Agenda

Metro
600 NE Grand Ave.
Portland, OR 97232-2736

Meeting: Transportation Policy Alternatives Committee (TPAC) Workshop
Date: Wednesday, July 12, 2023
Time: 9:00 a.m. to 12:00 p.m.
Place: Virtual meeting held via Zoom
Connect with Zoom
Passcode: 810060
Phone: 888-475-4499 (Toll Free)

9:00 a.m.	**Call meeting to order and Introductions** • Committee input on creating a Safe Space at TPAC	Chair Kloster
9:05 a.m.	**Comments from the Chair and Committee Members** • Updates on various ODOT funding programs (Chris Ford, ODOT) • Update on Regional Mobility Policy Draft Throughway Travel Speed Analysis (Kim Ellis, Metro) **Public communications on agenda items**	
9:15 a.m.	**Consideration of TPAC workshop summary, May 10, 2023** Edits/corrections sent to Marie Miller	Chair Kloster
9:20 a.m.	**2023 Regional Transportation Plan (RTP): Regional Mobility Policy TDM/TSMO System Completeness Measures and Implementation** Purpose: The Metro RTO team is working with Steer to develop implementation guidance for TDM and TSMO to support the new Regional Mobility Policy. This guidance will outline the process by which jurisdictions should apply the new policy in system planning and plan amendment processes. The goal of this conversation is to share the proposed implementation framework with partners for feedback; the resulting discussions will help refine the framework and associated policy implementation guidance, to support implementation following the 2023 RTP Update.	Kim Ellis, Metro Grace Stainback, Metro Kate Bridges, Steer
10:55 a.m.	**Draft Transportation System Management & Operations (TSMO) System Completeness and Mobility Corridors** Purpose: Share a summary of stakeholder input on TSMO system completeness and corridors for feedback, helping to develop guidance for Regional Mobility Policy implementation.	Caleb Winter, Metro
11:55 a.m.	**Committee comments on creating a safe space at TPAC**	Chair Kloster
12:00 p.m.	**Adjournment**	Chair Kloster

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2023 TPAC Work Program

As of 7/5/2023

NOTE: *Items in* ***italics*** *are tentative;* ***bold*** *denotes required items*

All meetings are scheduled from 9am - noon

TPAC meeting, July 7, 2023 Comments from the Chair: • Committee member updates around the Region (Chair Kloster & all) • Monthly MTIP Amendments Update (Ken Lobeck) • Fatal crashes update (Chair Kloster) • 2023 RTP: Public Review Draft RTP (Kim Ellis) **Agenda Items:** • **2024-2027 MTIP – Adoption Draft** Recommendation to JPACT (Grace Cho, Metro, 30 min) • 2027-30 Statewide Transportation Improvement Program (STIP) Revenues and Investment Priorities Discussion (Chris Ford, ODOT, 45 min) • 2023 RTP: Overview of Fall adoption package and discussion of draft Chapter 8 (Implementation) (Kim Ellis and John Mermin, Metro, 60 min) • Committee Wufoo reports on Creating a Safe Space at TPAC (Chair Kloster; 5 min)	**TPAC workshop, July 12, 2023** Comments from the Chair: • Updates on various ODOT funding programs (Chris Ford, ODOT) • Update on Regional Mobility Policy Draft Throughway Travel Speed Analysis (Kim Ellis, Metro) **Agenda Items:** • 2023 RTP: Regional Mobility Policy TDM/TSMO System Completeness Measures and Implementation (Kim Ellis and Grace Stainback, Metro, and Kate Bridges, Steer, 95 minutes) • Draft Transportation System Management & Operations (TSMO) System Completeness and Mobility Corridors (Caleb Winter, 60 minutes)
TPAC meeting, August 4, 2023 Comments from the Chair: • Committee member updates around the Region (Chair Kloster & all) • Monthly MTIP Amendments Update (Ken Lobeck) • Fatal crashes update (Lake McTighe) **Agenda Items:** • 2023 RTP: Regional Mobility Policy Measures (Kim Ellis, Metro, 45 min) • 2023 RTP: Update on Regional Mobility Policy Throughway Reliability Measure (Kim Ellis and Metro Research Center staff, Metro, 45 minutes) • 2023 RTP: Chapter 8 (Implementation) (Kim Ellis, Metro, 45 min) • Committee Wufoo reports on Creating a Safe Space at TPAC (Chair Kloster; 5 min)	**MTAC/TPAC joint workshop, August 16, 2023** **Agenda Items:** • Construction Career Pathways Overview and Update (Sebrina Owens-Wilson & Andre Bealer, Metro, 45 min.) • 2023 RTP: Begin discussion of public comments on Public Review Draft RTP, Project List and Appendices (Kim Ellis, 60 min) • 2023 RTP: TBD topic, if needed (Kim Ellis, 45 min)

TPAC meeting, September 1, 2023 Comments from the Chair: • Committee member updates around the Region (Chair Kloster & all) • Monthly MTIP Amendments Update (Ken Lobeck) • Fatal crashes update (Lake McTighe) **Agenda Items:** • **MTIP Formal Amendment 23-XXXX** Recommendation to JPACT (Lobeck, 10 min) • 2023 RTP: Draft Legislation and Overview of Public Comments Received and Draft Recommended Actions in Response to Public Comment (Kim Ellis, Metro; 30 min) • Better Bus Call for Projects (Alex Oreschak, Metro/ Cara Belcher, TriMet; 30 min) • TV Highway Transit and Development Project Update (Jessica Zdeb, 45 min) • Freight Commodity Study: Draft Findings (Tim Collins, Metro, 30 min) • *Great Streets Program updates: Final project list (Chris Ford, ODOT; 30 min)* • Committee Wufoo reports on Creating a Safe Space at TPAC (Chair Kloster; 5 min)	**TPAC workshop, September 13, 2023** **Agenda Items:** • 2023 RTP: Draft Public Comment Report and Recommended Actions in Response to Public Comment (Kim Ellis, 90 min)
TPAC meeting, October 6, 2023 Comments from the Chair: • Committee member updates around the Region (Chair Kloster & all) • Monthly MTIP Amendments Update (Ken Lobeck) • Fatal crashes update (Lake McTighe) **Agenda Items:** • **MTIP Formal Amendment 23-XXXX** Recommendation to JPACT (Lobeck, 10 min) • Ordinance 23-1496 2023 RTP: Draft Public Comment Report and Recommended Actions in Response to Public Comment (Kim Ellis, Metro, 90 min) • 2023 High Capacity Transit Strategy (Resolution No. 23-5348) Discussion (Ally Holmqvist, Metro; 45 min) • 82nd Avenue Transit Project Update (Elizabeth Mros-O'Hara/ TriMet TBD; 45 min) • Committee Wufoo reports on Creating a Safe Space at TPAC (Chair Kloster; 5 min)	

TPAC meeting, November 3, 2023 Comments from the Chair: • Committee member updates around the Region (Chair Kloster & all) • Monthly MTIP Amendments Update (Ken Lobeck) • Fatal crashes update (Lake McTighe) **Agenda Items:** • **MTIP Formal Amendment 23-XXXX** Recommendation to JPACT (Lobeck, 10 min) • **Ordinance 23-1496 on 2023 RTP, Projects and Appendices** Recommendation to JPACT (Kim Ellis, Metro, 90 min) • **2023 High Capacity Transit Strategy (Resolution No. 23-5348)** Recommendation to JPACT (Ally Holmqvist, Metro; 45 min) • Committee Wufoo reports on Creating a Safe Space at TPAC (Chair Kloster; 5 min)	**TPAC workshop, November 8, 2023** **Agenda Items:** • Regional Transportation Safety Performance Report (Lake McTighe, 30 min) • 2027-30 STIP – options being discussed at OTC (Chris Ford, ODOT; 30 min) • Freight Delay Study Report Update (Tim Collins; 45 min)
TPAC meeting, December 1, 2023 Comments from the Chair: • Committee member updates around the Region (Chair Kloster & all) • Monthly MTIP Amendments Update (Ken Lobeck) • Fatal crashes update (Lake McTighe) **Agenda Items:** • **MTIP Formal Amendment 23-XXXX** Recommendation to JPACT (Lobeck, 10 min) • Westside Multimodal Improvements Study (Kate Hawkins, Metro/ Stephanie Millar, ODOT; 45 min) • Committee Wufoo reports on Creating a Safe Space at TPAC (Chair Kloster; 5 min)	

Parking Lot: Future Topics/Periodic Updates

- Columbia Connects Project
- 82nd Avenue Transit Project update (Elizabeth Mros-O'Hara & TBD, City of Portland)
- Best Practices and Data to Support Natural Resources Protection
- TV Highway Corridor plan updates
- High Speed Rails updates (Ally Holmqvist)
- MTIP Formal Amendment I-5 Rose Quarter discussion (Ken Lobeck)
- I-5 Rose Quarter Project Briefing (Megan Channell, ODOT)
- I-5 Interstate Bridge Replacement program update
- Ride Connection Program Report (Julie Wilcke)
- Get There Oregon Program Update (Marne Duke)
- RTO Updates (Dan Kaempff)

Agenda and schedule information E-mail: marie.miller@oregonmetro.gov or call 503-797-1766.
To check on closure or cancellations during inclement weather please call 503-797-1700.

Memo

Metro
600 NE Grand Ave.
Portland, OR 97232-2736

Date: July 5, 2023

To: Transportation Policy Alternatives Committee (TPAC) and interested parties

From: Kim Ellis, AICP, RTP Project Manager

Subject: 2023 Regional Transportation Plan: Regional Mobility Policy Next Steps

PURPOSE

The purpose of this memo is to provide an update on additional work completed and underway to inform finalizing the draft policy, measures and targets/thresholds for the 2023 Regional Transportation Plan (RTP).

ACTION REQUESTED

No action is requested. This is for informational purposes.

BACKGROUND

The Regional Mobility Policy is a policy in the RTP as well as the Oregon Highway Plan (OHP). It applies to transportation system planning and plan amendment processes within the Portland metropolitan area. The policy is used to identify transportation needs and solutions during updates to the RTP and local transportation system plans (TSPs), and to evaluate the potential impacts of local comprehensive plan amendments and zoning changes.

An update to the regional mobility policy has been underway since 2019, through a joint effort of Metro and the Oregon Department of Transportation (ODOT). In November and December 2022, JPACT and the Metro Council accepted the new draft policies and supported further development of the draft performance measures and targets during 2023 RTP system analysis that continues. These actions were informed by deep research, technical analysis and significant input from policymakers, practitioners and other stakeholders.[1]

This work has shifted the discussion of mobility from simply being about the number of vehicles to moving people, goods and services in a much more tangible and comprehensive way. When finalized, the updated mobility policy will guide the development of regional and local transportation plans and studies, and the evaluation of potential impacts of local comprehensive plan amendments and zoning changes on the transportation system.

The updated policy will remove housing and economic development barriers and support the region in advancing desired outcomes for transportation and land use, including:

- Land use efficiency, with more housing, jobs, services and mixed use development in the region's centers.

[1] The research, a project video and summary reports of the engagement activities are posted on the project website at www.oregonmetro.gov/mobility.

- Roadways designed and built for people of all ages and abilities.
- Travel options and connectivity that allow people to reliably and safely walk, bike, drive, and take transit to get where they need to go.
- Safe, efficient and reliable travel speeds for people, goods and services.

Another key outcome of the regional mobility policy update is cross-agency coordination and collaboration to implement transportation plan updates and state land use rules in the Portland area.

STATUS OF DRAFT POLICY STATEMENTS

The draft policy statements have been incorporated in Chapter 3 of the public review draft 2023 RTP.

STATUS OF THE DRAFT MEASURES AND TARGETS/THRESHOLDS

The draft regional mobility policy for the 2023 RTP identifies three mobility performance measures: vehicle miles traveled per capita, system completion for all modes (including TDM and TSMO) and throughway reliability using travel speed. The measures and their respective targets/thresholds were recommended as a starting point to be tested and refined in 2023. A summary of their status follows:

- **Vehicle miles traveled** – Metro staff are developing an approach for evaluating household-based VMT per capita and VMT per employee. This will be presented to TPAC for feedback at the Aug. 4 TPAC workshop and Aug. 16 TPAC/MTAC workshop.
- **System completeness** – For the system completeness performance measure, the 2023 RTP "planned" networks include: Regional Motor Vehicle Network, Regional Freight Network, Regional Transit Network, Regional Pedestrian Network, Regional Bicycle Network and the Transportation System Management and Operations (TSMO) Network. Maps of these networks have been updated to reflect housekeeping edits identified by local, regional and state agencies. The updated network maps are included in Chapter 3 of the public review draft 2023 RTP. Reporting on system completeness for all modes of travel is reflected in Chapter 4 and Chapter 7 of the public review draft 2023 RTP.

  Development of an approach for measuring system completeness for both transportation demand management (TDM) and transportation system management and operations (TSMO) continues. Materials summarizing this work is included in the July 12 workshop packet and will be presented to TPAC at the workshop for feedback.
- **Throughway reliability** – Metro and ODOT staff worked together developed a methodology that was used to calculate initial observed and modeled travel speed metrics for throughways designated in the RTP. A memo summarizing this work is included in the July 12 TPAC workshop packet, and will be presented to TPAC at the Aug. 4 meeting for feedback.

STATUS OF THE IMPLEMENTATION ACTION PLAN

Implementation actions identified in 2022 will also be updated, as needed, in Chapter 8 of the public review draft 2023 RTP following the public comment period. Updates are anticipated to address feedback provided by TPAC and the Metro Technical Advisory Committee (MTAC) this summer as well as public feedback received during the public comment period. Other updates may be identified as a result of statewide work underway to support local and Metro implementation of the Climate Friendly and Equitable Communities (CFEC) Program.

More information about the regional mobility policy update can be found at:
www.oregonmetro.gov/mobility

Memo

Metro
600 NE Grand Ave.
Portland, OR 97232-2736

Date: July 5, 2023
To: Kim Ellis, RTP Project Manager
From: Joe Broach, Senior Researcher and Modeler
Peter Bosa, Principal Researcher and Modeler
Subject: Draft Throughways Travel Speed Analysis for the 2023 Regional Transportation Plan (RTP)

Purpose

This memo summarizes work to develop a methodology and to calculate initial observed and modeled travel speed metrics for throughways designated in the Regional Transportation Plan (RTP) for the Portland metropolitan region. This work supports further testing and refinement of the draft Regional Mobility Policy (RMP).

Background

The Regional Mobility Policy is a policy in the RTP as well as the Oregon Highway Plan (OHP). It applies to transportation system planning and plan amendment processes within the Portland metropolitan area. The policy is used to identify transportation needs and solutions during updates to the RTP and local transportation system plans (TSPs), and to evaluate the potential impacts of local comprehensive plan amendments and zoning changes.

An update to the regional mobility policy has been underway since 2019, through a joint effort of Metro and the Oregon Department of Transportation (ODOT). In November and December 2022, JPACT and the Metro Council accepted the new draft policies and supported further development of the draft performance measures and targets during 2023 RTP system analysis in 2023. The draft regional mobility policy for the 2023 RTP identifies travel speed on throughways as one of three mobility performance measures. More information about the regional mobility policy update, including research that informed the draft travel speed targets for throughways can be found at:

- https://www.oregonmetro.gov/sites/default/files/2023/02/24/Draft-2023-RTP-Regional-mobility-policy-overview-Jan2023.pdf
- https://www.oregonmetro.gov/sites/default/files/2023/03/01/Regional-Mobility-Policy-Update-Reliability-Research-Process_0.pdf

The draft RMP includes travel speed-based performance metrics to identify transportation needs on throughways designated in the RTP. This memo describes initial analysis and results from both observed data (*pre-pandemic* existing throughway performance) and regional travel model outputs (*pre-pandemic* base and future year scenario predicted performance) for the region's throughway system. Observed and modeled speed data will be used separately in each planning effort. Future updates may refine and modify the initial data and methods presented here.

Data and Methods Used in the Analysis

The methods and data described in this memo build on two existing streams of work:

1) Ongoing work to calculate and report on National Highway System (NHS) and freight reliability performance metrics as required by the Moving Ahead for Progress in the 21st Century (MAP-21). All observed conditions presented in this memo are based on 2019 data for the entire year, from January 1 to December 31, 2019.

2) The regional travel demand model and supporting data, which supports the analysis of travel patterns under RTP base year and future scenario conditions. All findings presented here are based on model runs supporting the 2023 RTP update, with a 2020 base year, 2030 interim future, and 2045 horizon year, covering various funding scenarios.

Data

Observed performance

Speed data were drawn from the National Performance Management Research Data Set (NPMRDS, available only for the National Highway System [NHS]) and the commercial INRIX Speed dataset (access provided by ODOT), where NPMRDS data were not available. All data were accessed using the Regional Integrated Transportation Information System (RITIS) platform. While all speed data could be obtained from the commercial INRIX dataset, the NPMRDS was used where available due to its more clearly defined standards and methodology, and ongoing independent validation. Both data sources rely on cell phone location and vehicle navigation data to sample travel speeds.

NPMRDS and INRIX speed data are provided on the proprietary Traffic Message Channel (TMC) network. The TMC network is used for in-vehicle navigation, based on "decision points" like freeway exits and major street intersections. An example is shown in Figure 1.

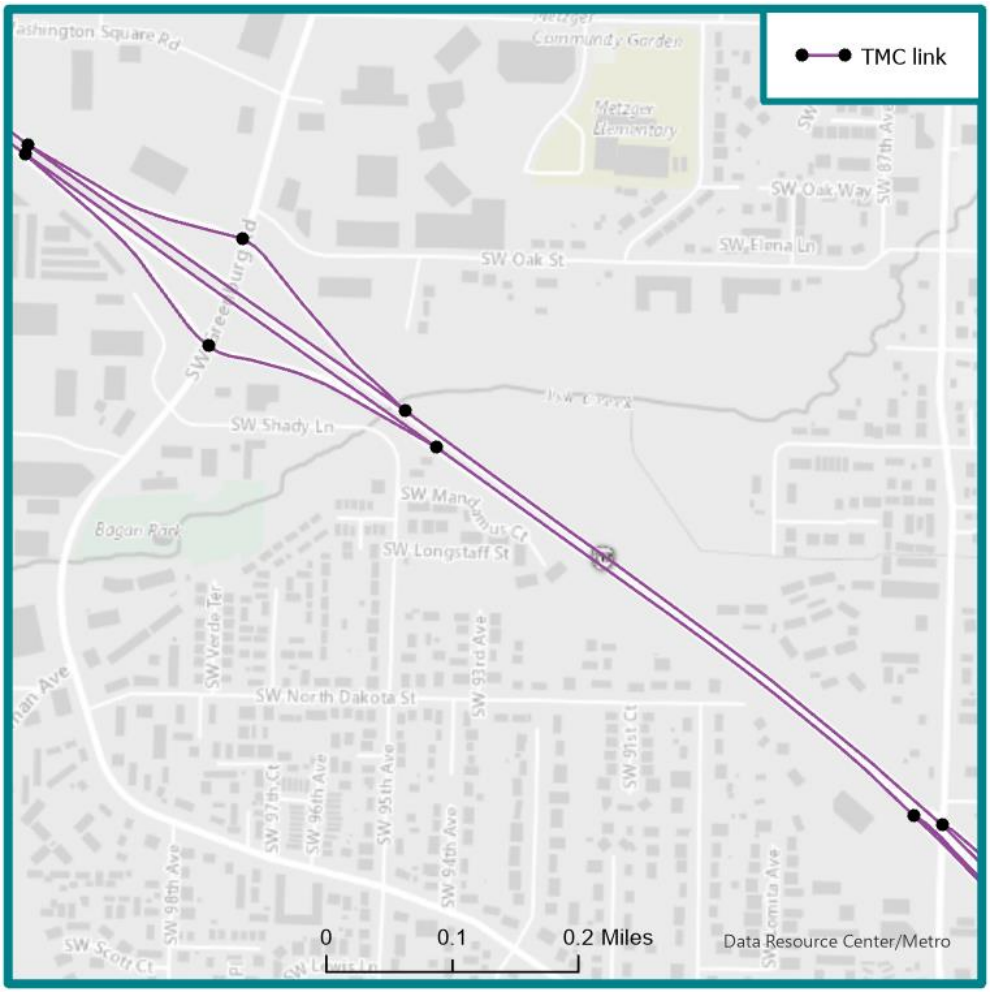

Figure 1 TMC network links example, OR 217 at SW Greenberg Rd (only mainline links were analyzed; data source RITIS)

An initial step in this analysis included coding the RTP throughways onto that network. In general, the analysis was limited to "mainline" (non-ramp) TMC links falling mostly inside the Metropolitan Planning Area (MPA). TMC links rarely split right on the MPA boundary, and a "majority inside" rule was used to handle such cases.

Data for all available 2019 weekdays (excepting holidays) were averaged over 15-minute intervals, following federal guidance for performance monitoring and reporting. NPMRDS contains only real-time data, with no missing value imputation. The INRIX data was filtered to keep only real-time speeds, again for consistency between data sources.

Modeled performance
Regional travel model outputs were drawn from five RTP scenarios (a sixth scenario, 2045 Strategic, was not yet available for analysis):

- **2020 Base** – pre-pandemic conditions
- **2030 No Build (NB)** – 2020 plus a limited set of projects already in motion (e.g. Abernethy Bridge, Division FX, Freeway Auxiliary Lanes); updates to regional land use, employment, and demographic data
- **2030 Financially Constrained (FC)** – 2030 NB plus additional major projects and policies, including:
    - I-205 widening
    - I-5 Rose Quarter Improvement Project
    - Interstate Bridge Replacement (IBR) pre-construction tolling
    - I-205 tolling on Tualatin River Bridge and Abernethy Bridge
    - Regional Mobility Pricing Project (RMPP) Demand Management and High Congestion Relief Pricing
- **2045 NB** – 2030 NB, with updates to regional land use, employment, and demographic data
- **2045 FC** – 2045 NB plus additional major projects, including:
    - I-205 widening
    - I-5 Rose Quarter Improvement Project
    - I-5 Interstate Bridge Replacement (IBR) Program completion, including Scenario B tolling
    - I-205 tolling on the Tualatin River Bridge and the Abernethy Bridge
    - RMPP Demand Management and High Congestion Relief Pricing

Each model scenario includes an all modes transportation network. Regional route definitions are maintained on these networks, and these were updated to match the analysis segmentation, described in more detail in the following section.

Methods

Methods were developed to further segment the throughway corridors and to summarize observed and modeled speed data into performance metrics.

The draft RMP proposes a minimum throughway performance threshold of no more than four hours per *week*day with travel speeds below 35 miles per hour (on controlled access freeways) or 20 miles per hour (on non-freeways with traffic signals). Figure 2 provides an overview map of the region's throughways, distinguishing between controlled-access RTP Throughways and signalized RTP Throughways. Initial metrics were created to capture that performance threshold. If average speeds fall below the relevant speed threshold for more than four hours in a day, it indicates the system is failing at that location and a transportation need exists.

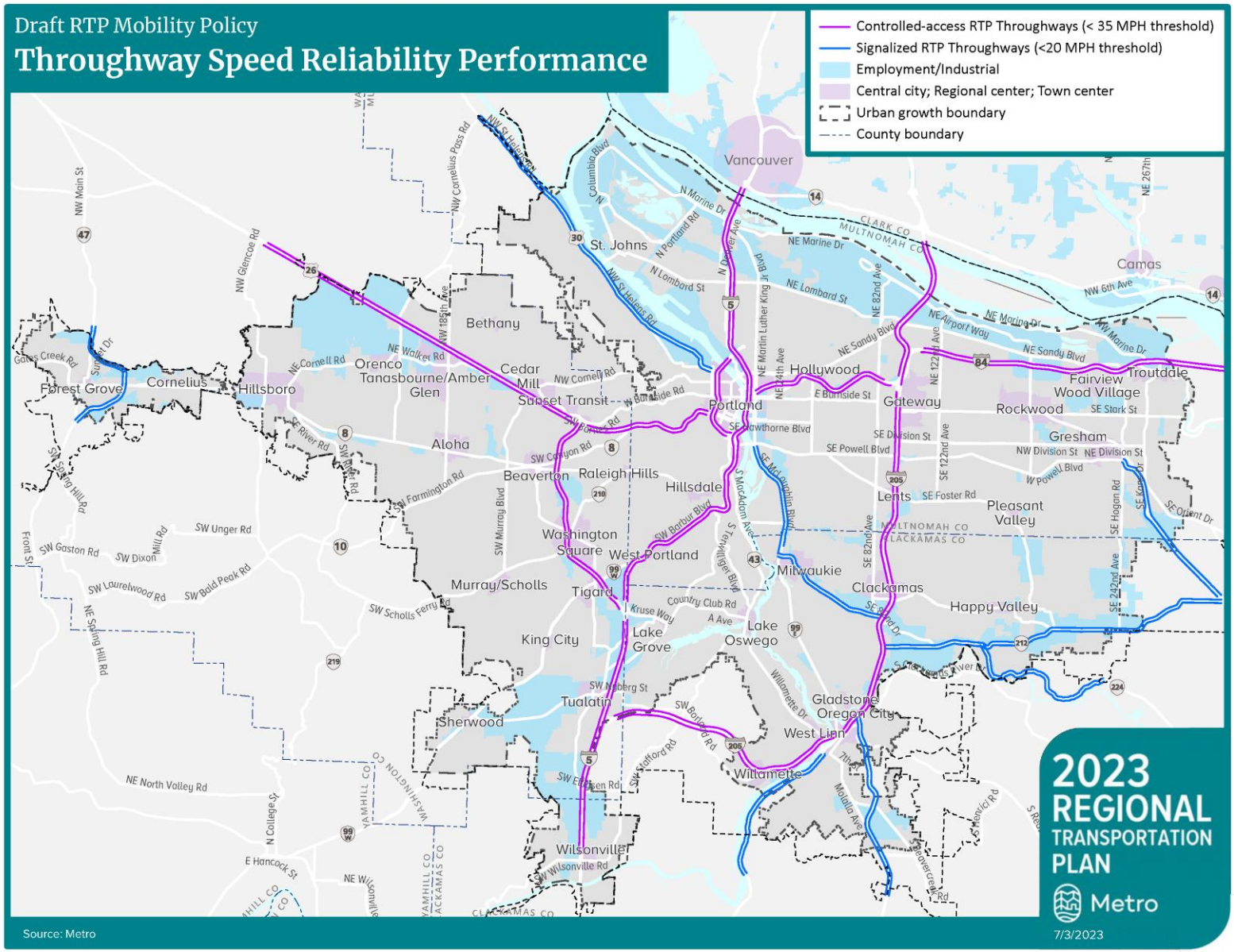

Figure 2 Controlled access RTP throughways and Signalized RTP Throughways for RTP policy analysis

Creating analysis segments

Initial work focused on entire throughway segments. The full throughway segments ranged from 3.4 to 11.6 miles in length (averaging 6.2 miles), and it was decided that many segments were too long for meaningful performance analysis. A method was developed to systematically divide the existing throughway corridors into shorter analysis segments. After multiple iterations, and noting that results were not overly sensitive to different options, the following method was chosen for its simplicity and legibility:

- For controlled access RTP throughways (35 mph threshold), create segments from each off ramp to the next downstream off ramp;
- For signalized RTP throughways (20 mph threshold), create segments at each major street intersections.

All analysis segments consist of a single travel direction. The new analysis segments averaged 1.4 miles, ranging from 0.1 to 5.8 miles. Merging the shortest segments with neighboring ones was considered but rejected in favor of maintaining consistency in segment definition. Figure 3 provides a graphical description.

The rules were followed as closely as possible, and in cases where the observed data (TMC) or model network did not have a breakpoint (node) at the desired location, the closest node was used instead. The method was first applied to the observed (TMC) network, and then the resulting segmentation transferred as faithfully as possible to the various model scenario networks.

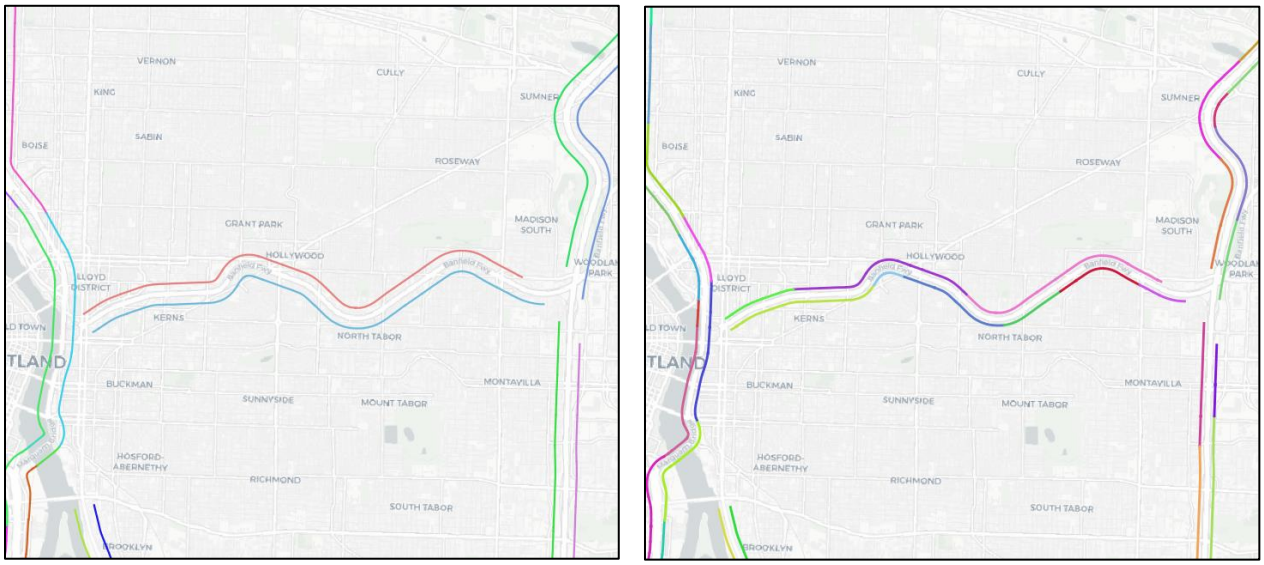

Figure 3 Full throughway segments (left panel) and revised segmentation based on off-ramps (base data: ESRI, RITIS)

Calculating hours under speed threshold

Methods were developed to calculate the hours under speed threshold for both observed and modeled data.

Observed data

For each analysis segment, consisting of one or more TMC links, the following steps were followed to calculate a segment-level measure of weekday hours not meeting policy:

1) For each directional TMC reporting link along the segment, calculate the average number of hours per weekday (excluding Federal holidays) that the observed speed fell under the relevant minimum speed threshold (20 or 35 mph);[1]
2) Calculate the length-weighted average number of hours across all links in a segment to arrive at a segment-level estimate.

Several calculation methods were tested before settling on the one described. The observed data from small samples of roadway vehicles presents unique challenges due to:

- missing data when too few vehicles were recording data along a specific link, and
- large outliers in travel speed or time due to data anomalies or unusual events

The chosen method simplifies the calculation and minimizes the impact of missing data and large outliers. The method of averaging first over individual links and then over the full segment also matches guidance for federal highway performance reporting and allows for efficient re-calculation of metrics with changes to segmentation. Future review will re-examine the selected method now that segmentation and modeled data approaches have been selected.

Modeled data

For each RTP scenario, model outputs provide an average hourly travel time for each segment coded into the corresponding model network. Compared with the observed speed data, which is sampled continuously across the year, several key differences should be noted:

- The model seeks to represent a typical mid-week weekday.
- Non-recurrent events, such as accidents, weather, or construction are not considered.
- Congestion that spills back via queueing is not modeled.
- Demand is spread across each hour of the day based on time of day factors by trip purpose and refined using a peak spreading methodology; these factors are fixed across the region and do not attempt to capture behavior specific to any single facility or corridor.[2]

Since the model outputs do have the sampling challenges inherent in the observed data, hourly speeds were calculated directly for each segment as *segment distance / travel time*. The number of hours under the relevant speed threshold was then calculated as the count of hours below the minimum speed threshold. A count of 4 hours or fewer under the speed threshold would be considered meeting the performance threshold.

[1] Note that hours per weekday was based on counting the number of 15-minute periods with average speed below the threshold on a given day; e.g., if the average speed from 8:00-8:15 was 30 mph on a freeway link, that would count as 0.25 congested hours, even if other periods in the hour had speeds meeting the threshold.
[2] Additional details on the travel model are available at https://www.oregonmetro.gov/modeling-services

Results

Results were tabulated over about 217 throughway analysis segments covering nearly 300 miles. Table 1 shows summary statistics for the observed baseline data and all modeled scenarios. Subsections follow with details on results from each sub-analysis.

Table 1 Throughway segments not meeting policy

Source/scenario	Segments	Miles	% of segments	% of miles
2019 RITIS observed	39	37.6	18.0%	12.6%
2020 model base year	28	27.8	12.9%	9.3%
2030 No Build	39	40.5	18.0%	13.6%
2030 Constrained	20	18.0	9.2%	6.0%
2045 No Build	66	73.9	30.4%	24.8%
2045 Constrained	30	28.7	13.8%	9.6%

Observed speed data from RITIS recorded 37.6 miles (13%) of throughways not meeting the policy target of no more than 4 hours per weekday under the relevant minimum speed. Modeled scenarios varied from 18 miles (6%) to 73.9 miles (25%) not meeting the mobility policy threshold.

2019 Observed data results

Figure 4 maps the results. **Table 2** lists the 39 analysis segments (37.6 miles) not meeting the policy target based on our analysis of observed 2019 weekday speed data collected via RITIS. Segments are grouped into their longer parent throughway segments. An additional 15 segments (14.9 miles) averaged between three and four hours per weekday under the relevant travel speed, but did not exceed the mobility policy threshold in the observed data. Results for all segments are provided in **Appendix A**.

Table 2 also provides a breakdown of typical hours not meeting the speed threshold by time of day. Periods were defined following MAP-21 highway performance reporting guidelines:

- AM peak: 6 a.m. to 10 a.m. weekdays (Mon-Fri)
- Mid-day: 10 a.m. to 4 p.m. weekdays (Mon-Fri)
- PM peak: 4 p.m. to 8 p.m. weekdays (Mon-Fri)

Note that hours from the three periods might not add to the total because some links see minor congestion even during overnight hours. Among segments that failed to meet the policy threshold:

- All day congestion: 17 segments had at least one hour with speeds lower than policy in each of the three periods: AM peak, mid-day, and PM peak;
- Mid-day and PM peak congestion only: 17 others had at least one mid-day and one PM peak hour below policy;
- AM peak and mid-day congestion only: 3 had at least one AM peak hour and one mid-day hour below the threshold.

When interpreting time of day patterns, it is important to remember that all segments are single direction, and any 15-minute interval (e.g., 8:00-8:15 or 8:15-8:30) where average weekday speeds fall below the policy threshold count toward the total hours.

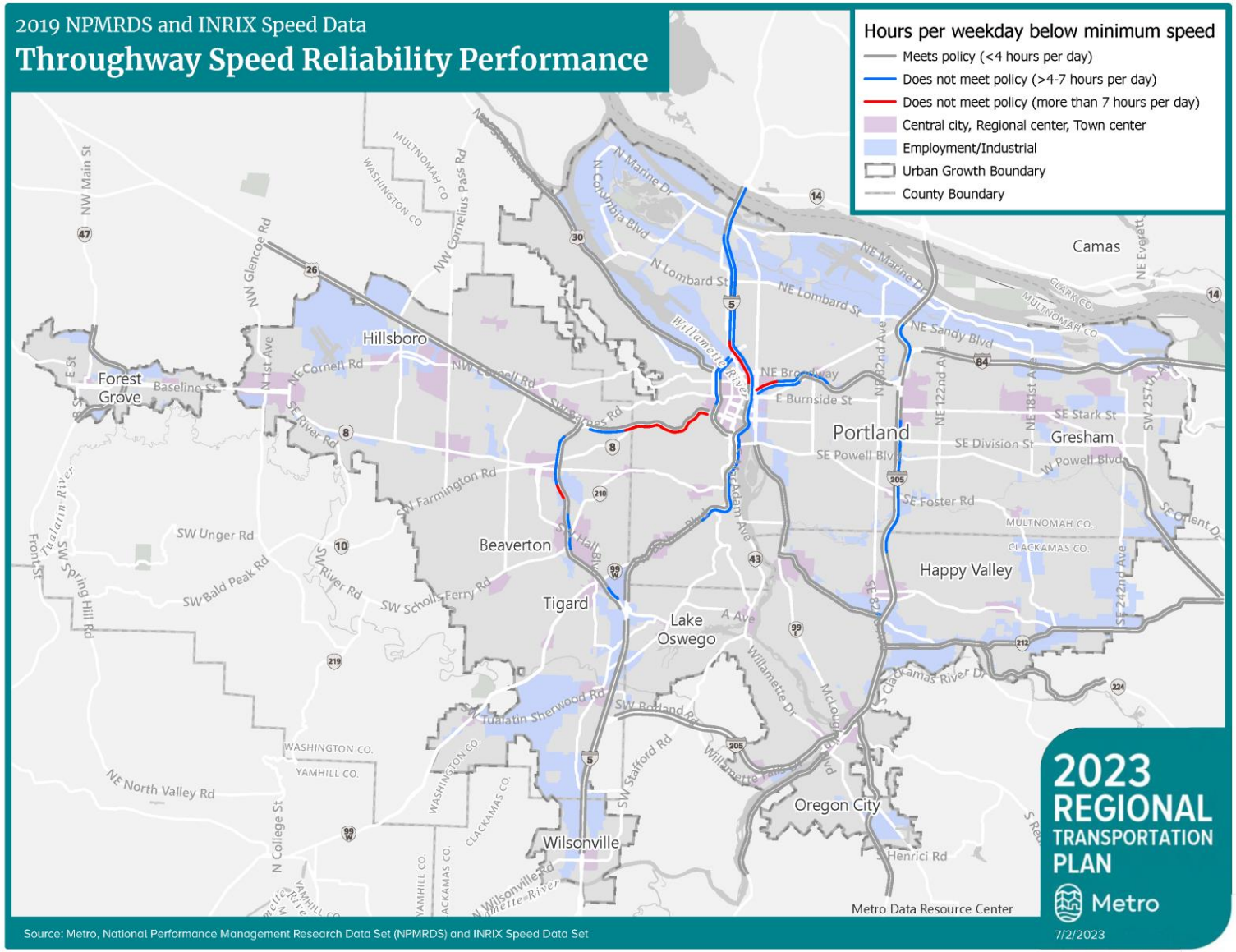

Figure 4 2019 observed conditions results map

Table 2 Throughway segments not meeting policy (2019 observed/RITIS)

Throughway segment	Analysis segment	Miles	Total weekday hours not meeting policy	AM peak hours	Mid-day hours	PM peak hours
OR 217 (US 26 to I-5)	217 NB 1	0.54	4.5	1.1	1.1	2.1
	217 NB 4	1.21	4.1	1.5	0.9	1.6
	217 SB 2	0.58	4.7	0.6	2.0	2.0
	217 SB 3	1.01	6.3	1.2	2.8	2.2
	217 SB 4	0.53	7.0	1.6	3.3	2.1
OR 224 (OR 99E to I-205)	224 WB 2	0.18	4.7	1.8	1.7	0.7
I-205 (I-84 to OR 99E)	I205 NB 11	1.60	4.8	1.4	2.1	1.2
	I205 NB 12	1.37	5.3	1.6	2.1	1.4
	I205 NB 13	1.45	4.8	1.1	1.8	1.7
I-205 (I-84 to Glen Jackson Bridge)	I205 NB 16	0.97	4.5	0.2	1.5	2.6
	I205 NB 17	0.43	4.7	0.3	1.5	2.7
I-405 (Fremont Br. to Marquam Br.)	I405 NB 7	0.79	4.4	0.1	1.9	2.4
	I405 SB 1	0.52	4.2	0.9	1.5	1.7
	I405 SB 2	0.48	6.2	1.7	2.2	2.1
	I405 SB 3	0.73	5.2	1.3	1.6	2.2
I-5 (I-405 to OR 217)	I5 NB 14	2.67	4.8	1.4	1.4	2.0
	I5 NB 15	0.38	5.0	0.5	2.1	2.4
I-5 (Fremont Br. to Marquam Br.)	I5 SB 7	0.88	8.7	2.1	4.4	2.2
	I5 SB 8	0.71	8.9	1.8	4.4	2.5
	I5 NB 16	1.09	6.4	0.7	3.0	2.7
	I5 NB 17	1.38	5.3	1.0	2.3	1.9
	I5 NB 18	0.65	5.0	0.4	2.6	2.0
I-5 (Fremont Bridge to Columbia River)	I5 NB 19	1.04	4.3	0.0	1.7	2.5
	I5 NB 20	0.95	4.9	0.0	2.1	2.7
	I5 NB 21	0.51	5.0	0.0	2.1	2.8
	I5 NB 22	0.66	5.3	0.0	2.3	2.9
	I5 NB 23	1.24	6.0	0.0	2.8	3.1
	I5 NB 24	0.59	6.7	0.0	3.3	3.2
	I5 NB 25	0.89	5.5	0.1	2.9	2.4
	I5 SB 3	1.86	4.2	2.8	1.2	0.1
	I5 SB 5	0.62	5.4	2.8	2.0	0.5
	I5 SB 6	1.00	5.1	2.0	2.0	1.1
I-84 (I-5 to I-205)	I84 EB 1	1.45	5.4	0.1	2.7	2.6
	I84 WB 2	1.79	6.2	2.7	2.3	1.1
	I84 WB 3	0.69	7.4	2.2	3.2	1.8
US 26 (I-405 to OR 217)	US 26 EB 8	1.12	5.2	2.5	1.0	1.6

Throughway segment	Analysis segment	Miles	Total weekday hours not meeting policy	AM peak hours	Mid-day hours	PM peak hours
	US 26 EB 9	1.34	8.3	3.0	2.7	2.4
	US 26 EB 10	0.99	10.6	3.2	4.3	3.0
	US 26 EB 11	0.71	12.0	3.3	5.2	3.3

Figure 5 and Figure 6 provide examples of the two most common time of day patterns noted in the observed data.

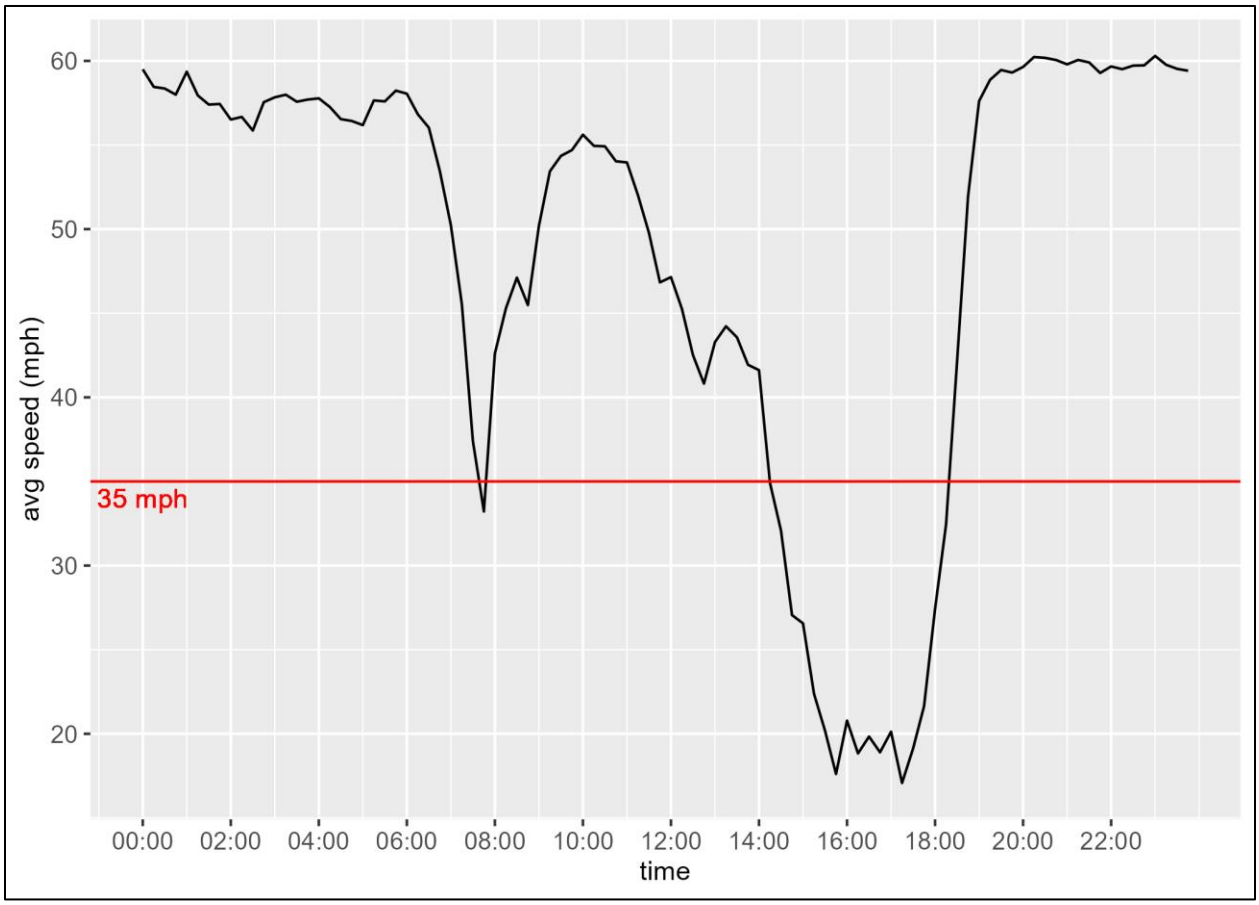

Figure 5 Example of mid-day and PM peak congestion pattern (Hwy 217 SB from Walker Rd to Canyon Rd)

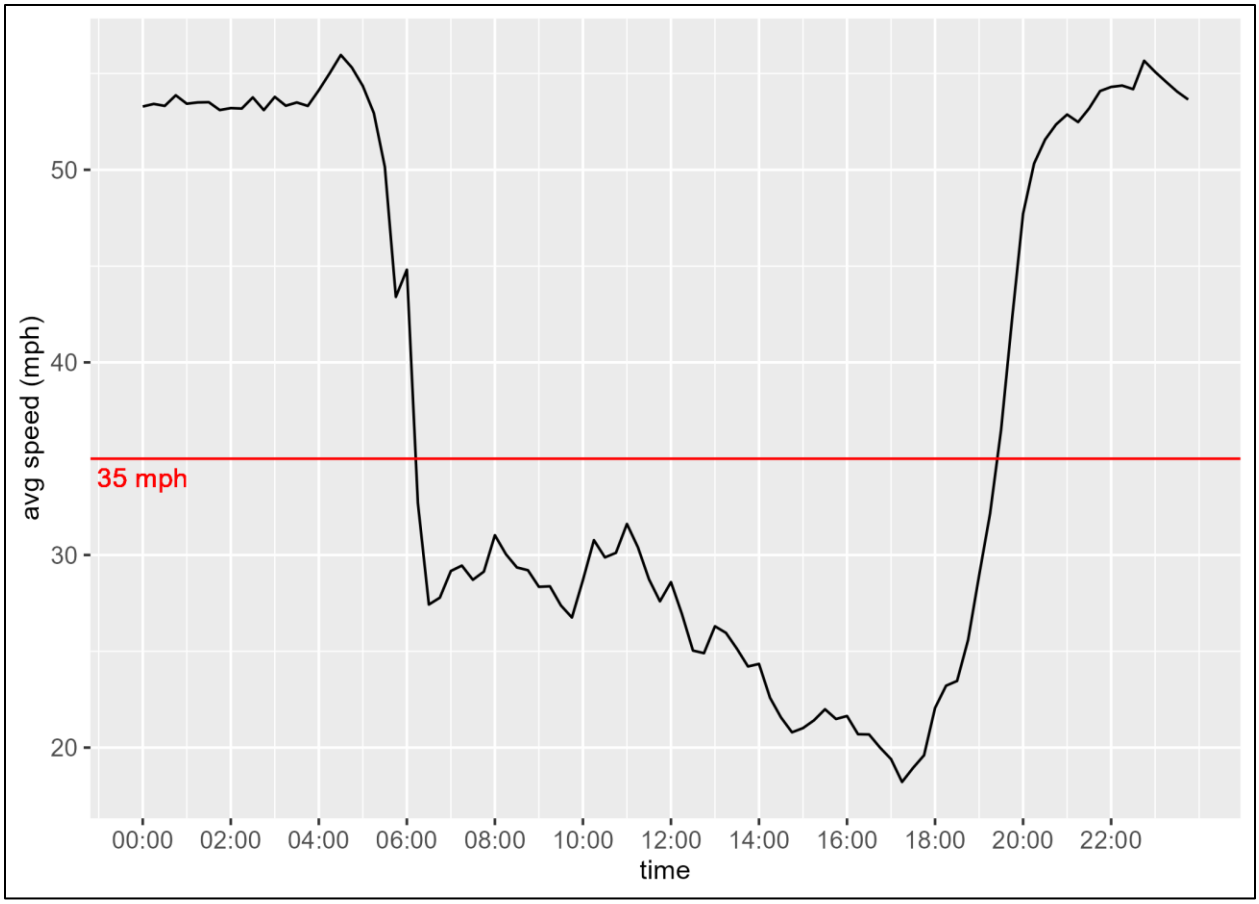

Figure 6 Example of all day congestion pattern (US26 EB from Jefferson St exit to I-405 via Vista Ridge Tunnel)

2020 Base Year model results

Pre-pandemic speeds were analyzed on the base year model network, which closely followed the observed segments. **Figure 7** maps the results. **Table 3** lists the 28 analysis segments (27.8 miles) not meeting the policy target based on modeled hourly weekday travel speeds. Segments are grouped into their longer parent throughway segments. An additional 21 segments (21.8 miles) had an estimated three or four hours per weekday under the relevant travel speed threshold, but did not exceed the policy threshold in the observed data. Results for all segments are provided in **Appendix B**.

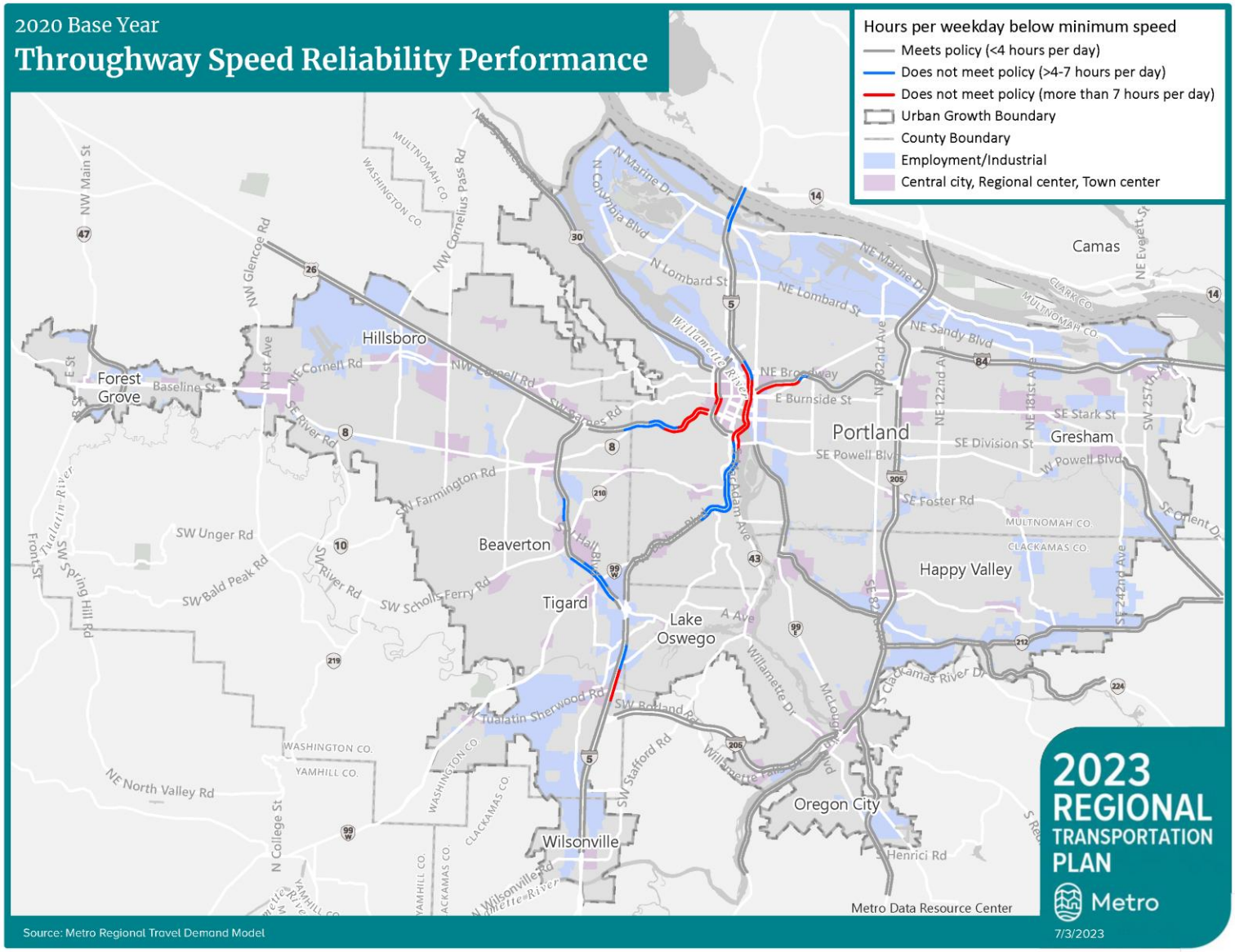

Figure 7 2020 Base model results map

Table 3 Throughway segments not meeting policy (2020 Base Year model)

Throughway segment	Analysis segment	Miles	Total weekday hours not meeting policy
OR 217 (US 26 to I-5)	217 NB 2	1.08	7
	217 SB 5	0.76	7
	217 SB 8	0.88	7
	217 SB 9	1.04	6
I-405 (Fremont Br. to Marquam Br.)	I405 NB 5	0.55	12
	I405 SB 3	0.73	12
I-5 (OR 217 to Wilsonville Road)	I5 NB 7	1.08	8
	I5 NB 8	0.82	6
I-5 (I-405 to OR 217)	I5 NB 14	2.67	7
	I5 SB 12	2.51	5
	I5 SB 13	0.65	6
I-5 (Fremont Br. to Marquam Br.)	I5 NB 16	1.09	13
	I5 NB 17	1.38	9
	I5 NB 18	0.65	6
	I5 SB 8	0.71	10
	I5 SB 9	0.23	10
	I5 SB 10	1.45	8
	I5 SB 11	0.38	13
I-5 (Fremont Bridge to Columbia River)	I5 NB 24	0.59	5
	I5 NB 25	0.89	6
	I5 SB 1	0.54	6
I-84 (I-5 to I-205)	I84 EB 1	1.45	12
	I84 EB 2	0.42	5
US 26 (I-405 to OR 217)	US 26 EB 9	1.34	6
	US 26 EB 10	0.99	13
	US 26 EB 11	0.71	13
	US 26 WB 1	1.28	11
	US 26 WB 9	0.92	6

Comparison between observed and modeled base year results

Table 4 compares observed and modeled results for the base year in terms whether specific segments met or did not meet the policy target for travel speeds.

Table 4 Results by system mileage, observed (2019) vs. modeled (2020 base, pre-pandemic)

		Modeled (miles)		
		Does NOT meet policy	**Meets policy**	**Total (Obs)**
Observed (miles)	Does **NOT** meet policy	13.2 (4%)	24.4 (8%)	**37.6 (13%)**
	Meets policy	14.6 (5%)	245.9 (83%)	**260.5 (87%)**
	Total (Modeled)	**27.8 (9%)**	**270.3 (91%)**	***298.1 (100%)***

Despite substantial differences in the two data sources and how and what they seek to measure, there was broad agreement in terms of the policy results; however, there was more disagreement over exactly where the system was failing to meet the policy:

- For 83% of system miles, observed data and the 2020 base year model agreed that the policy requirements were met;
- For 4% of system miles, the methods agreed that the policy was NOT met;
- For about 13% of the miles analyzed, the observed data and model results disagreed
    - For 8% of the system, observed data suggested the policy was NOT met, but the model reported that it was; i.e., the model predicted LESS congestion than observed data.
    - For 5% of the system, the travel model suggested that the policy was NOT met, but observed data reported that it was; i.e. the model predicted MORE congestion than observed data.

Where segments failed to meet policy in the observed data, the modeled speeds agreed just 47% of the time, by mileage, and for segments the model reported as not meeting policy, observed data agreed for just 35% of those miles.

Initial investigation into the most common disagreement (model misses a case where observed data suggests policy not met) suggested that two model limitations – lack of queuing behavior and hourly resolution – likely explain a substantial share of the differences. Figure 8 shows one example on I-5 northbound (I5 NB 23), just upstream from slowdowns near the Interstate Bridge over the Columbia River. The model traces a similar time of day pattern, but fails to capture the intensity of congestion beginning ahead of the evening peak. The speed drop and recovery profiles here are steep, and a secondary issue is that the model's hourly resolution also smooths over some of the speed drops on the shoulders of the peak. Supporting these hypotheses are the downstream segments closer to the source of the slowdowns (I5 NB 24 & 25 in the tables), where the observed and modeled data are in close agreement on the policy measure. Assuming the observed data is correct, the model gets the primary congestion source location right but misses the spill back upstream.

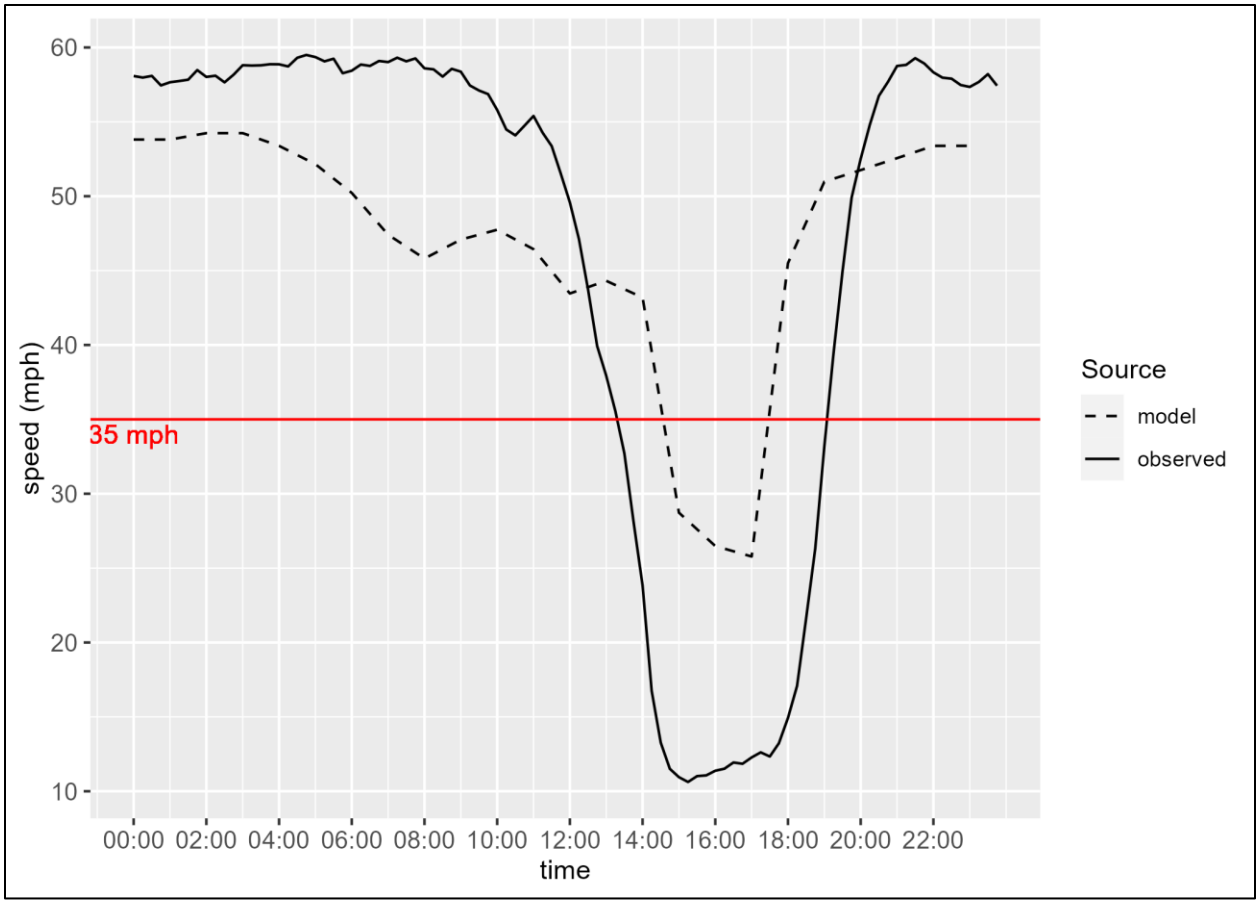

Figure 8 I-5 northbound example (I5 NB 23) upstream from Interstate Bridge

2030 No Build model results

Speeds were analyzed on the 2030 No Build model network, with a limited set of projects already constructed (or under construction) added (e.g. Abernethy Bridge, Division FX, freeway auxiliary lanes) along with updates to regional land use, employment, and demographic data. **Figure 9** maps the results. **Table 5** lists the 39 analysis segments (49.5 miles) not meeting the policy threshold based on modeled hourly weekday travel speeds. Segments are grouped into their longer parent throughway segments. An additional 24 segments (25.7 miles) had an estimated three or four hours per weekday under the relevant travel speed, but did not exceed the policy threshold in the observed data. Results for all segments are provided in **Appendix B**.

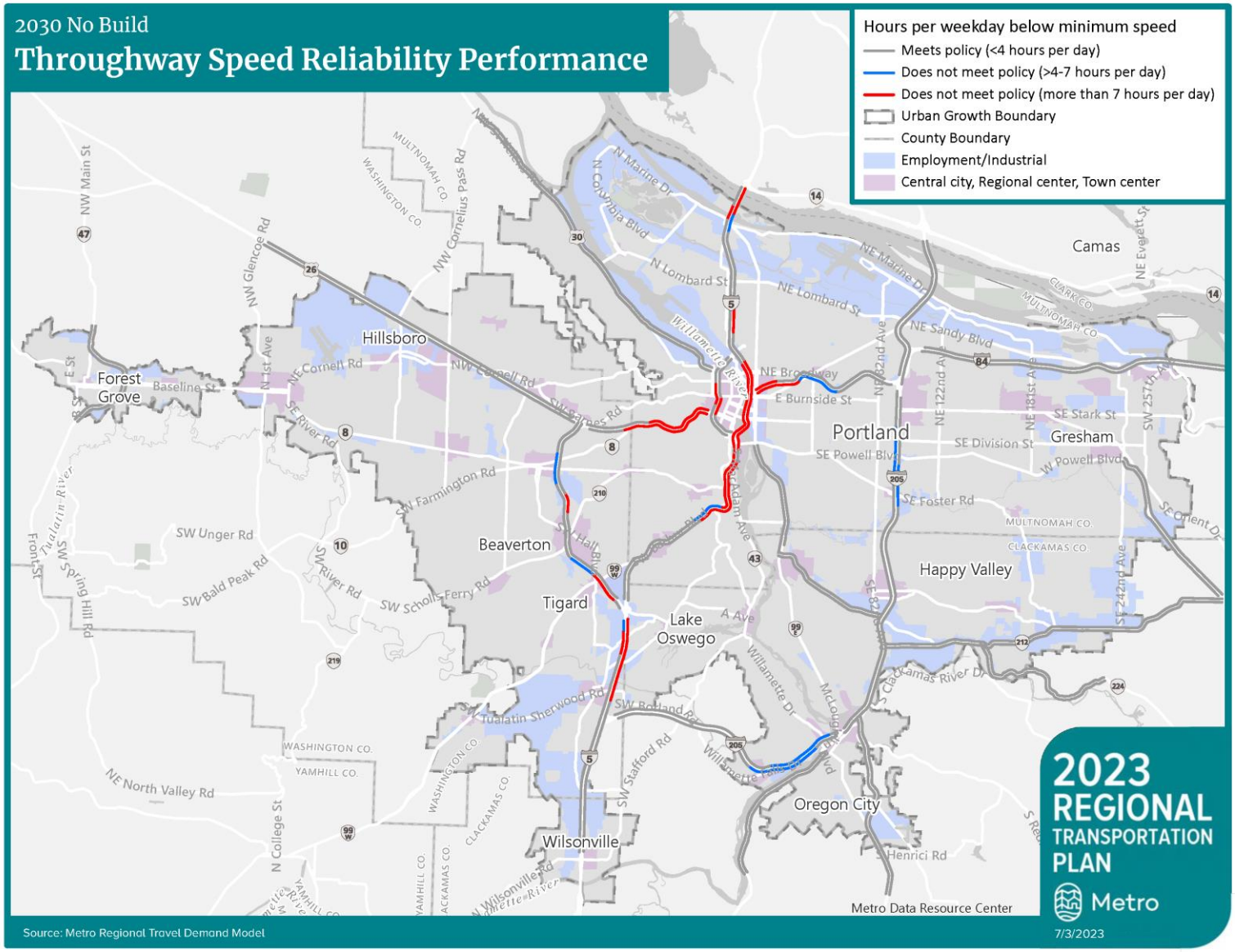

Figure 9 2030 No Build model results map

Table 5 Throughway segments not meeting policy (2030 No Build model)

Throughway segment	Analysis segment	Miles	Total weekday hours not meeting policy
OR 217 (US 26 to I-5)	217 NB 5	0.60	8
	217 SB 3	1.01	5
	217 SB 8	0.88	5
	217 SB 9	1.04	11
I-205 (OR 99E to I-5)	I205 NB 3	2.36	7
	I205 SB 15	2.26	6
I-205 (I-84 to OR 99E)	I205 NB 12	1.37	6
	I205 SB 6	1.91	5
I-405 (Fremont Br. to Marquam Br.)	I405 NB 5	0.55	12
	I405 SB 3	0.73	13
I-5 (Fremont Br. to Marquam Br.)	I5 NB 16	1.09	14
	I5 NB 17	1.38	12
	I5 NB 18	0.65	11
	I5 SB 8	0.71	13
	I5 SB 9	0.23	12
	I5 SB 10	1.45	11
	I5 SB 11	0.38	13
I-5 (Fremont Bridge to Columbia River)	I5 NB 20	0.95	8
	I5 NB 24	0.59	6
	I5 NB 25	0.89	9
	I5 SB 1	0.54	10
I-5 (OR 217 to Wilsonville Road)	I5 NB 7	1.08	13
	I5 NB 8	0.82	11
	I5 NB 9	0.80	8
	I5 SB 19	0.38	6
	I5 SB 20	0.79	9
I-5 (I-405 to OR 217)	I5 NB 14	2.67	10
	I5 SB 12	2.51	9
	I5 SB 13	0.65	7
	I5 SB 14	0.38	5
I-84 (I-5 to I-205)	I84 EB 1	1.45	12
	I84 EB 2	0.42	7
	I84 EB 3	1.06	5
	I84 WB 3	0.69	9
US 26 (I-405 to OR 217)	US 26 EB 9	1.34	10
	US 26 EB 10	0.99	14
	US 26 EB 11	0.71	14
	US 26 WB 1	1.28	13
	US 26 WB 9	0.92	11

In the 2030 No Build scenario, the model mostly predicts a broadening and deepening of 2020 Base Year existing congestion across the region. Some new areas appear as predicted to exceed the policy threshold, though, most prominently about eight miles of I-205 and about three and one-half miles of I-5 and OR 217, near their junction in the southwest portion of the region.

2030 Financially Constrained model results

The 2030 Constrained scenario implemented several major projects and policies, including the I-205 widening, I-5 Rose Quarter Improvement Project, and tolling at key points in the throughway network. The sum of project impacts reduced the number and mileage of throughways not meeting policy below the 2020 Base Year scenario. **Figure 10** maps the results. **Table 6** lists the 20 analysis segments (18 miles) not meeting the policy target based on modeled hourly weekday travel speeds. Segments are grouped into their longer parent throughway segments. An additional 10 segments (11.3 miles) had an estimated three or four hours per weekday under the relevant travel speed threshold, but did not exceed the policy threshold in the observed data. Results for all segments are provided in **Appendix B**.

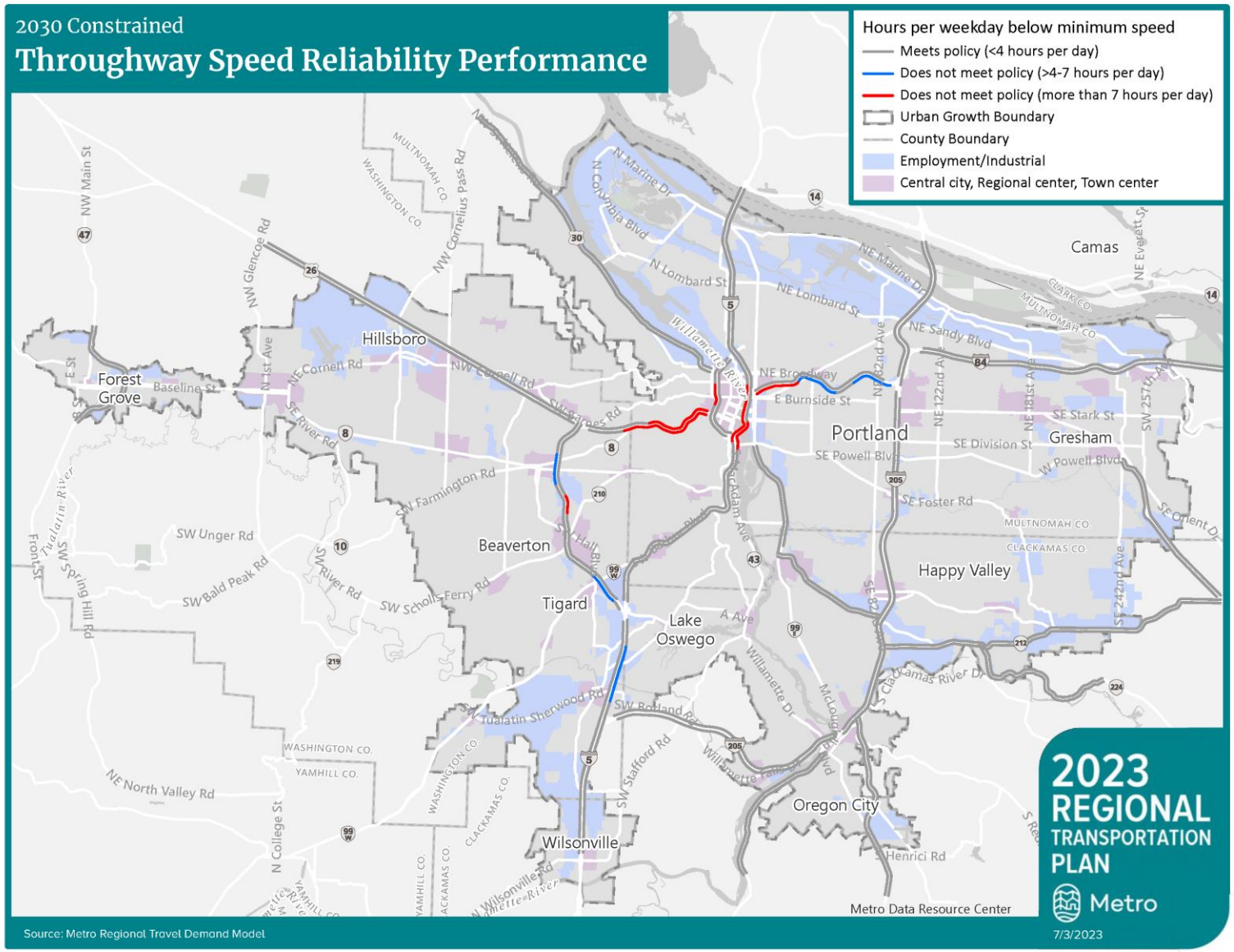

Figure 10 2030 Financially Constrained model results map

Table 6 Throughway segments not meeting policy (2030 Constrained model)

Throughway segment	Analysis segment	Miles	Total weekday hours not meeting policy
OR 217 (US 26 to I-5)	217 NB 5	0.60	8
	217 SB 3	1.01	7
	217 SB 9	1.04	7
I-405 (Fremont Br. to Marquam Br.)	I405 SB 3	0.73	12
I-5 (Fremont Br. to Marquam Br.)	I5 NB 16	1.09	14
	I5 SB 9	0.23	8
	I5 SB 10	1.45	10
	I5 SB 11	0.38	15
I-5 (OR 217 to Wilsonville Road)	I5 NB 7	1.08	5
	I5 NB 8	0.82	7
I-84 (I-5 to I-205)	I84 EB 1	1.45	13
	I84 EB 2	0.42	5
	I84 EB 3	1.06	6
	I84 EB 5	0.92	5
	I84 EB 6	0.44	5
US 26 (I-405 to OR 217)	US 26 EB 9	1.34	9
	US 26 EB 10	0.99	14
	US 26 EB 11	0.71	14
	US 26 WB 1	1.28	12
	US 26 WB 9	0.92	10

2045 No Build model results

The 2045 No Build scenario implemented the same handful of minor projects in progress as 2030 No Build, along with updates to regional land use, employment, and demographic data. The resulting list of 66 analysis segments (73.9 miles) – one-quarter of the throughway system – not meeting the policy threshold is provided in **Appendix B.**

Figure 11 maps the results. An additional 14 segments (17.2 miles) had an estimated three or four hours per weekday under the relevant travel speed threshold, but did not exceed the policy threshold in the observed data.

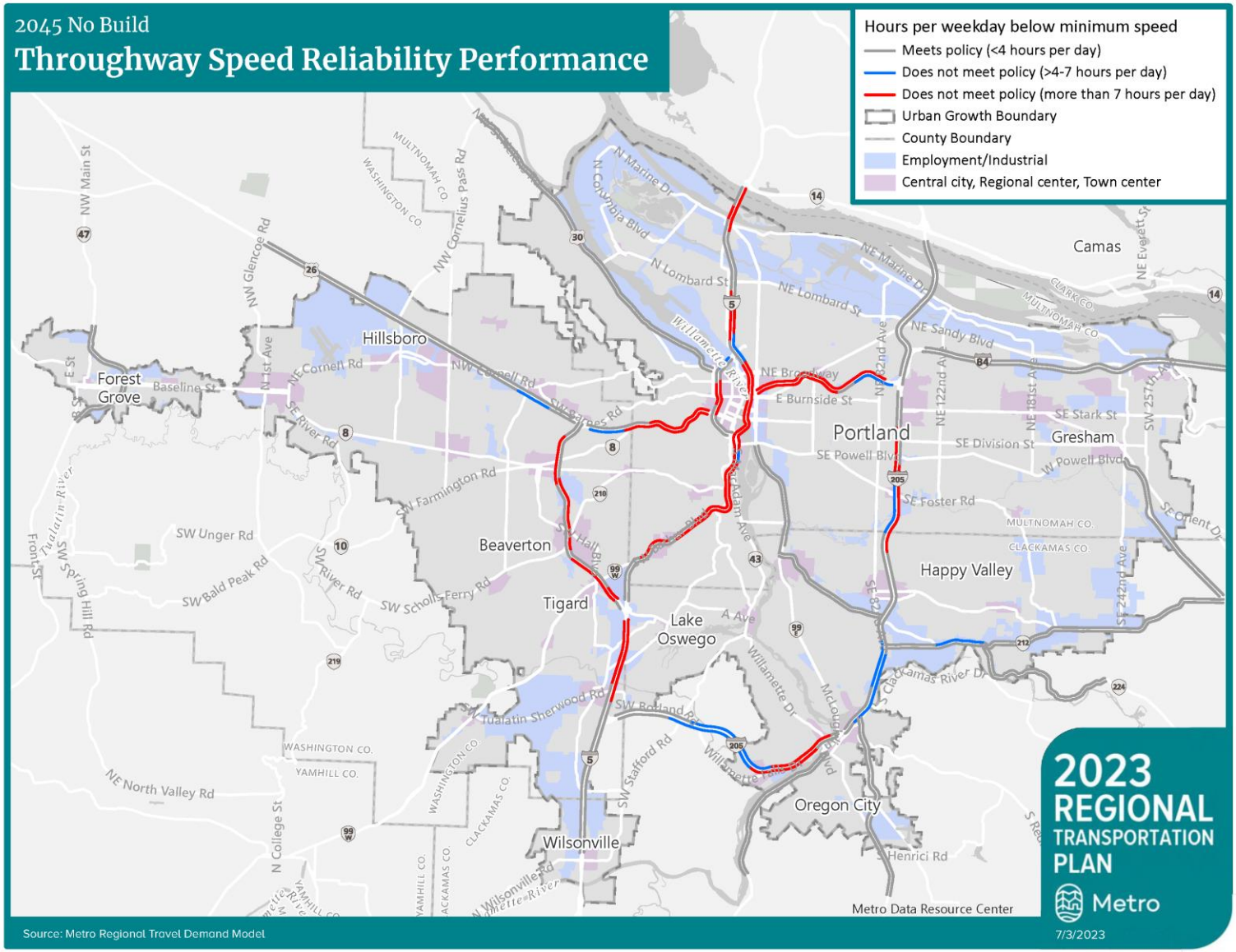

Figure 11 2045 No Build model results map

2045 Financially Constrained model results

The 2045 Constrained scenario implemented, in addition to 2030 Constrained, the IBR Program and associated post-construction tolling. The sum of project impacts held the number and mileage of throughways not meeting policy to about what they were in the 2020 Base Year scenario. **Table 7** lists the 30 analysis segments (28.7 miles) not meeting the policy target based on modeled hourly weekday travel speeds. Although the extent of under-performing segments is similar to the base year, demand growth resulted in an average estimated two-hour increase (from 8 to 10 hours per weekday) in the length of congestion on segments not meeting policy compared with 2020 Base Year data. **Figure 12** maps the results. An additional 10 segments (11.3 miles) had an estimated three or four hours per weekday under the relevant travel speed threshold, but did not exceed the policy threshold in the observed data. Results for all segments are provided in **Appendix B**.

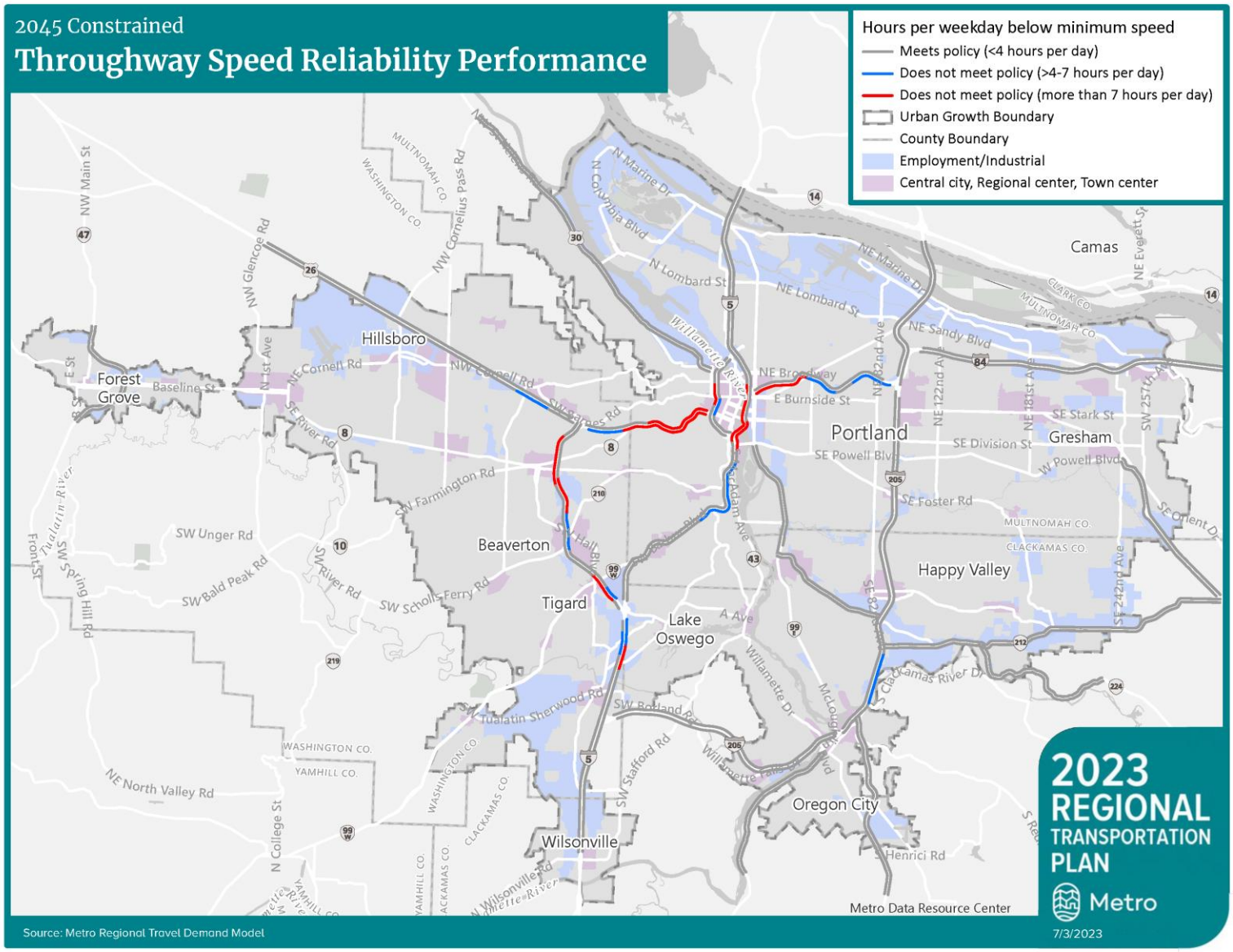

Figure 12 2045 Financially Constrained model results map

Table 7 Throughway segments not meeting policy (2045 Financially Constrained model)

Throughway segment	Analysis segment	Miles	Total weekday hours not meeting policy
OR 217 (US 26 to I-5)	217 NB 1	0.54	6
	217 NB 4	1.21	6
	217 NB 5	0.60	11
	217 NB 6	0.62	9
	217 SB 2	0.58	9
	217 SB 3	1.01	8
	217 SB 9	1.04	9
I-205 (I-84 to OR 99E)	I205 NB 7	1.69	5
I-405 (Fremont Br. to Marquam Br.)	I405 NB 5	0.55	7
	I405 SB 3	0.73	13
I-5 (Fremont Br. to Marquam Br.)	I5 NB 16	1.09	14
	I5 SB 9	0.23	11
	I5 SB 10	1.45	13
	I5 SB 11	0.38	16
I-5 (OR 217 to Wilsonville Road)	I5 NB 8	0.82	8
	I5 NB 9	0.80	6
	I5 SB 20	0.79	7
I-5 (I-405 to OR 217)	I5 NB 14	2.67	6
I-84 (I-5 to I-205)	I84 EB 1	1.45	13
	I84 EB 2	0.42	9
	I84 EB 3	1.06	7
	I84 EB 5	0.92	7
	I84 EB 6	0.44	7
US 26 (OR 217 to NW Glencoe Road)	US 26 EB 6	1.20	6
US 26 (I-405 to OR 217)	US 26 EB 8	1.12	7
	US 26 EB 9	1.34	13
	US 26 EB 10	0.99	14
	US 26 EB 11	0.71	14
	US 26 WB 1	1.28	13
	US 26 WB 9	0.92	11

Appendix A

Table 8 Observed weekday hours not meeting policy speed

Segment	Miles	Min speed	2019 obs.[1]	AM (6-10a)	MD (10a-4p)	PM (4p-8p)
OR 212 - I-205 to SE 242nd						
212 EB 1	1.56	20	2.8	0.37	**1.05**	0.71
212 EB 2	1.66	20	1.8	0.20	0.54	0.85
212 EB 3	2.43	20	0.9	0.07	0.25	0.53
212 EB 4	2.18	20	0.6	0.05	0.19	0.27
212 WB 1	2.18	20	0.8	0.31	0.23	0.22
212 WB 2	2.51	20	0.3	0.08	0.08	0.06
212 WB 3	1.58	20	0.5	0.11	0.15	0.11
212 WB 4	1.56	20	4.0	0.62	**1.80**	0.93
OR 212 in Damascus from SE 242nd Avenue to US 26 (Mount Hood Hwy.)						
212 EB 5	2.37	20	0.7	0.09	0.21	0.15
212 EB 6	1.30	20	0.3	0.04	0.19	0.05
212 WB 5	2.37	20	0.9	0.13	0.22	0.18
212 WB 6	1.30	20	0.4	0.07	0.20	0.05
OR 213 from I-205 to S. Leland Road						
213 NB 1	2.48	20	0.9	0.55	0.21	0.08
213 NB 2	0.61	20	1.6	0.42	0.69	0.37
213 NB 3	3.02	20	0.2	0.11	0.05	0.05
213 SB 1	3.02	20	0.1	0.01	0.04	0.06
213 SB 2	0.62	20	1.6	0.14	0.53	0.87
213 SB 3	2.48	20	0.9	0.06	0.32	0.54
OR 217 (US 26 to I-5)						
217 NB 1	0.54	35	**4.5**	**1.1**	**1.1**	**2.1**
217 NB 2	1.08	35	3.8	**1.21**	0.75	**1.81**
217 NB 3	0.67	35	3.2	**1.18**	0.57	**1.40**
217 NB 4	1.21	35	**4.1**	**1.5**	0.9	**1.6**
217 NB 5	0.60	35	1.2	0.87	0.12	0.17
217 NB 6	0.62	35	0.6	0.46	0.06	0.08
217 NB 7	0.87	35	0.1	0.04	0.02	0.03
217 NB 8	0.79	35	0.1	0.02	0.01	0.01
217 NB 9	0.37	35	0.3	0.05	0.03	0.07
217 SB 1	0.68	35	2.3	0.11	0.84	**1.29**
217 SB 2	0.58	35	**4.7**	0.6	**2.0**	**2.0**
217 SB 3	1.01	35	**6.3**	**1.2**	**2.8**	**2.2**
217 SB 4	0.53	35	**7.0**	**1.6**	**3.3**	**2.1**
217 SB 5	0.76	35	3.5	**1.54**	**1.23**	0.73
217 SB 6	0.55	35	2.4	**1.68**	0.36	0.31
217 SB 7	0.65	35	3.0	**1.87**	0.60	0.46
217 SB 8	0.88	35	1.1	0.62	0.29	0.15
217 SB 9	1.04	35	0.6	0.19	0.24	0.17
217 SB 10	0.38	35	1.0	0.08	0.48	0.40

Segment	Miles	Min speed	2019 obs.[1]	AM (6-10a)	MD (10a-4p)	PM (4p-8p)
OR 224 (OR 99E to I-205)						
224 EB 1	1.90	20	0.7	0.16	0.32	0.22
224 EB 2	1.21	20	0.5	0.04	0.16	0.24
224 EB 3	0.72	20	2.1	0.25	0.90	0.82
224 EB 4	0.18	20	2.3	0.60	0.93	0.57
224 WB 2	0.18	20	**4.7**	**1.8**	**1.7**	0.7
224 WB 3	0.72	20	1.4	0.36	0.51	0.30
224 WB 4	0.51	20	0.2	0.02	0.10	0.10
224 WB 5	0.70	20	0.0	0.01	0.01	0.01
224 WB 6	1.90	20	0.7	0.16	0.17	0.27
OR 224 (Clackamas Highway) from OR 212 to 232nd Drive						
224 EB 6	1.12	20	0.8	0.03	0.08	0.60
224 EB 7	4.45	20	0.0	0.00	0.00	0.00
224 WB 7	4.45	20	0.0	0.00	0.00	0.00
224 WB 8	1.12	20	0.7	0.15	0.23	0.17
OR 47						
47 NB 1	2.07	20	0.5	0.19	0.23	0.07
47 NB 2	1.70	20	0.4	0.15	0.20	0.06
47 NB 3	0.89	20	0.1	0.02	0.04	0.01
47 SB 1	0.88	20	0.2	0.08	0.10	0.03
47 SB 2	1.70	20	0.9	0.19	0.39	0.25
47 SB 3	2.07	20	0.3	0.05	0.11	0.09
OR 99E (SE McLoughlin Blvd) - SE Powell Blvd. to OR 224						
OR 99E NB 1	0.73	20	0.3	0.21	0.02	0.01
OR 99E NB 2	2.06	20	0.7	0.46	0.06	0.07
OR 99E NB 3	0.74	20	1.5	**1.37**	0.03	0.02
OR 99E SB 3	1.03	20	1.9	0.03	0.30	**1.49**
OR 99E SB 4	1.78	20	0.3	0.03	0.05	0.13
OR 99E SB 5	1.01	20	0.2	0.03	0.04	0.09
OR 99E (OR 99E) from 6th Street in Oregon City to South End Road						
OR 99E NB 7	5.19	20	0.2	0.04	0.05	0.07
OR 99E SB 7	5.19	20	0.2	0.04	0.06	0.12
I-205 (OR 99E to I-5)						
I205 NB 1	1.72	35	2.5	0.06	0.98	**1.45**
I205 NB 2	3.29	35	3.4	0.09	**1.08**	**2.19**
I205 NB 3	2.35	35	3.0	0.09	0.94	**1.90**
I205 NB 4	0.77	35	2.0	0.08	0.62	**1.32**
I205 SB 14	0.28	35	3.0	**2.19**	0.61	0.14
I205 SB 15	2.26	35	1.1	0.74	0.21	0.06
I205 SB 16	3.26	35	0.4	0.21	0.13	0.03
I205 SB 17	2.48	35	0.1	0.05	0.01	0.01
I-205 (I-84 to OR 99E)						
I205 NB 5	0.48	35	0.2	0.06	0.07	0.04
I205 NB 6	0.78	35	0.4	0.16	0.14	0.05
I205 NB 7	1.69	35	0.3	0.09	0.12	0.05

Segment	Miles	Min speed	2019 obs.[1]	AM (6-10a)	MD (10a-4p)	PM (4p-8p)
I205 NB 8	0.66	35	0.3	0.05	0.12	0.06
I205 NB 9	0.80	35	1.1	0.16	0.60	0.21
I205 NB 10	1.98	35	1.9	0.43	0.98	0.48
I205 NB 11	1.60	35	**4.8**	**1.4**	**2.1**	**1.2**
I205 NB 12	1.37	35	**5.3**	**1.6**	**2.1**	**1.4**
I205 NB 13	1.45	35	**4.8**	**1.1**	**1.8**	**1.7**
I205 NB 14	0.68	35	2.8	0.09	0.69	**1.89**
I205 SB 5	1.18	35	3.0	0.07	**1.14**	**1.68**
I205 SB 6	1.91	35	1.6	0.04	0.71	0.78
I205 SB 7	1.65	35	0.3	0.02	0.12	0.10
I205 SB 8	1.62	35	0.4	0.00	0.10	0.33
I205 SB 9	1.20	35	1.5	0.05	0.32	**1.06**
I205 SB 10	0.78	35	2.1	0.11	0.56	**1.44**
I205 SB 11	1.62	35	1.9	0.58	0.49	0.84
I205 SB 12	0.95	35	2.0	**1.48**	0.37	0.16
I205 SB 13	0.69	35	3.1	**2.19**	0.70	0.16
I-205 (I-84 to Glen Jackson Bridge)						
I205 NB 15	0.79	35	3.3	0.04	0.84	**2.34**
I205 NB 16	0.97	35	**4.5**	0.2	**1.5**	**2.6**
I205 NB 17	0.43	35	**4.7**	0.3	**1.5**	**2.7**
I205 NB 18	0.64	35	3.7	0.01	**1.12**	**2.45**
I205 NB 19	2.41	35	1.7	0.00	0.31	**1.32**
I205 SB 1	1.74	35	1.2	0.52	0.43	0.17
I205 SB 2	1.02	35	2.0	0.34	0.98	0.67
I205 SB 3	1.05	35	1.4	0.10	0.50	0.79
I205 SB 4	1.15	35	2.3	0.42	0.64	**1.09**
I-405 (Fremont Br. to Marquam Br.)						
I405 NB 1	0.10	35	2.1	0.46	0.44	**1.10**
I405 NB 2	0.23	35	2.6	0.62	0.61	**1.34**
I405 NB 3	0.32	35	3.8	0.98	0.92	**1.83**
I405 NB 4	0.35	35	1.2	0.12	0.20	0.79
I405 NB 5	0.55	35	2.2	0.05	0.64	**1.43**
I405 NB 6	0.63	35	3.5	0.05	**1.28**	**2.02**
I405 NB 7	0.79	35	**4.4**	0.1	**1.9**	**2.4**
I405 SB 1	0.52	35	**4.2**	0.9	**1.5**	**1.7**
I405 SB 2	0.48	35	**6.2**	**1.7**	**2.2**	**2.1**
I405 SB 3	0.73	35	**5.2**	**1.3**	**1.6**	**2.2**
I405 SB 4	0.60	35	1.7	0.15	0.53	0.89
I405 SB 5	0.51	35	2.2	0.05	0.71	**1.39**
I-5 (OR 217 to Wilsonville Road)						
I5 NB 4	1.70	35	0.6	0.16	0.34	0.06
I5 NB 5	2.35	35	0.8	0.64	0.06	0.04
I5 NB 6	1.01	35	2.0	**1.62**	0.21	0.12
I5 NB 7	1.08	35	2.0	**1.58**	0.26	0.16
I5 NB 8	0.82	35	0.2	0.04	0.03	0.02

Segment	Miles	Min speed	2019 obs.[1]	AM (6-10a)	MD (10a-4p)	PM (4p-8p)
I5 NB 9	0.80	35	0.3	0.04	0.06	0.18
I5 SB 19	0.38	35	0.9	0.00	0.39	0.53
I5 SB 20	0.79	35	1.1	0.00	0.44	0.64
I5 SB 21	0.97	35	1.5	0.00	0.53	0.94
I5 SB 22	0.77	35	2.0	0.00	0.75	**1.19**
I5 SB 23	2.48	35	3.0	0.00	**1.10**	**1.86**
I5 SB 24	2.34	35	2.7	0.00	0.84	**1.86**
I-5 (I-405 to OR 217)						
I5 NB 10	0.40	35	0.1	0.02	0.03	0.00
I5 NB 11	0.46	35	0.1	0.02	0.04	0.01
I5 NB 12	2.14	35	1.3	**1.07**	0.10	0.08
I5 NB 13	1.02	35	3.0	**2.01**	0.35	0.63
I5 NB 14	2.67	35	**4.8**	**1.4**	**1.4**	**2.0**
I5 NB 15	0.38	35	**5.0**	0.5	**2.1**	**2.4**
I5 SB 12	2.51	35	1.5	0.03	0.61	0.80
I5 SB 13	0.65	35	0.1	0.01	0.05	0.03
I5 SB 14	0.38	35	0.1	0.00	0.03	0.02
I5 SB 15	1.09	35	0.0	0.00	0.03	0.01
I5 SB 16	1.17	35	0.0	0.00	0.02	0.01
I5 SB 17	0.75	35	0.1	0.00	0.03	0.02
I5 SB 18	0.71	35	0.3	0.00	0.13	0.12
I-5 (Fremont Br. to Marquam Br.)						
I5 NB 16	1.09	35	**6.4**	0.7	**3.0**	**2.7**
I5 NB 17	1.38	35	**5.3**	1.0	**2.3**	**1.9**
I5 NB 18	0.65	35	**5.0**	0.4	**2.6**	**2.0**
I5 SB 7	0.88	35	**8.7**	**2.1**	**4.4**	**2.2**
I5 SB 8	0.71	35	**8.9**	**1.8**	**4.4**	**2.5**
I5 SB 9	0.23	35	2.2	0.19	0.73	**1.15**
I5 SB 10	1.45	35	2.2	0.09	0.62	**1.42**
I5 SB 11	0.38	35	3.2	0.05	**1.22**	**1.88**
I-5 (Fremont Bridge to Columbia River)						
I5 NB 19	1.04	35	**4.3**	0.0	**1.7**	**2.5**
I5 NB 20	0.95	35	**4.9**	0.0	**2.1**	**2.7**
I5 NB 21	0.51	35	**5.0**	0.0	**2.1**	**2.8**
I5 NB 22	0.66	35	**5.3**	0.0	**2.3**	**2.9**
I5 NB 23	1.24	35	**6.0**	0.0	**2.8**	**3.1**
I5 NB 24	0.59	35	**6.7**	0.0	**3.3**	**3.2**
I5 NB 25	0.89	35	**5.5**	0.1	**2.9**	**2.4**
I5 SB 1	0.54	35	1.4	**1.10**	0.22	0.02
I5 SB 2	0.50	35	1.9	**1.47**	0.34	0.02
I5 SB 3	1.86	35	**4.2**	**2.8**	**1.2**	0.1
I5 SB 4	0.63	35	2.4	**1.63**	0.54	0.06
I5 SB 5	0.62	35	**5.4**	**2.8**	**2.0**	0.5
I5 SB 6	1.00	35	**5.1**	**2.0**	**2.0**	**1.1**

Segment	Miles	Min speed	2019 obs.[1]	AM (6-10a)	MD (10a-4p)	PM (4p-8p)
I-84 (I-5 to I-205)						
I84 EB 1	1.45	35	**5.4**	0.1	**2.7**	**2.6**
I84 EB 2	0.42	35	3.4	0.06	**1.24**	**2.02**
I84 EB 3	1.06	35	2.6	0.04	0.95	**1.55**
I84 EB 4	0.61	35	1.9	0.03	0.67	**1.19**
I84 EB 5	0.92	35	0.6	0.03	0.12	0.40
I84 EB 6	0.44	35	0.4	0.01	0.06	0.27
I84 WB 1	2.16	35	3.8	**2.75**	0.76	0.24
I84 WB 2	1.79	35	**6.2**	**2.7**	**2.3**	**1.1**
I84 WB 3	0.69	35	**7.4**	**2.2**	**3.2**	**1.8**
I-84 (I-205 to NE Marine Dr. in Troutdale)						
I84 EB 7	0.61	35	0.1	0.01	0.02	0.03
I84 EB 8	2.66	35	0.1	0.01	0.02	0.02
I84 EB 9	1.44	35	0.1	0.01	0.01	0.02
I84 EB 10	1.53	35	0.0	0.01	0.02	0.00
I84 EB 11	0.99	35	0.1	0.01	0.03	0.02
I84 WB 4	0.43	35	0.1	0.01	0.01	0.01
I84 WB 5	1.49	35	0.0	0.01	0.00	0.00
I84 WB 6	1.34	35	0.1	0.02	0.01	0.01
I84 WB 7	3.84	35	1.5	0.07	0.63	0.80
I-84 from SE 257th Drive to MPA boundary						
I84 EB 12	1.16	35	0.2	0.02	0.05	0.03
I84 EB 13	4.06	35	0.0	0.00	0.01	0.01
I84 WB 8	3.73	35	0.0	0.00	0.00	0.01
I84 WB 9	0.59	35	0.1	0.02	0.01	0.02
I84 WB 10	0.92	35	0.0	0.00	0.00	0.00
US 26 (OR 217 to NW Glencoe Road)						
US 26 EB 1	3.47	35	0.0	0.00	0.01	0.01
US 26 EB 2	1.22	35	0.1	0.01	0.02	0.02
US 26 EB 3	1.87	35	0.1	0.01	0.01	0.10
US 26 EB 4	1.42	35	1.1	0.11	0.06	0.87
US 26 EB 5	1.51	35	2.4	0.52	0.39	**1.42**
US 26 EB 6	1.20	35	2.8	0.86	0.57	**1.30**
US 26 EB 7	0.91	35	1.0	0.70	0.08	0.17
US 26 WB 3	1.45	35	2.4	0.38	0.26	**1.69**
US 26 WB 4	1.22	35	1.6	0.27	0.25	**1.03**
US 26 WB 5	1.67	35	0.1	0.01	0.03	0.03
US 26 WB 6	1.77	35	0.0	0.01	0.01	0.01
US 26 WB 7	1.51	35	0.1	0.02	0.02	0.02
US 26 WB 8	3.75	35	0.1	0.01	0.02	0.01
US 26 (I-405 to OR 217)						
US 26 EB 8	1.12	35	**5.2**	**2.5**	1.0	**1.6**
US 26 EB 9	1.34	35	**8.3**	**3.0**	**2.7**	**2.4**
US 26 EB 10	0.99	35	**10.6**	**3.2**	**4.3**	**3.0**
US 26 EB 11	0.71	35	**12.0**	**3.3**	**5.2**	**3.3**

Segment	Miles	Min speed	2019 obs.[1]	AM (6-10a)	MD (10a-4p)	PM (4p-8p)
US 26 WB 1	1.28	35	1.4	0.27	0.23	0.56
US 26 WB 2	2.05	35	0.2	0.05	0.01	0.08
US 26 WB 9	0.92	35	0.4	0.05	0.03	0.07
US 26 from SE Hogan Road (SE 242nd) in Gresham to OR 212						
US 26 EB 18	0.61	20	1.6	0.27	0.77	0.39
US 26 EB 19	0.49	20	1.2	0.15	0.47	0.40
US 26 EB 20	4.52	20	0.0	0.01	0.01	0.01
US 26 WB 16	4.52	20	0.1	0.01	0.03	0.02
US 26 WB 17	0.62	20	2.2	0.42	**1.07**	0.57
US 26 WB 18	0.49	20	3.8	0.77	**2.11**	0.68
US 30/NW Yeon Ave. - I-405 to NW Cornelius Pass Road						
US 30 EB 1	5.83	20	0.3	0.03	0.05	0.10
US 30 EB 3	3.05	20	0.3	0.12	0.05	0.05
US 30 EB 4	1.95	20	1.2	0.37	0.19	0.35
US 30 EB 5	0.40	20	0.9	0.11	0.18	0.54
US 30 EB 6	0.20	20	0.8	0.04	0.16	0.60
US 30 WB 1	0.58	20	0.4	0.09	0.14	0.07
US 30 WB 2	1.95	20	0.6	0.07	0.11	0.23
US 30 WB 3	2.01	20	0.4	0.06	0.05	0.17
US 30 WB 4	1.04	20	0.3	0.03	0.08	0.13
US 30 WB 5	5.83	20	0.2	0.03	0.03	0.02

[1] total hours may exceed AM, MD, PM sum due to rounding and/or off-hours slow downs

Appendix B

Table 9 Modeled weekday hours not meeting policy speed by RTP scenario (4 or fewer meets policy)

Segment	Miles	Min speed	2020 Base	2030 NB	2030 FC	2045 NB	2045 FC
OR 212 - I-205 to SE 242nd							
212 EB 1	1.56	20	0	0	0	0	0
212 EB 2	1.66	20	0	2	1	4	0
212 EB 3	2.43	20	0	0	0	0	0
212 EB 4	2.18	20	0	0	0	0	0
212 WB 1	2.18	20	0	0	0	1	0
212 WB 2	2.51	20	0	0	0	0	0
212 WB 3	1.58	20	1	3	2	**5**	0
212 WB 4	1.56	20	0	0	0	0	0
OR 212 in Damascus from SE 242nd Avenue to US 26 (Mount Hood Hwy.)							
212 EB 5	2.37	20	0	0	0	0	0
212 EB 6	1.30	20	0	0	0	0	0
212 WB 5	2.37	20	0	0	0	0	0
212 WB 6	1.30	20	0	0	0	0	0
OR 213 from I-205 to S. Leland Road							
213 NB 1	2.48	20	0	0	0	0	0
213 NB 2	0.61	20	0	0	0	0	0
213 NB 3	3.02	20	0	0	0	0	0
213 SB 1	3.02	20	0	0	0	0	0
213 SB 2	0.62	20	0	0	0	0	0
213 SB 3	2.48	20	0	0	0	0	0
OR 217 (US 26 to I-5)							
217 NB 1	0.54	35	0	4	2	**12**	**6**
217 NB 2	1.08	35	**7**	0	0	0	0
217 NB 3	0.67	35	2	0	0	0	0
217 NB 4	1.21	35	0	4	2	**11**	**6**
217 NB 5	0.60	35	3	**8**	**8**	**12**	**11**
217 NB 6	0.62	35	0	4	4	**11**	**9**
217 NB 7	0.87	35	0	0	0	2	1
217 NB 8	0.79	35	0	0	0	0	0
217 NB 9	0.37	35	0	0	0	0	0
217 SB 1	0.68	35	0	0	0	0	0
217 SB 2	0.58	35	0	3	4	**10**	**9**
217 SB 3	1.01	35	0	**5**	**7**	**8**	**8**
217 SB 4	0.53	35	3	0	0	0	0
217 SB 5	0.76	35	**7**	0	0	0	0
217 SB 6	0.55	35	0	0	0	0	0
217 SB 7	0.65	35	2	0	0	0	0
217 SB 8	0.88	35	**7**	**5**	2	**10**	4
217 SB 9	1.04	35	**6**	**11**	**7**	**14**	**9**
217 SB 10	0.38	35	0	0	0	0	0

Segment	Miles	Min speed	2020 Base	2030 NB	2030 FC	2045 NB	2045 FC
OR 224 (OR 99E to I-205)							
224 EB 1	1.90	20	0	0	0	0	0
224 EB 2	1.21	20	0	0	0	0	0
224 EB 3	0.72	20	0	0	0	0	0
224 EB 4	0.18	20	0	0	0	0	0
224 WB 2	0.18	20	0	0	0	0	0
224 WB 3	0.72	20	0	0	0	0	1
224 WB 4	0.51	20	0	0	0	0	0
224 WB 5	0.70	20	0	0	0	0	0
224 WB 6	1.90	20	0	0	0	0	0
OR 224 (Clackamas Highway) from OR 212 to 232nd Drive							
224 EB 6	1.12	20	0	0	0	0	0
224 EB 7	4.45	20	0	0	0	0	0
224 WB 7	4.45	20	0	0	0	0	0
224 WB 8	1.12	20	0	0	0	2	1
Highway 47 (OR 47)							
47 NB 1	2.07	20	0	0	0	0	0
47 NB 2	1.70	20	0	0	0	0	0
47 NB 3	0.89	20	0	0	0	0	0
47 SB 1	0.88	20	0	0	0	0	0
47 SB 2	1.70	20	0	0	0	0	0
47 SB 3	2.07	20	0	0	0	0	0
OR 99E (SE McLoughlin Blvd) - SE Powell Blvd. to OR 224							
OR 99E NB 1	0.73	20	0	0	0	0	0
OR 99E NB 2	2.06	20	0	0	0	0	1
OR 99E NB 3	0.74	20	0	0	0	0	0
OR 99E SB 3	1.03	20	0	2	2	3	3
OR 99E SB 4	1.78	20	0	0	0	0	0
OR 99E SB 5	1.01	20	0	0	0	0	0
OR 99E (OR 99E) from 6th Street in Oregon City to South End Road							
OR 99E NB 7	5.19	20	0	0	0	0	0
OR 99E SB 7	5.19	20	0	0	0	0	0
I-205 (OR 99E to I-5)							
I205 NB 1	1.72	35	0	0	0	0	0
I205 NB 2	3.29	35	1	2	0	**5**	0
I205 NB 3	2.35	35	2	**7**	0	**14**	0
I205 NB 4	0.77	35	3	0	0	0	0
I205 SB 14	0.28	35	2	0	0	0	0
I205 SB 15	2.26	35	3	**6**	0	**12**	0
I205 SB 16	3.26	35	3	3	0	**7**	0
I205 SB 17	2.48	35	0	0	0	0	0
I-205 (I-84 to OR 99E)							
I205 NB 5	0.48	35	0	0	0	0	0
I205 NB 6	0.78	35	0	1	0	**5**	1
I205 NB 7	1.69	35	1	3	0	**6**	**5**
I205 NB 8	0.66	35	0	0	0	0	0

Segment	Miles	Min speed	2020 Base	2030 NB	2030 FC	2045 NB	2045 FC
I205 NB 9	0.80	35	0	0	0	0	0
I205 NB 10	1.98	35	0	0	0	0	0
I205 NB 11	1.60	35	1	4	0	**10**	0
I205 NB 12	1.37	35	2	**6**	2	**13**	4
I205 NB 13	1.45	35	0	0	0	2	0
I205 NB 14	0.68	35	0	0	0	0	0
I205 SB 5	1.18	35	0	0	0	0	0
I205 SB 6	1.91	35	0	**5**	0	**10**	0
I205 SB 7	1.65	35	0	0	0	**5**	0
I205 SB 8	1.62	35	0	0	0	0	0
I205 SB 9	1.20	35	0	0	0	0	0
I205 SB 10	0.78	35	0	0	0	0	0
I205 SB 11	1.62	35	0	2	0	**5**	0
I205 SB 12	0.95	35	0	0	0	4	0
I205 SB 13	0.69	35	0	0	0	0	0
I-205 (I-84 to Glen Jackson Bridge)							
I205 NB 15	0.79	35	0	0	0	0	0
I205 NB 16	0.97	35	0	0	0	2	0
I205 NB 17	0.43	35	0	0	0	0	0
I205 NB 18	0.64	35	0	0	0	0	0
I205 NB 19	2.41	35	0	0	0	0	0
I205 SB 1	1.74	35	1	1	1	2	1
I205 SB 2	1.02	35	1	0	0	0	0
I205 SB 3	1.05	35	0	0	0	0	0
I205 SB 4	1.15	35	0	0	0	0	0
I-405 (Fremont Br. to Marquam Br.)							
I405 NB 1	0.10	35	0	0	0	0	0
I405 NB 2	0.23	35	0	0	0	0	0
I405 NB 3	0.32	35	0	0	0	0	0
I405 NB 4	0.35	35	0	0	0	0	0
I405 NB 5	0.55	35	**12**	**12**	3	**13**	**7**
I405 NB 6	0.63	35	2	4	0	**12**	3
I405 NB 7	0.79	35	0	1	0	4	0
I405 SB 1	0.52	35	3	4	2	**6**	2
I405 SB 2	0.48	35	1	2	0	2	0
I405 SB 3	0.73	35	**12**	**13**	**12**	**13**	**13**
I405 SB 4	0.60	35	0	0	0	0	0
I405 SB 5	0.51	35	0	0	0	0	0
I-5 (OR 217 to Wilsonville Road)							
I5 NB 4	1.70	35	0	0	0	1	1
I5 NB 5	2.35	35	0	0	0	3	1
I5 NB 6	1.01	35	0	0	0	1	0
I5 NB 7	1.08	35	**8**	**13**	**5**	**14**	2
I5 NB 8	0.82	35	**6**	**11**	**7**	**14**	**8**
I5 NB 9	0.80	35	2	**8**	0	**14**	**6**
I5 SB 19	0.38	35	0	**6**	0	**12**	1

Segment	Miles	Min speed	2020 Base	2030 NB	2030 FC	2045 NB	2045 FC
I5 SB 20	0.79	35	3	**9**	0	**13**	**7**
I5 SB 21	0.97	35	2	3	0	**11**	1
I5 SB 22	0.77	35	0	0	0	3	0
I5 SB 23	2.48	35	0	0	0	0	0
I5 SB 24	2.34	35	0	0	0	1	1
I-5 (I-405 to OR 217)							
I5 NB 10	0.40	35	0	0	0	0	0
I5 NB 11	0.46	35	0	0	0	0	0
I5 NB 12	2.14	35	0	1	0	3	0
I5 NB 13	1.02	35	2	4	0	**9**	4
I5 NB 14	2.67	35	**7**	**10**	4	**14**	**6**
I5 NB 15	0.38	35	3	4	0	**5**	4
I5 SB 12	2.51	35	**5**	**9**	1	**12**	0
I5 SB 13	0.65	35	**6**	**7**	2	**13**	0
I5 SB 14	0.38	35	2	**5**	1	**11**	4
I5 SB 15	1.09	35	0	0	0	0	0
I5 SB 16	1.17	35	0	2	0	**8**	0
I5 SB 17	0.75	35	0	0	0	0	0
I5 SB 18	0.71	35	0	0	0	1	0
I-5 (Fremont Br. to Marquam Br.)							
I5 NB 16	1.09	35	**13**	**14**	**14**	**14**	**14**
I5 NB 17	1.38	35	**9**	**12**	0	**12**	0
I5 NB 18	0.65	35	**6**	**11**	0	**13**	0
I5 SB 7	0.88	35	2	2	0	4	0
I5 SB 8	0.71	35	**10**	**13**	0	**13**	0
I5 SB 9	0.23	35	**10**	**12**	**8**	**12**	**11**
I5 SB 10	1.45	35	**8**	**11**	**10**	**13**	**13**
I5 SB 11	0.38	35	**13**	**13**	**15**	**15**	**16**
I-5 (Fremont Bridge to Columbia River)							
I5 NB 19	1.04	35	0	2	0	**7**	0
I5 NB 20	0.95	35	4	**8**	0	**10**	0
I5 NB 21	0.51	35	0	0	0	0	0
I5 NB 22	0.66	35	3	3	0	3	0
I5 NB 23	1.24	35	3	3	0	3	0
I5 NB 24	0.59	35	**5**	**6**	2	**11**	0
I5 NB 25	0.89	35	**6**	**9**	2	**12**	0
I5 SB 1	0.54	35	**6**	**10**	3	**13**	1
I5 SB 2	0.50	35	3	3	1	3	0
I5 SB 3	1.86	35	2	1	0	2	0
I5 SB 4	0.63	35	3	3	1	2	0
I5 SB 5	0.62	35	4	4	3	**8**	3
I5 SB 6	1.00	35	4	4	2	**10**	0
I-84 (I-5 to I-205)							
I84 EB 1	1.45	35	**12**	**12**	**13**	**13**	**13**
I84 EB 2	0.42	35	**5**	**7**	**5**	**9**	**9**
I84 EB 3	1.06	35	3	**5**	**6**	**10**	**7**

Segment	Miles	Min speed	2020 Base	2030 NB	2030 FC	2045 NB	2045 FC
I84 EB 4	0.61	35	0	0	0	0	0
I84 EB 5	0.92	35	3	3	**5**	**7**	**7**
I84 EB 6	0.44	35	3	3	**5**	**7**	**7**
I84 WB 1	2.16	35	4	4	4	**9**	4
I84 WB 2	1.79	35	4	4	4	**11**	4
I84 WB 3	0.69	35	4	**9**	4	**12**	4
I-84 (I-205 to NE Marine Dr. in Troutdale)							
I84 EB 7	0.61	35	0	0	0	0	0
I84 EB 8	2.66	35	0	0	0	0	0
I84 EB 9	1.44	35	0	0	0	0	0
I84 EB 10	1.53	35	0	0	0	0	0
I84 EB 11	0.99	35	0	0	0	0	0
I84 WB 4	0.43	35	0	0	0	0	0
I84 WB 5	1.49	35	0	0	0	0	0
I84 WB 6	1.34	35	0	0	0	0	0
I84 WB 7	3.84	35	0	0	0	0	0
I-84 from SE 257th Drive (wo Sandy River) to MPA boundary							
I84 EB 12	1.16	35	0	0	0	0	0
I84 EB 13	4.06	35	0	0	0	0	0
I84 WB 8	3.73	35	0	0	0	0	0
I84 WB 9	0.59	35	0	0	0	0	0
I84 WB 10	0.92	35	0	0	0	0	0
US 26 (OR 217 to NW Glencoe Road)							
US 26 EB 1	3.47	35	0	0	0	0	0
US 26 EB 2	1.22	35	0	0	0	0	0
US 26 EB 3	1.87	35	0	0	0	0	0
US 26 EB 4	1.42	35	0	0	0	0	0
US 26 EB 5	1.51	35	0	0	0	0	0
US 26 EB 6	1.20	35	0	2	0	**6**	**6**
US 26 EB 7	0.91	35	0	0	0	3	4
US 26 WB 3	1.45	35	0	0	0	0	0
US 26 WB 4	1.22	35	0	1	0	3	1
US 26 WB 5	1.67	35	0	0	0	0	0
US 26 WB 6	1.77	35	0	0	0	2	1
US 26 WB 7	1.51	35	0	0	0	0	0
US 26 WB 8	3.75	35	0	0	0	0	0
US 26 (I-405 to OR 217)							
US 26 EB 8	1.12	35	1	4	4	**5**	**7**
US 26 EB 9	1.34	35	**6**	**10**	**9**	**14**	**13**
US 26 EB 10	0.99	35	**13**	**14**	**14**	**14**	**14**
US 26 EB 11	0.71	35	**13**	**14**	**14**	**14**	**14**
US 26 WB 1	1.28	35	**11**	**13**	**12**	**14**	**13**
US 26 WB 2	2.05	35	0	2	2	3	3
US 26 WB 9	0.92	35	**6**	**11**	**10**	**12**	**11**
US 26 from SE Hogan Road (SE 242nd) in Gresham to OR 212							
US 26 EB 18	0.61	20	0	0	0	0	0

Segment	Miles	Min speed	2020 Base	2030 NB	2030 FC	2045 NB	2045 FC
US 26 EB 19	0.49	20	0	0	0	0	0
US 26 EB 20	4.52	20	0	0	0	0	0
US 26 WB 16	4.52	20	0	0	0	0	0
US 26 WB 17	0.62	20	0	0	0	0	0
US 26 WB 18	0.49	20	0	0	0	0	0
US 30/ NW Yeon Ave. - I-405 to NW Cornelius Pass Road							
US 30 EB 1	5.83	20	0	0	0	0	0
US 30 EB 3	3.05	20	0	0	0	0	0
US 30 EB 4	1.95	20	0	0	0	0	0
US 30 EB 5	0.40	20	0	0	0	0	0
US 30 EB 6	0.20	20	0	0	0	0	0
US 30 WB 1	0.58	20	0	0	0	0	0
US 30 WB 2	1.95	20	0	0	0	0	0
US 30 WB 3	2.01	20	0	0	0	0	0
US 30 WB 4	1.04	20	0	0	0	0	0
US 30 WB 5	5.83	20	0	0	0	0	0

Meeting minutes

Metro
600 NE Grand Ave.
Portland, OR 97232-2736

Meeting:	**Transportation Policy Alternatives Committee (TPAC) Workshop**
Date/time:	Wednesday May 10, 2023 | 9:00 a.m. to 12:00 p.m.
Place:	Virtual online meeting via Web/Conference call (Zoom)

Members Attending	**Affiliate**
Tom Kloster Chair	Metro
Karen Buehrig	Clackamas County
Allison Boyd	Multnomah County
Dyami Valentine	Washington County
Eric Hesse	City of Portland
Jaimie Lorenzini	City of Happy Valley and Cities of Clackamas County
Jay Higgins	City of Gresham and Cities of Multnomah County
Mike McCarthy	City of Tualatin and Cities of Washington County
Chris Ford	Oregon Department of Transportation
Bill Beamer	Community Representative at Large
Sarah Iannarone	Community Representative, The Street Trust
Danielle Maillard	Community Representative, Oregon Walks
Jasia Mosley	Community Representative at Large

Alternates Attending	**Affiliate**
Jamie Stasny	Clackamas County
Sarah Paulus	Multnomah County
Dayna Webb	City of Oregon City and Cities of Clackamas County
Gregg Snyder	City of Hillsboro and Cities of Washington County
John Serra	TriMet
Glen Bolen	Oregon Department of Transportation

Members Excused	**Affiliate**
Judith Perez	SW Washington Regional Transportation Council
Tara O'Brien	TriMet
Gerik Kransky	Oregon Department of Environmental Quality
Laurie Lebowsky-Young	Washington State Department of Transportation
Lewis Lem	Port of Portland
Ellie Gluhosky	Community Representative, OPAL
Indi Namkoong	Community Representative, Verde
Jasmine Harris	Federal Highway Administration
Katherine Kelly	City of Vancouver
Steve Gallup	Clark County
Shawn M. Donaghy	C-Tran System
Ned Conroy	Federal Transit Administration
Rian Sallee	Washington Department of Ecology

Guests Attending	Affiliate
Alicia Wood	
Andrew Plambeck	
Annie T.	
April Bertelsen	Portland Bureau of Transportation
Bryan D.	
Chris Smith	
Dan Bower	Portland Streetcar, Inc.
Francesca Jones	Portland Bureau of Transportation
Jeff Owen	HDR
Jessica Engelmann	City of Beaverton
Kate Lyman	
Katie Selin	
Kelsey Lewis	SMART
Kiel Jenkins	
Mauricio Leclerc	Portland Bureau of Transportation
Max Nonnamaker	Multnomah County
Michael Dohn	TriMet
Nick Fisher	
Shawn Canny	Portland Bureau of Transportation
Tom Mills	TriMet
Vanessa Vissar	Oregon Department of Transportation
Will Farley	City of Lake Oswego
One unidentified phone caller	

Metro Staff Attending
Alex Oreschak, Ally Holmqvist, Caleb Winter, Clint Chiavarini, Daniel Audelo, Eliot Rose, Grace Cho, John Mermin, Kim Ellis, Marie Miller, Matt Bihn, Matthew Hampton, Molly Cooney-Mesker, Ted Leybold, Thaya Patton, Tim Collins, Tom Kloster

Call to Order and Introductions
Chair Kloster called the meeting to order at 9:00 a.m. Introductions were made. Reminders where Zoom features were found online was reviewed. The link for providing 'safe space' at the meeting was shared in the chat area.

Committee and Public Communications on Agenda Items – none received

Consideration of TPAC workshop summary, March 8, 2023 (Chair Kloster) Edits or corrections were asked to be sent to Marie Miller. No edits/corrections were received. Meeting summary approved.

High Capacity Transit Strategy Update: Draft Report (Ally Holmqvist, Metro) The presentation described the work done to finalize the corridor investment priorities, outline the actions and recommendations included in the draft report document, and review next steps for the report and for the strategy as the update merges with the 2023 RTP Update process.

Feedback from stakeholders has been gathered to refine the investment priorities and identify additional considerations for high capacity transit investment readiness. The high capacity transit network vision includes corridors collectively identified as of critical regional importance, making key connections between regional centers and town centers. Within the constraints of assumed funding

and agency capacity to advance these types of projects, the corridor tiers create a pipeline where the vision corridors with the greatest need and readiness for this highest level of transit service (taking frequent service to the next level) are advanced first – reflecting current regional priorities, leveraging opportunities and maximizing fiscal stewardship and community benefits in-line with regional goals. This creates the strategy for how high capacity investments will be guided in the future, informing the 2023 Regional Transportation Plan and future plan investment strategies.

Ms. Holmqvist referred to materials in the meeting packet that described developing the draft report, the high capacity transit supportive elements, recommended actions that regional partners can take to move corridors forward based on their tier status, and next steps. The final draft report will be included as part of the public review draft 2023 Regional Transportation Plan. TPAC will then consider making a recommendation to JPACT about releasing the 2023 RTP for public review in a 45-day comment period this summer.

Comments from the committee:

- Dyami Valentine noted that a slight edit on Figure 16 in the report (HCT regional vision corridors by tier map) that the C9 Hillsboro to Forest Grove LRT extension align with the Council Creek Regional Trail.
- April Bertelsen noted it looked like the project development pathway graphic on the slide was possibly the old version. Will an updated version be included in the report? Ms. Holmqvist confirmed it would.
- Sarah Iannarone noted the Governor's pause on tolling. It was asked if any news could be shared with coordination between ODOT and regional transportation planning and how funding of projects may be impacted. Ms. Ellis noted we are proceeding with the RTP with projects going through the NEPA work. This spring/summer we may learn more about implications and make adjustments if needed. Chris Ford added ODOT looks forward to guidance from the commission on transportation planning, but at this point there is a lot we don't know.
- Karen Buehrig noted the challenge of reading the Regional Transit map that included employment areas and suggested this category be removed. Multiple transit networks all in the vision map make it inconsistent between existing lines and future lines. It was suggested to work with TriMet to make sure the information is accurate and reflect what you want it to reflect. In the last revision how the FX lines interface with the HCT, and reference to future work on BRT priorities it was unclear if this was the same work from the UPWP under Better Bus. Ms. Holmqvist noted the Vision Map goes beyond Forward Together with more Vision Enhancement Plan included. Comments are appreciated and will be included in the update. Regarding the FX lines we did include the corridor-based rapid bus. Definitions were discussed around corridor-based plan and high rapid bus which are included in the HCT mode. The Better Bus is different than BRT described in Chapter 8. The UPWP question will need to be checked on, since chapter 8 of the RTP is a 5-year work plan.
- Mike McCarthy suggested consideration of the people outside the region coming into the region on routes not reflected in the modeling and analysis. This results in underestimated demands on the corridors. Hwy 99 corridor with past designation tier 1 (2009) and I-5 traffic challenged to get people on transit and away from vehicle mode to make a significant difference in our climate goals should be considered. Ms. Holmqvist noted regarding Hwy 99 this time was focused on 2014 modeling numbers which have changed performance levels to tier 4. The same was true with SW corridor analysis.

- John Serra acknowledged the plan to update the transit vision map. TriMet continues to have issues with the current version and wishes to work with Metro on reflecting transit service plans moving forward.
- Karen Buehrig noted some initial concerns with the HCT strategy was making sure we can achieve our climate and carbon reduction goals with transit for a faster, more reliable ridership. It was noted that in some parts of the region transit requires much more time for travel. Other studies such as FX and being able to connect our town centers and places not available in the near-term, HCT can be looked at closer. The HCT strategy with investments goes 20-30 years. Ms. Holmqvist noted that using the priorities/tiers matched with investments in opportunities to advance projects to achieve these goals can make them achievable in more near-term time.
- Eric Hesse noted that there is a whole range of projects in the RTP and transit which are all related to land use issues in the region. There are challenges in perspectives with geographic disparities and using the right tool for the right task to provide the best solution. The land use connection in corridor planning and transit strategies and investments should be used together.
- Allison Boyd appreciated having the built-in stepping stone pieces with this plan. Having various project tiers identified and gaining coordination to better connect transit is looked forward to.
- Jaimie Lorenzini added to comments on the stepping stone approach but noted that different levels of readiness affect portions of the region.

2023 Regional Transportation Plan: Draft system analysis results (Kim Ellis & Eliot Rose, Metro) The presentation began with a review of the draft system analysis key findings. Expected growth in the region was shown to have impacts on our transportation networks. Draft results were summarized for the mobility, safety, equity and economy elements of the RTP. Further analysis are still underway.

Comments from the committee:

- Jaimie Lorenzini noted that it appeared the approach to the economy matrix was more oriented toward economic hubs that already exist. Would it be possible to also look at projects that help open more industrial areas, such as with the 2040 growth plan, so we are preparing our region for expected population and jobs. Mr. Rose noted the analysis was set up for corridors in both current and planned centers of the region. The 2040 industrial areas are included.
- Bill Beamer noted the challenge of bike/pedestrian transit in industrial areas with safety concerns. It was suggested to have van service or electric transport for employees considered. Mobility options for low-income populations for employment should be considered. Ms. Holmqvist noted that in the RTP Chapter 8 future work will include the Active Transportation Study that builds on the HCT strategy vision work, emerging travel modes and technology in micro transit, shuttles and transit services more broadly. Mr. Beamer noted that working with employers in destination areas and have them contribute to this participation and investment would help with operating costs as well.
- Eliot Rose noted Counties also operate shuttles to some of these areas, and those are included in the RTP transit network.
- Dyami Valentine noted Washington County supports access to job shuttles operated by Ride Connection and has conducted a shuttle analysis related to future needs for other employment areas https://www.washingtoncountyor.gov/lut/planning/washington-county-transit-study. Washington County is also currently preparing a transit vision thinking longer-term, https://www.washingtoncountyor.gov/lut/planning/washington-county-transit-study,

- Allison Boyd noted Multnomah County provides job connector shuttles to industrial areas (https://www.multco.us/transit) We are also interested in vanpools and other ways to connect with the employers.
- Tom Mills noted TriMet provides STIF funds to the counties to operate the shuttles in the region. There are currently 8 shuttles operating in the region with more to come in FY24-25. It's also important to note that TriMet gives SMART STIF funds to operate service to Tualatin and will provide additional STIF funds in FY24-25 to operate trips from Wilsonville to Clackamas Town Center. Finally, TriMet will provide FY24-25 STIF funds to Sandy Transit to operate service to Clackamas Town Center.
- Chris Ford noted in the memo table 4 *RTP prioritizes improving access to jobs within equity focus areas (relative to other communities)* % of regional jobs accessible by transit in equity focus areas unchanged from 5% base year to 2030 to 2045. *Table 2: Summary of draft system analysis results: mobility*, RTP aims to complete the motor vehicle, transit, bicycle, trail and pedestrian networks 100% base year to 2030 to 2045. Are this draft and need fine tuning or actual target numbers? Mr. Rose noted the goals of the RTP policies are to complete all the planned infrastructure networks included in the plan – motor vehicle, transit, pedestrian, bicycle and trail. None of these networks are complete, but the motor vehicle network, which will be 99% complete in 2045 when other networks are only 58 to 73% complete, is much closer than the other networks.

  The memo noted "The region is not on track to meet its target of reducing fatal and serious injury crashes to zero by 2035." *Table 3: Summary of draft system analysis results: Safety* shows no data. Where do you draw conclusions for this? Mr. Rose noted the present data goes into the needs assessment https://www.oregonmetro.gov/sites/default/files/2023/01/12/2023-RTP-Needs-Assessment-memo-nov-2022.pdf. The performance analysis looks at the future. Safety is the exception because we can't forecast crashes.

  In the mobility draft results it was noted the target was to triple transit, bike and pedestrian mode share. When looking at the 2045 targets the consequences add up to say non-auto trips to 45%. Is this the intended target? Ms. Ellis noted each RTP uses a base year, with this target based on the 2010 RTP adoption. The tripling effect comes over time.

- Karen Buehrig noted the pedestrian/bike investments and transit access and last mile investments in industrial areas. Clackamas County has been successful with last mile shuttle service implemented in their industrial area, including the need for business to business. The point of connecting with employers is a significant piece of work being done on the Mountain with ski resorts helping with employee transit coverage.

  The fourth bullet on economy "Prioritize bike/ped facilities in employment and industrial areas" brings to mind recent RFFA investments where there wasn't a competitive application for these funds. It was suggested to think about how regional flexible fund policies connect with the outcomes we are finding in the RTP analysis. It was noted of the challenge to see the industrial areas connected to EFAs even with employees working there.

  In the first bullet on economy "Decrease driving travel times along key corridors" it was asked how the tolling listed in the I-205 and regional mobility pricing in the RTP, with forecast investments in the I-205 corridor would show significant travel time decreases fits in with these draft results. Mr. Rose noted he is hearing the bike/ped may not be the preferred method to reach outcomes with access to industrial areas. Regarding travel time and congestion, more

information is coming. We have 24 mobility corridors with 4-6 corridors captured in tolling. The presented results with tolling proposed in the RTP shows only a limited number of corridors.

- Eric Hesse noted the equity disparities with safety and mobility in particular with investments, which underlines how big a gap there was historically but now offering more opportunities to correct this. The difference between transit access vs driving alone is striking. Opportunities to prioritize and strategize more carefully for outcomes with limited investments and leveraging/matching investments when possible is suggested. It was noted to be mindful of the number of projects and distribution of funds when deciding small and large projects regionally.
- Danielle Maillard noted on slide 8 "The vast majority of RTP spending goes toward serving the places where current and planned jobs are concentrated." Development in industrial areas often to not include sidewalks which are requested. It was asked who makes the decisions on where these planned developments are located and what the jobs are. Chair Kloster noted Metro's 2040 Growth Concept sets the building blocks in the region, with cities and counties planning zoning and comprehensive planning. More specific information will be provided directly from Mr. Hesse as a follow up to this question.
- Sarah Iannarone asked when the next 2040 Growth Concept Plan update was happening. It was noted this is upcoming, but no specific date known. Chris Ford noted maybe TPAC could consider sending a resolution or letter to JPACT recommending the Growth Concept needs to be updated prior to the next RTP update process beginning. Ms. Iannarone agreed. The 2040 plan update is long overdue, conceptually, technically, and demographically.

The meeting took a 5-minute break before resuming.

Part 2 of the presentation on 2023 draft RTP climate analysis provided results:
The RTP may or may not meet regional climate targets depending on what state-led pricing and transportation funding sources are assumed in the analysis. The State is working to identify new revenue sources to replace or supplement the gas tax. The ODOT Urban Mobility Office and ODOT Climate Office both provide relevant information. Staff has prepared scenarios to illustrate how these assumptions affect greenhouse gas emissions. Increased transit service, parking pricing and other Climate Smart strategies can also help meet targets.

Answers on how the climate analysis aligns with other plans and processes was described. State-provided cost-of-driving assumptions in the RTP was presented. Price + revenue assumptions by scenario was presented.

RTP23 + Adopted state Plan and RTP + Statewide Transportation Strategy scenario assumptions

Transit service
Consistent with 2023 RTP (includes HCT corridors, Forward Together, shuttles, C-Tran adjustments)

Parking pricing
Consistent with 2023 RTP (higher levels of pricing in some regional centers than in 2018 due to CFEC)

Land use
Consistent with 2040 Growth Concept and adopted growth distribution (38% of households are located in mixed-use areas)

Demand management
Consistent with 2023 RTP (~5% of employees and ~1% of households participate in travel options programs)

Lane miles
Consistent with 2023 RTP (39 new throughway lane miles, 266 new arterial lane miles)

Progress toward climate targets was shown from the scenarios. Only Statewide Transportation Strategy throughway pricing plus $0.10-0.17 in additional gas tax equivalents meets targets.

Comments from the committee:

- Eric Hesse asked if it was possible to show some of the key elements and components of STS strategies that could be assumed, broken up per costs, so we can understand how they are contributing as opposed to other factors such as project readiness. Mr. Rose noted the STS hasn't been updated in quite a while but discussions with ODOT indicate the distribution among mechanisms at this point may be quite different now since many things have changed. It was noted the usefulness of the STS strategies may help with assumptions in their relative performance as levers and factors become updated and more known. It was noted work on the carbon program is being studied that could be included in the analysis.
- Karen Buehrig noted that what we are learning is that pricing on just throughways will not get us to reaching our targets or making less congestion. It was noted that what additional pricing assumptions should we be doing from the STS, leading to whatever we end up with assuming we should be pairing with a Chapter 8 project that digs deeper, especially on the road user charge, and being able to understand what's important in our region with specific application or width in our gas tax, in our road charge tax, and then how that money is spent. This helps to understand how we fund transit in relation to these actions.

  Also - I am interested in how all of this relate to the VMT analysis. I didn't hear about VMT reduction in the Climate Smart presentation. Mr. Rose noted the charts I was showing had daily VMT/capita results. Per CFEC, our regional climate targets are equivalent to VMT reduction targets.

- Dyami Valentine echoed Mr. Hesse's comments and the need to consider a ch.8 item to focus on this topic.
- Chris Ford noted that ODOT does not know tolling rates yet with projected revenues still being discussed. It was suggested to include in chapter 8 climate strategy a section to update lane uses to differentiate travel patterns in terms of VMT and other climate goals.

Annual Transit Agency Budget Process – Updates and Highlights of FY 24 (Kelsey Lewis, SMART and Michael Dohn, TriMet) An overview on the transit agencies' South Metro Area Regional Transit (SMART) and TriMet programming of federal revenues and local service investment recommendations from their annual budget process was given. Both TriMet and SMART shared information on their development of proposed budgets and the programming of federal funds in the upcoming fiscal year (fiscal year 2023-2024).

Montgomery Park Streetcar Expansion Project (Dan Bower, Portland Streetcar, Inc.) The presentation began with an overview of the Portland Streetcar Governance Structure. The system was described as:

- Three Routes Serving Portland's Central City
- 19 Vehicles and 70 Stations
- 50% of all housing built in the City of Portland since 2001 is within a ¼ mile of a streetcar including ~ 40% of all affordable housing.
- 80% of all TriMet frequent service bus & MAX routes connect within ½ mile of streetcar stops.

Significant development opportunities remain along existing alignments. New land uses in these places support continued ridership growth and importance of reliable streetcar service. Project details of the Montgomery Park expansion were provided:

- 1.3 mile (0.65 one-way) extension of Portland Streetcar, 100% off-wire, minimal operating costs to City and TriMet
- Coordinated reconstruction of NW 23rd from Lovejoy to Vaughn
- Rezoning of former ESCO site from Industrial/Employment to Mixed Use
- Zoning Adjustments to Montgomery Park and ESCO sites to leverage existing investment
- Value capture through negotiated agreement to ensure public benefits
- Estimated capital cost ~$80m
- Metro Travel Demand Model – Estimated 3,100 boardings/day from 1.3 mile extension

Several potential funding sources were described to support the project. Next steps in the potential transit investment were provided.

Comments from the committee:

- Glen Bolen shared an inspiring story that provided a streetcar rider the ability to complete their education and gain employment. Mr. Bower noted the streetcar has 5 times the number of regional disabled riders in our transit system and appreciated the news.
- Gregg Snyder noted with just a one-mile extension that could generate that much ridership is a smart use of transit planning. The idea of using battery operated vehicles is good as well. Noted was the local improvement district with funding and agreed that if you have enough development that's a great way to go. Excited about the innovative project.
- Danielle Maillard appreciated the presentation and information. It was noted of the importance with zoning and tracking travel which this does transparently.
- Sarah Iannarone appreciated the focus on equity with many people in our community experiencing homelessness. The Streetcar is a real model of public safety on public transportation. I really wish we could replicate their successes for communities across Oregon.

Committee comments on creating a safe space at TPAC – none received

Adjournment

There being no further business, workshop meeting was adjourned by Chair Kloster at 12:01 p.m.
Respectfully submitted,
Marie Miller, TPAC Recorder

Item	Document Type	Document Date	Document Description	Document No.
1	Agenda	5/10/2023	5/10/2023 TPAC Workshop Agenda	051023T-01
2	2023 TPAC Work Program	5/2/2023	2023 TPAC Work Program as of 5/2/2023	051023T-02
3	Minutes	3/8/2023	Minutes for TPAC workshop, 3/8/2023	051023T-03
4	Memo	5/3/2023	TO: TPAC and interested parties From: Ally Holmqvist, Senior Transportation Planner RE: High Capacity Transit Strategy Update: Report and Recommendations	051023T-04
5	Attachment 1	May 2023	HIGH CAPACITY TRANSIT STRATEGY UPDATE Key Meeting Dates and Engagement Activities for Project Milestones	051023T-05
6	Attachment 2	3/19/2023	Memo to Recap on HCT Vision and tiering, overview of Draft HCT Strategy Update report, next steps for the project and interaction with the ongoing RTP update	051023T-06
7	Attachment 3	3/26/2023	HIGH CAPACITY TRANSIT Strategy Update	051023T-07
8	Attachment 4	April 2023	DRAFT High Capacity Transit Strategy Update	051023T-08
9	Attachment 5	April 2023	Public and stakeholder engagement and consultation summary	051023T-09
10	Memo	5/5/2023	TO: TPAC and interested parties From: Eliot Rose, Senior Transportation Planner RE: Draft 2023 Regional Transportation Plan system analysis results	051023T-10
11	Memo	5/3/2023	TO: TPAC and interested parties From: Grace Cho, Metro RE: 2024-2027 MTIP – Transit Agency Annual Budget Process Update and Programming of Projects	051023T-11
12	Presentation	5/10/2023	Portland Streetcar	051023T-12
13	Presentation	5/10/2023	High Capacity Transit Strategy Update: Report & Actions	051023T-13
14	Presentation	5/10/2023	2023 draft RTP system analysis results	051023T-14
15	Presentation	5/10/2023	2023 draft RTP climate analysis update	051023T-15
16	Presentation	5/10/2023	SMART: Metropolitan Transportation Improvement Program Coordination	051023T-16

Item	Document Type	Document Date	Document Description	Document No.
17	Presentation	5/10/2023	TriMet Coordination with the Metropolitan Transportation Improvement Program (MTIP)	051023T-17

TDM /TSMO System Completeness

Metro

July 2023

Support for the Regional Mobility Policy Update

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Agenda

1. Draft System Completeness Definition
2. Process for Updating Transportation System Plans
3. Comprehensive Plan Amendments
4. Support from Metro (Tools and Guidance)

Purpose of the Regional Mobility Policy Update

Update the mobility policy and how we **define and measure mobility** for the Portland area transportation system

Recommend amendments to the **Regional Transportation Plan** and **Oregon Highway Plan Policy 1F** for the Portland area

Visit oregonmetro.gov/mobility

Draft Regional Mobility Policy

- **Target:** 20% reduction by 2035, 34% reduction by 2050
- **Outcome:** Land Use Efficiency

VMT/Capita

- **Target**: Complete the “planned” network and system
- **Outcome**: Complete multimodal networks

System Completeness

- **Target**: 4 or fewer hours per day that average throughway speeds drop below 35 or 20 MPH, varies by throughway
- **Outcome**: Reliable travel speeds for goods and services

Reliability of Throughways

Secondary measures used to identify needs and inform development of planned system.

Potential Application of Mobility Measures

System Planning

- **Define the planned complete transportation system.**
- Apply as target in planning (VMT/capita)
- Set standards based on what the plan is able to achieve.

Plan Amendments

- Identify if there is a measurable change in performance compared to standard. (Does amendment exceed VMT/capita targets?)
- If significant impact, **identify appropriate mitigations**. (What projects need to be completed to reduce VMT/capita?)

Planning for the Future

Regulating Plan Amendments

Guidance for Defining Complete Planned System

Table 3: Guidance for Defining the Complete Planned System

Mode	System Completeness Element	Supporting guidance
Pedestrian	Plan for complete network	RTFP, DLSTG, BUD
	Plan for adequate crossing spacing	RTFP, DLSTG, BUD
	Plan for adequate crossing treatments, including curb ramps	NCHRP 562
	Plan for a low-stress walking network to transit and other key destinations[4]	RTFP, APM, TriMet Pedestrian Plan
Bicycle	Plan for complete network	RTFP, DLSTG, BUD
	Plan for a low-stress bicycling network to transit and other key destinations	APM
	Plan for adequate bike parking at key destinations	RTFP, TriMet Bicycle Parking Guidelines
Transit	Plan for complete network	Regional Transportation Plan RTFP
	Plan for transit priority infrastructure (e.g., transit signal priority, queue jumps, semi-exclusive or exclusive bus lanes or transitways)	Regional Transit Strategy
	Plan for adequate bus stop amenities and other transit supportive facilities[5]	TriMet Bus Stop Guidelines
Motor Vehicle	Plan for adequate local, collector and arterial street connectivity	RTP, RTFP
	Plan for number of through lanes within maximum guidance	RTP, RTFP, DLSTG
	Plan/policy for where turn lanes will be permitted/prohibited and maximum number of turn lanes considering safety for all modes and land use context	APM, DLSTG, BUD
TSMO	Plan for infrastructure and programs, and maintain system compatibility	RTFP[6] Regional ITS Architecture Plan Regional TSMO Strategy
TDM	Plan for infrastructure and programs	RTFP (forthcoming) Oregon Metro-specific guidance for TSPs[7]

Table 5: Guidance for Assessing Plan Amendment Impacts to System Completeness

	Plan Amendment		
	1. Determine study area by selecting the specified distance along existing and planned facilities	2. Determine if the planned system should be updated based on the projected trip generation	3. Determine locations and quantity of gaps in the planned system within the study area
Pedestrian	Along facilities within 1/4-mile routing from site in all directions	n/a	Missing pedestrian crossings
	Along facilities within 1/4-mile routing from site in all directions	Review NCHRP 562	Missing pedestrian crossings by treatment type
	Along facilities within 1/4-mile routing from site in all directions	n/a	Curb-miles of low-stress pedestrian facilities gaps
Bike	Along facilities within 1/4-mile routing from site in all directions	n/a	Curb-miles of low-stress bicycle facilities gaps
	Along facilities within 1/4-mile routing from site in all directions	n/a	Missing bicycle crossings
	Along facilities within 1/4-mile routing from site in all directions	Review TriMet Bicycle Parking Guidelines	Missing bike parking
Transit	Along facilities within 1/4-mile routing from site in all directions	Review TriMet Bus Stop Guidelines	Missing Bus stops amenities by amenity type
			Missing transit priority treatments (e.g., transit signal priority, queue jumps, bus-only lanes)
			Missing transit supportive infrastructure
Motor Vehicle	Along facilities within 1/2-mile routing from site in all directions	n/a	Centerline-miles of roadway gaps
	Along facilities within 1/2-mile routing from site in all directions	Review travel speeds, off-ramp queuing	Lane-miles of throughway lane gaps
TSMO	Along facilities within 1/2-mile routing from site in all directions	n/a	Gaps in ITS infrastructure along TSMO 'Key Corridors' (defined by TSMO Strategy and RTP); Missing ITS projects (per TSP)
TDM – Infrastructure	Along facilities within 1/4-mile routing from site in all directions	n/a	Missing TDM projects (per TSP)
TDM - Programming	Site-based/within site boundaries	n/a	Agreement to fulfill required programming (per TSP)

Process Check – Defining System Completeness

Definitions

What makes a complete TDM/TSMO system?

What should be considered baseline, defined and optimized?

Roles & Responsibilities

What are Metro's role and responsibilities?

What roadblocks might be encountered by jurisdictions, mobility operators, and agencies?

Updated Regional Mobility Policy

How will this be implemented within the context of the Mobility Policy Update?

- Transportation System Plans

- Comprehensive Plan Amendments

Purpose of Today's Discussion

Introduce the **draft** definition of TDM and TSMO system completeness

Discuss how the capability framework will work in the context of the mobility policy update

Collect your feedback so that we can continue to **refine the definition** and develop useful implementation **guidance and tools**

Questions for TPAC

1. What challenges or roadblocks do you see in the process that we lay out for achieving system completeness?
2. Are there additional considerations that should be added to our capability framework?
3. What kinds of support could Metro and/or ODOT provide for jurisdictions and agencies to help them comply with the new mobility policy?

Draft Definition

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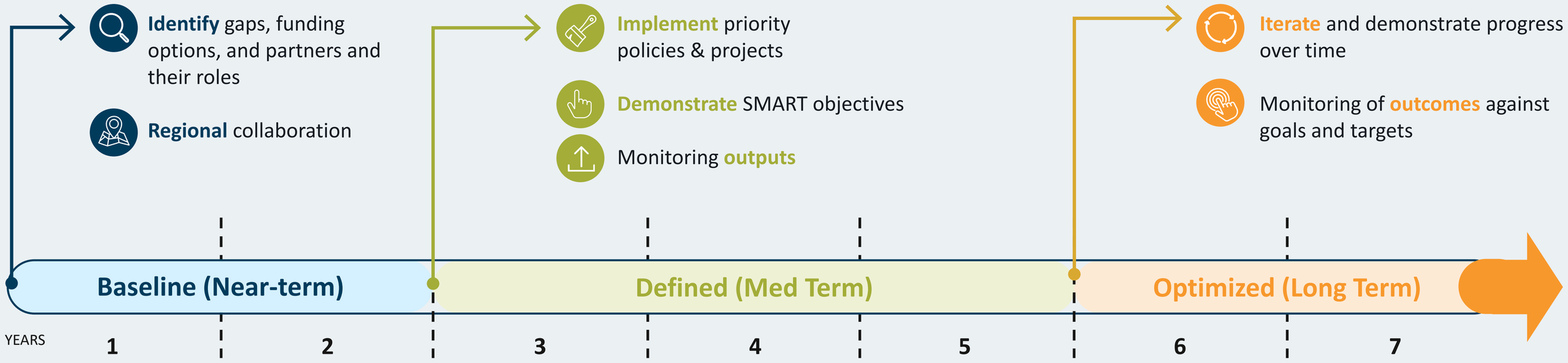
Overview of System Completeness



Overview of System Completeness

	Identify | Prioritize	Implement	Iterate
	Baseline	**Defined**	**Optimized**
General	• **Identification** of projects and programs based on gap analysis and prioritization based on needs; development of specific TDM/TSMO Plan • Identification of funding options • Identification of key actors/partners and their roles • State and regional collaboration	• Implementation of **prioritized** projects and programs (planned TDM system) • Deploy funding mechanisms • SMART Objectives w/Targets • Monitoring of outputs • Priority should include equity considerations	• Implementation of projects and programs (planned TDM system) and **iteration** over time • Outcome goals and targets linked to outputs – include equity impact • Demonstrated monitoring and progress over time
TDM	Gap Analysis ❑ Policy (Land use) ❑ Geographic/equity ❑ Programmatic (ECO, SRTS) ❑ User groups/equity – establish needs/barriers ❑ Modal (incl. shared mobility, emerging)		
TSMO	Gap Analysis ❑ Mobility on Demand/Emerging Mobility ❑ ITS (consistent with ITS architecture) ❑ System interoperability ❑ ODOT Procedure Manual – RMPU materials ❑ Key Corridors		
	Near-Term	**Med-Term**	**Long-Term**
YEARS	1 2	3 4 5	6 7

Draft of System Completeness

	Baseline	Defined	Optimized
Parking (land use section)	Incorporate into Gap Analysis Comply with CFEC Parking Reform A or B Requirements.		
Wayfinding	Incorporate into Gap Analysis	Specific strategies outlined in CFEC and other policy documents should be consolidated into **a TDM toolbox**, so that jurisdictions can select strategies/projects that help TSPs meet the VMT/capita thresholds.	
Pricing	Incorporate into Gap Analysis Identify potential geographic areas where pricing strategies may be appropriate (parking, carbon, congestion and others)	No additional requirements other than they review as part of the gap analysis for Baseline	
Design	Incorporate into Gap Analysis Demonstrate alignment w/2040 Growth Concept, RTP Policies, and TPR/CFEC		

Transportation System Plans

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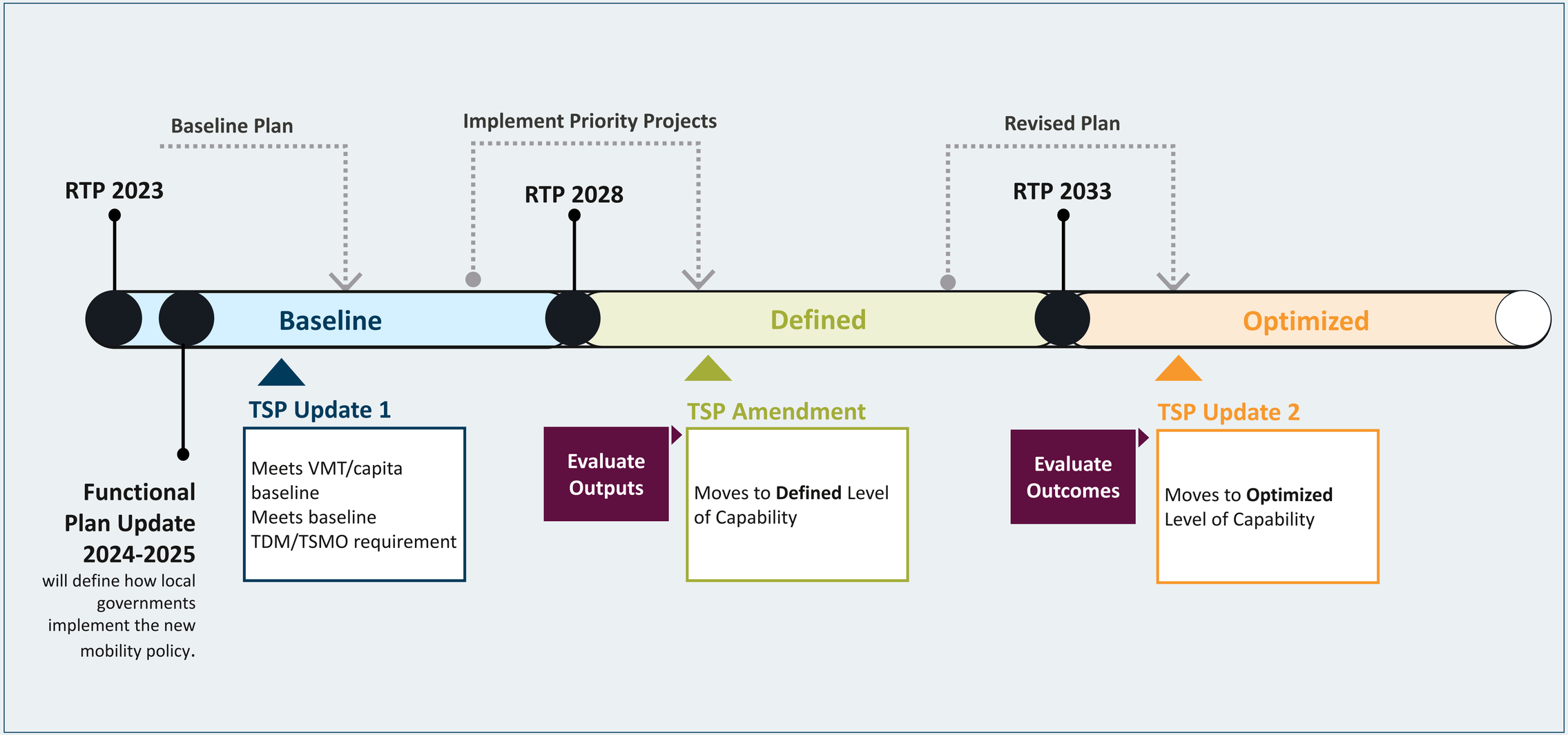
RTP updates occur every 5 years.



Case Study 1: County of Clackamas

Baseline

- Identifies priority Safe Routes to School projects and associated funding sources.
- Identifies equity priority geographies and user needs.
- Includes support and participation in area TMA to develop, monitor and fund regional TDM programs.
- Long Term Capital Projects identify priority projects such as traffic signal timing and implementing ITS Plan and associated funding sources.
- Demonstrates compliance with 2040 Growth Concept.

To achieve baseline: Gap analysis to include broader range of TDM and TSMO considerations.

Defined

- Equity considerations included in the prioritization of projects to ensure equitable mobility for people and goods.
- Establishes performance targets (non-drive alone mode share targets for 2040).

To achieve Defined: Establish SMART objectives for priority projects and programs, demonstrate plan to monitor performance.

Optimized

To achieve Optimized: Demonstrate progress towards performance targets and iterate on projects and programs.

Case Study 1: City of Beaverton

Baseline

- Identifies land use and programmatic (ECO) needs.
- Identifies priority TSM projects including consideration of key corridors.
- Considers supportive policies like congestion pricing – describes how pricing enhances TDM effectiveness
- Beaverton has previously identified funding sources for RTP Ped/Bike/Transit/TDM/TSM Projects up to $79 M.

To achieve baseline: Consider additional elements of gap analysis, equity considerations, and supportive policies (parking inventory).

Defined

- Establishes non-drive alone mode share targets for 2040.

To achieve Defined: Establish SMART objectives for priority projects and programs, demonstrate plan to monitor performance.

Optimized

- Identifies TDM strategies and their potential trip reduction. Each trip reduction is specifically calculated based on the day of the week, transit service available, alternate modes.
- Identifies and includes TSM related data including traffic signal response and discrepancies.

To achieve Optimized: Demonstrate progress towards performance and iterate on projects and programs.

Plan Amendments

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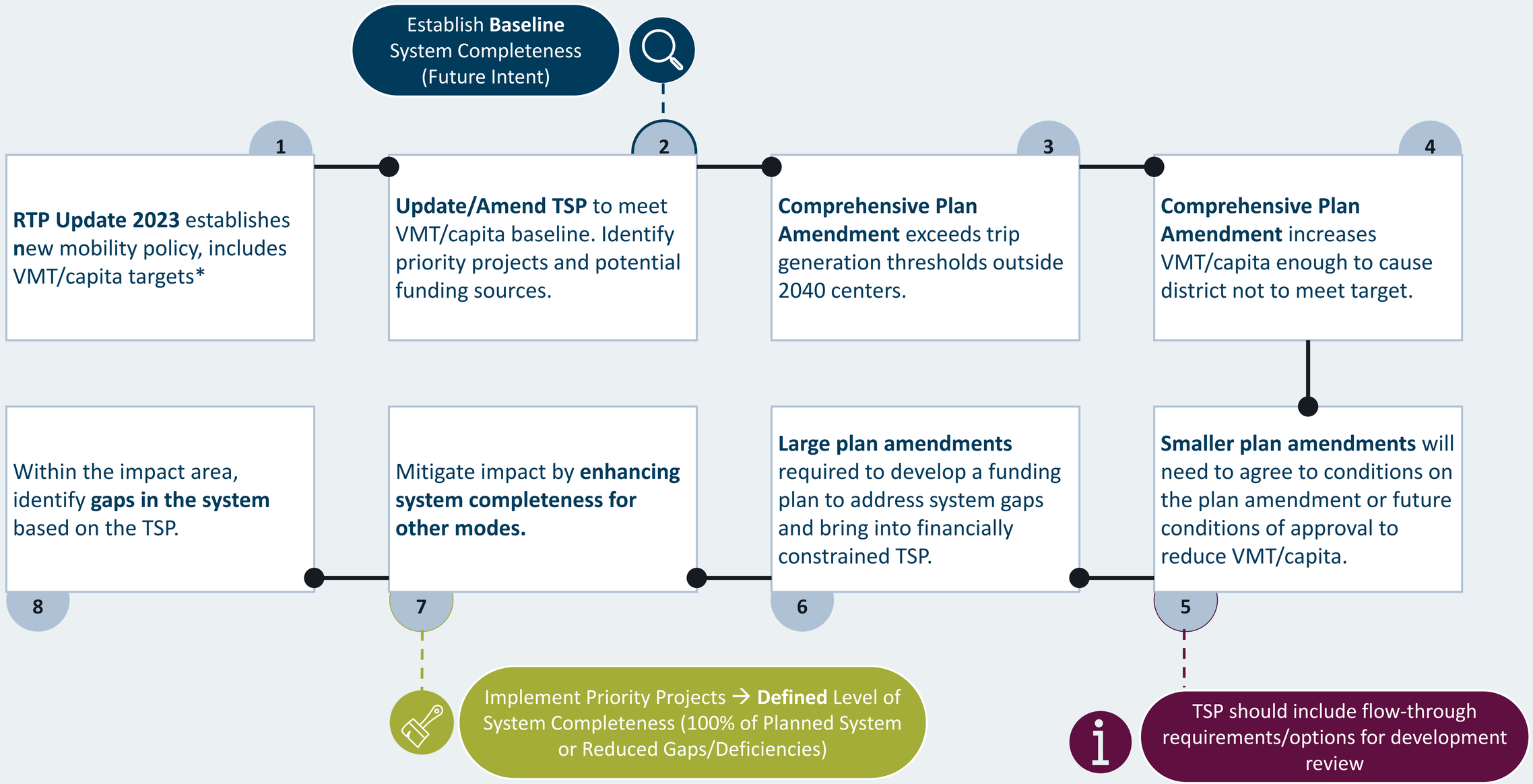
How Plan Amendments interact with TSP/System Completeness



Requirements for Plan Amendment

	System Plans Requirements	Plan Amendment	Target
TDM	Plan for infrastructure and programs	Missing TDM projects and agreement to fulfill programming per TSP (within proximity to site)	**100%** of planned system (as defined in TSP) or Reduced gaps and deficiencies
TSMO	Plan for infrastructure and programs and maintenance of system operability	Gaps in ITS infrastructure along TSMO Key Corridors and missing projects per TSP (within ¼ mile routing of site)	

Recommendations for Plan Amendments

Option 1

- Require commercial and residential developments implement projects to fulfill TSP

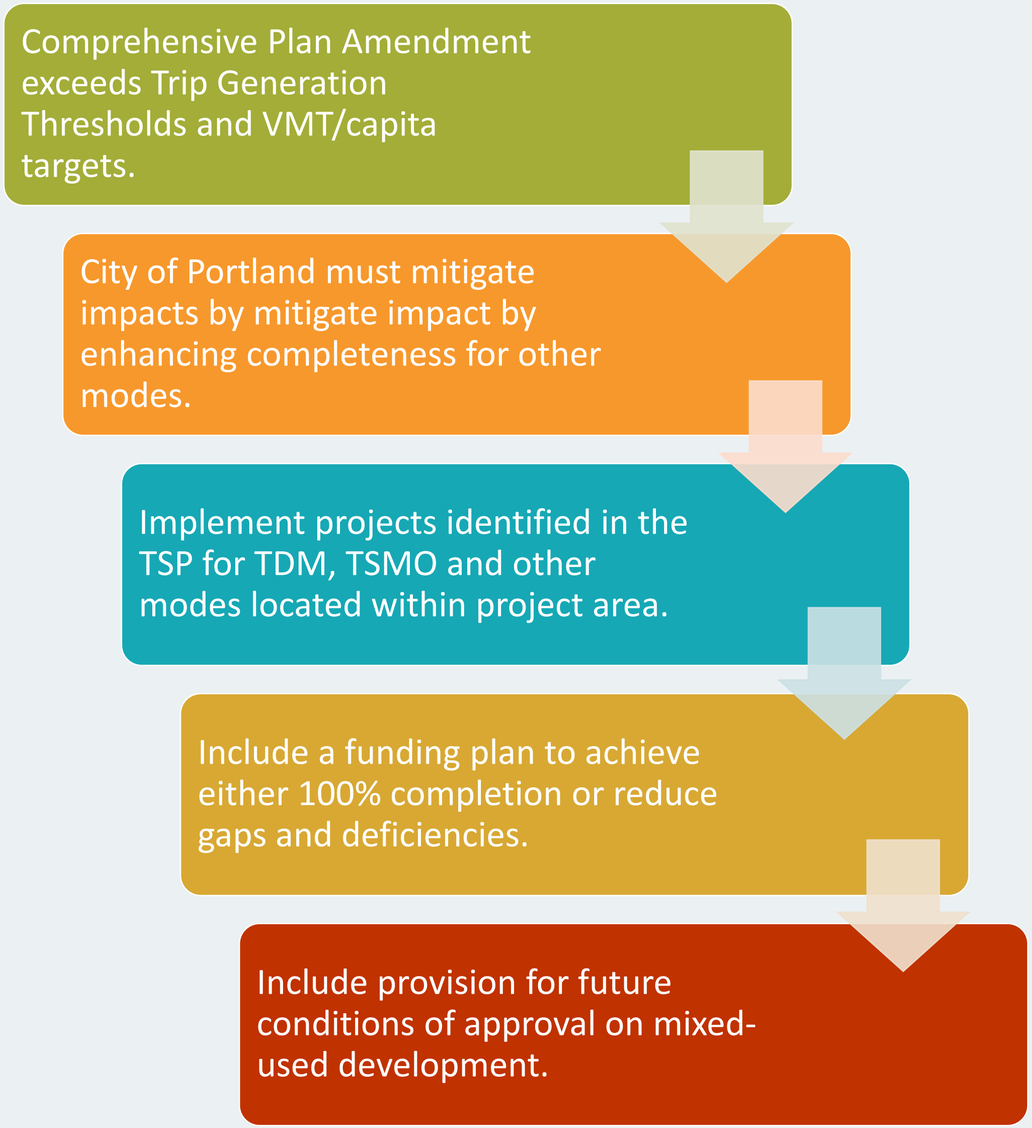
Option 2

- Fees paid by employer/developer for jurisdiction to implement projects

Recommend that a section on **funding strategies** for TDM and TSMO be included as a **resource** in the Toolbox.

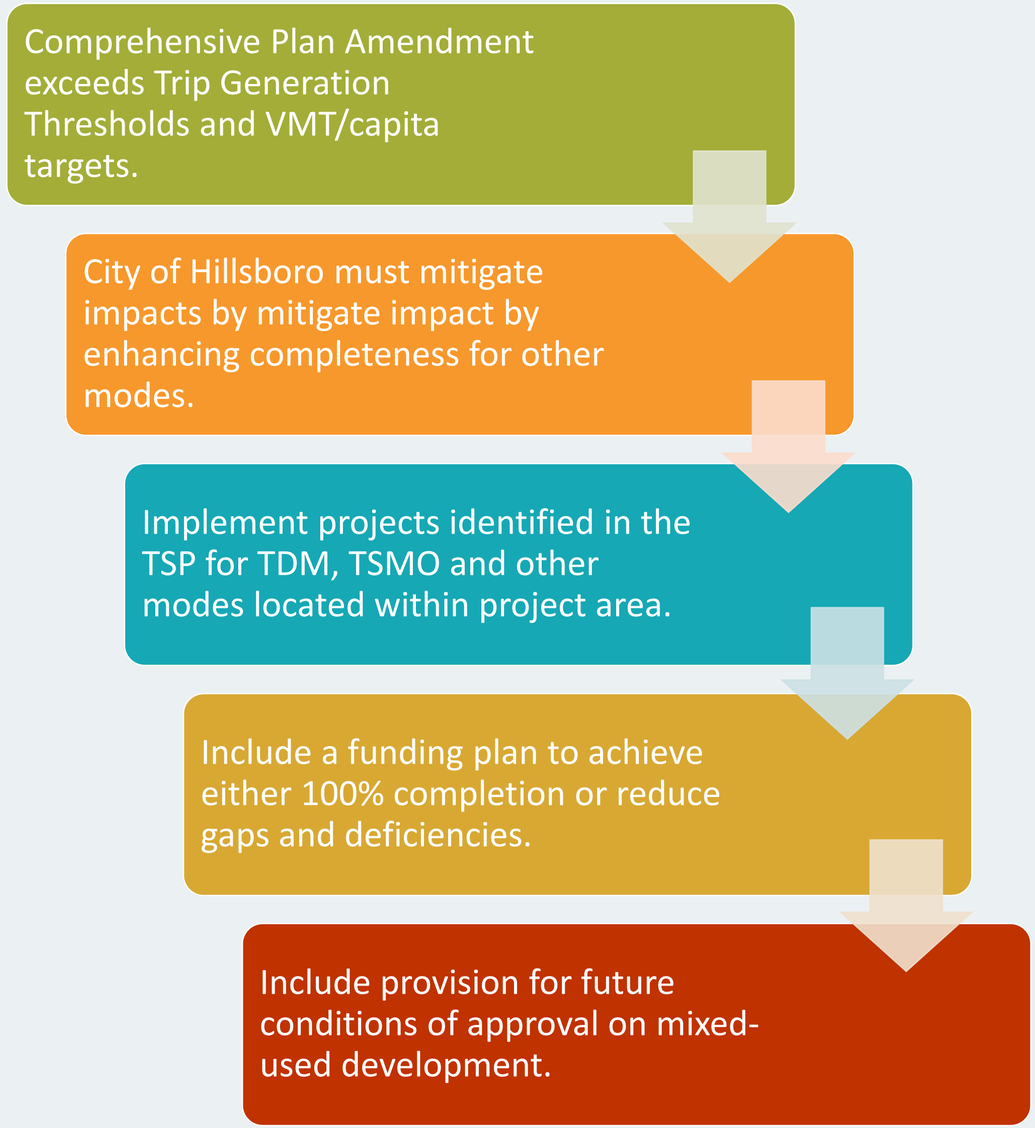
Case Study 1 – Colwood Industrial District

- This 2013 **quasi-judicial plan amendment** to the City of Portland Comprehensive Plan rezoned a 48-acre portion of the Colwood National Golf Course site near Portland International Airport.
- Plan highlights the need for economic development near Portland's **freight hub**.
- Provides a list of **key transit corridors** to support the use of transit and increased residential densities within one quarter mile of transit routes.
- Identifies the important of transit-oriented development.
- **Potential enhancements:** include specific projects or enhancements to increase multimodal network, funding plan and provision for conditions of approval for future mixed-use development.



Case Study 2 – City of Hillsboro Community Development Plan

- The City of Hillsboro adopted the South Hillsboro Community Plan as a **legislative plan amendment**, providing a framework for a new master-planned development, including the 463-acre Reed's Crossing neighborhood in South Hillsboro. Defines land uses in a TDM supportive way
- Identifies key corridors for TSMO projects from the Tualatin Valley Highway Corridor and South Hillsboro Focus Area Plans to increase regional connectivity.
- Incorporates priority wayfinding improvements.
- Identifies funding sources - primarily from new private development in South Hillsboro, with supplemental funding anticipated from potential "Regional Share" sources
- Includes inventory of on- and off-street parking.
- **Potential Enhancements**: include a more extensive list of TDM and TSMO strategies to reduce gaps/deficiencies in the system.



Role for Metro

Support from Metro

Regional Collaboration

- Convene Regional Working Group
- Community Listening Group
- Agreements for Regional traveler ITS

Tools and Resources

- Guidance for implementation
- Best practices menu of TDM/TSMO strategies
- Maintain equity focus areas
- Maintain regional SRTS and TDM Inventory spatial tools
- Rules for surveys and data collection

Funding and Investments

- Funding for needs/gap analysis
- RTO and other grant programs (RFF)
- Other funding sources – TDM requirements for Capital Projects
- Tracking investments for and with BIPOC and low-income communities

Direct Services

- Analysis of regional needs
- Regional TDM services for smaller jurisdictions – could be delivered through a contractor
- Commuter Services of regional significance/base level of service
- Planning resource/advisory – TSP support

Next Steps

1. Incorporate feedback TPAC workshop and stakeholder engagement sessions
2. Refine our definition and begin developing guidance document and tools
3. Workshop in more depth the roles and responsibilities for Metro

Thank you!

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Julia Wean, Project Director
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Draft Transportation System Management & Operations System Completeness and Mobility Corridors

TPAC Workshop, July 12, 2023

Caleb Winter, Metro

Portland Metro Region

Workshop Questions for TPAC

How can we best describe TSMO System Completeness among the targets and other systems to meet the Regional Mobility Policy?

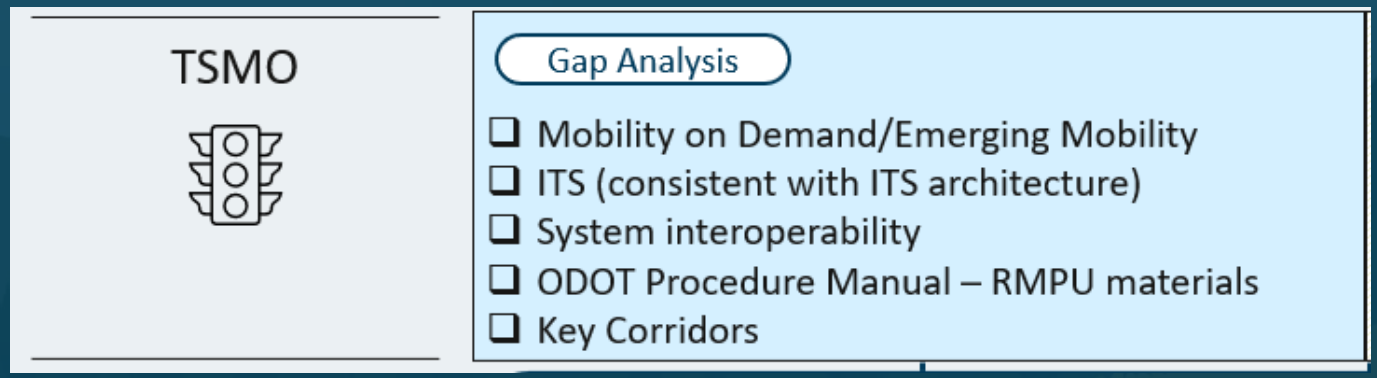
When it is time to update a local transportation system plan, is the information presented today on track to helping guide your TSMO conversation?

What needs to be considered when a large development, for example, means amending your local transportation system plan?

Are there other connections/limitations or opportunities to consider?

Presentation outline

- Process update: summary of TSMO stakeholder workshops
- What goes into a TSMO gap analysis?
  - Intelligent Transportation Systems (ITS) Architecture and Interoperability
  - ODOT Procedures manual
  - 2023 RTP System Management: actively managing throughways and arterials
  - TSMO Stakeholder input that supports TSMO in RTP Mobility Corridors
- Defining TSMO System Completeness
- Discussion



Process Update: summary of TSMO Stakeholder Workshops

Process update

Work to date

March 2021	ODOT/Metro team engaged TransPort on RMPU
January 2022	2021 TSMO Strategy adopted
September 2022	TransPort RMPU intro and overview of “key corridors”
Fall/Winter	RMPU TDM/TSMO staff conversations
Winter 2023	Draft System Management map for Ch. 3 of the RTP
May/June 2023	Workshops and TransPort

Next steps

July 2023	Incorporate TPAC Workshop Discussion
July-September	Refine definitions, map and tools
Fall 2023	Work with RMPU planners and consultants to finalize in 2023 RTP

Process update: May/June workshops

Washington County and cities
John Fasana, Susie Serres, Mike McCarthy, Tina Nguyen

ODOT
Kate Freitag, Mike Burkart, Katie Bell, Scott Turnoy

Clackamas County, cities and Wilsonville SMART
Carl Olson, Dwight Brashear, Eric Loomis, Will Farley, Zach Weigel

Multnomah County, Portland and Gresham
Jim Gelhar, Rick Buen, Alison Tanaka, Bikram Raghubansh

Transit and mobility services with TriMet
A.J. O'Connor, Grant O'Connell

May/June workshop summary

Actively manage facilities that have planned functions:

- Freight (increased demand), transit, emergency routes (and access to hospitals)
- All river crossings (Tualatin, Willamette) and bridges (Sellwood, Hawthorne, Morrison)
- Throughways, considering transit bypass of ramp meters and bus on shoulder

Consider facility limitations

- Hwy 26 Vista Tunnel does not allow hazardous material (HM) so this freight uses Cornelius Pass Road

Take a holistic approach to transit reliability

- Safe access, navigation apps, signal priority

Coordinate during weather events

- Shared agency capabilities (snow signage: chains required Barnes Road to Burnside)

Connect digital infrastructure

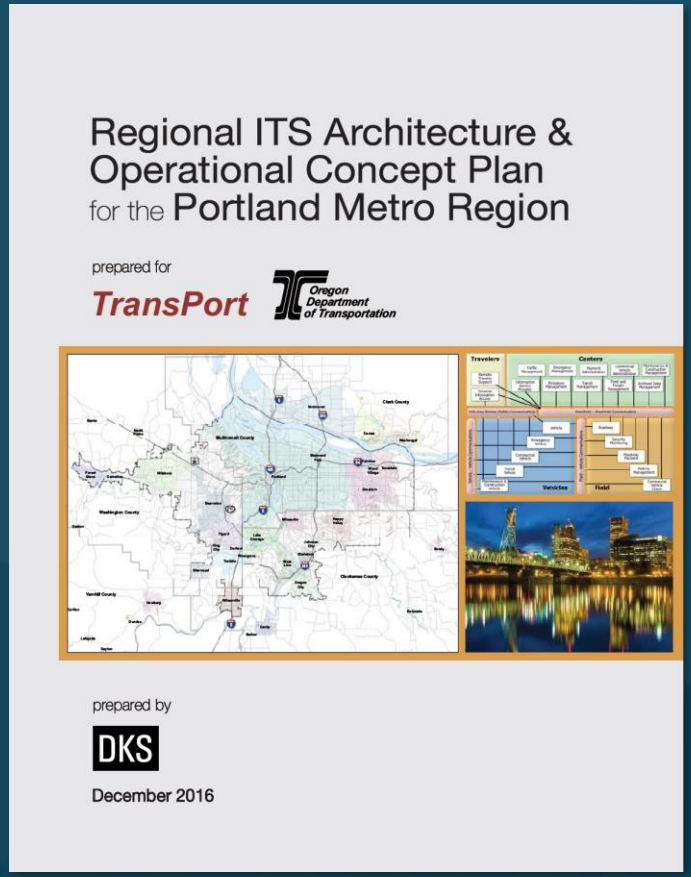
- Close gaps in the fast, shared data network

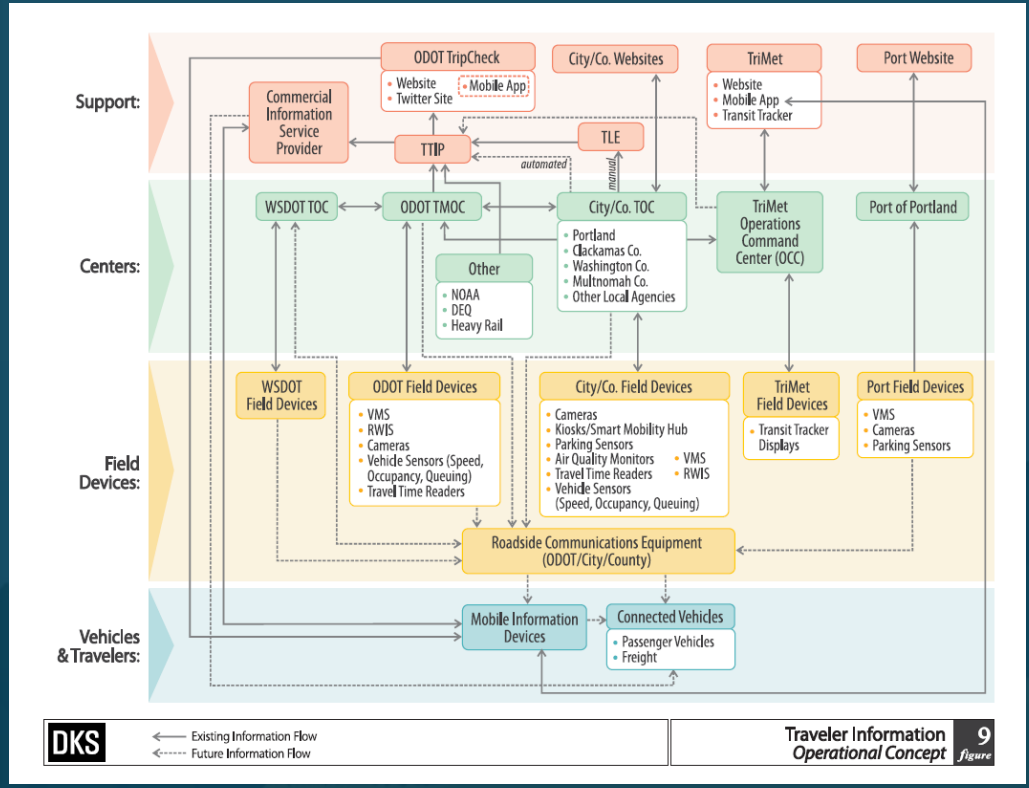
Mobility-focus means actively managing facilities for their primary function and managing demand away from trips outside mobility corridors. Mobility corridors have capacity for multimodal trips.

What goes into a TSMO gap analysis?

Regional ITS Architecture

The Regional ITS Architecture ensures information systems are interoperable for both efficiencies in public investment while growing operator capabilities.





www.oregonmetro.gov/public-projects/regional-tsmo-strategy/tsmo-resources

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Last Update: April 2023

Analysis Procedures Manual

VERSION 2

Policy, Data & Analysis Division
Planning Section

Transportation Planning Analysis Unit
Salem, Oregon

Oregon Department of Transportation

YSTEMS MANAGEMENT &

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Last Updated 09/2019

Appendix 18A: Summary of TSMO Strategies

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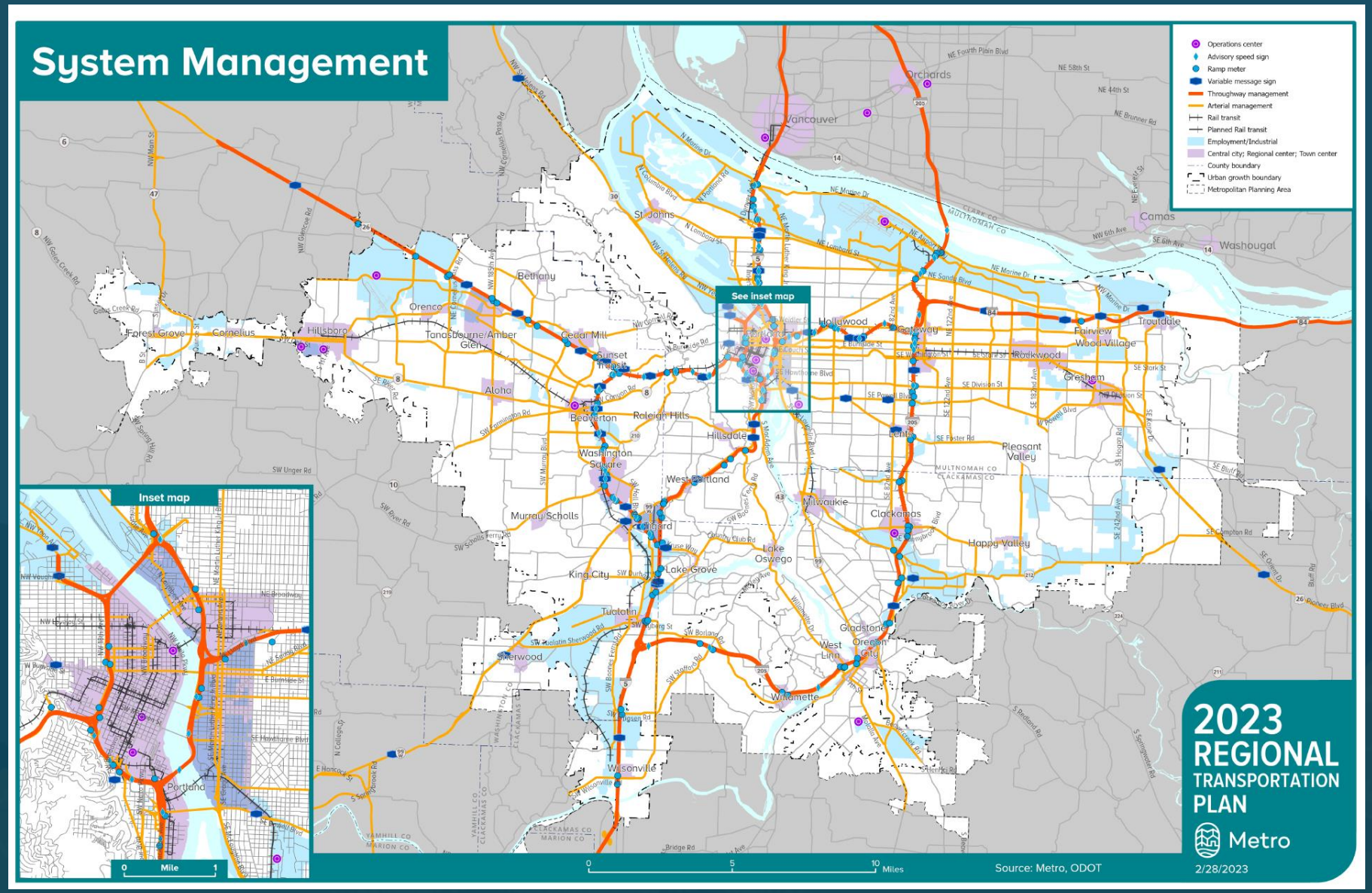

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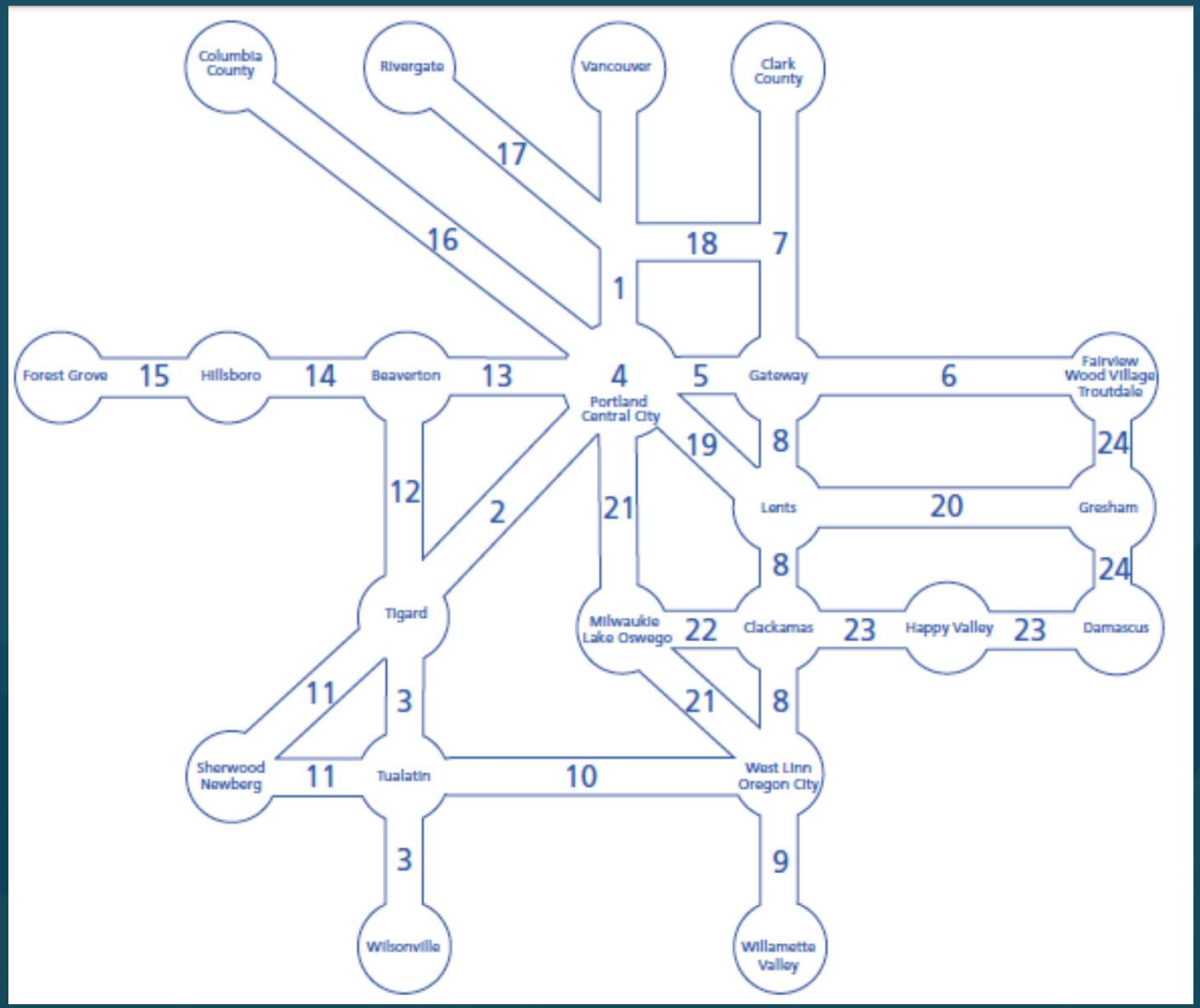

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Stakeholders highlighted arterials to consider adding to the RTP System Management map.

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  - Cornelius Pass Road: Vista Tunnel does not allow Hazardous Material transport; freight and travelers also journey north to Port of Longview, Port of Kalama or I-5 North
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May/June workshop notes

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May/June workshop notes

Throughways

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Defining TSMO System Completeness

May/June workshop notes

Important region-wide

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Discussion

Metro

Portland Metro Region

Thank you

TSMO Program

Caleb Winter, Metro

Caleb.Winter@oregonmetro.gov

Materials following this page were distributed at the meeting.

Draft Transportation System Management & Operations System Completeness and Mobility Corridors

TPAC Workshop, July 12, 2023

Caleb Winter, Metro

Portland Metro Region

Workshop Questions for TPAC

How can we best describe TSMO System Completeness among the targets and other systems to meet the Regional Mobility Policy?

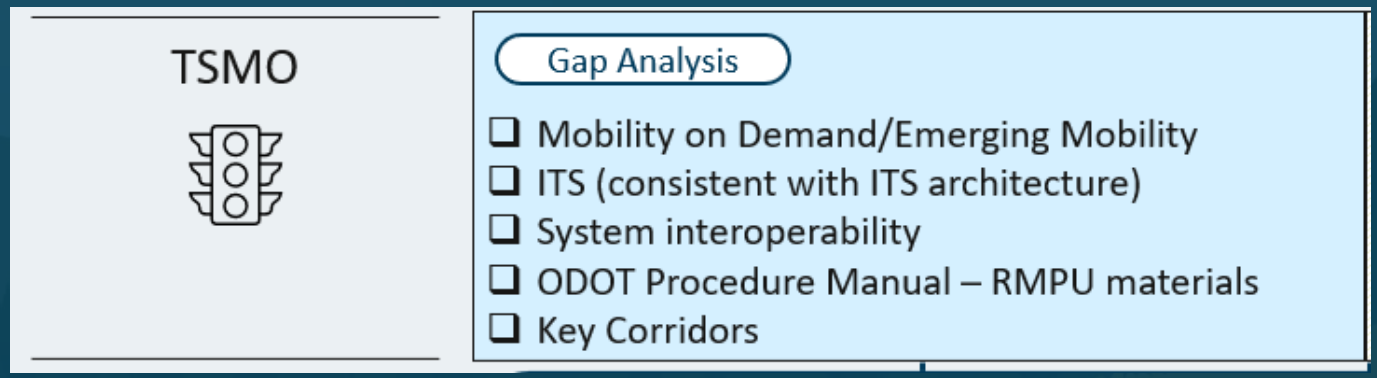
When it is time to update a local transportation system plan, is the information presented today on track to helping guide your TSMO conversation?

What needs to be considered when a large development, for example, means amending your local transportation system plan?

Are there other connections/limitations or opportunities to consider?

Presentation outline

- Process update: summary of TSMO stakeholder workshops
- What goes into a TSMO gap analysis?
  - Intelligent Transportation Systems (ITS) Architecture and Interoperability
  - ODOT Procedures manual
  - 2023 RTP System Management: actively managing throughways and arterials
  - TSMO Stakeholder input that supports TSMO in RTP Mobility Corridors
- Defining TSMO System Completeness
- Discussion



Process Update: summary of TSMO Stakeholder Workshops

Process update

Work to date

March 2021	ODOT/Metro team engaged TransPort on RMPU
January 2022	2021 TSMO Strategy adopted
September 2022	TransPort RMPU intro and overview of “key corridors”
Fall/Winter	RMPU TDM/TSMO staff conversations
Winter 2023	Draft System Management map for Ch. 3 of the RTP
May/June 2023	Workshops and TransPort

Next steps

July 2023	Incorporate TPAC Workshop Discussion
July-September	Refine definitions, map and tools
Fall 2023	Work with RMPU planners and consultants to finalize in 2023 RTP

Process update: May/June workshops

Washington County and cities
John Fasana, Susie Serres, Mike McCarthy, Tina Nguyen

ODOT
Kate Freitag, Mike Burkart, Katie Bell, Scott Turnoy

Clackamas County, cities and Wilsonville SMART
Carl Olson, Dwight Brashear, Eric Loomis, Will Farley, Zach Weigel

Multnomah County, Portland and Gresham
Jim Gelhar, Rick Buen, Alison Tanaka, Bikram Raghubansh

Transit and mobility services with TriMet
A.J. O'Connor, Grant O'Connell

May/June workshop summary

Actively manage facilities that have planned functions:

- Freight (increased demand), transit, emergency routes (and access to hospitals)
- All river crossings (Tualatin, Willamette) and bridges (Sellwood, Hawthorne, Morrison)
- Throughways, considering transit bypass of ramp meters and bus on shoulder

Consider facility limitations

- Hwy 26 Vista Tunnel does not allow hazardous material (HM) so this freight uses Cornelius Pass Road

Take a holistic approach to transit reliability

- Safe access, navigation apps, signal priority

Coordinate during weather events

- Shared agency capabilities (snow signage: chains required Barnes Road to Burnside)

Connect digital infrastructure

- Close gaps in the fast, shared data network

Mobility-focus means actively managing facilities for their primary function and managing demand away from trips outside mobility corridors. Mobility corridors have capacity for multimodal trips.

What goes into a TSMO gap analysis?

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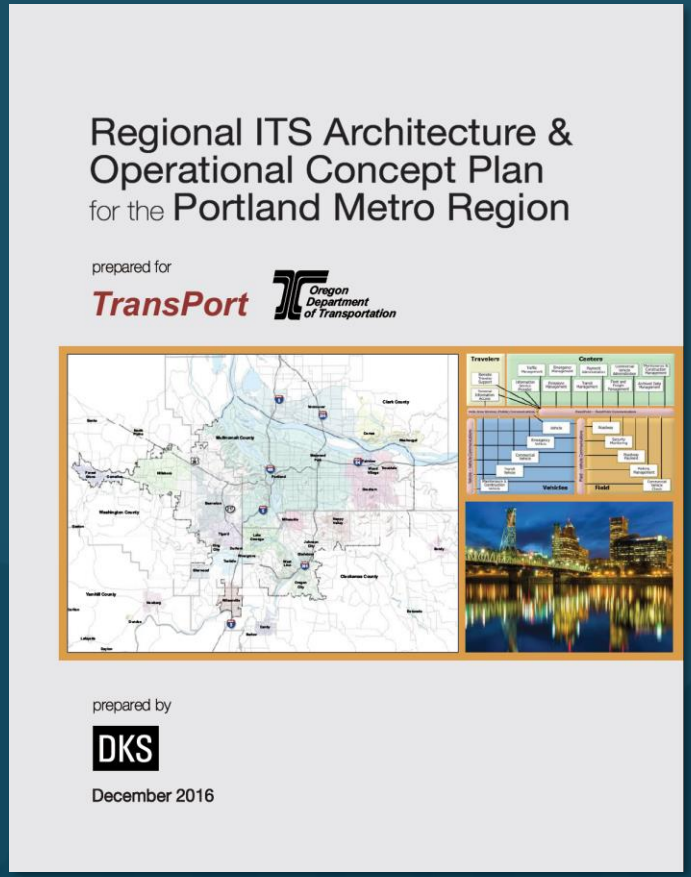
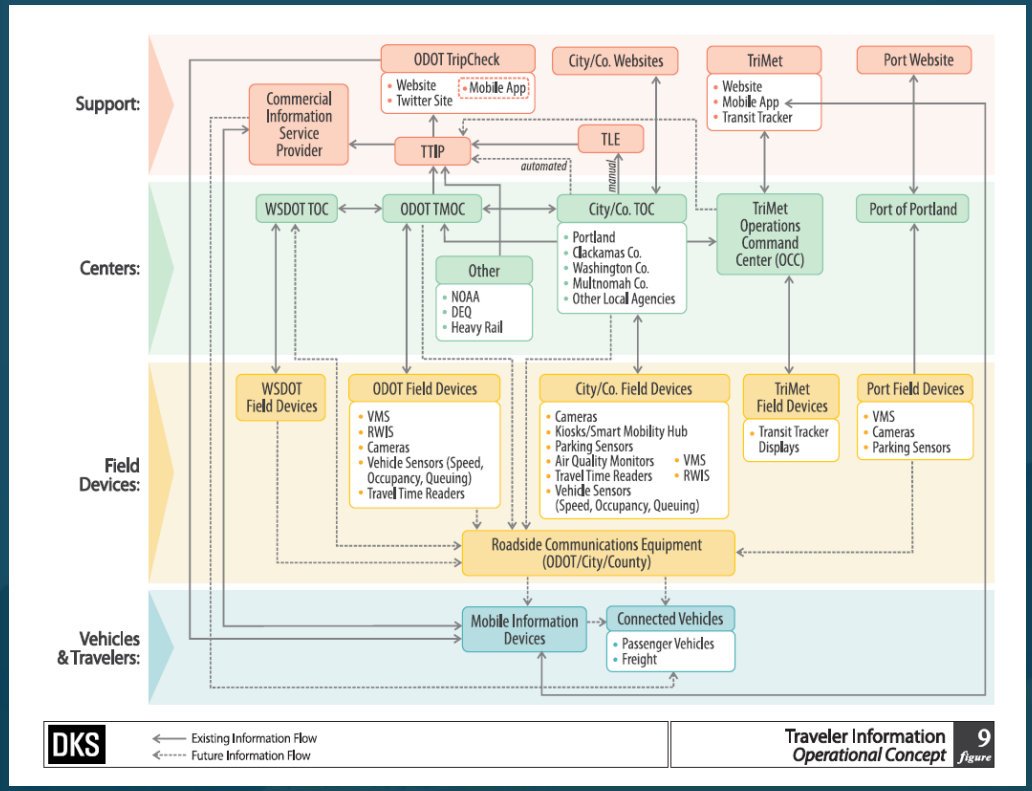
The Regional ITS Architecture ensures information systems are interoperable for both efficiencies in public investment while growing operator capabilities.





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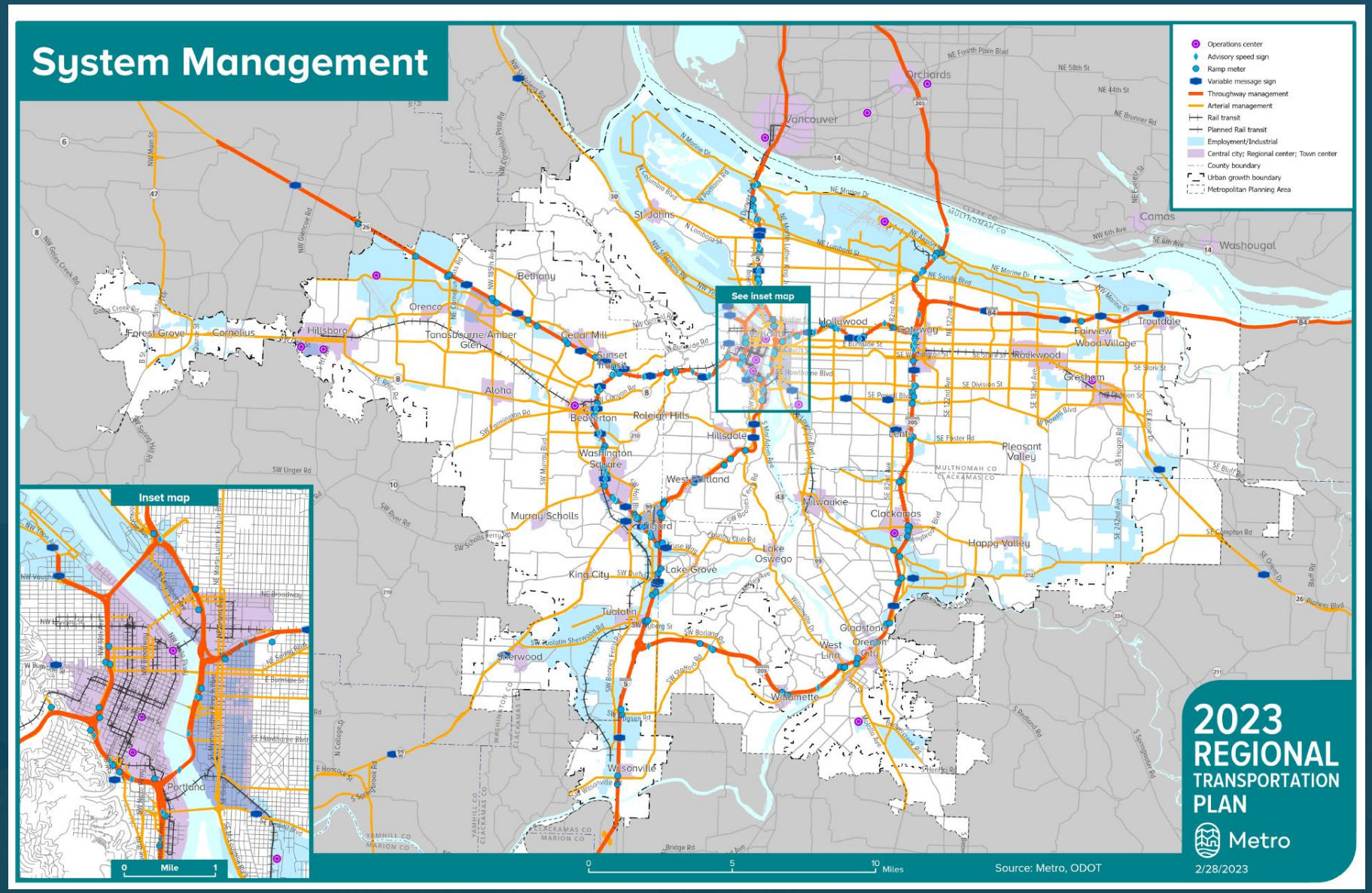

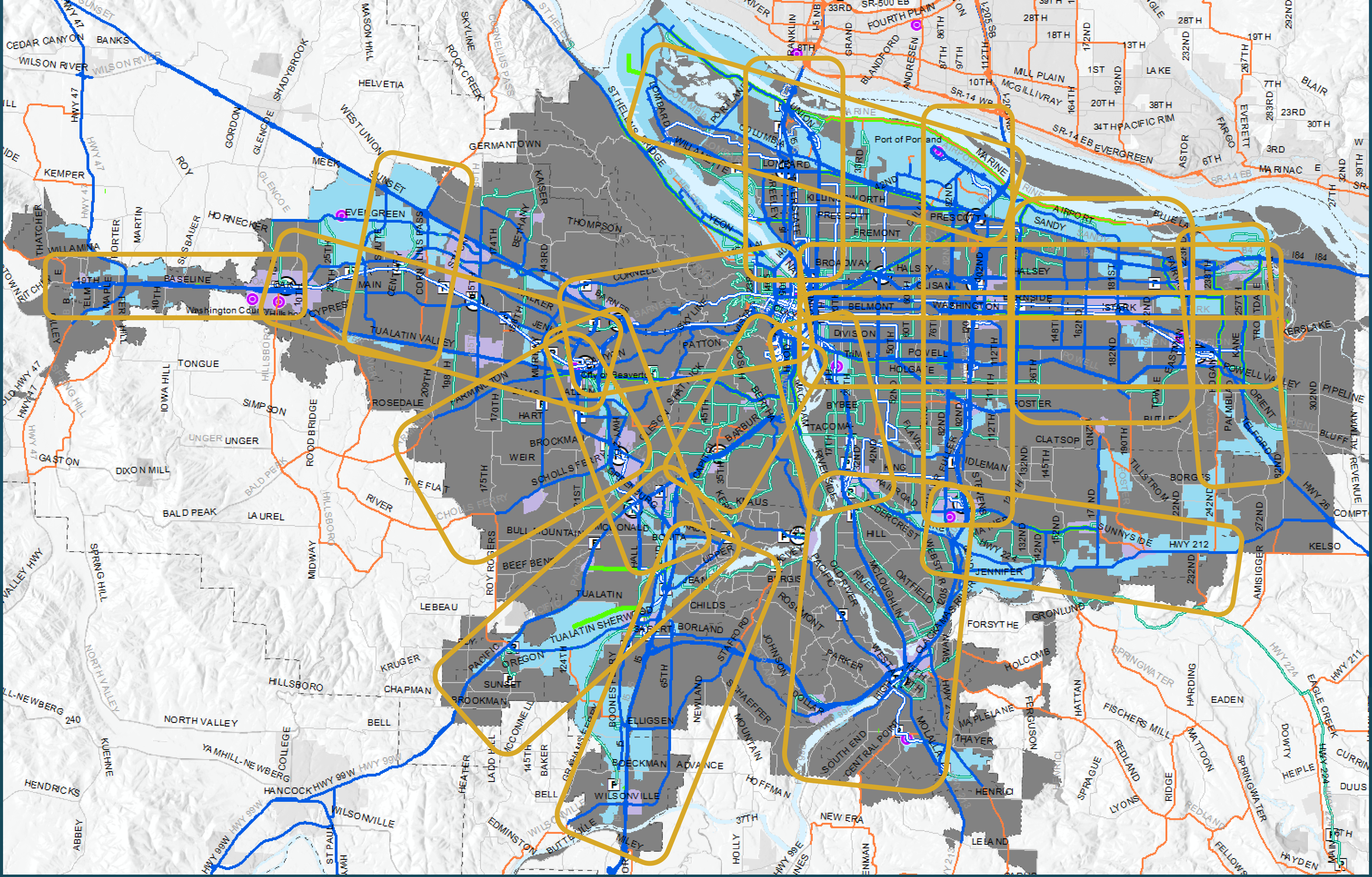

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LOMBARD
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KILLINGSWORTH
PRESCOTT
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BROADWAY
HALSEY
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POWELL
HOLGATE
FOSTER
CLATSOP
BYBEE
TACOMA
KING
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SUNNYSIDE
HWY 212
JENNIFER
KELSO
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SIMPSON
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FARMINGTON
HART
BROCKMAN
WEIR
SCHOLLS FERRY
BULL MOUNTAIN
BEEF BEND
TUALATIN
TUALATIN SHERWOOD
CHILDS
BORLAND
PACIFIC
OREGON
SUNSET
BROOKMAN
ELLIGSEN
BOECKMAN
ADVANCE
WILSONVILLE
BELL
KRUGER
CHAPMAN
HILLSBORO
NORTH VALLEY
HANCOCK
HWY 99W
GASTON
DIXON MILL
BALD PEAK
LAUREL
UNGER
RIVER
LEBEAU
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HENRICI
NEW ERA
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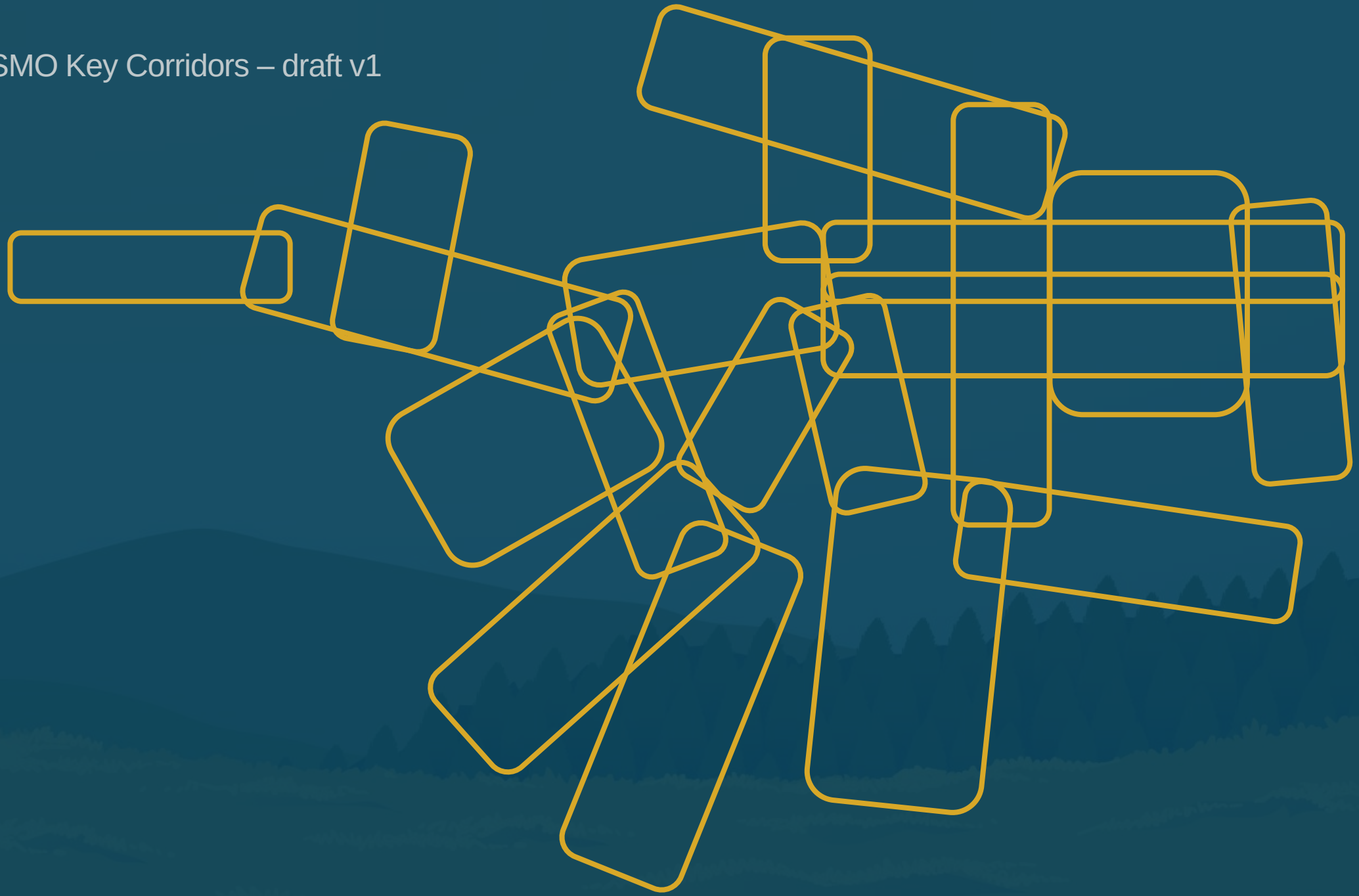
COMPTON

TSMO Key Corridors – draft v1



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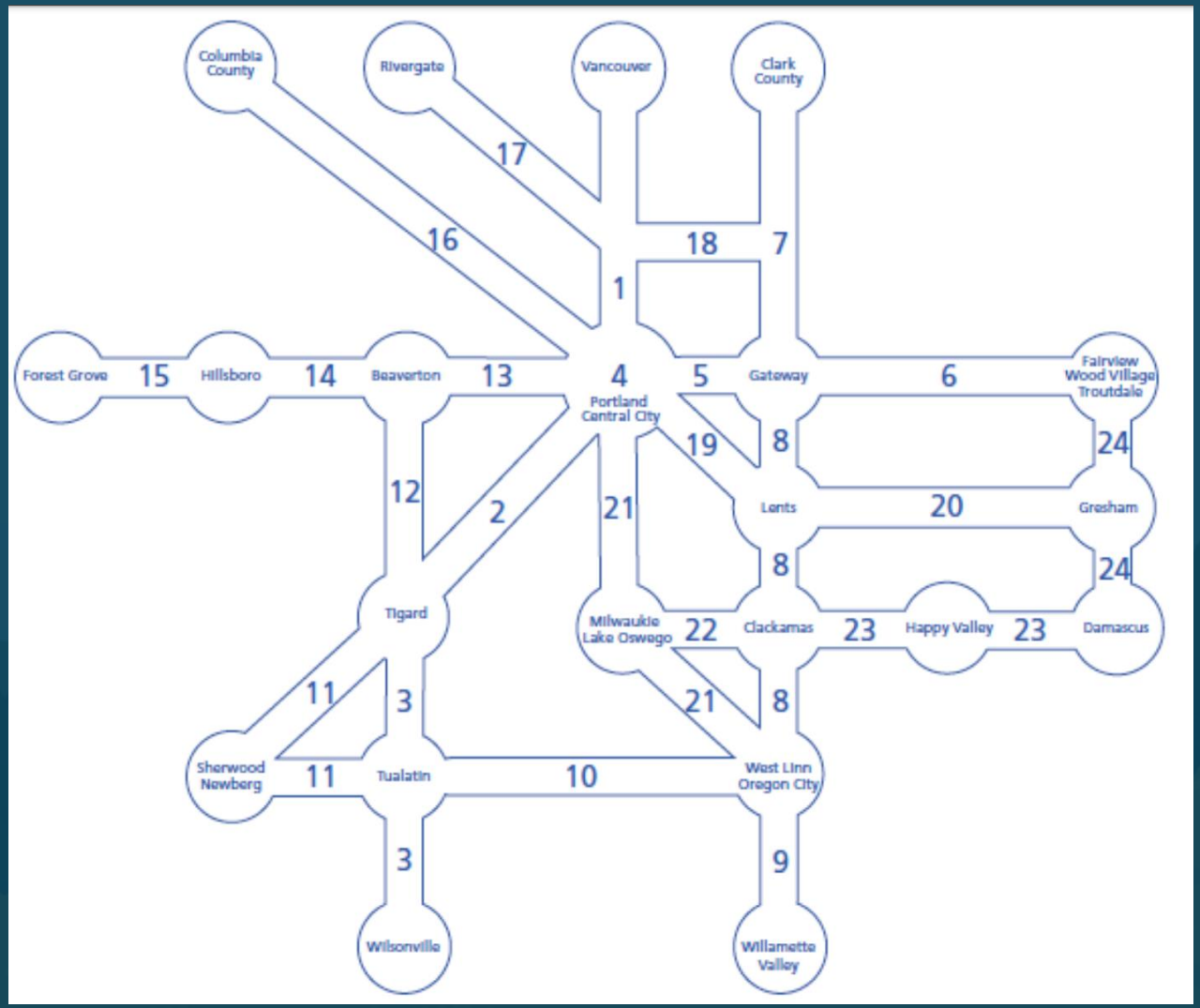

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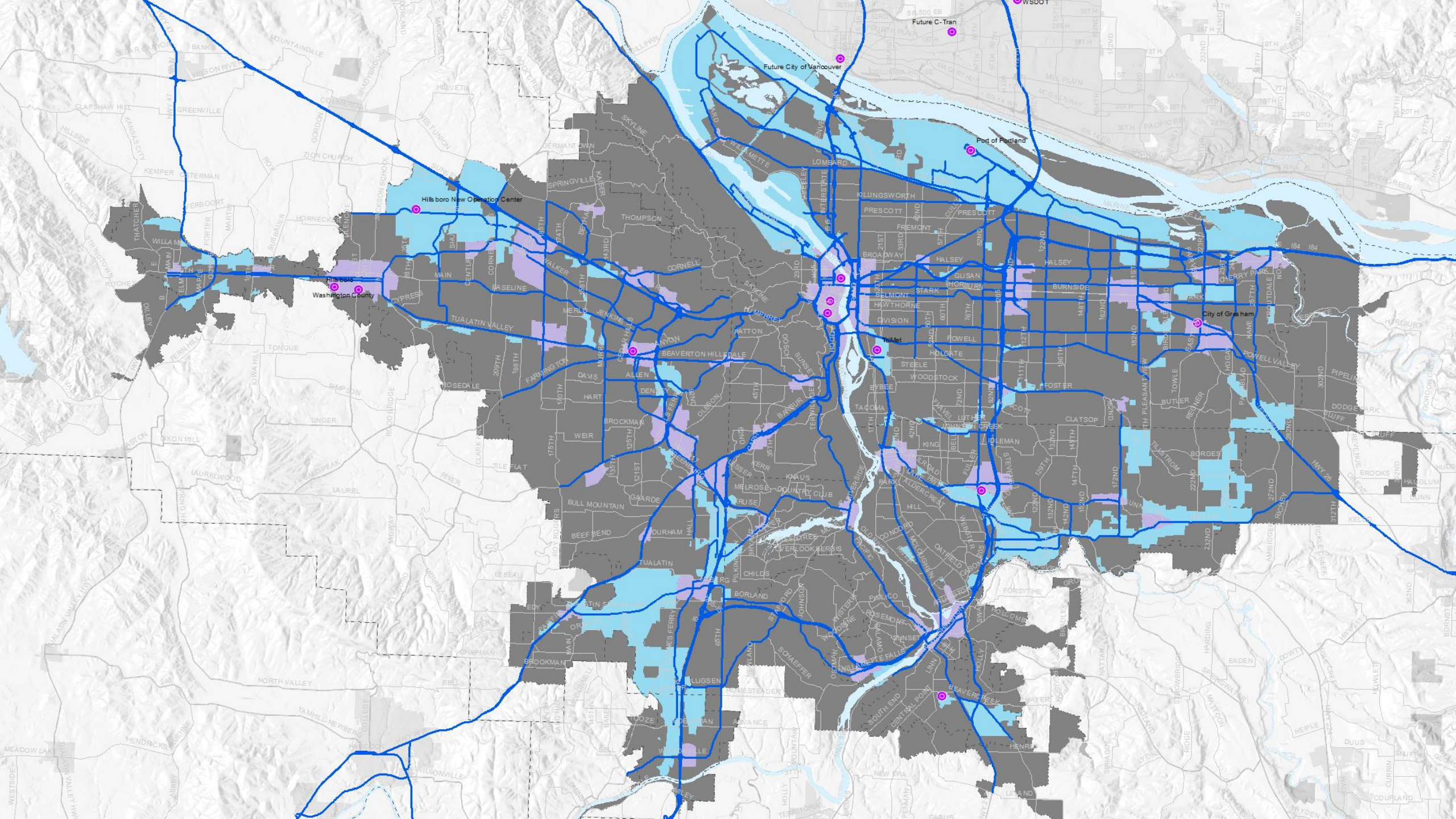
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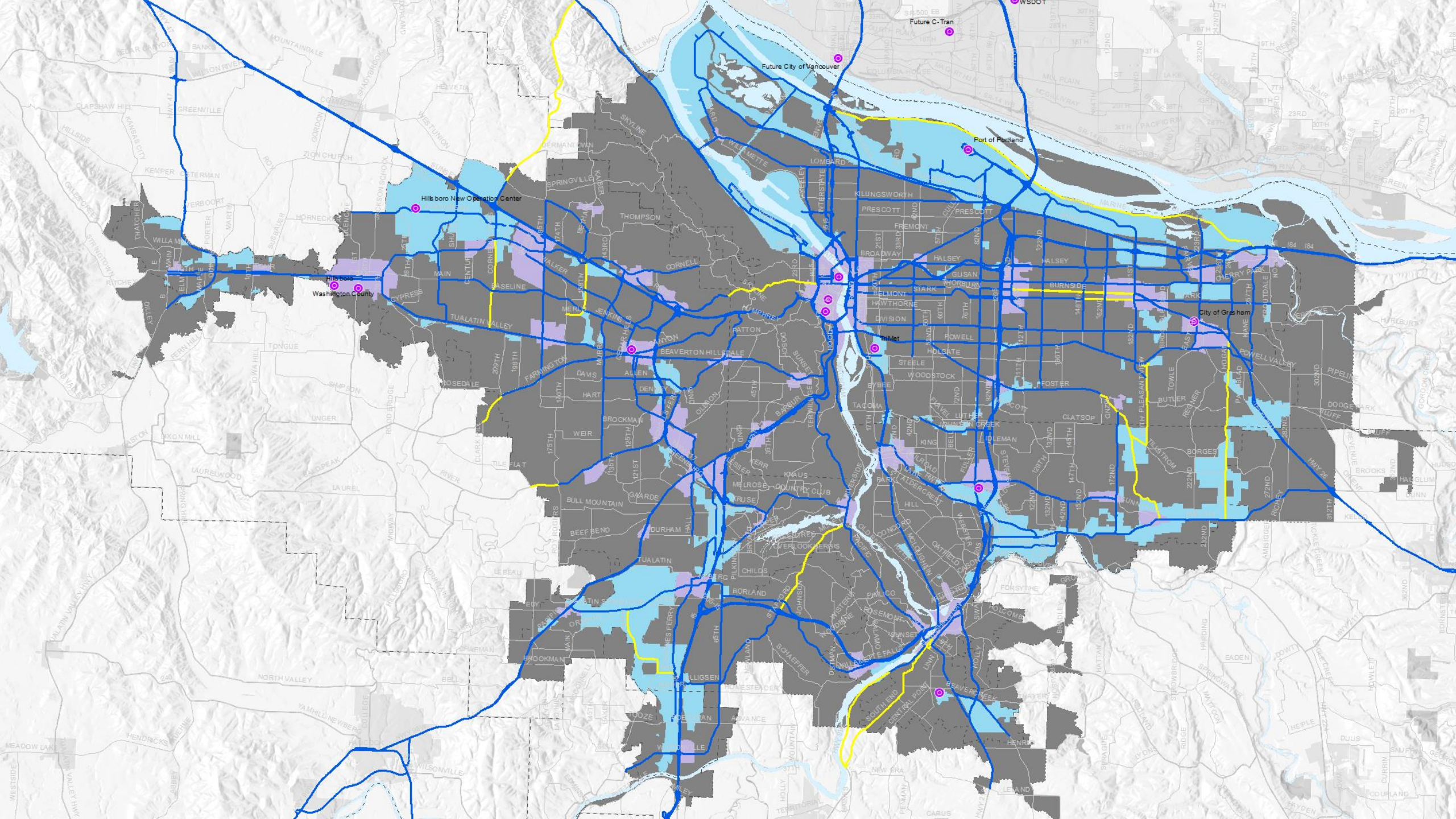
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Metro

Portland Metro Region

Thank you

TSMO Program

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TDM /TSMO System Completeness

Metro

July 2023

Support for the Regional Mobility Policy Update

steer

Agenda

1. Draft System Completeness Definition
2. Process for Updating Transportation System Plans
3. Comprehensive Plan Amendments
4. Support from Metro (Tools and Guidance)

Purpose of the Regional Mobility Policy Update

Update the mobility policy and how we **define and measure mobility** for the Portland area transportation system

Recommend amendments to the **Regional Transportation Plan** and **Oregon Highway Plan Policy 1F** for the Portland area

Visit oregonmetro.gov/mobility

Draft Regional Mobility Policy

- **Target:** 20% reduction by 2035, 34% reduction by 2050
- **Outcome:** Land Use Efficiency

VMT/Capita

- **Target**: Complete the “planned” network and system
- **Outcome**: Complete multimodal networks

System Completeness

- **Target**: 4 or fewer hours per day that average throughway speeds drop below 35 or 20 MPH, varies by throughway
- **Outcome**: Reliable travel speeds for goods and services

Reliability of Throughways

Secondary measures used to identify needs and inform development of planned system.

Potential Application of Mobility Measures

System Planning

- **Define the planned complete transportation system.**
- Apply as target in planning (VMT/capita)
- Set standards based on what the plan is able to achieve.

Plan Amendments

- Identify if there is a measurable change in performance compared to standard. (Does amendment exceed VMT/capita targets?)
- If significant impact, **identify appropriate mitigations**. (What projects need to be completed to reduce VMT/capita?)

Planning for the Future

Regulating Plan Amendments

Guidance for Defining Complete Planned System

Table 3: Guidance for Defining the Complete Planned System

Mode	System Completeness Element	Supporting guidance
Pedestrian	Plan for complete network	RTFP, DLSTG, BUD
	Plan for adequate crossing spacing	RTFP, DLSTG, BUD
	Plan for adequate crossing treatments, including curb ramps	NCHRP 562
	Plan for a low-stress walking network to transit and other key destinations[4]	RTFP, APM, TriMet Pedestrian Plan
Bicycle	Plan for complete network	RTFP, DLSTG, BUD
	Plan for a low-stress bicycling network to transit and other key destinations	APM
	Plan for adequate bike parking at key destinations	RTFP, TriMet Bicycle Parking Guidelines
Transit	Plan for complete network	Regional Transportation Plan RTFP
	Plan for transit priority infrastructure (e.g., transit signal priority, queue jumps, semi-exclusive or exclusive bus lanes or transitways)	Regional Transit Strategy
	Plan for adequate bus stop amenities and other transit supportive facilities[5]	TriMet Bus Stop Guidelines
Motor Vehicle	Plan for adequate local, collector and arterial street connectivity	RTP, RTFP
	Plan for number of through lanes within maximum guidance	RTP, RTFP, DLSTG
	Plan/policy for where turn lanes will be permitted/prohibited and maximum number of turn lanes considering safety for all modes and land use context	APM, DLSTG, BUD
TSMO	Plan for infrastructure and programs, and maintain system compatibility	RTFP[6] Regional ITS Architecture Plan Regional TSMO Strategy
TDM	Plan for infrastructure and programs	RTFP (forthcoming) Oregon Metro-specific guidance for TSPs[7]

Table 5: Guidance for Assessing Plan Amendment Impacts to System Completeness

	Plan Amendment		
	1. Determine study area by selecting the specified distance along existing and planned facilities	2. Determine if the planned system should be updated based on the projected trip generation	3. Determine locations and quantity of gaps in the planned system within the study area
Pedestrian	Along facilities within 1/4-mile routing from site in all directions	n/a	Missing pedestrian crossings
	Along facilities within 1/4-mile routing from site in all directions	Review NCHRP 562	Missing pedestrian crossings by treatment type
	Along facilities within 1/4-mile routing from site in all directions	n/a	Curb-miles of low-stress pedestrian facilities gaps
Bike	Along facilities within 1/4-mile routing from site in all directions	n/a	Curb-miles of low-stress bicycle facilities gaps
	Along facilities within 1/4-mile routing from site in all directions	n/a	Missing bicycle crossings
	Along facilities within 1/4-mile routing from site in all directions	Review TriMet Bicycle Parking Guidelines	Missing bike parking
Transit	Along facilities within 1/4-mile routing from site in all directions	Review TriMet Bus Stop Guidelines	Missing Bus stops amenities by amenity type
			Missing transit priority treatments (e.g., transit signal priority, queue jumps, bus-only lanes)
			Missing transit supportive infrastructure
Motor Vehicle	Along facilities within 1/2-mile routing from site in all directions	n/a	Centerline-miles of roadway gaps
	Along facilities within 1/2-mile routing from site in all directions	Review travel speeds, off-ramp queuing	Lane-miles of throughway lane gaps
TSMO	Along facilities within 1/2-mile routing from site in all directions	n/a	Gaps in ITS infrastructure along TSMO 'Key Corridors' (defined by TSMO Strategy and RTP); Missing ITS projects (per TSP)
TDM – Infrastructure	Along facilities within 1/4-mile routing from site in all directions	n/a	Missing TDM projects (per TSP)
TDM - Programming	Site-based/within site boundaries	n/a	Agreement to fulfill required programming (per TSP)

Process Check – Defining System Completeness

Definitions

What makes a complete TDM/TSMO system?

What should be considered baseline, defined and optimized?

Roles & Responsibilities

What are Metro's role and responsibilities?

What roadblocks might be encountered by jurisdictions, mobility operators, and agencies?

Updated Regional Mobility Policy

How will this be implemented within the context of the Mobility Policy Update?

- Transportation System Plans

- Comprehensive Plan Amendments

Purpose of Today's Discussion

Introduce the **draft** definition of TDM and TSMO system completeness

Discuss how the capability framework will work in the context of the mobility policy update

Collect your feedback so that we can continue to **refine the definition** and develop useful implementation **guidance and tools**

Questions for TPAC

1. What challenges or roadblocks do you see in the process that we lay out for achieving system completeness?
2. Are there additional considerations that should be added to our capability framework?
3. What kinds of support could Metro and/or ODOT provide for jurisdictions and agencies to help them comply with the new mobility policy?

Draft Definition

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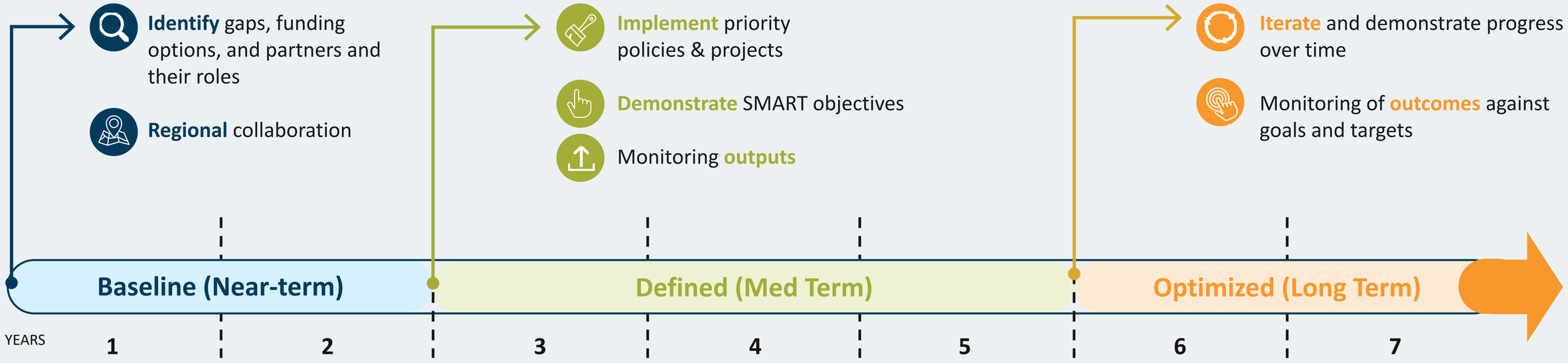
Overview of System Completeness



Overview of System Completeness

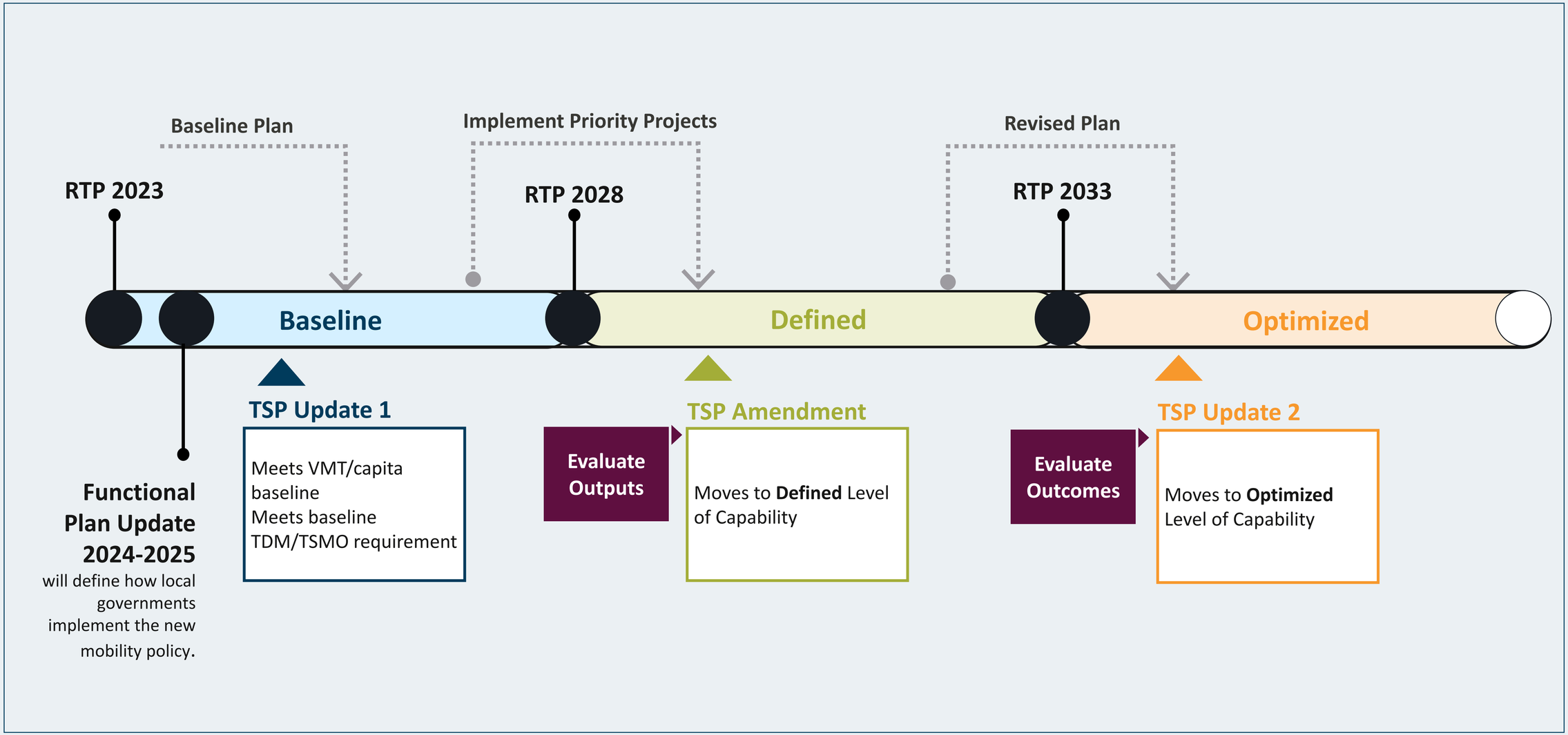
	Identify | Prioritize	Implement	Iterate
	Baseline	**Defined**	**Optimized**
General	• **Identification** of projects and programs based on gap analysis and prioritization based on needs; development of specific TDM/TSMO Plan • Identification of funding options • Identification of key actors/partners and their roles • State and regional collaboration	• Implementation of **prioritized** projects and programs (planned TDM system) • Deploy funding mechanisms • SMART Objectives w/Targets • Monitoring of outputs • Priority should include equity considerations	• Implementation of projects and programs (planned TDM system) and **iteration** over time • Outcome goals and targets linked to outputs – include equity impact • Demonstrated monitoring and progress over time
TDM	Gap Analysis ❑ Policy (Land use) ❑ Geographic/equity ❑ Programmatic (ECO, SRTS) ❑ User groups/equity – establish needs/barriers ❑ Modal (incl. shared mobility, emerging)		
TSMO	Gap Analysis ❑ Mobility on Demand/Emerging Mobility ❑ ITS (consistent with ITS architecture) ❑ System interoperability ❑ ODOT Procedure Manual – RMPU materials ❑ Key Corridors		
	Near-Term	**Med-Term**	**Long-Term**
YEARS	1 2	3 4 5	6 7

Draft of System Completeness

	Baseline	Defined	Optimized
Parking (land use section)	Incorporate into Gap Analysis Comply with CFEC Parking Reform A or B Requirements.		
Wayfinding	Incorporate into Gap Analysis	Specific strategies outlined in CFEC and other policy documents should be consolidated into **a TDM toolbox**, so that jurisdictions can select strategies/projects that help TSPs meet the VMT/capita thresholds.	
Pricing	Incorporate into Gap Analysis Identify potential geographic areas where pricing strategies may be appropriate (parking, carbon, congestion and others)	No additional requirements other than they review as part of the gap analysis for Baseline	
Design	Incorporate into Gap Analysis Demonstrate alignment w/2040 Growth Concept, RTP Policies, and TPR/CFEC		

Transportation System Plans

RTP updates occur every 5 years.



Case Study 1: County of Clackamas

Baseline

- Identifies priority Safe Routes to School projects and associated funding sources.
- Identifies equity priority geographies and user needs.
- Includes support and participation in area TMA to develop, monitor and fund regional TDM programs.
- Long Term Capital Projects identify priority projects such as traffic signal timing and implementing ITS Plan and associated funding sources.
- Demonstrates compliance with 2040 Growth Concept.

To achieve baseline: Gap analysis to include broader range of TDM and TSMO considerations.

Defined

- Equity considerations included in the prioritization of projects to ensure equitable mobility for people and goods.
- Establishes performance targets (non-drive alone mode share targets for 2040).

To achieve Defined: Establish SMART objectives for priority projects and programs, demonstrate plan to monitor performance.

Optimized

To achieve Optimized: Demonstrate progress towards performance targets and iterate on projects and programs.

Case Study 1: City of Beaverton

Baseline

- Identifies land use and programmatic (ECO) needs.
- Identifies priority TSM projects including consideration of key corridors.
- Considers supportive policies like congestion pricing – describes how pricing enhances TDM effectiveness
- Beaverton has previously identified funding sources for RTP Ped/Bike/Transit/TDM/TSM Projects up to $79 M.

To achieve baseline: Consider additional elements of gap analysis, equity considerations, and supportive policies (parking inventory).

Defined

- Establishes non-drive alone mode share targets for 2040.

To achieve Defined: Establish SMART objectives for priority projects and programs, demonstrate plan to monitor performance.

Optimized

- Identifies TDM strategies and their potential trip reduction. Each trip reduction is specifically calculated based on the day of the week, transit service available, alternate modes.
- Identifies and includes TSM related data including traffic signal response and discrepancies.

To achieve Optimized: Demonstrate progress towards performance and iterate on projects and programs.

Plan Amendments

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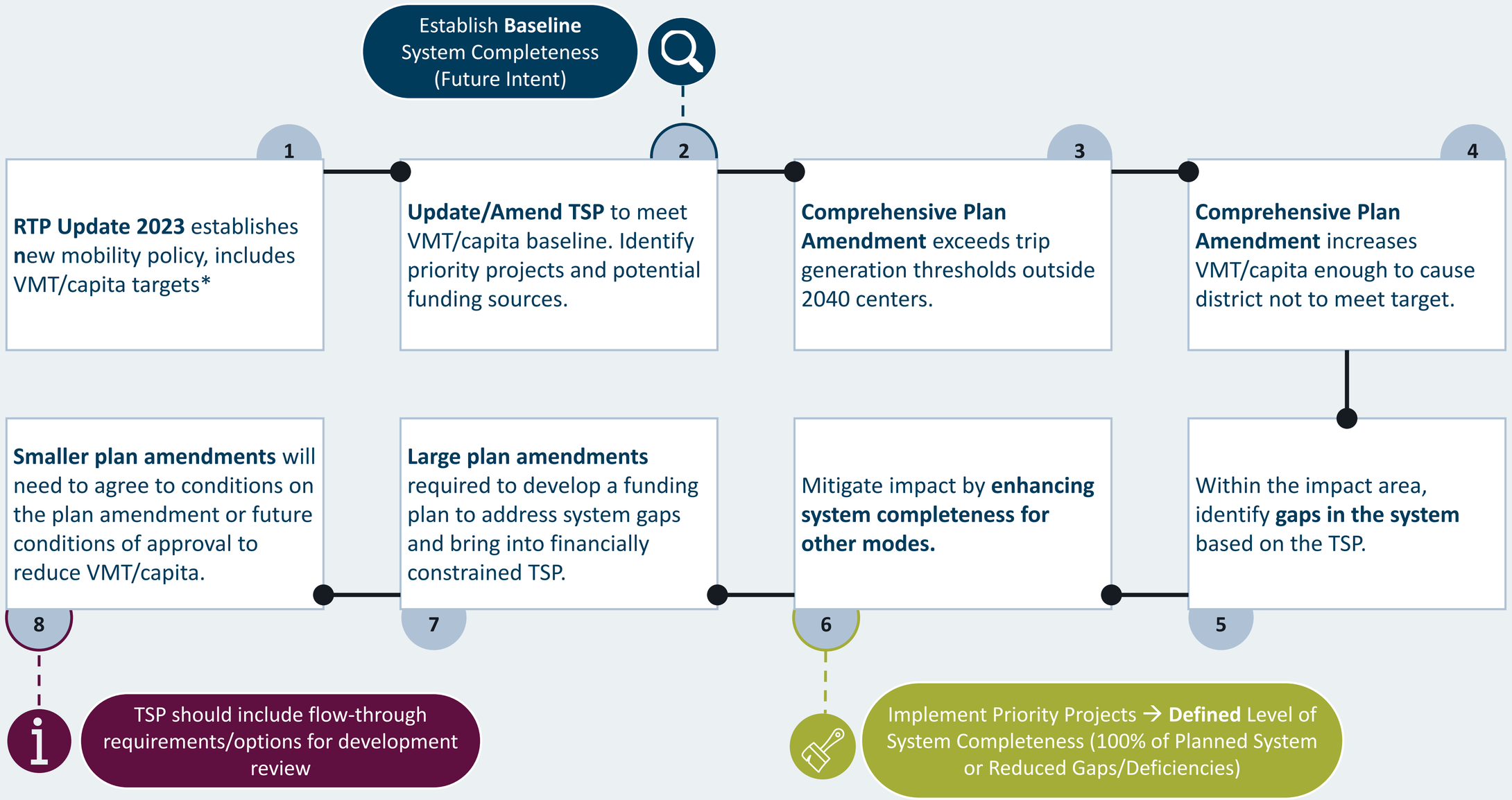
How Plan Amendments interact with TSP/System Completeness



Requirements for Plan Amendment

	System Plans Requirements	Plan Amendment	Target
TDM	Plan for infrastructure and programs	Missing TDM projects and agreement to fulfill programming per TSP (within proximity to site)	**100%** of planned system (as defined in TSP) or Reduced gaps and deficiencies
TSMO	Plan for infrastructure and programs and maintenance of system operability	Gaps in ITS infrastructure along TSMO Key Corridors and missing projects per TSP (within ¼ mile routing of site)	

Recommendations for Plan Amendments

Option 1

- Require commercial and residential developments implement projects to fulfill TSP

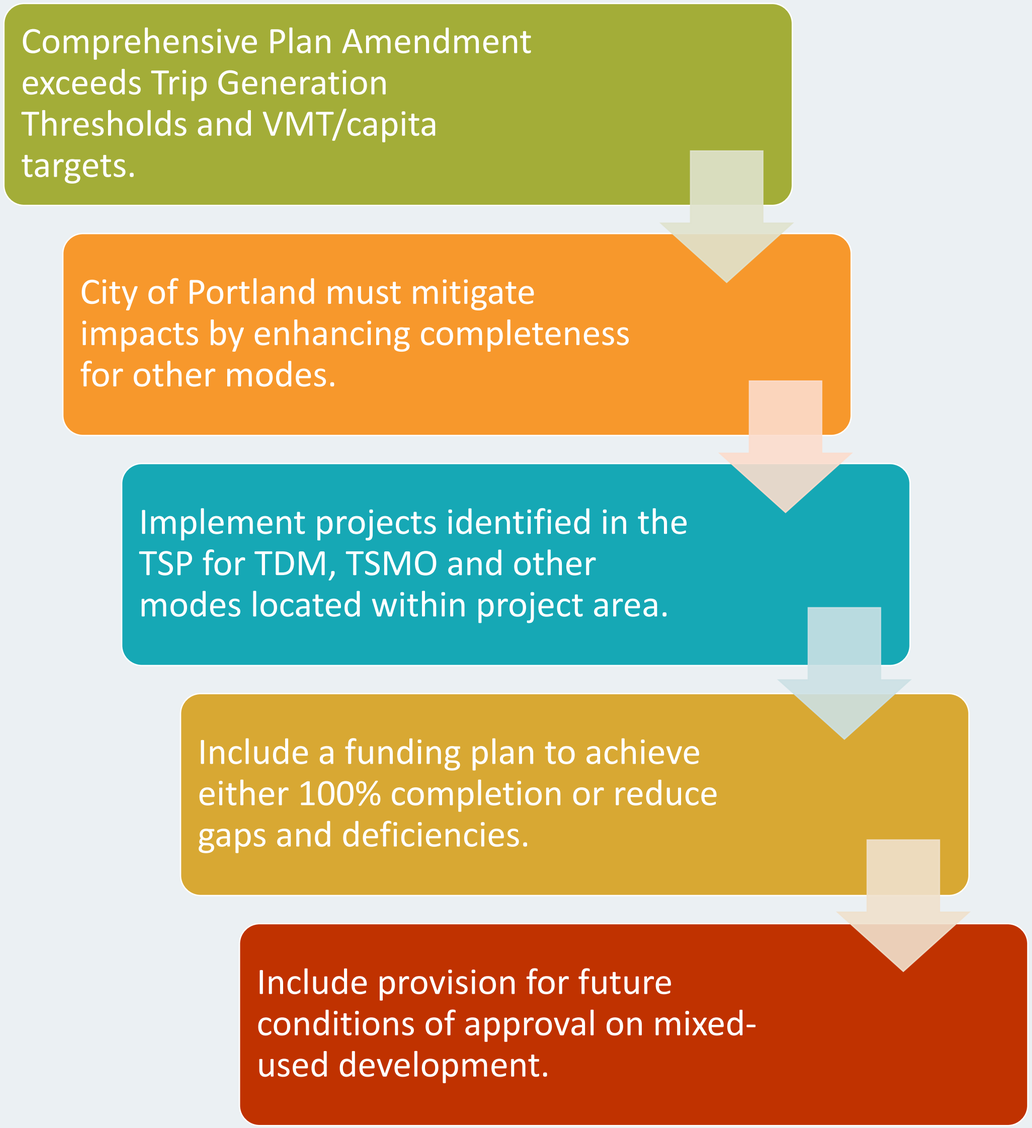
Option 2

- Fees paid by employer/developer for jurisdiction to implement projects

Recommend that a section on **funding strategies** for TDM and TSMO be included as a **resource** in the Toolbox.

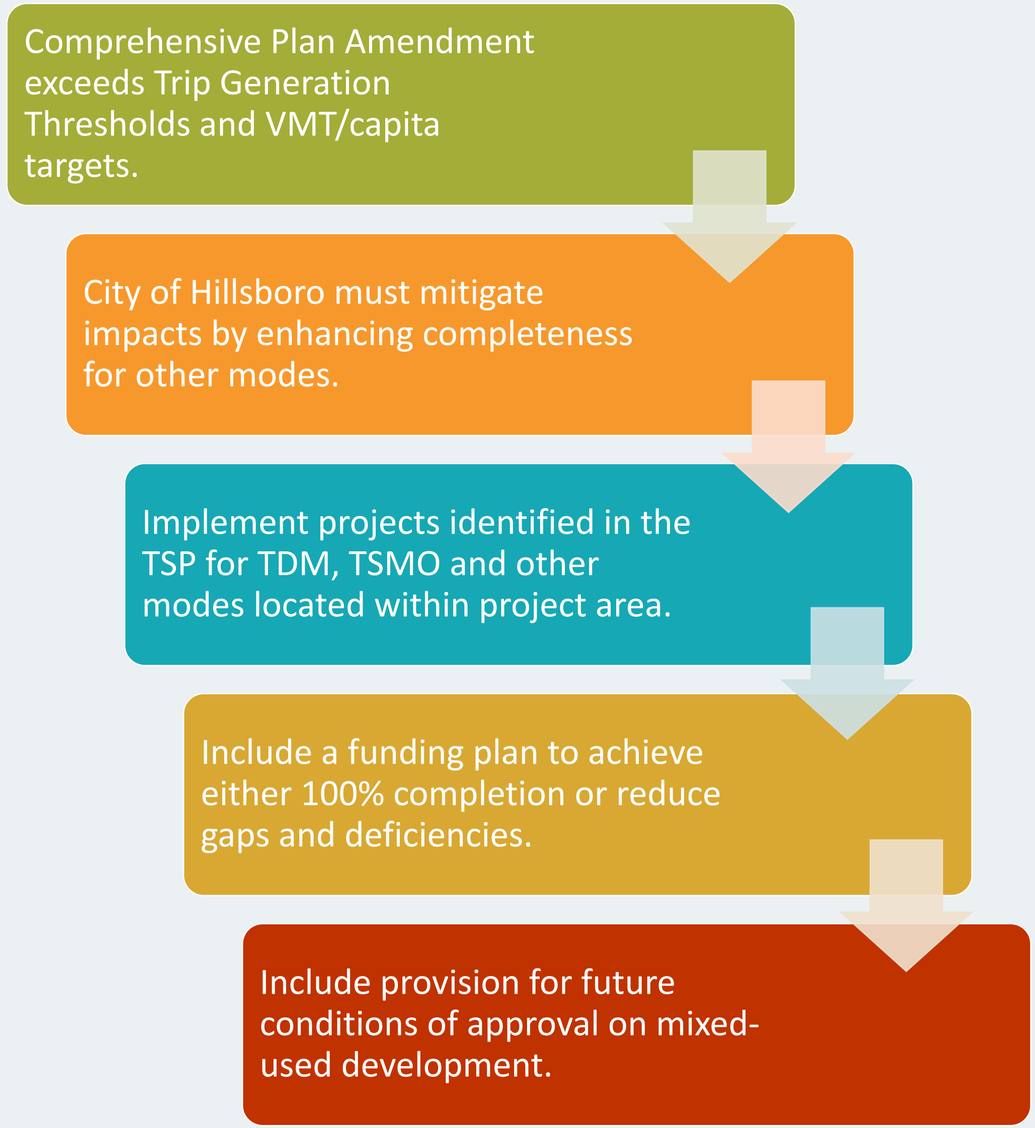
Case Study 1 – Colwood Industrial District

- This 2013 **quasi-judicial plan amendment** to the City of Portland Comprehensive Plan rezoned a 48-acre portion of the Colwood National Golf Course site near Portland International Airport.
- Plan highlights the need for economic development near Portland's **freight hub**.
- Provides a list of **key transit corridors** to support the use of transit and increased residential densities within one quarter mile of transit routes.
- Identifies the important of transit-oriented development.
- **Potential enhancements:** include specific projects or enhancements to increase multimodal network, funding plan and provision for conditions of approval for future mixed-use development.



Case Study 2 – City of Hillsboro Community Development Plan

- The City of Hillsboro adopted the South Hillsboro Community Plan as a **legislative plan amendment**, providing a framework for a new master-planned development, including the 463-acre Reed's Crossing neighborhood in South Hillsboro. Defines land uses in a TDM supportive way
- Identifies key corridors for TSMO projects from the Tualatin Valley Highway Corridor and South Hillsboro Focus Area Plans to increase regional connectivity.
- Incorporates priority wayfinding improvements.
- Identifies funding sources - primarily from new private development in South Hillsboro, with supplemental funding anticipated from potential "Regional Share" sources
- Includes inventory of on- and off-street parking.
- **Potential Enhancements**: include a more extensive list of TDM and TSMO strategies to reduce gaps/deficiencies in the system.



Role for Metro

Support from Metro

Regional Collaboration

- Convene Regional Working Group
- Community Listening Group
- Agreements for Regional traveler ITS

Tools and Resources

- Guidance for implementation
- Best practices menu of TDM/TSMO strategies
- Maintain equity focus areas
- Maintain regional SRTS and TDM Inventory spatial tools
- Rules for surveys and data collection

Funding and Investments

- Funding for needs/gap analysis
- RTO and other grant programs (RFF)
- Other funding sources – TDM requirements for Capital Projects
- Tracking investments for and with BIPOC and low-income communities

Direct Services

- Analysis of regional needs
- Regional TDM services for smaller jurisdictions – could be delivered through a contractor
- Commuter Services of regional significance/base level of service
- Planning resource/advisory – TSP support

Next Steps

1. Incorporate feedback TPAC workshop and stakeholder engagement sessions
2. Refine our definition and begin developing guidance document and tools
3. Workshop in more depth the roles and responsibilities for Metro

Thank you!

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