previous efforts, identifying TSMO-related solutions.

Priority:

7 SAC Votes

High

Timeline:

Near: 2021-2024

Responsibility:

ODOT, Metro and PSU TREC

Furthers Objectives:

3.1) Prioritize reaching underrepresented groups when providing traveler information and community outreach and ensure that modal access and traveler information is free from technological and financial barriers.

3.3) Identify and increase awareness of the unique travel experiences of people of color and historically marginalized communities.

References to other Plans and Projects:

TriMet Reimagine Transportation
ODOT Office of Social Equity
Metro Regional Travel Options Program.
Equity outcomes and potential for a better bike share

Developing strategies to enhance mobility and accessibility for a community-dwelling older adults

New mobility for all: Can targeted information and incentives help underserved communities realize the potential of emerging mobility options?

Seamless wayfinding by individuals with functional disability in indoor and outdoor spaces: An investigation into lived experiences, data needs, and technology requirements

App-based data collection to characterize latent transportation demand within marginalized and underserved populations

How can enter disciplinary teams leverage emerging technologies to respond to transportation infrastructure needs? Mixed-methods evaluation of civil engineers urban planning and social workers' perspectives

Marginalized populations' access to transit: Journeys from home and work to transit

Do travel costs matter?: Using psychological and social equity perspective to evaluate the effects of a low income transit fare program on low income riders

Portland Metro Region

- Applying an equity lens to automated payment solutions for public transportation
- Developing data, models, and tools to enhance transportation equity
- A comprehensive examination of electronic wayfinding technology for visually impaired travelers in an urban environment
- Defining and measuring equitable access to Washington Park in Portland, Oregon
- Addressing changing demographics and environmental justice analysis, state of the practice
- Life-space mobility and aging in place
- Evaluating and enhancing public transit systems for operational efficiency, service quality and access equity
- Racial bias in drivers' yielding behavior or at crosswalks: Understanding the effect
- Evaluating efforts to improve the equity of bike share systems

Portland Metro Region

14. Create continuous improvement process for existing and new signal systems and related performance.

Concepts, Capabilities, and Infrastructure

Action Description:

Outline and begin continuous improvement process for signal systems and new concepts that serve major arterials and high-injury corridors. The continuous improvement process will utilize systems engineering from concept of operations through retirement of legacy systems.

In coordination with asset managers, inventory automatic traffic recorder stations, ATC controllers, and detection sensors (location, status, age, and operability). Identify through corridors and major arterials that do not currently have travel time information collection by mode to identify gaps in the existing system. Create a plan to mitigate identified gaps by completing high priority projects targeted for either technological upgrades (sensors, ATRs etc.) or crowd sourced data.

Priority:

2 SAC Votes

Low

Timeline:

Ongoing

Responsibility:

Agencies participating in TransPort's Central Signal System Users Group and PBOT

Furthers Objectives:

2.1) Collaborate to provide consistent travel experiences across jurisdictional boundaries through integrated payment and scheduling systems, integrated corridor management, and data sharing between agencies.

5.1) Manage recurring and non-recurring congestion to improve travel time reliability for all users, including active transportation, transit, and freight.

6.1) Plan and design a flexible transportation network that can adapt to new technology and travel choices that are consistent with the region's desired land use and transportation outcomes.

6.4) Provide public agency staff with the data, tools, models, and training needed to assess long-term disruptive transportation trends.

References to other Plans and Projects:

ODOT ITS Master Communication Plan

Data-driven mobility strategies for multimodal transportation

Understanding factors affecting arterial reliability performance metrics

Portland Metro Region

15. Deploy regional traveler information systems.

Concepts, Capabilities, and Infrastructure

Action Description:

Create a traveler information and educational campaign with BIPOC, low- income, and limited English proficiency community needs. The campaign should also start deploying traveler information systems where community-voiced need and multiple transportation options are present, building into a methodology Traveler Information Systems (TIS) priorities that may involve transit stops, public buildings, major destinations within regional centers. and on-vehicle displays. The TIS should incorporate a broad cross section of traveler needs which may include travel time, route, real-time transit, and real-time shared-use mobility information.

Priority:

9 SAC Votes

High

Timeline:

Ongoing

Responsibility:

Metro for convening and scoping

Furthers Objectives:

2.3) Collaborate with and educate travelers.

3.1) Prioritize reaching underrepresented groups when providing traveler information and community outreach and ensure that modal access and traveler information is free from technological and financial barriers.

References to other Plans and Projects:

Overcoming barriers for a wide-scale adoption of standardized real time transit information

Developing data, models, and tools to enhance transportation equity

ODOT TripCheck offers a Beta TripCheckTV for internet-connected displays.
https://www.tripcheck.com/tv/

TriMet lists developers including some who tailor information to dedicated monitors.
https://trimet.org/apps [] F&P will reference Ron's learning from CA

Portland Metro Region

16. Implement Integrated Corridor Management and mainstream into corridor planning.

Concepts, Capabilities, and Infrastructure:

Action Description:

Provide tools for regional partners based on I-84 Multimodal ICM Deployment Plan including:

- Establish a multimodal detour policy across agencies. Define lines of communication and pre-plan emergency needs by rehearsing scenarios for a variety of events impacting operations. Provide job-shadow and training experiences.
- Create a data sharing policy and inter-agency(s) agreement with agency partners to incorporate data into PORTAL or another identified internal sharing system. Share construction schedules across agencies. Implement a decision support system, employing forecast models as useful.

Beginning with the next RTP update, consider corridor needs that can be met through ICM based on regional efforts and FHWA guidance and local operators.

Priority:

3 SAC Votes

Low

Timeline:

2021-2023

Milestone: RTP Update

Responsibility:

Metro and ODOT

Furthers Objectives:

2.1) Collaborate to provide consistent travel experiences across jurisdictional boundaries through integrated payment and scheduling systems, integrated corridor management, and data sharing between agencies.

2.2) Collaborate with emergency management when prioritizing investments on key emergency response routes.

2.4) Improve inter-agency & intra-agency collaboration to ensure efficient operations by identifying and addressing barriers in communication when making decisions about network operation or expansion.

5.1) Manage recurring and non-recurring congestion to improve travel time reliability for all users, including active transportation, transit, and freight.

6.4) Provide public agency staff with the data, tools, models, and training needed to assess long-term disruptive transportation trends.

References to other Plans and Projects:

Understanding factors affecting arterial reliability performance metrics

Statistical inference for multimodal travel time reliability

Portland Metro Region

17. Create a TSMO Safety Toolbox.

Concepts, Capabilities, and Infrastructure:

Action Description:

Create a TSMO Safety Toolbox to advance actions identified in the Metro Regional Safety Strategy. The toolbox should include guidance for the deployment of new technologies and create policy for evaluating their effectiveness.

Create a Speed Management Plan, in coordination with Statewide Policy, and collaborate with local agencies to provide guidance and implementation program for active speed management and feedback including, automated speed feedback signs, changeable speed limits, automated enforcement, and traffic calming solutions. Evaluate speed limits and identify opportunities to apply a safe systems approach to speeds in regional and town centers, high pedestrian, and bicycle corridors, and in equity focus areas. Apply Automated Traffic Signal Performance Measures (ATSPMs), including speeds,

The toolbox should respond to emerging research related to speed reduction through signal timing strategies context and point out where overlapping road functions or classifications have potential for creating risk and/or preventing implementation of TSMO safety tools.

Priority:

5 SAC Votes

High

Timeline:

Near: 2022-2024

Responsibility:

All Agencies

Furthers Objectives:

1.2) Ensure historically marginalized communities and people of color benefit from safety improvements.

1.3) Provide a transportation system where human error does not result in serious injury or loss of life.

References to other Plans and Projects:

Data-driven mobility strategies for multimodal transportation

Improving walk ability through control strategies at signalized intersection

Subcontract: NCHRP 17-87 Enhancing Pedestrian Volume Estimation and Developing HCM Pedestrian Methodologies for Safe and Sustainable Communities

Pedestrian behavior study to advance pedestrian safety in smart transportation systems using innovative LiDAR sensors

Effect of residential street speed limit reduction from 25 to 20 mph on driving speeds in Portland, Oregon

Road user understanding of bicycle signal faces on traffic signals

Improving integration of transit operations and bicycle infrastructure at the stop level

Contextual guidance at intersections for protected bicycle lanes

The TSMO Safety Toolbox should utilize the Safe Systems Approach. Safe Routes to School efforts work with the traffic patterns, facilities, and education to improve safety for children and families on the way to and from school. In 2021, the Oregon Legislature approved emergency speed changes for Cities/Counties.

Portland Metro Region

18. Participate in regional public outreach to assist in guiding, listening, and learning through TSMO-focused conversations.

Listening & Accountability

Action Description:

TSMO-focused public outreach should include traveler safety information and be created with BIPOC, low-income, and limited English proficiency communities. Work with local agencies to create/update public outreach that specifically include equity-focused TSMO that include BIPOC, low income and limited English proficiency communities.

Priority:

8 SAC votes

Medium

Timeline:

Near

Responsibility:

Metro, ODOT and Third Party

Furthers Objectives:

1.2) Ensure historically marginalized communities and people of color benefit from safety improvements.

2.3) Collaborate with and educate travelers.

3.1) Prioritize reaching underrepresented groups when providing traveler information and community outreach and ensure that modal access and traveler information is free from technological and financial barriers.

5.4) Communicate expected changes in reliability so that travelers can make informed travel choices.

References to other Plans and Projects:

Developing data, models, and tools to enhance transportation equity

New mobility for all: can targeted information and incentive help underserved communities realize the potential of emerging mobility options?

Do travel costs matter?: Using psychological and social equity perspectives to evaluate the effects of a low-income transit fare program and low-income riders

Implementing a community transportation academy

Portland Metro Region

19. Improve TSMO data availability to aid in traveler decisions and behavior.

Listening & Accountability

Action Description:

- Unify multimodal trip planning by coordinating among transit service providers' and riders' needs, creating opportunities for TriMet and other Open Trip Planner partners.
- Create an external facing dashboard for TSMO metrics accountability connecting each metrics' relevance to travelers.
- Communicate TSMO to raise awareness in the need for travelers to participate to improve transportation system outcomes and metrics. For example, signage about moving over for emergency vehicles, merging, or moving property-damage-only crashes out of the travel lane will help with overall system management and clearance metrics.
- Increase communication about how the system could operate safer and more efficiently using signage and coordinating agency Public Service Announcements (PSAs.)

Priority:

7 SAC Votes

Medium

Timeline:

Mid

Responsibility:

Metro, TriMet and ODOT

Furthers Objectives:

2.1) Collaborate to provide consistent travel experiences across jurisdictional boundaries through integrated payment and scheduling systems, integrated corridor management, and data sharing between agencies.

2.3) Collaborate with and educate travelers.

5.4) Communicate expected changes in reliability so that travelers can make informed travel choices.

References to other Plans and Projects:

Overcoming barriers for the wide-scale adoption of standardized real-time transit information

Social transportation analytics toolbox (STAT) for transit networks

Portland Metro Region

20. Build and use a TSMO Toolbox to connect gaps in bicycle and pedestrian infrastructure.

Concepts, Capabilities, and Infrastructure:

Action Description:

Create a connected bicycle and pedestrian infrastructure with TSMO tools. Start with a Connectivity Index of existing pedestrian and bicycle infrastructure that includes community-voiced barriers, inventories of low stress facilities, and other identified gaps in the system. The toolbox should consider how pedestrian and bicycle modes interact with signals, illumination, and transit connections, while also the disparities experienced by BIPOC and people with lower income-. Investments made using the toolbox should afford complete treatment to address these disparities.

Priority:

23 SAC Votes

High

Timeline:

Ongoing

Milestone: ODOT Pedestrian and Bicycle Priority Routes

Responsibility:

All Agencies and PSU TREC

Furthers Objectives:

1.4) Ensure people of color and historically marginalized communities can safely access multiple low stress mode choices and routes within the transportation system by improving access to transit stops, pedestrian, and bicycle facilities.

4.1) Connect decentralized travel options to facilitate viable destinations in Regional Centers, Town Centers, and employment areas outside downtown Portland.

4.2) Prioritize the completion and expansion of planned transit and active mode networks when investing discretionary revenues especially to destinations with limited travel choices.

References to other Plans and Projects:

Equity in bike share research

Understanding economic and business impacts of street improvements for bicycle and pedestrian mobility - A multi-city multi-approach exploration [phase 2]

Reducing VMT, encouraging walk trips, and facilitating efficient trip chains through polycentric development

Bikeway design research

Improving integration of transit operations and bicycle infrastructure at the stop level

ODOT Active Transportation Needs Inventory (ATNI)

Portland Metro Region

21. Update the Regional ITS Architecture.

Planning

Action Description:

Collaborate on updates to the Regional ITS Architecture by reviewing changes on a quarterly basis and adjusting every two years to include innovations in the national and statewide architecture.

Priority:

4 SAC Votes

Low

Timeline:

Near: 2022-2024

Responsibility:

Metro

(ITS Architecture Group should be integral to this action)

Furthers Objectives:

2.4) Improve inter-agency & intra-agency collaboration to ensure efficient operations by identifying and addressing barriers in communication when making decisions about network operation or expansion.

6.1) Plan and design a flexible transportation network that can adapt to new technology and travel choices that are consistent with the region's desired land use and transportation outcomes.

References to other Plans and Projects:

Applying data driven multi model speed management strategies for safe, efficient transportation

Deploying electric buses to improve air quality in low-income areas

Can incentivizing E bikes support GHG goals? Launching the new EV incentive cost and impact tool

Connected vehicle system design for signalized arterials

Modeling and analyzing the impact of advanced technologies on livability and multimodal transportation performance measures in arterial corridors

The regional ITS Architecture was updated in 2016 and posted here on Metro's site https://www.oregonmetro.gov/public-projects/regional-tsmo-strategy/2010-2020-tsmo

Exhibit C to Resolution No. 21-5220
2021 Transportation System Management and Operations (TSMO) Strategy
Summary of Comments Received and Recommended Actions
Comments received September 24 through October 25, 2021

Metro respects civil rights
Metro fully complies with Title VI of the Civil Rights Act of 1964 and related statutes that ban discrimination. 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 (MPO) 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 strives for 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. JPACT serves as the MPO board for the region in a unique partnership that requires joint action with the Metro Council on all MPO decisions.

Project web site: www.oregonmetro.gov/tsmo

The preparation of this report was financed in part by the U.S. Department of Transportation, Federal Highway Administration and Federal Transit Administration. The opinions, findings and conclusions expressed in this report are not necessarily those of the U.S. Department of Transportation, Federal Highway Administration and Federal Transit Administration

2021 Transportation System Management and Operations (TSMO) Strategy Public Comment Report

The 2021 TSMO Strategy Draft was released for public review from September 24 through October 25, 2021. Comments were received during the public comment period and through the public meetings of the Transportation Policy Alternatives Committee (TPAC) on November 5, 2021 and Joint Policy Advisory Committee on Transportation (JPACT) on November 18, 2021. Stakeholders were encouraged to review the draft document and comment:

- in writing to Metro Planning, 600 NE Grand Ave., Portland, OR 97232 or transportation@oregonmetro.gov
- by phone at 503-797-1750 or TDD 503-797-1804
- Through an online comment survey

Public agencies, advocacy groups and members of the public submitted comments through email, the online comment survey and one video conference call. In total, eight people provided comments. Eleven people participated in the online comment survey and four of those respondents provided substantive comments. Three people submitted comments through email and one community organization representative provided comments on a video conference call with project staff. No comments were received by mail or phone. All comments received are attached to this report.

Notice of the public comment period was provided through Metro News and distributed to members of the Metro transportation committees interested persons list and Metro's Transportation Policy Alternatives Committee (TPAC) interested parties list and TransPort, a subcommittee of TPAC.

Online comment survey summary

The survey participants' answers to the open-ended questions are included in the comment log with responses.

The online comment survey included a multiple choice question that asked:
"Which actions should be emphasized? Select your top three. Please comment on your selections."
Out of 21 actions include in the 2021 TSMO Strategy, the following actions were selected by survey participants as ones that should be emphasized: Facilitate ground truthing of emerging technologies. (3 respondents), Develop a Mobility on Demand strategy and policy (2 respondents), Manage transportation assets to secure the network (1 respondent), Pilot Origin-Destination data to prioritize TSMO investments (1 respondent), Explore new TSMO data sources (1 respondent), Create a TSMO safety toolbox (1 respondent), and Improve TSMO data availability to aid in traveler decisions and behavior (1 respondent).

Comment log

The following comment log summarizes recommended changes to respond to all substantive comments received during the comment period. New wording is shown in underline; deleted words are crossed out in strikeout. Recommended changes will be made to the 2021 TSMO Strategy upon adoption of this Exhibit C by JPACT and Metro Council.

All items in this Exhibit C are recommended for approval by JPACT and the Metro Council.

The first 12 entries in the following comment log were from four people who made substantive

comments using the online comment form. They included optional demographic information that they were comfortable sharing. Two people responded from Portland, one from Beaverton and one from Washougal, Washington (based on Zip Code). Two respondents shared perspectives as "Community member/traveler" and two shared "Transportation professional" perspectives. Age ranges selected included 35-44 and 65-74. Three respondents selected white as their racial or ethnic identity and one preferred not to answer. Household income ranges before taxes were $50,000 to $74,999, $100,000 to $149,999 or preferred not to answer.

Comment	**Chapter or Appendix**	**Name/Commentator**	**Affiliation**	**Date**	**Method**
1	Chapter 3	Survey respondent 1	n/a	10/2/21	Survey
Comment			Response and/or recommended change (changes shown in ~~strikeout~~ and underline)		
Goal "1) Create a transit system that is free to all riders (without regressive taxation)."			Change Chapter 5, Action 10, sub-action 2 to read "Expand low or free fare, or price subsidies, to include MOD and transit for Black, Indigenous, people of color, and people with low incomes."		

Comment	**Chapter or Appendix**	**Name/Commentator**	**Affiliation**	**Date**	**Method**
2	Chapter 3	Survey respondent 1	n/a	10/2/21	Survey
Proposed change identified in comment(changes shown in ~~strikeout~~ and underline)			JPACT recommendations(changes shown in ~~strikeout~~ and underline)		
Add objective "The statistics are CLEAR if you are poor you can't afford to travel. My family takes the train and walks 20-30 min to avoid the cost. This study clearly avoids the issue that the lower incomes peoples earn IN PORTLAND CENTRAL do not cost of provide money to ride even with the 50% off cards. Do the math. If the rides where free we would have more white ridership and loads more short trips made by bus. It would only be a couple years until we saw all the cars off the roads and ridership reflect the population....less people of color killed by cars because they could afford monitored ticket travel. Seriously...rent and food eat more than a low income salary...you can't make it without cheating presently. This report doesn't make that abundantly clear. Free to all cuts cost of all that administration and would create lower skill level jobs that these same people could do cleaning regularly, handing security, etc."			No change recommended. In Chapter 3, Goal 3, Eliminate Disparities" includes objective 3.4 "Reduce the transportation cost burden experienced by Black, Indigenous, people of color and, people with low incomes."		

Comment	**Chapter or**	**Name/Commentator**	**Affiliation**	**Date**	**Method**

3	**Appendix** Chapter 2	Survey respondent 1	n/a	10/2/21	Survey
Comment		Response and/or recommended change (changes shown in ~~strikeout~~ and underline)			
Comment related to additional TSMO considerations for transportation agencies and decision-makers: "Stop the investment in tech and support the investment in the people."		No change recommended. The Strategy calls for use of the Equity Tree to assess the solution steps to achieving equitable outcomes, evaluating outcomes and being accountable.			

Comment	**Chapter or Appendix**	**Name/Commentator**	**Affiliation**	**Date**	**Method**
4	Chapter 3	Survey respondent 1	n/a	10/2/21	Survey
Proposed change identified in comment(changes shown in ~~strikeout~~ and underline)		JPACT recommendations(changes shown in ~~strikeout~~ and underline)			
Comment related to bias: "The bias is thinking that the workers with kids and earning minimum wage can afford the train...so more money put into tech means they continue to be left behind with no sign, no trains at night when there is work (MORE AND MORE WORK NIGHTS AND YOU EARN LESS THAN A 10 MIN UBER RIDE!!!!)....seriously make the train free for all and then add more drivers and trains...we don't need the tech."		The Strategy Chapter 3, Goal 4, Objective 4.4 is to "Increase availability and accessibility of low-cost transportation options for low income individuals and people of color." Recommend change to Chapter 5, Action to Unify and standardize fare subsidies for transit and MOD, sub-action 2 to read "Expand low or free fare, or price subsidies, to include MOD and transit for Black, Indigenous, people of color, and people with low incomes."			

Comment	**Chapter or Appendix**	**Name/Commentator**	**Affiliation**	**Date**	**Method**
5	Chapter 3	Survey respondent 2	n/a	10/5/21	Survey
Comment		Response and/or recommended change (changes shown in ~~strikeout~~ and underline)			
Comment related to Vision, Goals and values: "Single occupant vehicles (SOVs) are extremely inefficient in the use of terrestrial space. The more land devoted to accommodate SOVs, the farther apart we push the points of origin and destination for which travel is required - community sprawl. As the distance between points of origin and destination increases, the more miles needed for travel. Traffic congestion is a predictable and expected outcome when the focus on transportation is placed on SOVs to meet travel needs. This focus must be changed. Traffic engineers are primarily trained in designing roadways to maximize traffic flow. All too often their focus is on providing more space, more lanes, to		No change recommended. In Chapter 3, Goal 4, Connected Travel Choices, includes objective 4.1 to "Connect decentralized travel options to facilitate viable destinations in Regional Centers, Town Centers, and employment areas outside downtown Portland." This goal and objective connects TSMO with efficient land use through regional growth policy. Objective 4.2 "Prioritize the completion and expansion of planned transit and active mode networks when investing discretionary revenues especially to destinations with limited travel choices." A performance measure on "system connectivity" will provide a measurement basis with equity context to Goal 4 and related objectives.			

accommodate more traffic. This, along with the points listed above, contributes toward induced demand. Our Department of Transportation insists that they have insufficient funds to maintain existing pavement, and at the same time, they continue to increase lanes and lane widths. Increasing space (lane width, shoulders, medians) for SOVs in order 'improve safety' often results in faster traffic, decreased efficiency in use of space, higher speed accidents and increased fatalities. Traffic congestion in urban areas is not a 'problem to be solved,' but the expected result of over-dependence on SOVs to meet transportation needs. Traffic congestion is a tool that must be used to modify human behavior and realize increased mobility. Increased reliance upon frequent, interconnected, reliable public transportation must be our primary response."	The Strategy also includes an Action to "Create a TSMO Safety Toolbox" to utilize a Safe Systems Approach, actively manage speed, provide guidance and implement technologies to improve safety. TransPort, Subcommittee of TPAC, will continue to meet regularly, providing an open forum among traffic engineers, planners, researchers, consultants, community members and all are welcome.

Comment	**Chapter or Appendix**	**Name/Commentator**	**Affiliation**	**Date**	**Method**
6	Chapter 3	Survey respondent 2	n/a	10/5/21	Survey

Comment	Response and/or recommended change (changes shown in ~~strikeout~~ and underline)
Comment related to Objectives: "Need to acknowledge that a significant percentage of our population does not have access to, or should not have access to, an automobile. A significant percentage of the population does not have the ability (age/physical/mental/financial/legal limitations) to drive safely - many cannot drive at all. This likely includes over 30% - 40% of the population. To realize "EQUITY," we must acknowledge these points, and reduce focus on accommodating SOVs."	Recommend change to Chapter 3, Goal 4, Objective 4.4 "Increase availability and accessibility of low-cost transportation options for ~~l~~low income individuals and people of color, and in acknowledgement that a significant percentage of people will not have access to an automobile."

Comment	**Chapter or Appendix**	**Name/Commentator**	**Affiliation**	**Date**	**Method**
7	Chapter 5	Survey respondent 2	n/a	10/5/21	Survey

Comment	Response and/or recommended change (changes shown in ~~strikeout~~ and underline)
Comment related to current work and urgent need in respondent's community: "The objective of 'intelligent transportation systems' is to provide improved guidance and traffic control of transportation vehicles. (We do not	Goal 6, Objective 6.1 is to "Plan and design a flexible transportation network that can adapt to new technology and travel choices that are consistent with the region's desired land use and transportation outcomes."

need 'emerging technologies,' we need to better utilize, and improve upon, the technologies we already have. Safe, efficient systems have existed for many decades, utilizing hybrid technology and electrical power for energy of motion, and highly efficient, and automated traffic control. We call this technology 'railways.' High capacity railways rely on flanged steel wheels rolling effortlessly on steel rails, greatly minimizing energy use, landuse, and a wide range of environmental and health related issues. Rubber tires on pavement require TEN TIMES more energy to overcome rolling friction on level ground. Japan's Shinkansen demonstrates that railway technology can be virtually fail-safe, cost-effective, environmentally sound and efficient. ZERO injury accidents after over 56 years of operation at speeds up to 200 mph."	Chapter 5 Action, to Facilitate Ground Truthing of Emerging Technologies, starts with a description to "Respond to community-voiced needs to initiate agency partnerships to test emerging technologies." Recommended change to this action is to add an example to the list: "<u>Collaborate with ODOT Public Transit Division, transit agencies and rail operators to identify technologies for safe, efficient and reliable operations.</u>"

Comment	**Chapter or Appendix**	**Name/Commentator**	**Affiliation**	**Date**	**Method**
8	Chapter 5	Survey respondent 2	n/a	10/5/21	Survey

Comment	Response and/or recommended change (changes shown in ~~strikeout~~ and <u>underline</u>)
Comment related to additional TSMO considerations for transportation agencies and decision-makers: "We need congestion-pricing, NOT tolling. Congestion pricing can help reduce traffic congestion and make the road system operate more efficiently for everyone. Consider program like Vancouver WA is doing - allowing C-Tran buses to drive on shoulder. Congestion pricing revenue could be designed to allow funding for meaningful transportation solutions (not subject to Constitutional restriction). Tolling merely adds more money to the fund used to expand road structure. Current Constitutional limitations on gas tax and registration fees would allow 'operation' of the roadways - this could and should include operation of public transportation (buses) - this would also help to address 'congestion,' safety, equity and environmental concerns."	Chapter 5, Action to Develop a Mobility on Demand strategy and policy includes a sub-action to "Evaluate unified payment strategy and related policies, including congestion pricing, as they function to provide demand and system management through MOD, transit and connected travel options." Under the Action to "Establish a Regional Transit Operators TSMO Group," recommend change to the sub-action: "Coordinate with ~~TriMet~~ <u>transit operators</u> to identify TSMO solutions to support a bus on shoulder implementation plan, building on lessons learned from I-5/I-205 pilot program."

Comment	**Chapter or**	**Name/Commentator**	**Affiliation**	**Date**	**Method**

9	**Appendix** Chapter 3	Survey respondent 3	Southwest Washington Regional Transportation Council	10/13/21	Survey

Comment	Response and/or recommended change (changes shown in ~~strikeout~~ and underline)
Change Goal 1 from "free from harm" to "safe."	No change recommended. Goal 1 is to "Create a transportation system where all users are free from harm." This goal was crafted by the Stakeholder Advisory Committee along with objectives that include safety.

Comment	**Chapter or Appendix**	**Name/Commentator**	**Affiliation**	**Date**	**Method**
10	Chapter 3	Survey respondent 4	City of Portland	10/22/21	Survey

Proposed change identified in comment(changes shown in ~~strikeout~~ and underline)	JPACT recommendations(changes shown in ~~strikeout~~ and underline)
Commenting on Goals: "There isn't much in the way of specifics in these goals. High level words are difficult to translate into traffic signal timing parameters and technology choices."	No change recommended. Metro staff acknowledge that Vision and Goals are at a high level, reflecting regional policies.

Comment	**Chapter or Appendix**	**Name/Commentator**	**Affiliation**	**Date**	**Method**
11	Chapter 3	Survey respondent 4	City of Portland	10/22/21	Survey

Comment	Response and/or recommended change (changes shown in ~~strikeout~~ and underline)
Commenting on Objectives: "Traffic signal timing updates and changes for people walking. Traffic signal priority for buses. Improved accessibility for people walking."	Recommend change to Chapter 3, Goal 1 Free From Harm, Objective 1.4 "Ensure people of color and low income individuals can safely access multiple low stress mode choices and routes within the transportation system by improving access to, and accessibility of transit stops, pedestrian, and bicycle facilities." Recommend change to Goal 2 Regional Partnerships & Collaboration Objective 2.1 "Collaborate to provide consistent travel experiences across jurisdictional boundaries through knowledge-sharing on best approaches to multimodal traffic signal timing, integrated payment and scheduling systems, integrated corridor management, and data sharing between agencies."

	Recommend change to Chapter 5 Action "Inventory and manage regional signal and ITS Communication infrastructure" sub-action "Create a regional inventory of traffic signal capabilities by location and operator (e.g., connected to central signal system <u>for traffic signal timing updates</u>, utilizing Next Generation Transit Signal Priority, serving freight, sensing bike and pedestrian movements)."

The Online Comment form invited survey respondents to select their top 3 Actions. Selections were made as follows:

Survey Respondent 1: Improve TSMO data availability to aide in traveler decisions and behavior.
Survey Respondent 2: (none selected)
Survey Respondent 3:
- Develop a Mobility on Demand strategy and policy.
- Facilitate ground truthing of emerging technologies.
- Explore new TSMO data sources.

Survey Respondent 4:
- Manage transportation assets to secure the network.
- Facilitate ground truthing of emerging technologies.
- Create a TSMO safety toolbox.

Comment	**Chapter or Appendix**	**Name/Commentator**	**Affiliation**	**Date**	**Method**
12	Chapter 3	Paul Edgar	n/a	9/29/21	Email
Comment			Response and/or recommended change (changes shown in ~~strikeout~~ and <u>underline</u>)		
Email excerpts: "Portland/Metro Transportation and Transit Systems that were built and justified for high levels of commuters and those needs are now collapsing." … "What so many business entities have learned in this pandemic, is a lesson coming from this high level of disruption and loss of revenue, is that they have to change their business model."			No change recommended. Goal 6, Prepare for Change, Objective 6.1 is to "Plan and design a flexible transportation network that can adapt to new technology and travel choices that are consistent with the region's desired land use and transportation outcomes." This and other Objectives of the Strategy respond to disruptions and trends.		

Comment	**Chapter or Appendix**	**Name/Commentator**	**Affiliation**	**Date**	**Method**
13	Chapter 5	Paul Edgar	n/a	9/29/21	Email

Comment	Response and/or recommended change (changes shown in ~~strikeout~~ and underline)
Email excerpt: "Option #1, Climate Change and the Marketplace can be addressed by creating a whole new Transit Paradigm, by emulating Uber and Lyft with all new electric mini-buses, picking up and delivering transit riders where they need to go, within a totally automated and flexible Route Management Transit System.."	No change recommended. Chapter 5 includes an action to Develop a Mobility on Demand strategy and policy with a subtask to "Build on existing regional policy conversations in support of mobility partnerships, and technology solutions for last-mile connections." Mobility on Demand includes connections to transit, taxi and transit network companies (e.g., Uber, Lyft, GoGirlRide), among other services. Metro will assist by convening discussions.

Comment	**Chapter or Appendix**	**Name/Commentator**	**Affiliation**	**Date**	**Method**
14	Chapter 5	Paul Edgar	n/a	9/29/21	Email

Comment	Response and/or recommended change (changes shown in ~~strikeout~~ and underline)
Email excerpt: "Option #2, Major Interstate Highway System, I-5, I-205, and I-84 are essential and require the highest priority to address capacity needs, with the elimination of bottlenecks or impediments that impede the flow of traffic."	No change recommended. Chapter 5 includes an action to Implement Integrated Corridor Management and mainstream into corridor planning." Reliability on interstates and highways will be part of the discussion of capacity across a travel shed, along capacity on other facilities and modes.

Comment	**Chapter or Appendix**	**Name/Commentator**	**Affiliation**	**Date**	**Method**
15	Chapter 5	Paul Edgar	n/a	9/29/21	Email

Comment	Response and/or recommended change (changes shown in ~~strikeout~~ and underline)
Email excerpt: "Option #3, Create more nimble Demand Management Planning of providing the transportation capabilities and capacity where it is needed and justified by the Marketplace."	No change recommended. Chapter 5 includes an action to Develop a Mobility on Demand strategy and policy including a subtask "Evaluate unified payment strategy and related policies, including congestion pricing, as they function to provide demand and system management through MOD, transit and connected travel options."

Comment	**Chapter or Appendix**	**Name/Commentator**	**Affiliation**	**Date**	**Method**
16	Chapter 3	Paul Edgar	n/a	9/29/21	Email

Comment	Response and/or recommended change (changes shown in ~~strikeout~~ and underline)
Email excerpt: "Option #4, Justification and	No change recommended. Chapter 3 includes

Priority of Transportation Systems and Investments, needs 'Public By-In', and that requires Voter Approval of Congestion Pricing/Tolling!"	Goal 2, Regional Partnerships & Collaboration, including Objective 2.3 "Collaborate with and educate travelers."

Comment	**Chapter or Appendix**	**Name/Commentator**	**Affiliation**	**Date**	**Method**
17	Chapters 3 and 4	Elizabeth Graser-Lindsey	n/a	10/25/21	Email

Comment	Response and/or recommended change (changes shown in ~~strikeout~~ and underline)
Email excerpt: "…SDCs would be a strong congestion-reduction/demand management tool and they would help with encouraging infill and with discouraging sprawl and its exorbitant costs. Tolls are a poor congestion-reduction/demand management tool because they penalize people for unavoidably using the regional inefficient system of roads connecting sprawling and incomplete communities (e.g. they tax people going to work or not using transit because of last mile considerations and they push some traffic on to surface streets causing more problems) rather than giving them positive options – like compact urban forms -- so they don't need to congest the roads."	No change recommended. In Chapter 3, the Strategy includes a Goal 4 to "Connect all people to the goods, services, and destinations they need through a variety of travel choices." Goal 4, Objective 4.1 is to "Connect decentralized travel options to facilitate viable destinations in regional Centers, Town Centers, and employment areas outside downtown Portland." In Chapter 4, the Strategy includes a performance measure for "How complete and connected the infrastructure system is for each travel mode." These parts of the strategy relate to land use, transportation options and connectivity. Additional elements of the strategy incorporate aspects of costs, affordability and pricing that will be important through the regional policy development on pricing and revenue that is outside the scope of this Strategy.

Comment	**Chapter or Appendix**	**Name/ Commentator**	**Affiliation**	**Date**	**Method**
18	Chapters 5	Duncan Hwang	Asian Pacific American Network of Oregon	10/18/21	Video Call

Comment	Response and/or recommended change (changes shown in ~~strikeout~~ and underline)
Paraphrased comment: The Action to Establish TSMO performance measures baseline is important. Also important but missing from Actions are the benchmarks or price tags that will establish TSMO Program accountability.	Recommend change to the Action to Establish TSMO performance measures baseline, adding a subtask: "Establish benchmarks, milestones and/or estimate costs for Actions. Complete this as early as possible in the scoping of each Action and communicate this information throughout the life of this Strategy."

Comment	**Chapter or Appendix**	**Name/ Commentator**	**Affiliation**	**Date**	**Method**
19	Chapters 5	Duncan Hwang	Asian Pacific	10/18/21	Video Call

			American Network of Oregon		

Comment	Response and/or recommended change (changes shown in ~~strikeout~~ and underline)
Paraphrased comment: The community represented by, and served by Asian Pacific American Network of Oregon asks several key questions about the transportation system: Am I going to be safe? Can I use and access the transportation service? When changes are made, how will you help people and businesses adapt to new modes, new patterns and new facilities? For example, Division Transit Project serves long-range policies but impacts local businesses during construction and in the configuration that limits turns, removes parking and presents painful changes that would be best supported with recognition and proactive assistance to make the adjustment. This includes identifying solutions for businesses for which a reconfigured right of way disrupts the last 50+ feet of deliveries, creating an ongoing burden.	Recommend change to the Action to Implement Integrated Corridor Management and mainstream into corridor planning, adding a sub-action to "Participate in all phases of a corridor project listening for needs voiced by communities, considering disruptions and proposing TSMO-related solutions where applicable. Keep communication lines open post-project to recognize ongoing burdens and participate in adjustments."

Comment	**Chapter or Appendix**	**Name/ Commentator**	**Affiliation**	**Date**	**Method**
20	Chapters 5	Duncan Hwang	Asian Pacific American Network of Oregon	10/18/21	Video Call

Comment	Response and/or recommended change (changes shown in ~~strikeout~~ and underline)
Paraphrased comment: The Action to Develop a Mobility on Demand strategy and policy should include more specifics about how communities can be engaged. The Action currently risks not addressing several key areas of transportation accessibility: digital, banked and linguistic divide (apps and other online services that require devices, data, bank account, English). How does work in this area of TSMO Strategy intersect with regulations?	Recommend change to Develop a Mobility on Demand strategy and policy Action description "Create a Regional Mobility on Demand (MOD) Working Group consisting of agency staff, transportation demand management non-profits (e.g., Transportation Management Associations), private partners, ~~and~~ community based organizations and stakeholders representing and helping to solve accessibility issues common to online services, to:" Recommend change to the fourth sub-action: "Examine regulations for shared mobility. Examine benchmarks set for shared mobility services (such as the PBOT Scooter Policy) by partner agencies and establish regional minimum level of service benchmarks for MOD service in equity focus areas connecting to

	opportunities, to Black, Indigenous, people of color, and people with low incomes." Recommend change to the ninth sub-action: "Develop communications with travelers, <u>inclusive of people with app or online-services accessibility needs,</u> to inform more travelers about these choices"

Comment	**Chapter or Appendix**	**Name/ Commentator**	**Affiliation**	**Date**	**Method**
21	Chapters 5	Duncan Hwang	Asian Pacific American Network of Oregon	10/18/21	Video Call

Comment	Response and/or recommended change (changes shown in ~~strikeout~~ and <u>underline</u>)
Paraphrased comment: The Action to Create a community listening program faces an immediate issue of a lack of capacity in most communities to partner on areas of this Strategy and this Action.	Recommend change to Action to Create a community listening program, adding to the Action description: "<u>Build capacity at CBOs to share an understanding of this Strategy and to guide partnership.</u> Collaborate with CBOs using a culturally specific model and approach to reach out to non-English speakers or limited-English-proficiency groups."

Comment	**Chapter or Appendix**	**Name/ Commentator**	**Affiliation**	**Date**	**Method**
22	Chapter 3	John A. Charles, Jr.	Cascade Policy Institute	10/25/21	Email

Comment	Response and/or recommended change (changes shown in ~~strikeout~~ and <u>underline</u>)
Email excerpts related to growth policy: "Many jurisdictions own and operate transportation facilities with long lists of capital improvement projects that can't be funded. What is the added value of the TSMO plan?" … "I'm not aware of any other special service district that takes a no-growth approach to planning." … "Municipal water districts plan for adequate supply in response to increased demand; and sewage agencies build costly treatment plants." …	No change recommended. The Strategy follows the planning process to implement the 2018 Regional Transportation Plan with supportive strategies such as TSMO. The Strategy updates 2010-2020 TSMO Plan by incorporating the 2018 RTP's community-prioritized policies on equity, climate, safety and reliability for congestion relief. TSMO is part of Climate Smart Strategy policies at the regional and state level and is part of the Congestion Management Process required at the federal level. The precursor to TSMO were ad-hoc efforts in the 1990s among road and transit operators. Their collaborations grew around shared capabilities to actively manage roads and formalized through agreements and a shared

"Transportation appears to be the one infrastructure service operating with a no-growth strategy. Under the direction of JPACT, the region has failed to add significant new highway capacity since I-205 opened in 1982. This is not a sustainable vision for a growing region where most daily trips are made in motorized vehicles. While there is nothing wrong with using existing facilities more efficiently, as TSMO aspires to do, the region cannot depend on demand management as the primary response to economic growth." … "Since TSMO is likely to add no value to the region, I suggest that the plan be euthanized and given a proper burial."	Intelligent Transportation Systems Architecture. This approach is supported by FHWA Operations for both optimizing operations of roads as well as supporting multimodal approaches such as managing demand during major incidents and events. FHWA also supports approaches to incorporate mobility choice for people to access and share bikes, e-scooters and cars. Transportation demand management followed the model of electric utilities that recognized benefits of a management approach before expanding capacity. Water and sewer systems likely follows a similar approach through conservation.

Comment	**Chapter or Appendix**	**Name/ Commentator**	**Affiliation**	**Date**	**Method**
23	Chapters 3	John A. Charles, Jr.	Cascade Policy Institute	10/25/21	Email

Comment	Response and/or recommended change (changes shown in ~~strikeout~~ and underline)
Email excerpts related to safety: "'Free from harm' in a policy context has no meaning because governments cannot promise freedom from harm. Everything in life has risks, especially in transportation. Governments cannot stop people from driving under the influence of intoxicants, bicycling at night in dark clothing, texting while jaywalking, or simply losing concentration at the wrong moments. The level of surveillance that would be necessary to actually make us all free from harm would itself create harm through the loss of civil liberties." … "The proposed measure of showing 'progress toward meeting the 2035 Vision Zero Goal' is another meaningless feel-good statement. Reducing the number of crashes is desirable, but Metro's own reporting shows that 'Vision Zero' is unrealistic. In 2019, the five year moving average for the region was 83 deaths. The actual number of deaths was 95, and Vision Zero called for a reduction to 55 deaths." … "Given that both the City of Portland and Metro	No change recommended. The goal to "Create a transportation system where all users are free from harm" was the desired goal of the Stakeholder Advisory Committee for TSMO to both work toward zero deaths and to look for opportunities to design and operate a system that is responsive to reducing racially motivated assaults.

are seeing Vision Zero trends moving in the wrong direction, assuming compliance by 2035 is an unreasonable metric. It should be modified or eliminated."	

Comment 24	**Chapter or Appendix** Chapters 3&5	**Name/ Commentator** John A. Charles, Jr.	**Affiliation** Cascade Policy Institute	**Date** 10/25/21	**Method** Email
Comment			Response and/or recommended change (changes shown in ~~strikeout~~ and underline)		
Email excerpts related to Connected Travel Choices Goal: "'Connected travel choices' is vaguely relevant, although in the absence of any governmental planning the travel connections would be made anyway by private parties (if transportation markets were allowed to function)." … Email excerpts related to Reliable Travel Choices Goal: "'Reliable travel choices' should be the primary objective of this plan, but JPACT has already demonstrated over a long period of time that it has no interest in reliability. That's why Metro has never implemented congestion pricing despite studying it for nearly 30 years." … "Metro could also consider market-based road pricing, such as a revenue-neutral feebate system in which peak hour motorists would be tolled and off-peak drivers would receive rebates. But to my knowledge, of the three congestion pricing studies that are now in public discussion (sponsored by Metro, ODOT and Portland, respectively), none anticipate using tolling for this purpose. All three appear to be arbitrary and punitive." …			No change recommended. The Action in Chapter 5, to Develop a Mobility on Demand policy and strategy, includes the sub-action to "Evaluate unified payment strategy and related policies, including congestion pricing, as they function to provide demand and system management through MOD, transit and connected travel options."		

Comment 25	**Chapter or Appendix** Chapter 4	**Name/ Commentator** John A. Charles, Jr.	**Affiliation** Cascade Policy Institute	**Date** 10/25/21	**Method** Email
Comment			Response and/or recommended change (changes shown in ~~strikeout~~ and underline)		
Email excerpts related to VMT Performance			No change recommended. The Strategy		

Measure: "The VMT goal seeks to 'reduce average vehicle miles traveled per person by 10 percent from 2021.'" … "Even if a VMT reduction goal was achievable through government intervention, there is no reason for Metro to adopt it. VMT adds value to the regional economy, because there is an economic purpose for every trip."	includes a VMT performance measure, not a VMT goal.

Comment 26	**Chapter or Appendix** Chapters 3	**Name/ Commentator** John A. Charles, Jr.	**Affiliation** Cascade Policy Institute	**Date** 10/25/21	**Method** Email
Comment			Response and/or recommended change (changes shown in ~~strikeout~~ and underline)		
Email excerpts related to Eliminate Disparities Goal: "Claims of disproportionate impacts: On page 9, it states that the 2021 TSMO plan seeks 'to address the disproportionate impacts of the transportation system on Black, Indigenous, people of color, and people with low incomes.' There is no definition of 'disproportionate impacts" here or elsewhere. On pp. 12-13 the plan discusses 'equity in TSMO', but relies on some simple descriptive statistics rather than trying to analytically demonstrate that the regional transportation system is inequitable. The 'TSMO Equity Tree', on page 14, is complete jibberish and serves no purpose. … "'Eliminate disparities' is another phrase that has no meaning." … "Disproportionate impacts: Metro is obsessed with alleged disproportionate impacts, but sees them as only affecting certain classes of people." … "'Disproportionate impacts' is a very complex topic, with cross-subsidies flowing in many directions. If Metro feels compelled to include it as a feature element of the TSMO plan, then the agency should commit to a thorough study of the subject."			No change recommended. Metro staff will continue to study disparities and follow the community-prioritized equity policy adopted in the 2018 RTP.		

Comment	**Chapter or**	**Name/**	**Affiliation**	**Date**	**Method**

27	**Appendix** Chapter 1 & Appendix A	**Commentator** John A. Charles, Jr.	Cascade Policy Institute	10/25/21	Email
Comment			Response and/or recommended change (changes shown in ~~strikeout~~ and underline)		
Comment on Chapter 1 "…the plan states, 'This approach is the core goal of TSMO.'" Comment on Appendix A list of 2010 projects: "What is the reader supposed to infer from this list?"			Recommend change to Chapter 1.3 "This approach is ~~the~~ core ~~goal of~~ to TSMO." Recommend change to Appendix A table title "2010 TSMO ~~Strategy~~ Planned Projects"		

From: Summer Blackhorse
To: Molly Cooney-Mesker; Caleb Winter
Subject: FW: [External sender]Portland/Metro Changing Transportation Paradigm, Please enter my comments into the record for the update to TMSO Strategy
Date: Thursday, September 30, 2021 10:39:41 AM

See below for TSMO comment.

Summer Blackhorse

503-329-8407
Hours: 7:30 a.m. to 4:00 p.m., Monday through Friday

Metro, Program Assistant III
Metropolitan Transportation Improvement Program
Regional Travel Options
Get There, Portland Metro Regional Network Administrator
TransPort & Emerging Technology program support

Due to the impact of COVID-19 I am working remotely. I will respond to your email as soon as possible.

From: Trans System Accounts
Sent: Thursday, September 30, 2021 10:30 AM
To: Malu Wilkinson <Malu.Wilkinson@oregonmetro.gov>; Tom Kloster <Tom.Kloster@oregonmetro.gov>; Ted Leybold <Ted.Leybold@oregonmetro.gov>
Cc: Summer Blackhorse <Summer.Blackhorse@oregonmetro.gov>; Yuliya Lee <Yuliya.Lee@oregonmetro.gov>
Subject: FW: [External sender]Portland/Metro Changing Transportation Paradigm, Please enter my comments into the record for the update to TMSO Strategy

Hello all,
Let me know if comments on this subject need to be forwarded to any other specific persons.
Laura

From: Paul Edgar [mailto:pauloedgar@q.com]
Sent: Wednesday, September 29, 2021 12:24 PM
To: Trans System Accounts <transportation@oregonmetro.gov>
Subject: [External sender]Portland/Metro Changing Transportation Paradigm, Please enter my comments into the record for the update to TMSO Strategy

Paul O. Edgar, Comments to the Portland Metro, Transportation Management System and Operation Strategy

Subject: **Portland/Metro's Changing Transportation Paradigm, commuters are not going into inter-city Portland. The future as it plays out, will reflect only half of**

commuters same month, commuting into intercity Portland. This is a permanent Paradigm Shift.

The world of old of Estimated Transportation Needs, from before the COVID Pandemic have changed and the "Virtual Office" has become the new norm. Portland/Metro Transportation and Transit Systems that were built and justified for high levels of commuters and those needs are now collapsing.

The most frighting example is TriMet's MAX Light Rail Transit System that has little ridership and this has resulted into staggering reductions in ridership revenues and at the same time ever increasing high operating costs with little use and NO future. The "Transportation Paradigm Change" is happening all over the United States and it is well documented.

A recent review of the needs of the Regional Legal Community for office space in SW Portland, reflects that these entities are entering into a major shift of where their employees will work. What so many business entities have learned in this pandemic, is a lesson coming from this high level of disruption and loss of revenue, is that they have to change their business model. One of the first things is they have had to do is get their Balance Sheets in back into balance. They realize that a majority of the employees that they did not layoff and worked virtually and want to continue working virtually. Decisions have been made, they are relocating staff and moving out of their expensive office towers, to regional and less expensive locations that adapt to what their staff's wants as part of the new Virtual Office World.

In these private discussions, it was stated that these Portland Office Foot-Prints over the next few years, will be pared down to what will be only 10% to 30% of what they were previously. This will of course be dictated by their needs and realities of their clientele. This is happening across the board with large and small businesses and firms and they will no longer have the majority of their employees commute into Portland offices and work spaces in near SW, NW, NE, and SE Portland, unless that is a requirement of their conditions of their employment.

What we are seeing is reflected in commuting ridership on TriMet's Light Rail Transit Systems, which might now only represent only 5% to 8% of Pre-Pandemic ridership, same month to current month from before the Pandemic. Regional outline areas are seeing office space getting snapped up in areas close to where people live and an example that was provided, was Kruse Way.

Roads, Highways and Bridges however are experiencing a return to levels of incidents of travel, close to what was occurring from before the COVID Pandemic.

This brings about real questions on ODOT and Portland/Metro's ability to respond to these "Paradigm Shifts on our Transportation Systems Needs and Priorities and Where to Invest".

1. The Marketplace is telling us that the great, great majority will no long having the need for the proposed SW Corridor TriMet Light Rail Transit Line to Tigard and Tualatin! (

2. The cost to provide "Fixed" TriMet's Light Rail Transit capabilities with limited all sources revenues can no longer justified and sustained.

3. The "Essential Transportation Needs have changed and now need to be Identified" as part of this Major Paradigm Shift in the Marketplace of whats it wants, needs, and will use.

A. Option #1, Climate Change and the Marketplace can be addressed by creating a whole new Transit Paradigm, by **emulating Uber and Lyft with all new electric mini-buses,** picking up and delivering transit riders where they need to go, within a totally automated and flexible Route Management Transit System.

B. Option #2, Major Interstate Highway System, I-5, I-205, and I-84 are essential and require the highest priority to address capacity needs, with the elimination of bottlenecks or impediments that impede the flow of traffic.

C. Option #3, Create more nimble Demand Management Planning of providing the transportation capabilities and capacity where it is needed and justified by the Marketplace.

D. Option #4, Justification and Priority of Transportation Systems and Investments, needs "Public By-In", and that requires Voter Approval of Congestion Pricing/Tolling!

October 25, 2021

Dear Decision Makers on I205 Tolling Project:

The I-205 Tolling Project update for public comment states in its Purpose, "The I-205 Toll Project will use variable-rate tolls on the Abernethy and Tualatin River Bridges to raise revenue to complete the I-205 Improvements Project and manage congestion."

The lack of revenue to complete I-205 Improvement Projects and to prevent regional congestion is an open acknowledgement that the lack of System Development Charges (SDCs) for regional transportation -- highways and freeways -- charged for new regional development is causing harm to the region.

- This harm takes the form of congestion that impacts each trip that residents take such as slowing the trip and making it inefficient wasting residents' time and fuel and likely reducing roadway safety.
- This harm also takes the form of development not covering its costs to the region nor factoring in the cost of transportation into development decision.
- It turns out that **SDCs for regional transportation <u>are</u> a congestion-reduction/demand management tool** (despite AskODOT's assertion to the contrary[1]). Therefore **they naturally would encourage compact urban forms, discourage driving and would benefit climate**. When an organization or individual bears the actual cost of their (new development) impacts, they factor

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1

Elizabeth Lindsey <eaglsing@gmail.com> Jun 11, 2018, 11:34 AM

Good morning Elizabeth –

Thanks for reaching out to Ask ODOT with your questions about system development charges (SDCs). As you probably know, the funding decisions and mechanisms involved with transportation projects are complex. ODOT is funded in large part by fuel taxes (both state and federal) and often works in partnership with local jurisdictions to complete projects.

You specifically asked whether ODOT has considered funding projects through System Development Charges. The short answer is yes. However, SDCs can only be assessed on new development and the revenues from those charges are only invested in related projects. As SDCs cannot be assessed at a high enough rate to cover 100% of project costs, this leaves a funding gap. Often, if these projects are not included in investment plans (either by the state or another jurisdiction) then these projects (and the SDC funds already generated/committed) sit awaiting additional funding. For myriad reasons, ODOT does not currently assess SDCs or rely on revenues generated therein to maintain our transportation system. In the past, some state facilities have been included in local government SDCs revenues.

You also asked about value pricing as a revenue generation mechanism. As you may know, the Oregon Legislature passed HB 2017, *Keep Oregon Moving*, during the 2017 legislative session. In that funding package, the Legislature directed ODOT to evaluate different value pricing options both as a congestion-reduction/demand management tool and a revenue generation tool. Consistent with the legislative direction, ODOT is in the process of evaluating all available options, with input from the Policy Advisory Committee and members of the public. If tolls are ever placed on Oregon roadways, it will be after engagement with the public, the legislature, and the Oregon Transportation Commission.

As a final note, value pricing focuses on demand management *and* revenue generation, whereas SDCs aren't an effective roadway management tool.

If you're interested in specific projects in your area or specific details about the value pricing options I'd be happy to talk in more detail, or direct you to the right person. Hope this helps. Please let me know if you have additional questions. Thanks.

Lindsay

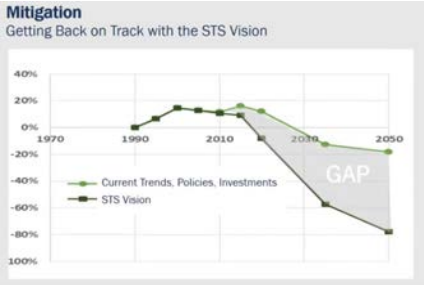
Lindsay Baker
Government Relations Manager
Oregon Department of Transportation
355 Capitol St. NE
Salem, OR 97301
(503) 877-7019 (cell)

those costs into their decision making -- such as whether to develop (or live) close in e.g. near transportation hubs and transit or whether to develop in remote sprawling locations. **System Development Charges for regional transportation could be quite complementary to enacting Vehicle Miles Travelled charges and Vehicle Miles Reduction programs**, that are under consideration. It they were implemented in that way, SDCs would be a strong congestion-reduction/demand management tool and they would help with encouraging infill and with discouraging sprawl and its exorbitant costs.

Tolls are a poor congestion-reduction/demand management tool because they penalize people for unavoidably using the regional inefficient system of roads connecting sprawling and incomplete communities (e.g. they tax people going to work or not using transit because of last mile considerations and they push some traffic on to surface streets causing more problems) rather than giving them positive options – like compact urban forms -- so they don't need to congest the roads.

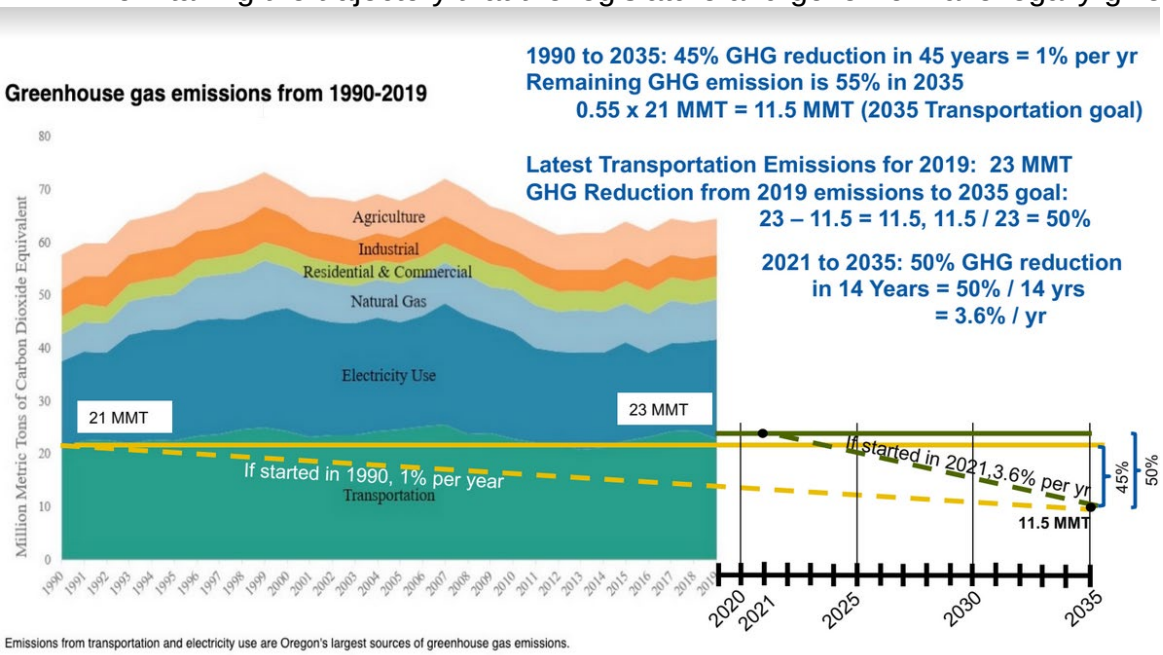
- ODOT's failure to charge SDCs for regional transportation is the main cause of regional congestion which has built up over many years when regional-transportation SDCs were a potential, but untapped, funding source. While SDCs can't be charged for congestion that predates new development, new development can pay for the congestion it generates as soon as you implement the SDCs. And, as soon as you implement the SDCs, the "funding gap" to correct congestion will stop growing.
- It is much more sensible to penalize the public in such a way that there is an incentive for them to live close to work (through a regional-transportation SDC that the developer would tend to pass on to the home buyer) than to enable the public to cheaply live far from work and service and urban centers (through no ODOT SDC) and then penalize the entire public (through new tolls) for the sprawling transportation needed to service the sprawling development.
- It is unreasonable for the long-time transportation system users to have to subsidize new development that overcrowded the roadway system in recent years/decades. Tolls are essentially a new development subsidy paid by the general public. Development should pay its own way, not pass its costs on to the general public.
- Using tolls to do what SDCs should have done and still could do causes cynicism in much of the public and damages the good will that we need to solve serious problems such as climate change.
- Furthermore, **subsidizing new development through tolls puts ODOT further from decreasing transportation greenhouse gas emissions**,

https://www.youtube.com/watch?v=JwV6SevgC3k&feature=youtu.be 6:00/57:57)



The GAP is the failure to meet the emission reduction target.

because we see (elsewhere in ODOT data) that per capita emissions have leveled off or reduced and it's the encouraging of population growth (new development) that keeps Oregon's transportation greenhouse gas emissions from taking the trajectory that the legislature and governor have legally-given.



Datasource:https://www.oregon.gov/deq/aq/programs/Pages/GHG-Inventory.aspx

- And subsidizing new development through tolls puts ODOT further from complying with Statewide Planning Goals 12[2] and 14[3] that direct transportation plans and development to stay within the carrying capacity of the air which the GHG emission goals indicate has been surpassed.

Please responsibly address Oregon's transportation funding gap and failure to reach GHG emission goals through System Development Charges rather than tolls.

Sincerely,

Elizabeth Graser-Lindsey
Beavercreek, OR 97004

[2] Statewide Planning Goal 12 – Transportation A6. "Plans providing for a transportation system should consider as a major determinant the carrying capacity of the air, land and water resources of the planning area. The land conservation and development actions provided for by such plans should not exceed the carrying capacity of such resources."

[3] Statewide Planning Goal 14 -- Urbanization A3. "Plans providing for the transition from rural to urban land use should take into consideration as to a major determinant the carrying capacity of the air, land and water resources of the planning area. The land conservation and development actions provided for by such plans should not exceed the carrying capacity of such resources."

TO: Metro Transportation Planning Department
FM: John A. Charles, Jr.
RE: Comments on Metro's draft TSMO Plan
DT: October 25, 2021

My name is John A. Charles, Jr., and I am President and CEO of Cascade Policy Institute, a non-partisan policy research organization. I have been involved in regional transportation planning for over 40 years, and have served on many advisory groups related to transportation and air quality, including:

- Portland Air Quality Advisory Committee, DEQ;
- Traffic Relief Options Study CAC, Metro;
- Oregon Road User Fee Task Force, ODOT;
- Portland Future Focus Steering Committee, Portland;
- Central City Transportation Management Plan CAC, Portland; and
- HB 2179 Task Force to Reduce Air Pollution in the Portland Region (Gov. Roberts).

I have reviewed the draft TSMO plan and offer the following comments:

Purpose: It's not clear why this plan is necessary. Every jurisdiction in the region is already burdened with transportation planning regulations, programs, and projects. Many jurisdictions own and operate transportation facilities with long lists of capital improvement projects that can't be funded. What is the added value of the TSMO plan?

Definition: On page 5, the narrative includes the following phrase: "TSMO strategies provide alternatives to chasing capacity growth…" This is reinforced in more direct language on page 6, under the subheading of **Transportation Planning Rule (TPR)**. In that section, the plan states, "This approach is the core goal of TSMO."

The clear implication of these statements is that adding capacity is a mindless and wasteful endeavor that provides no net benefits to the region. This is incorrect. Healthy regions grow, and it's the responsibility of government to provide related infrastructure including roads, bridges, schools, parks, waste disposal and drinking water.

I'm not aware of any other special service district that takes a no-growth approach to planning. School districts construct and operate new facilities to accommodate growing student populations; they don't simply reject students or encourage parents to stop having children. Municipal water districts plan for adequate supply in response to increased demand; and sewage agencies build costly treatment plants.

Metro itself has sought and received close to a billion dollars of bonding authority to pay for undeveloped land perceived to be necessary for the park needs of a growing metropolitan region. While the execution of that program has been poor, with most Metro parklands not accessible to the public or even located within the Metro borders, the Metro Council has been aggressive in seeking public funding to "chase capacity growth" for future nature parks.

Transportation appears to be the one infrastructure service operating with a no-growth strategy. Under the direction of JPACT, the region has failed to add significant new highway capacity since I-205 opened in 1982. This is not a sustainable vision for a growing region where most daily trips are made in motorized vehicles.

While there is nothing wrong with using existing facilities more efficiently, as TSMO aspires to do, the region cannot depend on demand management as the primary response to economic growth.

Claims of disproportionate impacts: On page 9, it states that the 2021 TSMO plan seeks "to address the disproportionate impacts of the transportation system on Black, Indigenous, people of color, and people with low incomes." There is no definition of "disproportionate impacts" here or elsewhere. On pp. 12-13 the plan discusses "equity in TSMO", but relies on some simple descriptive statistics rather than trying to analytically demonstrate that the regional transportation system is inequitable.

The "TSMO Equity Tree", on page 14, is complete jibberish and serves no purpose.

Objectives: At least four of the six objectives are useless. ***"Free from harm"*** in a policy context has no meaning because governments cannot promise freedom from harm. Everything in life has risks, especially in transportation. Governments cannot stop people from driving under the influence of intoxicants, bicycling at night in dark clothing, texting while jaywalking, or simply losing concentration at the wrong moments. The level of surveillance that would be necessary to actually make us all free from harm would itself create harm through the loss of civil liberties.

"Regional partnerships" is a redundant objective because everything in the region is already taking place through multiple partnerships. ***"Eliminate disparities"*** is another phrase that has no meaning. Disparities exist everywhere for many reasons. Policies and programs such as the TriMet payroll tax, transportation SDCs, urban renewal construction, and road diets create cross-subsidies and disparate outcomes. Metro is not in a position to ensure equal outcomes for everyone under all circumstances.

"Connected travel choices" is vaguely relevant, although in the absence of any governmental planning the travel connections would be made anyway by private parties (if transportation markets were allowed to function).

"Reliable travel choices" should be the primary objective of this plan, but JPACT has already demonstrated over a long period of time that it has no interest in reliability. That's why Metro has never implemented congestion pricing despite studying it for nearly 30 years. It's also why Metro prohibited any new Willamette River Bridge capacity south of the Sellwood Bridge, despite finding a need for it in 1999. And it's why we still have only two interstate bridge crossings over the Columbia River, despite a clear need for at least four.

From Metro's standpoint, lack of reliability is ***a feature, not a bug***, so including it in the TSMO plan is gratuitous.

"Prepare for change" is something that every service provider should assume, but again Metro has spent decades using regulation and taxation to lock in the current infrastructure while avoiding important new investments – aside from the buildout of the 19th century regional rail system, which is the opposite of "planning for change."

Performance measures: In the event that anyone ever tries to measure the success of this TSMO plan – as unlikely as that sounds – the performance measures will be unhelpful. The VMT goal seeks to ***"reduce average vehicle miles traveled per person by 10 percent from 2021."*** How could Metro possibly propose this goal, when the entire point of the TPR was to reduce VMT per capita and it failed miserably?

Specifically, the TPR mandated for Metro and other MPOs that VMT per capita be reduced by 10% over 20 years, and 20% over 30 years. It was adopted in 1991. Here we are 30 years later, the TPR accomplished nothing at great cost, and now Metro wants to try it again without even stating a proposed time period for completion.

Even if a VMT reduction goal was achievable through government intervention, there is no reason for Metro to adopt it. VMT ***adds value*** to the regional economy, because there is an economic purpose for every trip. People don't just randomly drive around for no reason, with the possible exception of teenagers on a Saturday night. If elected officials were to succeed in suppressing VMT through taxation or regulation, the economy would suffer and people would consider themselves worse off.

VMT may drop for other reasons, such as a permanent increase in remote working as a result of the pandemic. In that case, it would not harm the regional economy.

Metro could also consider market-based road pricing, such as a revenue-neutral feebate system in which peak hour motorists would be tolled and off-peak drivers would receive rebates. But to my knowledge, of the three congestion pricing studies that are now in public discussion (sponsored by Metro, ODOT and Portland, respectively), none anticipate using tolling for this purpose. All three appear to be arbitrary and punitive.

The proposed measure of showing ***"progress toward meeting the 2035 Vision Zero Goal"*** is another meaningless feel-good statement. Reducing the number of crashes is desirable, but

Metro's own reporting shows that "Vision Zero" is unrealistic. In 2019, the five year moving average for the region was 83 deaths. The actual number of deaths was 95, and Vision Zero called for a reduction to 55 deaths.

As local economist Joe Cortright wrote in a May 2021 critique of Vision Zero:

> Metro tracks 25 separate measures of system safety…Metro's annual report shows that the region is on-track to make exactly none of these 25 objectives…

Given that both the City of Portland and Metro are seeing Vision Zero trends moving in the wrong direction, assuming compliance by 2035 is an unreasonable metric. It should be modified or eliminated.

Appendix A: "TSMO strategy projects": The first page includes phantom projects, such as "Congestion pricing/HOT lanes" and "rideshare services and employer services", at a total cost of $148 million. The second page lists 23 projects at total cost of $437 million. This appendix is useless for analytical purposes. Is everything in the region TSMO? Were these projects evaluated for effectiveness? What is the reader supposed to infer from this list?

General comments

Disproportionate impacts: Metro is obsessed with alleged disproportionate impacts, but sees them as only affecting certain classes of people. A more nuanced assessment would consider other types of equity concerns, including:

- The fairness of TriMet's regional payroll tax, which taxes many people for the benefit of the few, in a transit system that has been losing ridership since 2012 despite a vast increase in taxpayer funding.

- The adverse effects of eminent domain used to seize private property in areas other than North Portland, including all light rail projects (built or planned), and interstate highways throughout the region.

- Costs imposed on property owners through LID assessments in neighborhoods along the Portland streetcar.

- Construction of the aerial tram, which imposed both real and intangible costs on affluent property owners in the Corbett-Terwilliger-Lair Hill neighborhood.

- Distributional effects of the STFF employee transit tax enacted by the legislature in 2017.

- Distributional effects of the many road diets and traffic calming projects that have been imposed on the region over the past 25 years.

"Disproportionate impacts" is a very complex topic, with cross-subsidies flowing in many directions. If Metro feels compelled to include it as a feature element of the TSMO plan, then the agency should commit to a thorough study of the subject.

Learning from history: Earlier in these comments, I criticized Metro for ignoring the TPR experience. Note that comments of this nature have been made many times before, by people with far more knowledge of Metro programs than I have. In particular, the Metro Auditor has been a relentless critic of Metro Transportation Planning for more than a decade. Relevant excerpts from Auditor Reports are listed below.

August 2008: Transit-Oriented Development Program: Improve Transparency and Oversight

- *"The Program had **no system for regularly monitoring project results** in terms of increased density, reduction in vehicle miles traveled or new private development stimulated by its efforts. Consequently, it is difficult for the Program to demonstrate its effectiveness."*

February 2010: Tracking Transportation Project Outcomes

- *"We found that Metro's processes to plan transportation projects in the region were linear when they should have been circular. After a plan was adopted, the update process began anew with **little or no reflection about the effectiveness of the previous plan** or the results of the performance measures they contained."*

- *"Systems to collect data and measure progress towards these outcomes were **not in place."***

- *"Metro relied almost entirely on **modeled data to estimate the impact of the regional transportation plan rather than on actual data.**"*

November 2010: Transit-Oriented Development Program: Audit Follow-up

- *"Three **recommendations [from 2008] were not implemented**: Develop a regular report that shows a comparison of projects in terms of the results they achieve; develop a method for tracking and reporting complete project costs by project; and develop procedures to monitor projects after they are completed."*

June 2013: Tracking Transportation Project Outcomes

- *"We found that **recommendations made in a 2010 audit had not been implemented.**"*

- *"The audit found the Planning Department was not organized or equipped to measure progress toward those outcomes."*

- *"The Planning Department should adjust plans and programs as needed **based on actual quantitative and qualitative data.**"*

These critiques should be considered in refining the TSMO plan.

Conclusion

Local governments and private transportation operators already have dozens of federal, state, and regional mandates, taxes, programs and projects to consider and/or manage. The draft TSMO plan is long on words and short on value. The "equity tree" perfectly symbolizes the circular reasoning associated with this plan.

Since TSMO is likely to add no value to the region, I suggest that the plan be euthanized and given a proper burial.

STAFF REPORT

IN CONSIDERATION OF RESOLUTION NO. 21-5220, FOR THE PURPOSE OF ADOPTING THE 2021 REGIONAL TRANSPORTATION SYSTEM MANAGEMENT AND OPERATIONS STRATEGY, REPLACING THE 2010 REGIONAL 2010-2020 TRANSPORTATION SYSTEMS MANAGEMENT AND OPERATIONS ACTION PLAN

Date: October 29, 2021
Department: Planning, Development and Research
Meeting Date: Jan. 6, 2022

Prepared by: Caleb Winter, 503-797-1758, caleb.winter@oregonmetro.gov
Length: 138 pages

ISSUE STATEMENT

Metro's 2018 Regional Transportation Plan (RTP) identifies four overarching policies for improving our regional transportation system – equity, safety, climate and congestion relief. Adopting the 2021 Regional Transportation System Management and Operations (TSMO) Strategy will incorporate the four priority policy outcomes and guide the region's TSMO Program to meet needs over the next ten years.

ACTION REQUESTED

The requested action is to adopt as a component of the 2018 RTP the 2021TSMO Strategy, as shown in the attached Exhibit A and amended by the "Summary of Comments Received and Recommended Actions" in Exhibit C, replacing the 2010 Regional TSMO Action Plan and to inform development of the 2023 RTP.

Metro and ODOT started the 2021 TSMO Strategy process in 2019. In 2020, a consultant team was brought on to support the Metro and ODOT project team and a Stakeholder Advisory Committee convened and met through 2021. Additionally, the project team engaged stakeholders via workshops and surveys throughout the process. Next steps involve a work plan that starts in 2022 to implement the TSMO Strategy through Metro's TSMO Program and partnerships, a TransPort (Subcommittee of TPAC) work plan and a TSMO Program Project Solicitation for sub-allocation of Regional Flexible Funds (previously allocated to the TSMO Program).

IDENTIFIED POLICY OUTCOMES

Policy outcomes relate to Goal 4 of the 2018 RTP: "The transportation system is managed and optimized to ease congestion, and people and businesses are able to safely, reliably and efficiently reach their destinations by a variety of travel options."

In 2010 the Metro Council adopted Ordinance No. 10-1241B, which adopted the 2010 RTP and included the region's first TSMO Action Plan as a component of the RTP.

In 2018 the Metro Council adopted Ordinance No. 18-1421 which adopted the 2018 RTP, including Goal 4. The 2021 TSMO Strategy provides a regional approach to implementation.

POLICY QUESTION(S)
How shall the region get the most value from capital and operations investments in the transportation system?

POLICY OPTIONS FOR COUNCIL TO CONSIDER
Options for managing and operating our regional transportation system as efficiently and effectively as possible include implementing TSMO to: "Collaborate to provide reliable, agile, and connected travel choices so that all users are free from harm, and to eliminate the disparities experienced by Black, Indigenous, people of color and people with low incomes."

TSMO approaches include managing demand, improving business practices and collaboration across jurisdictional boundaries and using technology to measure and manage transportation operations and track progress towards regional goals. While some of these strategies will be implemented through interagency agreements, other strategies such as congestion pricing, transportation options, and broadband will occur through collaborations between road, transit and other mobility service operators.

STAFF RECOMMENDATIONS
Metro and ODOT planning staff recommend adoption of the 2021 TSMO Strategy.

STRATEGIC CONTEXT & FRAMING COUNCIL DISCUSSION
In addition to the policies referenced above, the strategic context for the 2021 TSMO Strategy includes:

- Renewed involvement from regional stakeholders around Metro's core work to plan for regional growth through land use and transportation policy and strategy.
- Advancement of Metro's racial equity goals by beginning the TSMO Strategy update with an equity focus; applying a TSMO Equity Tree to all subsequent tasks and discussions; establishing a TSMO vision that integrates equity "...so that all users are free from harm, and to eliminate the disparities experienced by Black, Indigenous, people of color and people with low incomes;" with new goals, objectives, performance measures and actions that will guide implementation in a strategic way to respond to community-voiced needs.
- Support for reducing vehicle miles traveled, thereby reducing greenhouse gas emissions harmful to the climate; support for sustainable transportation options including Mobility on Demand; support for incident management and real-time demand management to reduce idling and provide congestion relief; support modernization of the traffic signal system to reduce idling and improve transit operations and improved operations for bicycling and walking; and, an objective to

"Minimize long term disruptions to the transportation system by creating resiliency to climate change and economic shifts."

- Recognition of opposition to the TSMO Strategy from the Cascade Policy Institute regarding the investment of public resources that do not add capacity to respond to growth; community support from online comment participants who selected the following TSMO Actions to be emphasized: Facilitate ground truthing of emerging technologies. (3 respondents), Develop a Mobility on Demand strategy and policy (2 respondents), Manage transportation assets to secure the network (1 respondent), Pilot Origin-Destination data to prioritize TSMO investments (1 respondent), Explore new TSMO data sources (1 respondent), Create a TSMO safety toolbox (1 respondent), and Improve TSMO data availability to aid in traveler decisions and behavior (1 respondent); Community based organizations involved in key pieces of the Strategy include Asian Pacific American Network of Oregon, Verde and Division Midway Alliance. Community feedback is reflected in Exhibit C, the public comment report.

The 2021 TSMO Strategy Stakeholder Advisory Committee included:

Margi Bradway, Metro's Deputy Director of Planning, Development and Research
Kate Freitag, ODOT's Region 1 Traffic Engineer, TransPort Chair
Millicent Williams, former Portland Bureau of Transportation's Deputy Director
Wendy Cawley, Portland Bureau of Transportation's City Engineer
Joe Marek, Clackamas County's Transportation Safety Program Manager
Lisha Shrestha, Division Midway Alliance's Executive Director
Debra Dunn, Synergy Resources Group's President and Founder, Oregon Environmental Council Board Member
Avi Unnikrishnan, Ph.D., Portland State University's Professor, Dept. of Civil and Environmental Engineering
Matt Ransom, Southwest Washington Regional Transportation Council's Executive Director
Geoff Bowyer, ODOT's Region 1 Traffic Management Operations Center
Jon Santana, TriMet's Interim Executive Director of Transportation

In addition to six Stakeholder Advisory Committee meetings, the project management team met monthly, received input from TransPort at four meetings, TPAC at two meetings, JPACT at two meetings, held a workshop, conducted a stakeholder survey, held focus groups and conducted interviews.

Legal Antecedents

- Ordinance No. 10-1241B, For the Purpose of Amending the 2035 Regional Transportation Plan (Federal Component) and the 2004 Regional Transportation Plan to Comply with Federal and State Law; to Add the Regional Transportation Systems Management and Operations Action Plan, the Regional Freight Plan and the

High Capacity Transit System Plan; to Amend the Regional Transportation Functional Plan and to Add it to the Metro Code; to Amend the Regional Framework Plan; and to Amend the Urban Growth Management Functional Plan, adopted on June 10, 2020.

- Ordinance No. 18-1421, For the Purpose of Amending the 2014 Regional Transportation to Comply with Federal and State Law and Amending the Regional Framework Plan, adopted on December 6, 2018.

Budget and Financial Implications

Coordination for the regional TSMO Program is part of Metro's budget, dependent on Regional Flexible Fund decisions and TransPort sub-allocation recommendations for those funds. The purpose of a regional TSMO strategy includes planning for operations and forming partnerships that require economical use of all agencies' operations and maintenance budgets. Regional collaboration and partnership often take the form of interagency agreements where no funds are transferred between agencies. A best practice for capital projects is to include TSMO to utilize Intelligent Transportation Systems and expand regional operator capabilities in the process. This is a project-by-project budget need that should not be overlooked. TSMO projects and TSMO project elements are included in RFFA and STIP funding cycles, for example Freight Intelligent Transportation Systems in Clackamas County and Active Corridor Management with real-time signage on regional throughways. As mentioned above, Regional Flexible Fund decisions to support the TSMO Program support the Actions and related projects through a sub-allocation process where stakeholders and technical experts recommend projects for funding. Agencies who receive funding do so with the prerequisite that they will cover a portion of the cost from their local budget. Last but not least, regional TSMO coordination has strengthened successful applications to national competitive funding programs such as Transportation Investment Generating Economic Recovery (TIGER) and Advanced Transportation and Congestion Management Technologies Deployment (ATCMTD). Financial implications may be ahead depending on federal legislation on transportation infrastructure funding.

Anticipated Effects

- Application of a holistic, systems approach to multimodal transportation, for example regional coordination for traffic signalization and related transit operations.
- Innovative, cost-effective solutions that include the continuation of data collection and enhanced use of data collected on the public right-of-way.
- Building on 10 years of TSMO progress, for example increasingly sophisticated traveler information through Trip Check that innovated both ways to communicate systems operations information to travelers and enhanced partner-agency tools to add incident and construction information to one, statewide platform.
- Incorporation of four key regional policies for equity, climate, safety and congestion relief with improved reliability.

BACKGROUND

Since adoption of the 2018 Regional Transportation Plan, Metro and ODOT planning staff worked with stakeholders to scope and update the 2010-2020 TSMO Action Plan. The timeline for the planning process began at Metro and ODOT in 2019 with consultant support starting in 2020 and the formation of a Stakeholder Advisory Committee who met through 2021 in addition to broad stakeholder engagement through workshops and surveys throughout the year. This work resulted in the attached 2021 TSMO Strategy Final Draft.

ATTACHMENTS

Exhibit A – 2021 TSMO Strategy Final Draft
Exhibit B – 2021 TSMO Strategy Appendices Final Draft
Exhibit C – 2021 TSMO Public Comment Report draft
Metro Resolution 21-5220 draft