Agenda

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

2018 REGIONAL TRANSPORTATION PLAN UPDATE

RTP Performance Work Group - Meeting # 8

Date: November 8, 2017
Time: 2 to 4 p.m.
Place: Metro Regional Center, Room 501
600 NE Grand Avenue, Portland, OR 97232
Purpose: Discuss streamlining RTP performance targets and monitoring, and initial results of the system evaluation

*Working together across interests and communities can help ensure every person and business in the Portland metropolitan region has access to safe, reliable, affordable and healthy ways to get around. Find out more at **oregonmetro.gov/rtp**.*

Agenda

2:00	**Welcome & introductions**	Tom Kloster
2:05	**Partner Updates** *Who have you talked to about this work? What have you heard?*	Everyone
2:15	**RTP Performance Targets and Monitoring** *Discuss options for streamlining how the 2018 RTP addresses state and federally-required target-setting, performance monitoring, and reporting*	John Mermin
3:05	**RTP System Evaluation** *Review preliminary RTP system evaluation results to identify potential refinements to performance measures*	John Mermin
3:55	**Next Steps** *Work group members are invited to attend a joint TPAC/MTAC workshop on the December 4 from 2 to 5 p.m. at Metro to continue discussion of the system evaluation results and pilot project evaluation.*	John Mermin
4:00	**Adjourn**	Tom Kloster

Meeting Packet	Next Meeting
• Agenda	**Dec. 7, 10 a.m.-noon** **Room 401**
• Summary from October 12, 2017 meeting	
• RTP Performance Targets and Monitoring memo	
• RTP System Evaluation memo	

Directions, travel options and parking information
Covered bike racks are located on the north plaza and inside the Irving Street visitor garage. Metro Regional Center is on TriMet bus line 6 and the streetcar, and just a few blocks from the Rose Quarter Transit Center, two MAX stations and several other bus lines. Visit our website for more information: http://www.oregonmetro.gov/metro-regional-center

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2018 REGIONAL TRANSPORTATION PLAN UPDATE

RTP Performance Work Group - Meeting # 7

Date: October 12, 2017
Time: 9am – 10:30am
Place: Metro Regional Center, Council Chambers

Committee Members Present:

Name	Affiliation
Jessica Berry	Multnomah County
Jay Higgins	City of Gresham
Phil Healy	Port of Portland
Steve Williams	Clackamas County
Karla Kingsley	Kittelson & Associates
Bill Holstrom	Oregon Dept. of Land Conservation & Development
Steve Kelley	Washington County
Peter Hurley	Portland
Lidwien Rahman	Oregon Department of Transportation
Chris Rall	Transportation 4 America
Lynda David	RTC

Metro Staff Present
John Mermin
Tom Kloster
Kim Ellis
Lake McTighe
Grace Cho
Jamie Snook
Cindy Pederson
Eliot Rose
Caleb Winter

I. Partner Updates

Work group members provided updates on their agencies' work. Steve Williams of Clackamas County described TSP updates to address the former City of Damascus and the

Canby Ferry. Phil Healey of the Port of Portland discussed the expansion of PDX that will take place over the next five to seven years. Jay Higgins of the City of Gresham discussed the a corridor study in the vicinity of 190th (Hwy 212 to I-84). Peter Hurley of the City of Portland updated the committee that performance measures are being considered by the Planning and Sustainability Committee, and that they are developing policies on "new mobility", e.g. automated vehicles. Chris Rall of Transportation 4 America discussed federal autonomous vehicle legislation and performance measures.

Regional Transportation Plan Development Update

Kim Ellis provided the work group with updates on the development of the Regional Transportation Plan Update. At present, the RTP is in the "building a shared strategy" phase, and is still on track to be completed on time. The "call for projects" phase was completed in August, with $21.5 billion proposed by regional partners that address safety, congestion, access, and other needs. These proposed projects will be uploaded onto an online interactive map that will launch soon. A work group member stated that they would like to see this map as soon as possible. Kim replied that she will send the group a link today.

Kim also stated that more than $3 billion has been invested since 2014. A work group member noted that they would like to see more publicity of this spending.

Kim then discussed how the updated framework is being used to evaluate how the draft investment strategy aligns with RTP goals. All projects are undergoing a system-level and equity evaluation, while a small number of projects are undergoing pilot project-level evaluations. Staff is aiming to have a set of evaluation findings at the end of this year.

The fourth Regional Leadership forum will be held in February 2018. Staff is looking to make goals and objectives in the RTP more measurable, and is relying on TPAC and MPAC to help shape this discussions and decisions. Joint TPAC-MTAC workshops will be held as necessary. The RTP is anticipated to be approved in December 2018.

Role of RTP Performance Measures Work Group

Kim Ellis briefly explained the role of this work group in the RTP update. In short, there are five goals:

- Discuss data gaps and capacity constraints in meeting state and required measures.
- Provide feedback on options for streamlining how we work together to share and report data.
- Review preliminary system evaluation results to identify potential refinements to measures.
- Discuss refinements to evaluation criteria
- Review draft revisions to RTP targets

Kim explained that Metro staff will develop an action plan to support system monitoring and federally-required MAP-21 FAST Act and Congestion Management Process (CMP) reporting that includes an approach to data collection, tools and methods development, and future updates to Atlas of Regional Mobility Corridors. He explained that a consolidated approach is needed for performance measure development that is cost-effective, efficient, and usable for decision-makers. In addition, a consolidated approach demonstrates that the region is achieving RTP goals and increases transparency with the public by better communicating how the system is performing and adds an element of accountability—that public dollars are spent wisely and lead to better outcomes.

John Mermin then begin his presentation and shared a graphic showing the RTP Performance Measurement Cycle. He said that last year, this work group discussed system evaluation measures, which are used to compare conditions today with future projections to see how the region would perform given the projects and programs in the RTP. At next month's work group meeting, the results of these system evaluation measures will be discussion. During the 3 fall meetings we will be focusing on 1) system monitoring measures that use observed data to track how the region is doing in between RTP updates and 2) targets for how ambitious to be.

RTP Monitoring Measures

John discussed how capacity constraints have limited the ability to monitor performance or to use collected (non-model) data. Eventually, the vision is to provide regularly collected data for mobility corridors online to the public.

A member asked how this is intended to be done, and if Metro has had any conversations with consultant firms to develop a strategy. Tom Kloster responded that the Metro Data Resource Center is helping to shape this strategy, and that they also intend to rely on this work group to help with the direction.

John outlined the approach to monitoring would connect Metro's CMP, MAP-21 target setting, and Climate Smart monitoring.

Kim Ellis added that a major point of emphasis from the federal certification review of Metro was the need to develop a sustainable data sharing scheme and better data collection for performance measurement.

Federal requirements relating to monitoring and target setting

Congestion Management Process

John presented a slide displaying the federally-required Congestion Management Process. The Metro region fulfills this obligation through its atlas of mobility corridors, whose measures are drawn from the RTP and are consistent with MAP-21. At present, the data is primarily forecasted.

MAP-21 Final Measures

John presented two slides detailing the federal performance measures required under MAP-21, and whether those measures are called out in the 2014 RTP. The measures are organized under the "national goal areas" of safety, infrastructure condition, congestion reduction, system reliability, freight movement and economic vitality, and environmental sustainability. A member asked about recent federal activity that repealing greenhouse gas requirements. Kim Ellis explained that the rule making process is long and complex, so it is not likely to impact our work in the near future.

State requirements relating to monitoring and target setting

John explained the requirements of Metro under the Oregon Transportation Planning Rule, which are to ensure the transportation system is adequate to serve planned land uses and demonstrate progress toward increasing transportation choices and reducing auto reliance. He then explained that Metro has addressed this with a combination of performance targets, regional modal targets, and system evaluation measures based on the RTP financially-constrained system.

A member representing DLCD stated that they are undergoing a rulemaking process to make it easier for smaller MPOs with fewer resources than Metro to understand their requirements.

John then briefly explained the requirements under the Oregon Highway Plan Mobility Policy (1F), which sets volume and capacity targets within the Portland Metro region, which reflects the level of congestion that the OTC has deemed tolerable at the time of adoption.

John described the State greenhouse gas targets for the Portland Metro area and noted that the Regions's Climate Smart Strategy is expected to achieve the target GHG reduction by 2035 if fully implemented.

John then explained requirements under ORS 197.301, which detail performance monitoring requirements for DLCD. It requires Metro to report on a variety of performance measures every two years, including ones related to mobility, accessibility, and air quality. The measures and targets in the RTP provide the basis for addressing this requirement.

Regional policy responses to Federal and state requirements

2014 RTP Performance Targets

John then detailed the specific performance targets outlined in the 2014 RTP, organized under the categories of safety, congestion, freight reliability, travel, clean air, climate change, access to daily needs, travel options, affordability, and basic infrastructure.

A member sought clarification on the targets that seek to reduce vehicle hours of delay and vehicle miles traveled. They said it can be confusing to the public and decision maerks regarding whether Metro seeks reductions in overall hours of delay or vehicle miles traveled vs per capita reductions. Tom Kloster and Kim Ellis both reiterated that they are

per capita reductions, but also intended to be aspirational goals. The member stated that the performance targets language should be clearer to avoid confusion.

A member noted that there are many variables that impact regional travel volume. For instance, during the recession, VMT shrunk as the economy weakened. While this was good for the transportation system, it was indicative of a weak economy. It is important to consider how economic health impacts meeting these performance targets.

A member commented that they hope to see accessibility more prominently discussed as an outcome.

Climate Smart Strategy Performance Monitoring Approach

John described the performance monitoring approach in the Climate Smart Strategy, which was developed in response to state requirements. It relies on existing monitoring processes, reports existing and new measures, sets targets that reflect key assumptions and modeled outcomes, and informs whether course adjustments are needed.

Interim Mobility Targets

John explained that amendments to the Oregon Highway Plan impacts Metro's approach to meeting interim mobility targets. In the past, Metro would conclude that they're "doing the best we can" to meet requirements. With the amendments, Metro will be working with ODOT to scope a refinement plan in order to update the region's interim mobility policy after the adoption of the 2018 RTP. This will allow the region to comply with the TPR and OHP mobility policy.

2040 Modal Targets

John explained Metro's 2040 modal targets represent the region's progress to the TPR requirement to reduce reliance on the automobile. Those targets (non-SOV travel) vary depending on land use and density, with larger non-SOV splits (45-70%) sought for large centers, medium (45-55%) for small centers and main streets, and small (40-45%) for neighborhoods and industrial areas.

John noted that the performance workgoup recommended narrowing the geography that this measure is reported on to be Central City, Regional Center, mobility corridors and regionwide. This formally acknowledges that Metro cannot accurately measure mode share at geographies as small as Town Center, Industrial areas and Employment areas.

A discussion ensured about making the targets easy to understand and speak to the relationship between VMT and GHG emissions. One member proposed looking at broader strategies to address GHG reductions, like transit, land use, and parking policies. Tom Kloster replied that the Climate Smart Strategy is working towards this.

Next Steps

John discussed the next steps with the work group. At the November 8 meeting, the group will:

- Discuss data gaps and capacity constraints
- Provide feedback on options for streamlining how to addresses state & federally-required target-setting, performance monitoring, and reporting.
- Report on RTP pilot project evaluation and discuss refinements to criteria.
- Review preliminary RTP system evaluation results to identify potential refinements to performance measures.
- Review draft revisions to RTP targets

At the December 7 meeting, the group will wrap up discussions of refinements to the project evaluation criteria, system evaluation measure, targets, and monitoring measures.

Questions and Discussion

John concluded his presentation and asked members to consider three questions:

- Initial reactions in preparation for next two meetings?
- Do you have suggestions for how our approach to monitoring & target setting can remain relevant and communicate effectively
- Do you know of locally collected data that could be useful and shared to support monitoring?

A workgroup member said that today's presentation made sense. The question is, does this stuff matter, e.g. will performance evaluation actually make an impact on the projects/strategies included in the plan. How can these measures be used to impact strategies leading toward different outcomes.

Tom Kloster explained that Metro's regional snapshots help communicate difficult concepts and issues, like induced demand, to the public. Several members agreed. One member pointed out that SCAG does a good job communicating the reasons behind highway congestion policies. Another stressed the need to tell a meaningful story, particularly how land use policies have led to an unsustainable transportation system.

A member asked why accessibility was not mentioned on page 40 in the meeting packet under system evaluation measures. John explained that these are the 2014 RTP measures, and that the new list of system evaluation measures was not included in the packet (since it wasn't the focus of today's discussion). Kim Ellis replied that the new measures can be sent out to work group members.

A member stated that they would like to see data detailing the average trip length broken down by mode, the duration of congestion on corridors, and a comparison to other regions.

A member representing Washington County stated that they are collecting data using Bluetooth technology on automobiles that communicate with roadside infrastructure, and would like to share it with the region.

A member suggested using comparisons to other regions when communicating about congestion and VMT, similar to TTI.

A member requested data on the value of trips by mode. Tom Kloster followed up by saying this can be useful in the consideration of access management.

A member stated that it is important in our communication strategy to provide examples of how a reduction in congestion or VMT is possible, besides just changing overall traveling routines. For instance, working from home once a week is an effective reduction measure, but doesn't require a wholesale change in commute behavior—just a once-a-week effort.

A member stated that capturing trip reduction by facility would also be helpful.

Meeting Adjourned

Memo

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

Date: November 1, 2017
To: RTP Performance Work Group
From: John Mermin, Performance Work Group Lead
Subject: 2018 RTP: Recommendations for streamlining response to federal and state requirements for monitoring and target setting

Background
At the October 12, 2017 RTP performance work group meeting, Metro staff presented the various federal and state regulations relating to monitoring and target setting. The current situation for regional performance monitoring and target setting presents a complex web with many data gaps and capacity constraints impacting the region's ability to respond to requirements. Metro is developing an action plan to support system monitoring, target setting and reporting requirements. A consolidated and streamlined approach is needed to allow for effective decision-making, greater transparency and accountability. The recommendations in this memo represent a first step toward a more streamlined approach.

Recommendations for streamlining RTP targets and monitoring measures

Safety

Staff recommends using the targets recommended by the RTP safety work group (and supported by the Metro Council, MPAC and JPACT in Spring 2017):

- By 2035 eliminate transportation related fatalities and serious injuries for all users of the region's transportation system, with a 50% reduction by 2025 and a 16% reduction by 2020 (as compared to the 2015 five year rolling average)
- Establish annual targets (as required by MAP-21), based on a five year rolling average of the number of people killed and seriously injured in traffic crashes in the region, by mode, per 100 million vehicle miles traveled, and per 100 thousand people.

This target is the same as the MAP-21-required target ODOT developed for the Oregon Transportation Safety Plan and relies on the same data that ODOT collects (observed) for monitoring.

Infrastructure condition

Staff recommends establishing targets that are the same as the MAP-21-requiredtargets that ODOT and TriMet are in the process of developing. In the future, staff recommends that Metro consider developing its own target.

These targets will rely on the same data that ODOT and TriMet collect (observed) for monitoring.

Vehicle Miles Traveled (VMT)

Staff recommends retaining the 10% VMT per capita reduction target (model-based) adopted in the 2014 RTP. Currently the region relies on the regional travel model data to show progress toward the target during updates to the RTP. In the future, staff recommends using observed data to track

progress and working to resolve issues between Climate Smart monitoring (GreenStep model-based), Federal Highway Performance Monitoring (HPMS) data and the FHWA National Performance Management Research Data Set (NPMRDS) (observed).

Congestion

Staff recommends replacing the region-wide 10% delay per capita reduction target (model-based) with the MAP-21-required National Highway System (NHS)-focused target using observed data from the FHWA National Performance Management Research Data Set (NPMRDS) (observed). ODOT is in the process of compiling and verifying this data to support target-setting by ODOT and Oregon's metropolitan planning organizations (MPOs) to meet MAP-21. The data is expected to be available in Spring 2018.

A refinement plan for the regional interim mobility policy is expected following the 2018 RTP update and may further update these NHS-focused targets.

Active Transportation Infrastructure

Consistent with direction from the equity work group, staff recommends establishing a more ambitious target for completion of the regional active transportation network. The existing target is to increase by 50% the miles of sidewalk, bikeways, and trails by 2040. The recommended new target is for 100% completion of the regional biking and walking network. In the long-term staff recommends using RLIS bicycle and pedestrian network data (observed) to monitor progress in between RTP updates.

Affordability

Staff proposes two options for consideration by the work group:

1) Defer adjusting the regional target (reduce average household combined cost of housing and transportation by 25 percent) until the next RTP update when Metro and regional partners have built an Housing + Transportation (H+T) analysis tool. To date, resource and capacity constraints have limited development of such a tool. As part of the 2018 RTP update, refine how cost-burdened is defined, e.g. use costs for lower income households instead of average household cost.
2) Create a monitoring target in the 2018 RTP that relies on Center for Neighborhood Technology Housing + Transportation Affordability Index data.[1]

System Reliability

Staff recommends setting an annual monitoring target in coordination with ODOT, as required by MAP-21 using observed data from the FHWA National Performance Management Research Data Set (NPMRDS) (observed). ODOT is in the process of compiling and verifying this data to support target-setting by ODOT and Oregon's metropolitan planning organizations (MPOs) to meet MAP-21. The data is expected to be available in Spring 2018.

[1] http://www.cnt.org/tools/housing-and-transportation-affordability-index

Freight movement and economic vitality

Staff recommends adjusting the 2014 RTP target (model-based) as follows: "By 2040, reduce ~~vehicle~~ truck hours of delay per truck trip by 10 percent compared to 2010." Set a monitoring target for % of Interstate System miles with reliable truck travel times in coordination with ODOT as required by MAP-21 using observed data from the FHWA National Performance Management Research Data Set (NPMRDS) (observed). ODOT is in the process of compiling and verifying this data to support target-setting by ODOT and Oregon's metropolitan planning organizations (MPOs) to meet MAP-21. The data is expected to be available in Spring 2018.

Clean Air

Staff recommends addressing the MAP-21 air quality-related target-setting requirement through updates to the Metropolitan Transportation Improvement Program (MTIP), not the RTP because the requirement is focused only on CMAQ-funded projects. The RTP does not allocate projects to specific funding sources.

In addition, staff recommends revising the existing regional target as follows:

"By 2040, ~~ensure zero percent population exposure to at-risk levels of~~ maintain or reduce tons of air pollution by mobile sources. In the future, staff recommends looking for opportunities to replace the RTP target with something based on the MAP-21 measure

Memo

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

Date: November 1, 2017
To: RTP Performance Work Group
From: John Mermin, Performance Work Group Lead
Subject: 2018 RTP: System Evaluation measures preliminary results.

Background
The Performance Measures work group met six times in 2016 to review and recommend updates to the *RTP system evaluation measures,* with an emphasis on simplifying and decreasing the number of measures. Measures were pulled from and based upon industry best practices, the 2014 RTP, the 2014 Climate Smart Strategy and those identified by other RTP work groups. The system evaluation measures will be used to evaluate performance of the 2018 RTP as a whole. The evaluation will help policymakers understand the degree to which projects and programs advance the region towards RTP goals, and identify where additional efforts may be needed.

RTP System Evaluation Measures
At the November 8 Performance work group meeting staff will present initial system evaluation results. Four attachments described below provide a starting point for that discussion.

Attachment 1 2018 RTP Draft System Evaluation Results Summary. This document summarizes key demographic and travel data. *(Note – air quality and greenhouse gas results will be added prior to the November 8 meeting)*

Attachment 2 2018 RTP Draft Performance Targets Results At-A-Glance
This document summarizes how well each investment scenario performs relative to the adopted 2014 RTP performance targets.

Attachment 3 RTP System Evaluation Measure Methodologies – Comment Log
These comments were provided by members of the RTP performance work group and TPAC while the system evaluation measures were being tested. They provide a starting point for refining system measures and are provided now as background for future discussion at the December 7 work group meeting

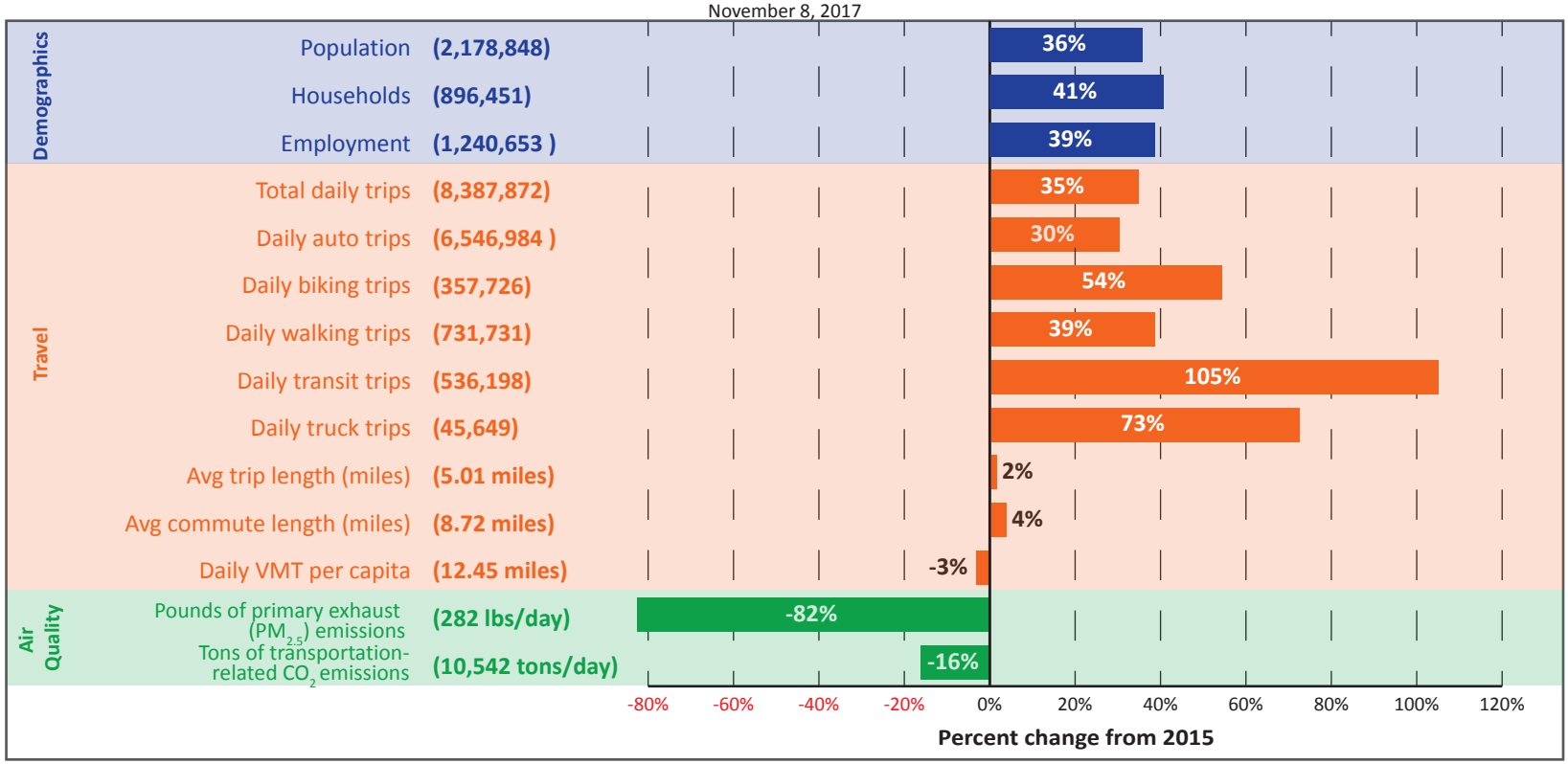
Attachment 4 RTP Goals and System Evaluation Measures Comparison
In response to feedback from the performance work group and TPAC this table has been updated to provide a more nuanced assessment of which RTP goals each evaluation measure addresses. The table now shows solid circles (measure addresses the goal) and empty circles (measure somewhat addresses the goal). Previously it only included solid circles.

Next Steps
Metro modeling staff is currently working on completing additional system evaluation measures. Staff will provide additional materials relating to the system evaluation at the November 8 meeting, including maps of where the region is not expected to meet the RTP Regional Interim Mobility Policy, and mode share and travel time data by mobility corridor.

Attachment 1 - 2018 RTP Draft System Evaluation Results Summary

Totals are for travel within the Metropolitan Planning Area for the Portland region and assume the 2040 Financially Constrained System of Projects.

November 8, 2017



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Attachment 2. 2018 RTP Draft Performance Targets Results | At-A-Glance *(for travel within the Metropolitan Planning Area)*

Green = Target achieved. **Yellow = performance moving in right direction, but falls short of target.** **Red = Performance moving in wrong direction from target**

Primary RTP Goal		Measure	2040 Target	2027 FC	2040 NB	2040 FC	2040 Strategic
Effective and Efficient Management of the Transportation System	1	Per capita vehicle delay	-10%	+54% in PM +94% in MD	+85% in PM +281% in MD	+70% in PM +134% in MD	+61% in PM +116% in MD
Economic Competitiveness and Prosperity	2	Per truck trip vehicle delay	-10%	+39% in PM +70% in MD	+54% in PM +222% in MD	+ 41% in PM + 97% in MD	+34% in PM +83% in MD
Public Health	3	Vehicle miles traveled per person	-10%	- 1.6%	-0.78%	-2.3%	-3.1%
Transportation Choices	4	Walking mode share[1]	+300%	0% change	0% change	+2.3%	+2.3%
	5	Biking mode share[2]	+300%	+3.33%	+3.33%	+10%	+10%
	6	Transit mode share	+300%	+35.7%	+19%	+57.1%	+69%
	7	Miles of sidewalk, bikeways, trails	+50%	*Under development*	*Under development*	*Under development*	*Under development*
Safety and Security	8	Fatalities and severe injuries	-50%[3]	*Under development*	*Under development*	*Under development*	*Under development*
Greenhouse Gas Emissions	9	Transportation-related GHG emissions per capita	"Reduce"	*Under development*	*Under development*	*Under development*	*Under development*
Environmental Stewardship	10	Percent population exposure to at-risk levels of air pollution	Zero	*Under development*	*Under development*	*Under development*	*Under development*
Ensure Equity	11	Average household combined cost of housing and transportation	-25%	*Under development*	*Under development*	*Under development*	*Under development*
	12	Essential destinations accessible within 30 minutes by bicycling and public transit for low-income minority, senior and disable populations	+50%	*Under development*	*Under development*	*Under development*	*Under development*

[1] Though increase in walk mode share is moderate, walk *trips* increase by 35% in 2040NB, by 18% in 2027 FC, by 39% in 2040FC, by 38% in 2040 Strategic
[2] Though increase in bike mode share is moderate, bike *trips* increase by 48% in 2040NB, by 27% on 2027 FC, by 54% in 2040FC, by 53% in 2040 Strategic
[3] Safety target is recommended to be updated as part of 2018RTP – Zero fatalities and serious injuries by 2035, 16% by 2025 and 50% reduction by 2025

Attachment 3. 2018 RTP System Evaluation Measures – Methodologies – Comment log

(These comments were provided by performance work group and TPAC members while system evaluation measures were being tested. They provide a starting point for refining system measures and are provided now as background for future discussion at the December 7 workgroup meeting)

#	Comment	Source(s)	Date	Response
1	Add an introduction to the Methodologies document including: a description of the overall purpose for the System evaluation measures and a definition of geographic analysis areas like "sub-regions", "mobility corridors"	Abbot Flatt, Clackamas County staff	2/16/17	Staff will add an introduction to the Methodologies document.
2	Explain the difference between "Historically Marginalized Communities" and "Focused Historically Marginalized Communities" and why each are used at different times. Be consistent with using these terms. Given the very limited difference we are not convinced that both measures are necessary.	Abbot Flatt, Clackamas County staff	2/16/17	Historically marginalized communities refers to the five communities (communities of color, lower-income populations, limited English proficiency populations, older adults and young people) and utilize the regional rate for defining locations. Out of a request of work group members, Focused Historically Marginalized Communities focuses on three of the five communities (communities of color, lower-income populations, and limited English proficiency populations), but also applies a density factor (to look at where you have high concentrations of these populations) and the Title VI LEP "safe harbor" communities. Please see "background information to transportation equity performance measures" documentation for detail.
3	Is Exposure to Crash Risk for non-vehicular trips? Not sure why US 26 in the east is excluded from analysis but Oregon 213 from Redland Rd to Beavercreek is not. Not sure how you are defining "freeway".	Abbot Flatt, Clackamas County staff	2/16/17	Exposure to Crash Risk is for all modes of travel. Freeways are defined as limited access highways. The list has been updated: • Hwy 26 W • Hwy 217 • Hwy 224 the sunrise corridor • Hwy 26 E from Burnside

				intersection in Gresham • OR 213, Redland to Beavercreek Road • I-5 • I-205 • I-84 • I-405
4	Access to Travel Options should be analyzed at sub-region.	Abbot Flatt, Clackamas County staff	2/16/17	If resources allow Metro will provide outputs by sub-region
5	Access to Community Services – are government buildings included in the NAICS dataset? There are a number of state and local government facilities in Clackamas County that are being used to offer a great deal of service to the community. This measure as structured would not capture the important services at these facilities.	Abbot Flatt, Clackamas County staff	2/16/17	NAICS codes are being used to identify places which provide different services. Depending on the classification in NAICS, Clackamas County government buildings may be included. But it should be recognized that sometimes facilities which provide a number of services may only get classified with one service provided and therefore may not get captured in the Access to Community Places system evaluation measure. Metro staff will look into the community places dataset for Clackamas County to see if there gap due to government buildings classifications and consider adding.
6	Concerned that the work has lost touch with measuring ways to maximize progress toward goals. Communicate in the methodologies report the degree-to-which each performance measure relates to / supports each goal.	Chris Rall, Transportation 4 America	2/28/17	Staff will bring an updated table that communicates degree-to-which each measure supports each goal to the November 8 performance work group meeting.

7	Add an introduction to the methodologies document that includes a complete chart showing how this entire set of performance measures effectively measures progress toward the RTP goals. This would allow the decision-makers to see which goals have ample coverage and start to whittle down the number of measures to a reasonable number that they could actually use to drive decision-making.	Chris Rall, Transportation 4 America	2/28/17	Staff will bring an updated table that communicates degree-to-which each measure supports each goal to the November 8 performance work group meeting.
8	Do not report bicycle miles, transit miles or walking miles traveled. They are redundant with mode share measure and not a useful as measures of health impact	Chris Rall, Transportation 4 America	2/28/17	TBD after applying draft measures and discussing results at November 8 meeting of performance work group. Bicycle miles can help people understand the magnitude of bicycle travel. Metro is working with the Oregon Health Authority to provide activity levels in a health analysis using ITHIM.
9	Add a physical activity measure. Use average time spent walking and biking per capita. If possible, impacts on disadvantaged population should be disaggregated to determine health equity impacts	Chris Rall, Transportation 4 America	2/28/17	Metro is working with the Oregon Health Authority to provide activity levels in a health analysis using ITHIM.
10	Reduce the number of measures, especially congestion and multimodal travel time which ar redundant with access (to jobs and community places). Decide which is most consistent with RTP goals and pursue that. I contend that access to jabs and community places are the measures most closely to RTP goals.	Chris Rall, Transportation 4 America	2/28/17	TBD after applying draft measures and discussing results at November 8 meeting of performance work group.
11	Provide a feedback loop in the process so that project sponsors can apply the measures and iterate their lists based on the outcome prior to submitting them to Metro in July.	Jon Makler, ODOT	2/28/17	There will be time to adjust the project lists between Fall 2017 and early 2018. An updated project list will be submitted to Metro by the end of April 2018.

12	Add dot for "Ensures Equity" for the multimodal travel measure (since increasing bicycling and walking inherently improves equity)	Karen Perl Fox, Tualatin	2/28/17	Staff agrees. Done.
13	Add dot for "Ensures Equity" for the active transportation and transit measure	Karen Perl Fox, Tualatin	2/28/17	Staff agrees. Done.
14	Complete methodology for measure "3. Affordability" this cycle since it is very important, and the current standard used for cost burdened households (spending >30% of income on housing) is outdated.	Karen Perl Fox, Tualatin	2/28/17	Metro's research center is developing a pilot to forecast housing and transportation expenditures in the future year (2040). The aim is to have the pilot ready in time for the 2018 RTP system evaluation. However, if the tool is not ready of available for the 2018 RTP system evaluation, the CNT H+T tool will be proposed as a monitoring measure for the plan and it will be recommended a tool be developed in time for use as part of the 2022 RTP.
15	What will be the process to address inequities in marginalized communities, once "4. Share of safety projects" is measured?	Karen Perl Fox, Tualatin	2/28/17	The transportation equity analysis will address if there is an aggregate disproportionate impact. The results and information will be brought to the work groups, TPAC and MTAC s for discussion and potential refinements if necessary. Metro staff recommendations will be provided at the Regional Leadership Forum for each measure.
16	What will be the process to address inequities in marginalized communities, once "5. Exposure to crash risk" is measured?	Karen Perl Fox, Tualatin	2/28/17	The transportation equity analysis will address if there is an aggregate disproportionate impact. Otherwise, areas with high VMT will get flagged. The results and information will be

				brought to the work groups, TPAC and MTAC s for discussion and potential refinements if necessary. Metro staff recommendations will be provided at the Regional Leadership Forum for each measure
17	Recommend that the performance target for "15. Climate Change" be more specific as to gas emission level that would be considered 'making slight, fair, good or excellent progress or losing ground (i.e. a numerical or percentage of improvement rating system). Also, consider sub-regional analysis in addition to regional analysis similar to #16 Clean air	Karen Perl Fox, Tualatin	2/28/17	Sub-regional analysis requires use of air modeling dispersion tools which are not available to this RTP. Therefore, sub-regional analysis will not be able to occur for the 2018 RTP.
18	Consider sub-regional analysis in addition to regional analysis for measure "16. Clean air".	Karen Perl Fox, Tualatin	2/28/17	Sub-regional analysis requires use of air modeling dispersion tools which are not available to this RTP. Therefore, sub-regional analysis will not be able to occur for the 2018 RTP.
19	Historically Underrepresented Communities: • Be careful of relying too much on Census data for equity locations, because it is too large a geography to pick up on actual locations of population. • Metrics based on proximity of transportation projects to certain communities miss out on the benefits and burdens to a community of using a facility that may not be located next to their community. • It is unclear how future communities of color, lower-income communities, limited English proficiency populations, older adults, and youth are being identified/defined? And if existing population/demographic data is to be used it should be clearly stated.	Steve L. Kelley, Washington County	3/6/17	At this time. The US Census is the most reliable and dataset available for demographic information. The geographic scale issue is noted. Comment noted. For Communities of Color, Limited English Proficiency Communities, Older Adults and Young People, the analysis will be conducted for the base-year and 10-year investment strategy, not for the 2040 horizon year. This is to recognize that forecasted data for these communities is not available for the region at the geographic scale necessary. These communities are being assumed static, which is not ideal. However, assuming

				this for the 10-year strategy is likely to be more reasonable than assuming these communities will be in the same places in 25+ years with the rental and housing market crisis the region is currently in. Since the Metroscope forecast can does produce information about household incomes, the lower-income definition can be applied to look at shifts in where lower-income households will be located in the future year. Therefore, at this time, lower-income populations is the only HMC population being proposed to look at in the 2040 transportation investment scenarios. However, this is still up for discussion and testing in the first round of the 2018 RTP evaluation will help determine whether this is appropriate.
20	Measure 1. Multimodal Travel: • Why only evaluate the urban areas of Washington County– excluding rural Washington County misses much of the travel patterns. This measure should include the whole MPA area. • Region-wide Freight Miles are a subset of Vehicle Miles Traveled (VMT) and should be reported as such. Region-wide Freight Miles should not be added to the other categories. The table is missing Region-wide Transit Person Miles (TPMT) traveled, which are a component of PMT.	Steve L. Kelley, Washington County	3/6/17	Metro will be evaluating the whole MPA area. This set of VMT calculations are matrix-based rather than network-based, so the freight data is entirely separate (not a subset of vehicles). Metro modeling staff are concerned that specifically listing Transit Person Miles traveled may be misleading. When using a matrix-based method, the distances are shortest path which do not reflect specific bus/rail routing.

21	Measure 4. Share of Safety Projects: 1. Improving a road to an urban standard does not appear to be an approved safety counter measure. This should be added as this is one of the ways we improve safety. 2. Standardize target across time on a per capita basis or some other measure. 3. Limiting the benefit of safety projects to the immediate location of marginalized communities precludes the benefit such community may get from using the facility from one neighborhood to another. The definition should be broader. 4. Don't see the value of calculating cost of safety projects per person – what if a really good safety project is inexpensive. More $$ doesn't mean more effectiveness.	Steve L. Kelley, Washington County	3/6/17	1. Proven safety countermeasures, such as those identified in the Crash Modification Clearinghouse, the Highway Safety Manuel and ODOT's Crash Reduction Factor Appendix, are identified by the potential to reduce crashes and address specific safety risks. We are not aware of a crash reduction factor for bringing a road up to urban standard. Agencies will be self identifying safety projects (those that reduce crashes as a primary purpose) in the RTP, and can determine whether a project that brings a roadway up to standard includes the necessary safety countermeasures to address any identified safety issues or risks and reduce crashes. 2. Investments in safety projects are identified by time period (2018-2027, 2028-2040), per capita, and cost and percentage in historically marginalized communities. 3. Agreed that people benefit from projects that are beyond the area in which they live. However this is the most direct way to measure direct impact on historically marginalized communities. A majority of fatal and severe injury pedestrian crashes occur in areas with above average concentrations of people of color, people with low incomes and people with limited English proficiency and a majority of high injury corridors are in

				communities with higher concentrations of people of color, people with low incomes and people with low-English proficiency. 4. Cost is a blunt way to understand level of investment in a particular area. Agreed that safety projects can sometimes be low cost and the RTP findings will note that.
22	5. Exposure to crash risk: This is too complicated on a system basis. The methodology should be modified for the different crash risk per facility type, including freeways. Suggest keeping VMT as an exposure coupled with VMT at different speeds, by facility classification. The Washington County Transportation Futures Study used a similar methodology.	Steve L. Kelley, Washington County	3/6/17	Washington County method was reviewed. Metro's approach is consistent with Washington County's 'Crash Exposure' measure, in which "the total amount of auto travel (VMT) is used for the crash exposure measure, because the more auto traffic a person is exposed to, the higher the risk of crash."
23	6. Access to Travel Options – System Connectivity and Completeness: 1. This measure does not capture new connections established in developing or redeveloping areas. This measure does not address future street configurations. Local streets and most neighborhood routes are constructed by development. Washington County has strong street connectivity standards that development is required to comply with. These are NOT public projects and will NOT be in the project list. This measure is not constructed to address the connections required through the development process. <u>Recommend a different measure:</u> a. % of regional system completed to include pedestrian and bicycle facilities. This measure can be calculated both in existing condition and, by	Steve L. Kelley, Washington County	3/6/17	1. New collector and above street connections will be captured in this measure. (Additionally this measure can be monitored over time and will reflect ANY new connections (new street, sidewalk, bikeway) that are updated in RLIS, regardless of classification.) 1.a. Percent of regional bicycle and pedestrian facilities completed is included in the measure. 2. Street segments with less than 50% of sidewalks completed will be defined as 'no sidewalk'

	utilizing the RTP project list, and the future planned network. 2. How will street segments with less than 50% percent of sidewalks complete be defined? 3. Description of trail connectivity and density is missing in item 3 under the methodology section. 4. Definition of what constitutes an active transportation/bikeway/sidewalk project is too narrowly defined and needs to be broadened to include completing a gap and/or adding bike/ped facilities where they are missing.			3. Trail connectivity and density is part of the performance measure and the methodology section has been updated. 4. Definitions have been updated to: New Street Connection Project is a project that creates a new street where none existed before; street widening projects are not new street connections. Bikeway Project is a project that fills a gap in the regional bikeway network. Bikeways included in larger street projects will be included in this analysis. Sidewalk Project is a project that fills a gap in the regional pedestrian network. Sidewalks included in larger street projects will be included in this analysis. Trail Project is a project that fills a gap in the regional trail network.
24	7. Access to Jobs: • Why is the annual salary based on a household size of 3? I think HUD uses a household size of four. • Why does the methodology vary the travel time window by mode? Perhaps for willingness to utilize a mode different travel times are appropriate but for access to jobs the measure should pick an appropriate travel time to use consistently. • This measure does not address how many people can access a job. Rather it measures how many jobs low and	Steve L. Kelley, Washington County	3/6/17	Based on the 2016 UGR the tri-county region's average household size is 2.54. Recognizing that it is challenging to have .5 of a person in a household, this number was rounded to 3. The transportation equity work group discussed potentially setting a single travel time to assess for this measure, but landed on using different travel

	middle wages households can access. For economic development it should be flipped to consider the travel time to the appropriate wage jobs. Consider a different measure that assesses if low and middle wages jobs have populations that can access them. • Washington County Transportation Futures Study evaluated the average travel time from the low income areas to the employment areas, as well as the number of jobs within a 30 min car/60 min transit commute from low income and all areas.			times for each mode based on the notion the different tolerances people have in traveling depending on what mode is being used. The varied travel times are based on commute travel times from the 2011 Oregon Household Activity Survey as well as looking to other regions which use a similar measure to look at how they set their travel times. The Access to Jobs system evaluation measure is looking at the defined geographies of historically marginalized communities (HMC) and focused historically marginalized communities (FHMC) in aggregate to determine the weighted average of low and middle income jobs reached. The suggestion to look at how many of our HMC and FHMC individuals within the aggregate geography is a method staff will look into for reporting out as it appears as a reasonable way to communicate out the core intent of the measure. Noted. Thank you for sharing the information.
25	8. Access to Community Places: • Page 25: Suggested reword last sentence from: "Lastly, the measure will look at the change in the accessibility to these existing community places between the base year and future year with added transportation investments, with an emphasis in looking at the change in	Steve L. Kelley, Washington County	3/6/17	Noted and will change in methodology sheets. Metro staff will look into adding parks. This is a good suggestion, but Metro currently does not have the capacity to

	communities of color, lower-income communities, limited English proficiency populations, older adults, and youth." change to: "Lastly, the measure will look at the change in Access to Community Places between the base year and future year with RTP transportation investments, including looking at the change for communities of color, lower-income communities, limited English proficiency populations, older adults, and youth." • The transit work group suggested adding parks to the list of community places. • Consider using a tool like Place Palette to reflect future land use typologies in areas not currently developed (South Hillsboro, South Cooper Mountain, West Sherwood, etc.)			use Place Palette.
26	9. Access to bicycle and pedestrian parkways: Suggest some method for determining allocation within the TAZ for this measure. A methodology was developed for the Washington County Transportation Futures Study using the Place Palette for allocating households.	Steve L. Kelley, Washington County	3/6/17	This is a good suggestion, but Metro currently does not have the capacity to use Place Palette.
27	11. Access to industry and freight intermodal facilities: • The methodology appears to be a select zone for truck delay, not facility. • One concern is that the regional model is not calibrated to truck volumes. The results may not be indicative of actual freight travel or patterns. Recommend not using this for project level evaluation and limiting output to system level.	Steve L. Kelley, Washington County	3/6/17	Regarding model calibration. The model is adequate at this broad scale. Staff is using the model to look at truck delay across groupings of facilities. In the future the truck model will be better for examining individual facilities.
28	12. Multimodal travel times: The description is unclear, average travel time should include all modes weighted by utilization.	Steve L. Kelley, Washington County	3/6/17	Unclear the benefit of doing this.
29	13. Congestion: The description should explain how VHD is mapped versus how VHD per person is calculated.	Steve L. Kelley, Washington County	3/6/17	Staff will add this description.

30	13. Congestion C) Freight Truck delay and D) Total cost of delay on freight network: The regional model is not calibrated to truck volumes. The results may not be indicative of actual freight travel or patterns.	Steve L. Kelley, Washington County	3/6/17	See response to #27. Regarding model calibration: The model is adequate at this broad scale. Staff is using the model to look at truck delay across the full network. In the future the truck model will be better for examining individual facilities.
31	16. Clean air: Unclear how vehicle hours of delay fits into this. It should since delay affects emissions.	Steve L. Kelley, Washington County	3/6/17	The transportation emissions model is based on daily VMT outputs based on scenario (i.e. financially constrained RTP, additional strategic priorities, base-year, no-build 2040). So delay would be indirectly measured through how it impact the daily VMT being produced for each hour of the day (then aggregated over 24 hours to get the daily VMT number) and the VMT would be affected by the average speed of vehicles during each hour.
32	17. Habitat impact: • Given required mitigation the impacts are likely to benefit habitat, consider a different name for this measure (perhaps "Habitat Investment"). The term "roadways" is used several times in this section, I think the assessment is intended to cover all types of transportation facilities not just roadways. • Why not use the Title 13 inventory, which is recognized and adopted by jurisdictions for protection.	Steve L. Kelley, Washington County	3/6/17	Per direction from the work group, this measure is focused on the roadway projects due to the historical precedence of roadway projects impacting HMC and FHMC. Additionally, it has been expressed by the work group active transportation investments are priority. This evaluation measure is mainly being used as a flag for project sponsors to be aware. The Title 13 inventory is a good alternative option for consideration. Metro staff will look into this option and compare to the Regional Conservation Strategy High Value

				Habitat work to see which dataset may be easier to use to assess and communicate this system evaluation measure.

Attachment 4. RTP System Evaluation Measures and RTP Goals Comparison *(Performance work group 11/8/17)*

	RTP System Evaluation Measures	RTP Goals										
		Foster Vibrant Communities and Compact Urban Form	Sustain Economic Competitiveness and Prosperity	Expand Transportation Choices	Effective and Efficient Management of System	Enhance Safety and Security	Promote Environmental Stewardship	Enhance Human Health	Demonstrate Leadership Reducing Greenhouse Gas Emissions	Ensure Equity	Ensure Fiscal Stewardship	Deliver Accountability
	How much do people and goods travel in our region?											
1	Multimodal Travel - *Vehicle miles traveled (VMT) – total, per capita, per employee, Bicycle miles traveled – total and per capita, Freight miles traveled, Pedestrian miles traveled- total and per capita, Person miles traveled per VMT. Reported system wide and by sub-region.*	●	○	●	●	○	●	●	●	●		
2	Active transportation and transit mode share – System-wide – total and share for walking, bicycling, transit. Non-Single Occupancy Vehicle (SOV) – total and share for: Central City, Regional Centers, Mobility corridors, sub-regions.	●	○	●	●	○	●	●	●	●		
	How much do households spend on housing and transportation in our region?											
3	Affordability* – Combined Housing and Transportation (methodology TBD)	●	●	●			○	○	○	●		
	How safe is travel in our region?											
4	Share of Safety Projects – Percent of number and cost of projects in the RTP investment packages regionwide and in areas with historically underrepresented communities.	○	○	●	●	●		●		●		
5	Exposure to crash risk* – Non-Freeway VMT exposure per capita Exposure to crash risk through the sum of all non-interstate vehicle miles traveled (VMT) in Transportation Area Zones (TAZ) for RTP investment packages region-wide, and in historically underrepresented communities.	○	○	●	●	●		●		●		
	How easily, comfortably and directly can we access jobs and destinations in our region?											
6	Access to Travel Options – system connectivity* - methodology TBD. Sub measure: Access to transit (percent of bike or pedestrian network gaps completed within ½-mile of transit)	●	○	●	●	●	●	●	●	●		
7	Access to Jobs* - Number of jobs (classified by wage groups – low, middle, and high) accessible within 30 minutes by auto; 45 minutes by transit; 30 minutes by bike, and 20 minutes by walking	●	●	●				○	○	●		
8	Access to Community Places* - 1)Measure access by bicycling, walking, transit, driving 2)Adjust the time sheds for each mode 3) Define existing "daily needs" consistent with other similar efforts, including the TriMet Equity Index.	●	○	●			●	●	○	●		
9	Access to Bicycle and Pedestrian Parkways – Number and percent of households within ½ mile of a bicycle or pedestrian parkway.	●	●	●		●	●	●	●	●		
10	Access to transit – Number and share of households, low-income households and employment within ¼-mile of high capacity transit or frequent service transit	●	●	●	○		●	○	●	●		
11	Access to Industry and Freight Intermodal Facilities – Methodology TBD		●									
	How efficient is travel in our region?											
12	Multi-modal Travel Times – between key origin-destinations for mid-day and 2-hr PM peak	●	●	●	●							
13	Congestion – A) Vehicle hours of delay per person B) Interim Regional Mobility Policy – Locations of throughways, arterials, and regional freight network facilities that exceed LOS threshold C) Freight Truck delay D) Total cost of delay on freight network	○	●		●	●	○	○	○			
14	Transit efficiency – A)Boarding rides per revenue hour for HCT & bus B) Revenue hours by transit mode C) Transit ridership systemwide by each transit service type	●		●	●		○					
	How will transportation impact climate change, air quality and the environment?											
15	Climate Change - Tons of transportation-related greenhouse gas emissions *(e.g. CO_2)*		●	●			●	●	●			
16	Clean Air - Tons of transportation-related air pollutants *(e.g.CO, ozone, and PM-10)*		●	●			●	●	○	●		
17	Habitat impact* - Number and percent of projects that intersect high value habitat	○					●	●	○	●		

There are no system evaluation measures for the "Ensure Fiscal Stewardship and Deliver Accountability goals.

There are no system evaluation measures for the "Ensure Fiscal Stewardship and Deliver Accountability goals.

*Reflects the transportation priorities identified by historically underrepresented communities and will serve as the basis for the federally-required Title VI Benefits and Burdens analysis.

Solid circles (●) indicate measures that support achieving the goal. Empty circles (○) indicate measures that partially support achieving the goal.

Measure 2 Mode Share (Subareas)

Technical review draft
10/30/17

Subareas - Active Transportation and Transit Mode Share	2015 Base Year		2027 Constrained		2040 No Build		2040 Constrained		2040 Strategic	
	Trips Within	All Trips	Trips Within	All Trips	Trips Within	All Trips	Trips Within	All Trips	Trips Within	All Trips
Total Region - 4-county	15%	14%	16%	15%	16%	15%	17%	16%	18%	17%
MPA - Metropolitan Planning Area	17%	16%	19%	17%	18%	17%	20%	19%	21%	19%
City of Portland	27%	23%	31%	27%	31%	26%	33%	29%	33%	29%
Urban Washington County	13%	11%	13%	12%	13%	11%	14%	13%	15%	13%
Urban Clackamas County	14%	10%	14%	11%	14%	11%	15%	12%	15%	12%
East Multnomah County	16%	12%	16%	12%	15%	12%	16%	13%	17%	14%
Clark County	11%	9%	10%	9%	10%	9%	10%	9%	10%	9%

Subareas - Active Transportation and Transit Mode Share	**2015 Base Year**	**Column1**	**2027 Constrained**	**Column2**	**2040 No Build**	**Column3**	**2040 Constrained**	**Column4**	**2040 Strategic**	**Column5**
	Trips Within	All Trips	Trips Within	All Trips	Trips Within	All Trips	Trips Within	All Trips	Trips Within	All Trips
Portland central city	65%	39%	74%	49%	74%	48%	79%	53%	79%	54%
Amberglen regional center	40%	12%	43%	15%	41%	15%	48%	18%	48%	19%
Beaverton regional center	40%	12%	42%	14%	42%	14%	46%	17%	46%	18%
Clackamas regional center	33%	11%	38%	13%	35%	13%	43%	16%	43%	17%
Gateway regional center	37%	14%	39%	16%	39%	16%	43%	19%	43%	20%
Gresham regional center	31%	13%	33%	14%	33%	14%	38%	17%	38%	17%
Hillsboro regional center	47%	19%	50%	20%	49%	20%	55%	24%	55%	24%
Oregon City regional center	25%	7%	27%	8%	27%	8%	30%	9%	30%	9%
Vancouver, WA central business	43%	15%	49%	18%	50%	19%	52%	21%	52%	21%
Washington Square regional center	29%	9%	33%	10%	31%	10%	38%	13%	38%	14%

Measure 12a Auto Travel Times

Technical review draft

10/30/17

Auto travel time (minutes) between locations (walk + in-vehicle time)		2015 Base			2040 No Build			2027 Constrained			2040 Constrained			2040 Strategic		
Mobility Corridor	Origin --> Destination	12-1pm	4-5pm	5-6pm	12-1pm	4-5pm	5-6pm	12-1pm	4-5pm	5-6pm	12-1pm	4-5pm	5-6pm	12-1pm	4-5pm	5-6pm
1	CBD to Vancouver CBD (SOV)	24.9	30.5	31.2	28.8	31.7	32.9	26.4	31.3	31.6	24.8	27.7	27.6	24.8	27.5	27.4
1	CBD to Vancouver CBD (HOV)	24.9	25.9	26.3	28.8	26.7	27.5	26.4	26.2	26.4	24.8	24.2	24.0	24.8	24.1	24.0
2	CBD to Tigard	24.8	27.0	27.2	26.8	29.5	29.9	25.5	28.8	29.1	25.6	28.6	28.8	25.5	28.5	28.7
2	Tigard to Tualatin	11.7	12.6	12.5	12.8	14.2	14.4	12.1	13.7	13.7	12.5	14.4	14.5	12.5	14.5	14.6
3	Tigard to Wilsonville	19.4	21.8	22.1	21.5	25.0	25.3	20.2	23.7	24.0	21.2	25.3	25.7	21.3	25.3	25.8
4	*no route specified*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
5	CBD to Gateway	21.3	24.7	25.3	22.6	24.9	25.4	21.7	24.5	24.8	22.5	24.7	24.9	22.4	24.6	24.8
6	Gateway to Gresham	18.2	19.0	19.1	18.8	20.0	20.2	18.4	19.3	19.5	18.6	19.6	19.8	18.6	19.6	19.7
6	Gateway to Troutdale	17.8	18.4	18.5	18.5	19.4	19.6	18.2	18.8	18.9	18.4	19.2	19.3	18.4	19.1	19.2
7	CBD to PDX	30.4	33.0	33.4	32.1	33.6	33.8	31.0	32.9	33.0	32.0	33.4	33.4	31.9	33.4	33.3
7	Gateway to Vancouver Mall	20.4	21.7	21.9	21.5	23.7	24.3	20.9	23.0	23.2	21.9	24.8	24.6	21.9	24.7	24.6
8	Gateway to Oregon City	22.6	26.4	27.1	25.6	31.1	31.8	24.0	29.2	30.0	26.0	32.2	32.8	26.0	32.2	32.8
9	Oregon City to Canby	16.5	17.1	17.3	16.9	18.7	19.3	16.7	17.9	18.3	16.8	18.7	19.2	16.8	18.7	19.2
10	Tualatin to Oregon City	17.8	23.5	24.8	20.2	24.9	26.0	19.2	25.3	26.2	19.1	24.2	24.9	19.1	24.0	24.8
11	Tigard to Sherwood	14.9	16.3	16.6	16.7	19.6	20.1	15.5	18.1	18.6	16.4	19.9	20.3	16.0	19.4	20.0
12	Beaverton to Washington Square	10.6	11.4	11.4	11.1	12.2	12.3	10.7	11.6	11.6	10.9	11.9	11.8	10.9	12.0	11.9
12	Washington Square to Tigard	8.7	9.1	9.1	9.2	9.7	9.8	8.9	9.5	9.5	9.1	9.6	9.7	8.9	9.4	9.4
12	Beaverton to Tigard	13.7	15.0	15.0	14.3	15.9	16.2	13.7	15.1	15.2	14.1	15.5	15.6	13.9	15.5	15.6
13	CBD to Beaverton	22.1	25.2	25.8	24.2	27.6	28.2	22.9	27.2	27.9	23.7	27.9	28.5	23.6	27.8	28.4
14	Beaverton to Hillsboro	21.9	24.0	24.4	23.7	26.6	26.9	22.5	24.9	25.3	23.1	25.6	25.8	23.1	25.5	25.7
14	Amberglen to Hillsboro	14.7	15.3	15.5	15.8	16.9	16.9	15.0	16.1	16.2	15.5	16.2	16.4	15.5	16.2	16.2
14	CBD to Hillsboro	36.0	40.4	41.3	39.6	44.9	45.6	37.1	42.8	43.8	39.0	44.4	45.1	38.8	44.2	44.9
15	Hillsboro to Forest Grove	15.9	16.4	16.6	16.4	18.3	18.6	16.1	17.5	17.7	16.4	17.8	18.1	16.3	17.8	18.1
16	CBD to Sauvie Island	28.1	28.5	28.5	28.5	29.1	29.1	28.2	28.6	28.7	28.4	28.9	29.0	28.4	28.9	28.9
17	*combined 17 & 18 to cover O-D pair I*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18	Rivergate to I-205/Sandy	21.4	22.3	22.4	22.2	23.6	23.8	21.6	23.0	23.0	22.5	24.1	24.1	22.4	23.9	23.8
19	CBD to Lents	25.7	29.4	29.9	27.4	30.7	31.0	26.4	30.1	30.5	27.4	30.8	30.9	27.3	30.7	30.8
20	Lents to Gresham	21.7	22.4	22.6	22.3	23.5	23.7	22.0	22.7	22.9	22.0	22.8	22.9	22.0	22.7	22.8
21	CBD to Oregon City	34.7	40.1	41.2	36.9	43.0	44.0	35.6	41.7	42.7	36.7	43.5	44.3	36.6	43.4	44.4
22	Milwaukie to Clackamas Town Cente	11.9	12.7	12.6	12.6	13.6	13.5	12.3	13.3	13.3	12.5	13.6	13.5	12.4	13.5	13.4
23	Clackamas Town Center to Happy Va	11.9	12.8	13.1	12.9	14.9	15.1	12.0	13.9	14.2	12.0	13.1	13.2	11.9	12.9	13.0
24	Wood Village to Gresham	11.1	11.3	11.3	11.3	11.8	11.9	11.2	11.5	11.5	11.2	11.7	11.8	11.2	11.7	11.7
24	Gresham to Happy Valley	20.4	21.4	21.5	22.2	24.9	25.1	21.3	22.5	22.7	20.6	21.9	22.2	20.4	21.7	21.8
N/A	Tualatin to Hillsboro	36.8	40.0	40.7	39.4	46.0	47.0	37.5	41.9	42.8	38.6	45.4	46.4	38.2	44.2	45.2

Auto travel time (minutes) between locations (walk + in-vehicle time)		2015 Base			2040 No Build			2027 Constrained			2040 Constrained			2040 Strategic		
Mobility Corridor	Origin --> Destination	12-1pm	4-5pm	5-6pm	12-1pm	4-5pm	5-6pm	12-1pm	4-5pm	5-6pm	12-1pm	4-5pm	5-6pm	12-1pm	4-5pm	5-6pm
1	Vancouver CBD to CBD (SOV)	23.0	22.8	22.4	26.2	25.9	25.0	24.5	24.3	23.7	22.2	22.8	22.5	22.2	22.8	22.5
1	Vancouver CBD to CBD (HOV)	23.0	22.8	22.4	26.2	25.9	25.0	24.5	24.3	23.7	22.2	22.8	22.5	22.2	22.8	22.5
2	Tigard to CBD	23.8	25.8	26.0	26.1	27.9	28.3	24.8	27.3	27.4	25.4	28.0	28.3	25.3	27.9	28.1
2	Tualatin to Tigard	11.9	13.2	13.1	13.0	15.0	15.2	12.3	14.5	14.4	12.8	15.0	15.0	12.7	14.9	15.0
3	Wilsonville to Tigard	19.9	21.6	21.7	22.3	25.3	25.4	20.9	23.8	23.8	21.2	24.7	24.8	21.1	24.6	24.6
4	*no route specified*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
5	Gateway to CBD	21.7	22.2	22.1	22.7	24.0	23.8	22.0	22.9	22.9	22.7	24.0	23.9	22.6	23.9	23.8
6	Gresham to Gateway	18.3	18.6	18.6	18.8	19.6	19.6	18.5	19.0	19.0	18.7	19.4	19.4	18.7	19.4	19.3
6	Troutdale to Gateway	18.2	18.6	18.5	18.9	20.1	20.1	18.5	19.3	19.3	18.8	19.9	19.9	18.8	19.8	19.8
7	PDX to CBD	30.6	31.1	31.0	31.8	33.1	33.0	31.0	31.9	31.9	31.8	33.2	33.1	31.7	33.1	33.0
7	Vancouver Mall to Gateway	19.4	19.6	19.5	20.6	20.9	20.5	19.9	20.2	20.0	21.1	21.5	21.1	21.1	21.4	21.1
8	Oregon City to Gateway	22.2	24.3	24.4	24.8	28.3	28.5	23.2	26.2	26.2	25.0	28.9	29.0	24.9	28.8	28.9
9	Canby to Oregon City	16.5	16.8	16.8	16.8	17.4	17.4	16.7	17.1	17.1	16.8	17.5	17.5	16.8	17.5	17.5
10	Oregon City to Tualatin	18.0	19.5	19.7	20.3	23.4	23.9	19.0	22.5	22.9	19.0	22.3	22.5	19.0	22.5	22.8
11	Sherwood to Tigard	14.9	16.3	16.4	16.4	19.0	19.1	15.3	17.6	17.7	15.9	18.7	18.8	15.6	18.4	18.6
12	Washington Square to Beaverton	10.5	11.3	11.3	11.2	12.4	12.5	10.8	12.1	12.1	11.1	12.6	12.7	10.8	12.1	12.1
12	Tigard to Washington Square	8.2	8.4	8.4	8.7	8.8	8.7	8.3	8.5	8.4	8.5	8.7	8.6	8.5	8.6	8.6
12	Tigard to Beaverton	14.0	15.3	15.4	15.1	17.0	17.1	14.5	16.4	16.5	15.0	17.2	17.4	14.4	16.2	16.3
13	Beaverton to CBD	22.2	25.0	25.4	24.2	26.4	26.9	23.1	26.1	26.4	23.9	27.0	27.5	23.8	27.0	27.5
14	Hillsboro to Beaverton	21.7	23.0	23.2	23.7	26.5	26.8	22.4	24.4	24.6	23.1	25.8	26.0	23.1	25.6	25.8
14	Hillsboro to Amberglen	14.7	15.1	15.1	15.7	17.1	17.1	15.0	15.9	16.0	15.6	16.6	16.7	15.5	16.4	16.5
14	Hillsboro to CBD	36.6	39.9	40.4	40.4	45.0	45.9	38.0	42.3	43.1	39.9	45.2	46.0	39.7	44.8	45.7
15	Forest Grove to Hillsboro	17.0	17.3	17.2	17.5	18.1	18.1	17.2	17.5	17.5	17.5	18.0	17.9	17.5	17.9	17.9
16	Sauvie Island to CBD	27.2	27.7	27.7	27.7	28.3	28.3	27.4	28.0	28.0	27.6	28.3	28.3	27.6	28.3	28.2
17	*combined 17 & 18 to cover O-D pair I*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18	I-205/Sandy to Rivergate	21.4	21.6	21.5	22.5	22.7	22.6	21.8	22.0	21.9	22.6	23.7	23.6	22.3	23.4	23.3
19	Lents to CBD	25.9	26.8	26.7	27.5	28.9	28.8	26.4	28.0	28.0	27.2	29.0	28.9	27.1	28.9	28.8
20	Gresham to Lents	21.4	22.2	22.2	22.3	23.3	23.4	21.8	22.6	22.7	22.2	22.9	22.9	22.1	22.8	22.9
21	Oregon City to CBD	34.3	35.7	35.6	36.3	39.5	39.6	34.8	37.4	37.5	35.9	39.6	39.7	35.8	39.5	39.6
22	Clackamas Town Center to Milwaukie	11.7	12.3	12.3	12.6	13.5	13.4	12.1	12.6	12.6	12.3	12.9	12.9	12.2	12.8	12.8
23	Happy Valley to Clackamas Town Cer	11.9	11.9	11.9	12.8	13.1	13.0	11.9	12.0	11.9	11.9	12.0	12.0	11.8	11.9	11.9
24	Gresham to Wood Village	11.1	11.2	11.1	11.3	11.4	11.4	11.2	11.3	11.3	11.2	11.4	11.3	11.2	11.4	11.3
24	Happy Valley to Gresham	20.5	21.3	21.4	22.4	25.0	25.3	21.3	22.5	22.5	20.7	22.0	22.2	20.5	21.6	21.7
N/A	Hillsboro to Tualatin	36.3	38.7	39.1	38.8	44.9	45.9	37.1	40.7	41.4	38.4	43.9	44.7	38.0	43.3	44.2

Measure 12b Transit Travel Times
Technical review draft
10/30/17

Transit travel time (minutes) between locations (walk + wait + in-vehicle time)		2015 Base		2040 No Build		2027 Constrained		2040 Constrained		2040 Strategic	
Mobility Corridor	Origin --> Destination	12-1pm	4-6pm	12-1pm	4-6pm	12-1pm	4-6pm	12-1pm	4-6pm	12-1pm	4-6pm
1	CBD to Vancouver CBD	45.9	31.9	50.2	39.2	47.9	34.4	44.2	31.7	44.2	30.7
2	CBD to Tigard	42.9	33.0	45.0	38.8	43.7	39.6	43.7	39.6	43.7	39.6
2	CBD to Tualatin	72.2	42.6	74.1	62.3	63.1	63.5	63.4	63.5	57.9	56.0
2	Tigard to Tualatin	32.4	29.5	30.4	29.5	29.3	29.6	30.0	29.6	22.1	22.1
3	Tigard to Wilsonville	80.1	53.3	78.7	53.3	74.4	53.3	74.9	53.4	49.3	45.9
4	CBD to Rose Quarter	18.3	17.0	18.3	17.0	18.2	16.6	16.3	14.8	16.3	14.8
5	CBD to Gateway	33.8	32.5	33.8	32.5	34.0	32.3	31.8	30.5	31.8	30.5
6	Gateway to Gresham	35.1	31.1	35.1	31.1	35.1	31.1	35.1	31.1	35.1	31.1
6	Gateway to Troutdale	64.8	51.3	56.0	51.0	54.4	54.4	54.4	54.6	47.3	47.4
7	CBD to PDX	50.8	50.8	50.8	50.8	50.8	49.3	48.8	47.3	48.8	47.3
7	Gateway to Vancouver Mall	97.1	92.4	96.1	98.8	95.5	94.1	86.9	82.5	86.9	82.5
8	Gateway to Oregon City	75.3	76.2	67.1	66.8	66.2	61.0	67.0	63.6	63.0	63.5
8	Gateway to Clackamas Town Center	30.2	30.2	30.2	30.2	30.2	26.4	30.2	26.4	30.2	26.4
8	Clackamas Town Center to Oregon City	50.6	51.0	41.4	41.2	40.5	39.1	41.4	41.7	37.4	41.6
9	Oregon City to Canby	54.1	40.0	54.5	43.7	54.3	41.7	54.5	43.1	54.5	43.1
10	Tualatin to Oregon City	116.9	98.4	101.1	107.5	83.6	88.4	84.9	91.1	84.6	87.8
11	Tigard to Sherwood	54.2	36.0	62.1	41.9	42.6	39.6	42.0	42.1	41.6	41.3
11	Tualatin to Sherwood	90.0	67.1	92.0	45.5	71.3	43.3	71.2	45.3	64.9	44.4
12	Beaverton to Washington Square	26.6	27.3	25.7	27.3	25.3	26.3	25.6	26.8	23.6	23.8
12	Washington Square to Tigard	20.0	20.4	19.6	20.8	19.3	20.0	19.5	20.5	17.8	17.9
12	Beaverton to Tigard	32.8	30.4	32.6	30.4	32.0	30.3	32.4	30.3	22.9	22.8
13	CBD to Beaverton	29.8	28.4	29.8	28.4	29.8	28.2	29.8	28.2	29.8	28.2
14	Beaverton to Hillsboro	36.4	32.4	36.4	32.4	36.4	32.4	36.4	32.4	36.4	32.4
14	Amberglen to Hillsboro	42.0	36.2	41.7	36.4	36.9	37.3	37.5	37.5	35.9	34.5
14	CBD to Hillsboro	59.1	55.1	59.1	55.1	59.1	55.1	59.1	55.1	59.1	55.1
15	Hillsboro to Forest Grove	35.9	36.6	36.5	38.7	34.9	36.6	33.0	33.9	32.4	28.7
16	CBD to Sauvie Island	81.1	83.5	84.1	89.9	74.8	73.3	75.9	75.7	75.8	75.6
16	CBD to St Johns	56.6	55.0	54.7	57.0	50.3	50.3	50.6	51.2	50.1	50.5
17	*no route specified*	--	--	--	--	--	--	--	--	--	--
18	*no route specified*	--	--	--	--	--	--	--	--	--	--
19	CBD to Lents	49.4	49.3	49.4	49.3	47.6	43.8	47.6	43.6	47.6	43.6
20	Lents to Gresham	53.1	49.1	53.1	49.1	43.3	45.4	43.4	45.4	42.7	45.4
21	CBD to Oregon City	70.5	63.9	67.7	71.0	65.3	67.1	66.9	69.9	66.8	69.8
22	Milwaukie to Clackamas Town Center	29.0	29.5	27.9	29.1	27.7	28.7	28.0	29.1	28.6	29.6
23	Clackamas Town Center to Happy Valley	38.4	39.5	39.5	41.8	38.5	40.6	38.5	39.6	38.5	34.4
24	Wood Village to Gresham	32.1	32.4	27.3	24.4	32.4	27.8	32.5	28.1	24.7	24.4
24	Gresham to Happy Valley	91.2	88.3	92.2	90.6	91.2	85.7	91.2	84.6	62.7	60.8
24	Gresham to Sandy	44.6	45.2	45.0	46.0	44.8	45.5	44.9	46.0	44.9	45.9

Transit travel time (minutes) between locations (walk + wait + in-vehicle time)		2015 Base		2040 No Build		2027 Constrained		2040 Constrained		2040 Strategic	
Mobility Corridor	Origin --> Destination	12-1pm	4-6pm	12-1pm	4-6pm	12-1pm	4-6pm	12-1pm	4-6pm	12-1pm	4-6pm
1	Vancouver CBD to CBD	46.7	27.7	51.3	32.7	48.3	29.3	43.9	28.4	43.9	28.3
2	Tigard to CBD	43.8	49.8	46.0	52.7	42.9	38.7	42.9	38.7	42.9	38.7
2	Tualatin to CBD	87.9	45.9	77.4	54.7	64.1	63.0	64.1	63.0	57.9	56.4
2	Tualatin to Tigard	39.3	30.0	33.4	30.0	32.1	30.1	32.5	30.1	22.5	22.5
3	Wilsonville to Tigard	86.3	55.0	83.3	55.0	76.9	54.4	76.9	54.6	52.0	47.5
4	Rose Quarter to CBD	15.9	14.8	15.9	14.8	15.2	14.0	14.1	12.8	14.1	12.8
5	Gateway to CBD	31.7	30.6	31.7	30.6	31.0	29.9	29.9	28.6	29.9	28.6
6	Gresham to Gateway	35.4	31.4	35.4	31.4	35.4	31.4	35.4	31.4	35.4	31.4
6	Troutdale to Gateway	59.3	53.4	54.6	53.0	52.9	53.5	53.0	53.7	50.8	48.7
7	PDX to CBD	49.2	49.2	49.2	49.2	49.2	47.7	47.5	46.0	47.5	46.0
7	Vancouver Mall to Gateway	93.6	84.6	99.5	86.0	98.6	82.9	84.9	82.5	84.9	82.5
8	Oregon City to Gateway	76.1	75.0	66.6	63.0	66.0	58.0	66.7	60.2	61.7	60.3
8	Clackamas Town Center to Gateway	30.1	30.1	30.1	30.1	30.1	26.3	30.1	26.3	30.1	26.3
8	Oregon City to Clackamas Town Center	50.3	48.9	39.9	36.3	39.4	35.1	40.1	37.2	35.1	37.3
9	Canby to Oregon City	54.6	40.1	55.0	41.3	54.8	40.6	55.0	41.2	55.0	41.2
10	Oregon City to Tualatin	114.2	101.3	99.5	101.3	83.1	83.8	84.0	86.4	86.7	82.4
11	Sherwood to Tigard	52.8	54.5	62.2	63.9	40.8	38.5	41.5	40.0	41.1	39.6
11	Sherwood to Tualatin	88.2	84.6	91.8	44.7	69.4	43.6	70.8	44.7	63.7	44.2
12	Washington Square to Beaverton	24.8	25.7	25.1	27.4	24.7	26.3	25.0	27.5	22.7	23.6
12	Tigard to Washington Square	18.5	18.6	18.2	18.7	18.1	18.2	18.3	18.5	17.1	16.9
12	Tigard to Beaverton	30.7	29.2	31.2	29.2	30.6	29.2	31.0	29.2	21.7	21.7
13	Beaverton to CBD	31.0	29.2	31.0	29.2	30.2	28.7	30.2	28.7	30.2	28.7
14	Hillsboro to Beaverton	36.5	32.5	36.5	32.5	36.5	32.5	36.5	32.5	36.5	32.5
14	Hillsboro to Amberglen	42.5	36.6	41.3	36.7	37.2	37.4	37.8	38.0	35.9	34.7
14	Hillsboro to CBD	60.1	56.1	60.1	56.1	60.1	56.1	60.1	56.1	60.1	56.1
15	Forest Grove to Hillsboro	40.3	40.6	40.8	41.4	39.0	39.4	37.0	36.5	32.4	28.4
16	Sauvie Island to CBD	81.4	83.6	84.7	89.3	75.1	73.2	76.2	75.6	76.2	75.4
16	St Johns to CBD	58.1	57.3	58.7	59.7	53.5	54.0	53.5	53.3	52.5	52.1
17	*no route specified*	--	--	--	--	--	--	--	--	--	--
18	*no route specified*	--	--	--	--	--	--	--	--	--	--
19	Lents to CBD	48.4	48.4	48.4	48.4	46.8	43.0	46.8	43.0	46.8	43.0
20	Gresham to Lents	52.7	48.7	52.7	48.7	52.7	45.0	52.7	45.0	52.7	45.0
21	Oregon City to CBD	68.3	67.4	69.2	72.9	65.4	68.7	66.0	69.9	65.6	73.7
22	Clackamas Town Center to Milwaukie	29.3	29.7	28.4	29.7	28.0	28.7	28.3	29.2	28.2	29.0
23	Happy Valley to Clackamas Town Center	37.1	37.1	38.1	38.4	37.1	37.2	37.1	37.2	37.0	32.1
24	Gresham to Wood Village	32.1	32.1	25.7	23.6	32.2	27.3	32.3	27.4	21.9	21.6
24	Happy Valley to Gresham	90.6	86.7	91.6	88.0	80.8	83.0	80.9	83.0	67.1	62.0
24	Sandy to Gresham	43.4	43.6	43.7	44.0	43.6	43.8	43.7	44.0	43.7	43.9

Measure 12c Bike Travel Times

Technical review draft

10/30/17

Bike travel time (minutes) between locations (assumes 12 mph speed for all bikes)

Mobility Corridor	Origin --> Destination	2015 Base	2040 No Build	2027 Constrained	2040 Constrained	2040 Strategic
1	CBD to Rosa Parks	23.2	23.2	23.2	23.0	23.0
1	Rosa Parks to Vancouver CBD	27.0	27.0	27.0	28.0	27.0
2	South Waterfront Tram to Barbur TC	25.6	25.6	25.6	25.4	25.4
2	Barbur TC to Tigard	18.3	18.3	18.3	18.3	18.3
2	Tigard to Tualatin	19.8	19.8	19.8	19.8	19.8
2	Tigard to Lake Grove	19.5	19.5	21.1	19.0	19.0
3	Tualatin to Wilsonville	37.8	37.5	37.5	37.3	39.8
4	CBD to South Waterfront Tram	10.2	10.2	10.2	10.2	10.2
5	CBD to Hollywood TC	21.8	21.8	21.8	21.8	23.8
5	Hollywood TC to Gateway	19.5	19.5	19.7	19.7	22.5
6	Gateway to Rockwood	22.5	22.5	22.4	22.4	22.4
6	Rockwood to Gresham	17.5	17.5	17.5	17.2	17.2
7	CBD to Gateway	35.8	35.8	34.8	34.8	43.4
7	Gateway to PDX	36.4	36.4	36.4	36.4	36.5
8	Gateway to Lents	21.5	21.5	21.5	21.5	21.5
8	Lents to Clackamas Town Center	20.6	20.6	20.6	20.6	20.6
8	Clackamas Town Center to Oregon City	37.1	37.1	37.1	37.6	37.6
9	Oregon City to Clackamas Community College	18.4	18.4	18.4	18.4	18.4
10	Tualatin to Oregon City	53.7	56.0	56.0	55.9	55.9
11	Tigard to Sherwood	35.3	35.3	35.3	35.3	35.3
12	Beaverton to Washington Square	18.1	20.3	20.3	20.3	19.4
12	Washington Square to Tigard	12.9	12.9	12.9	12.9	12.9
12	Beaverton to Aloha (185th/TV Hwy)	16.9	16.9	16.9	17.0	17.8
13	Beaverton to Providence Medical Center	15.9	15.8	15.8	16.8	16.8
13	Sunset TC to Goose Hollow MAX Station	28.0	28.0	28.0	33.7	28.0
14	Aloha (185th/TV Hwy) to Hillsboro	34.2	34.2	34.2	34.8	34.8
14	Orenco MAX Station to Aloha (185th/TV Hwy)	24.0	23.9	23.9	22.0	22.0
14	Orenco MAX Station to Amberglen	14.6	14.6	14.6	13.9	13.9
14	Bethany to Amberglen	19.3	19.3	19.3	19.3	18.6
14	Bethany to Intel - East	25.8	25.8	25.8	25.8	25.8
14	Hillsboro to Intel - West	11.8	11.8	12.0	12.0	12.0
14	Amberglen to Hillsboro	30.1	30.1	30.1	30.1	29.8
15	Hillsboro to Cornelius	22.0	22.0	24.4	24.4	23.5
15	Cornelius to Forest Grove	16.3	16.3	18.9	17.9	16.4
16	CBD to St Johns	41.0	41.0	41.0	40.6	40.6
17	St Johns to PDX	53.0	53.0	53.0	54.1	54.1
18	*no route specified*	--	--	--	--	--
19	Bybee MAX Station to Tilikum Crossing - East End	23.2	23.2	23.2	23.3	23.3
19	Lents to Clinton St MAX Station	28.1	25.7	25.7	25.7	25.7
20	Lents to Powell Butte	25.9	25.9	25.9	25.9	25.9
20	Powell Butte to Gresham	23.5	23.5	23.5	23.5	23.5
21	Lake Oswego to Park Ave MAX Station	39.1	39.1	12.4	12.2	12.2
21	Lake Oswego to West Linn (Bolton)	26.5	26.5	26.5	26.5	26.5
21	Milwaukie to Bybee MAX Station	17.2	17.2	17.2	17.2	17.2
21	Park Ave MAX Station to Oregon City	32.3	32.3	32.3	32.3	32.3
21	Lake Oswego to John's Landing near Sellwood Bric	25.3	25.3	25.3	21.6	21.6
22	Clackamas Town Center to Milwaukie	19.1	19.1	20.3	19.1	19.1
23	Clackamas Town Center to Happy Valley	22.6	22.6	22.6	22.6	22.6
24	Wood Village to Gresham	17.8	17.8	17.4	17.4	17.4
24	Troutdale Town Center to Gresham	21.9	21.6	21.6	21.6	22.5
24	Gresham to Springwater Trail	12.1	12.1	12.1	12.1	12.1

Bike travel time (minutes) between locations (assumes 12 mph speed for all bikes)

Mobility Corridor	Origin --> Destination	2015 Base	2040 No Build	2027 Constrained	2040 Constrained	2040 Strategic
1	Rosa Parks to CBD	21.5	21.5	21.5	21.7	21.7
1	Vancouver CBD to Rosa Parks	27.3	27.3	27.3	27.3	27.3
2	Barbur TC to South Waterfront Tram	25.5	25.5	25.5	25.4	25.4
2	Tigard to Barbur TC	18.3	18.3	18.3	18.3	18.3
2	Tualatin to Tigard	19.8	19.8	19.8	19.8	19.8
2	Lake Grove to Tigard	19.5	19.5	21.1	19.0	19.0
3	Wilsonville to Tualatin	37.8	37.5	37.5	37.3	39.8
4	South Waterfront Tram to CBD	10.2	10.2	10.2	10.2	10.2
5	Hollywood TC to CBD	22.1	22.1	22.1	22.1	24.2
5	Gateway to Hollywood TC	19.5	19.5	19.3	19.3	22.5
6	Rockwood to Gateway	21.6	21.6	21.5	21.5	21.5
6	Gresham to Rockwood	15.9	15.9	15.9	15.5	15.5
7	Gateway to CBD	36.0	36.0	34.7	34.7	43.9
7	PDX to Gateway	36.4	36.4	36.4	36.4	36.5
8	Lents to Gateway	21.3	21.3	21.7	21.7	21.7
8	Clackamas Town Center to Lents	20.9	20.9	20.9	20.9	20.9
8	Oregon City to Clackamas Town Center	37.1	37.1	37.1	37.7	37.7
9	Clackamas Community College to Oregon City	18.3	18.3	18.3	18.3	18.3
10	Oregon City to Tualatin	53.7	56.0	56.0	55.9	55.9
11	Sherwood to Tigard	35.3	35.3	35.3	35.3	35.3
12	Washington Square to Beaverton	17.5	17.5	17.5	20.0	19.2
12	Tigard to Washington Square	12.9	12.9	12.9	12.9	12.9
12	Aloha (185th/TV Hwy) to Beaverton	16.9	16.9	16.9	17.0	17.9
13	Providence Medical Center to Beaverton	15.2	15.1	15.1	15.3	15.3
13	Goose Hollow MAX Station to Sunset TC	27.9	27.9	27.9	31.6	31.6
14	Hillsboro to Aloha (185th/TV Hwy)	34.1	34.1	34.1	34.7	34.7
14	Aloha (185th/TV Hwy) to Orenco MAX Station	24.0	23.9	23.9	22.0	22.0
14	Amberglen to Orenco MAX Station	14.6	14.6	14.6	13.9	13.9
14	Amberglen to Bethany	19.3	19.3	19.3	19.3	18.6
14	Intel - East to Bethany	25.8	25.8	25.8	25.8	25.8
14	Intel - West to Hillsboro	11.8	11.8	12.0	12.0	12.0
14	Hillsboro to Amberglen	30.1	30.1	30.1	30.1	29.8
15	Cornelius to Hillsboro	22.5	22.5	24.4	24.4	23.5
15	Forest Grove to Cornelius	18.8	18.8	18.9	17.9	16.4
16	St Johns to CBD	39.2	39.2	39.2	38.8	38.8
17	PDX to St Johns	53.0	53.0	53.0	54.1	54.1
18	*no route specified*	--	--	--	--	--
19	Tilikum Crossing - East End to Bybee MAX Station	22.9	22.9	22.9	23.1	23.1
19	Clinton St MAX Station to Lents	28.1	25.7	25.7	25.7	25.7
20	Powell Butte to Lents	26.2	26.2	26.2	26.2	26.2
20	Gresham to Powell Butte	23.5	23.5	23.5	23.5	23.5
21	Park Ave MAX Station to Lake Oswego	39.2	39.1	12.4	12.2	12.2
21	West Linn (Bolton) to Lake Oswego	26.5	26.5	26.5	26.5	26.5
21	Bybee MAX Station to Milwaukie	17.2	17.2	17.2	17.2	17.2
21	Oregon City to Park Ave MAX Station	32.3	32.3	32.3	32.4	32.4
21	John's Landing near Sellwood Bridge to Lake Oswe	25.3	25.3	25.3	21.6	21.6
22	Milwaukie to Clackamas Town Center	19.1	19.1	20.3	19.1	19.1
23	Happy Valley to Clackamas Town Center	22.6	22.6	22.6	22.6	22.6
24	Gresham to Wood Village	17.8	17.8	17.6	17.6	17.6
24	Gresham to Troutdale Town Center	21.9	21.9	21.9	21.9	22.5
24	Springwater Trail to Gresham	12.1	12.1	12.1	12.1	12.1

2018 RTP Performance Measures Work Group

John Mermin, Regional Planner

November 8, 2017

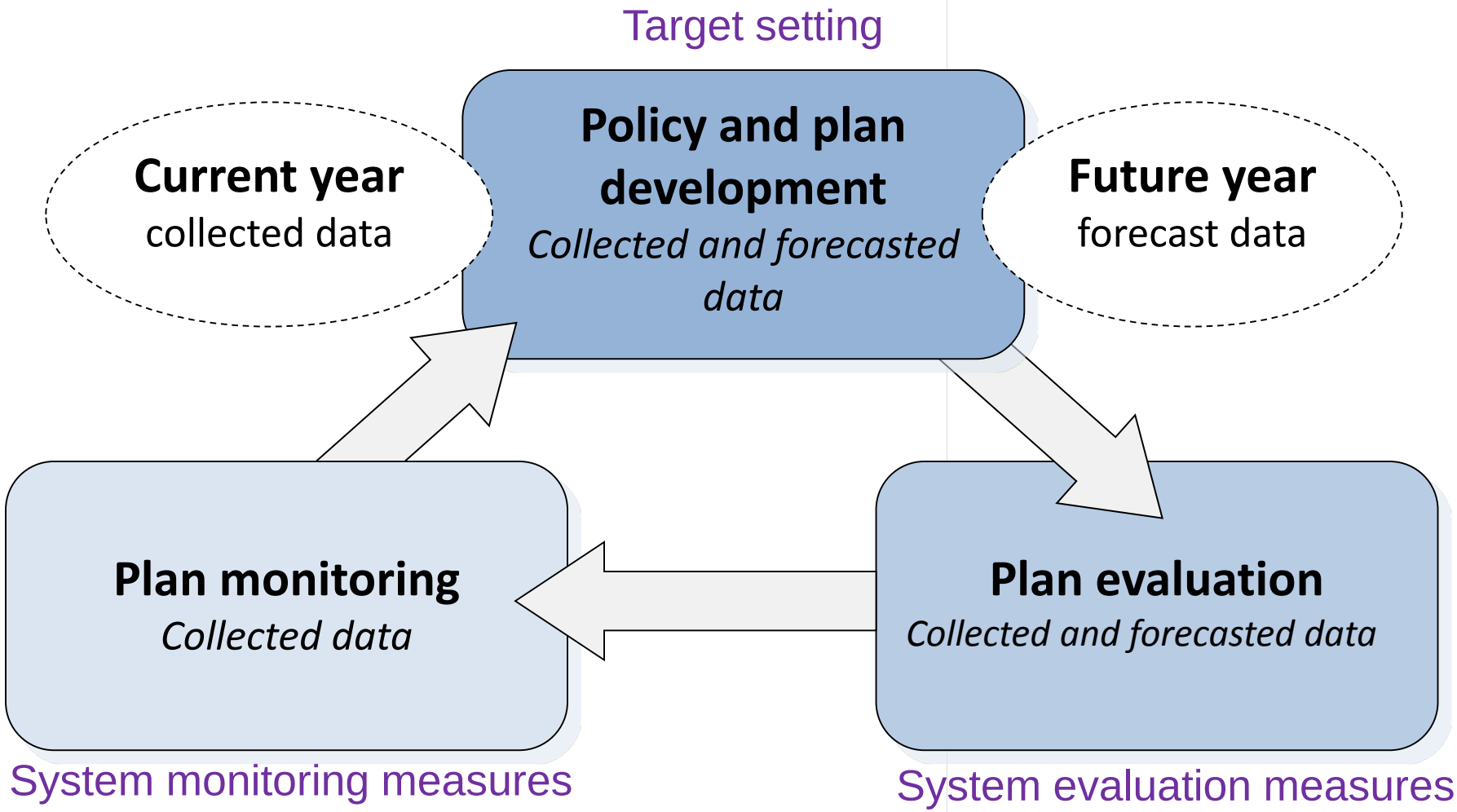
Today's Agenda

- RTP Performance Targets and Monitoring
  - Discuss options for streamlining
- RTP System Evaluation
  - Review initial results
  - Identify potential refinements to measures

RTP Performance targets and monitoring

- Presented the complex federal and state regulatory framework at last meeting
- Recommendations provided in memo provide a first step toward a more streamlined approach

RTP Performance Measurement System



Streamlining Recommendations for Targets & Monitoring: **Safety**

- Use targets recommended by RTP safety work group
  - Eliminate fatalities and serious injuries by 2035
  - 50% reduction by 2025
  - 16% reduction by 2020
  - Annual target to be established as required by MAP-21

Streamlining Recommendations for Targets & Monitoring: **Infrastructure Condition**

- Establish targets that are same as the MAP-21 required targets that ODOT and TriMet are developing
- In future, consider developing Metro specific target

Streamlining Recommendations for Targets & Monitoring: **VMT**

- Retain the 10% Vehicle Miles Traveled (VMT) per capita reduction target (model-based) from 2014 RTP
- In future, use observed data to track progress and resolve issues between Climate Smart monitoring (GreenSTEP), Federal Highway Performance Monitoring System (HPMS) data and National Performance Management Research Data Set (NPMRDS)

Streamlining Recommendations for Targets & Monitoring: **Congestion**

- Replace the regionwide 10% delay per capita target (model-based) with MAP-21 required National Highway System (NHS)-focused target using National Performance Management Research Data (observed)
- A refinement plan for the Interim Regional Mobility Policy following 2018 RTP may further update targets

Streamlining Recommendations for Targets & Monitoring: **Active Transportation Infrastructure**

- As recommended by regional equity work group, establish a more ambitious target for completing regional active transportation network
  - 100% completion of regional biking and walking network by 2040
- In future, use RLIS data (observed) to monitor progress between RTP updates

Streamlining Recommendations for Targets & Monitoring: **Affordability**

- Two options for consideration by performance work group

Option 1: Defer adjusting regional target (reduce average HH combined cost of housing and transportation by 25%) until the 2023 RTP update.

In 2018 RTP update, refine how cost-burdened is defined – to focus on costs for lower income households, instead of average household

Option 2: Create a monitoring target in 2018 RTP that relies on Center for Neighborhood Technology Housing + Transportation Affordability Index data.

Streamlining Recommendations for Targets & Monitoring: **System Reliability**

- Set annual monitoring target in coordination with ODOT, as required by MAP-21 using National Performance Management Research Data Set (observed)

Streamlining Recommendations for Targets & Monitoring: **Freight Movement & Economic Vitality**

- Refine 2014 RTP target (model-based) as follows: “By 2040, reduce ~~vehicle~~ truck hours of delay per truck trip by 10% compared to 2010”
- Set a monitoring target of % of Interstate System miles with reliable truck travel times in coordination with ODOT as required by MAP-21 using National Performance Management Research Data (observed).

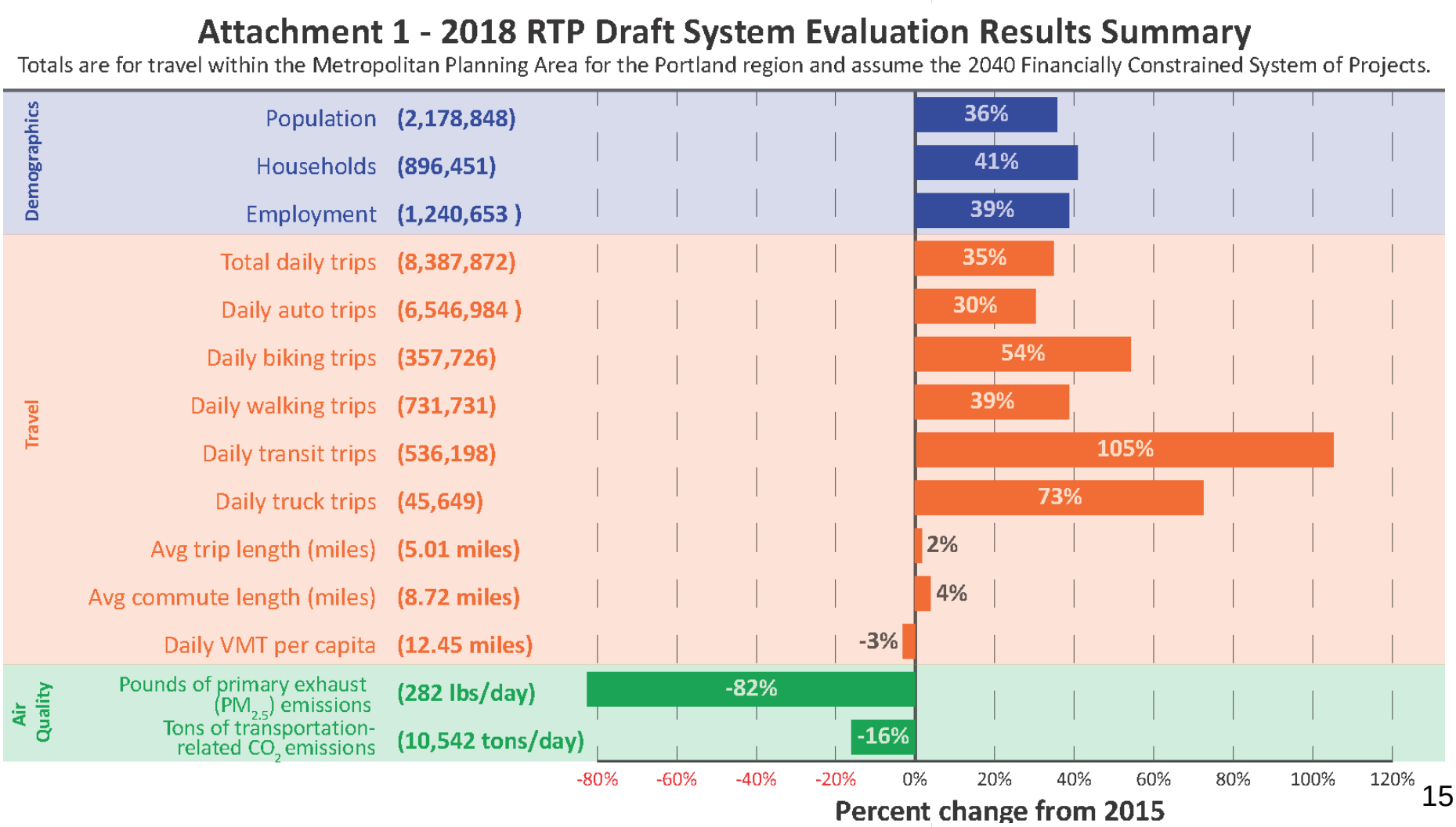
Streamlining Recommendations for Targets & Monitoring: **Clean Air**

- Address MAP-21 air quality target setting requirement through updates to the MTIP, not the RTP, because its focused only on CMAQ projects.
- Revise existing regional target as follows:
  - By 2040, ~~ensure zero percent population exposure to at risk level of~~ maintain or reduce tons of air pollution by mobile sources.”
- In future, look for opportunities to replace RTP target with MAP-21 based measure.

Questions and discussion

- Initial reactions and observations?
- Do you have comments on or suggestions for staff's recommendations?
- Do you have thoughts on establishing 2015 as the baseline for targets and keep it for future RTP updates?

DRAFT RTP System Evaluation results



RTP Performance Targets results

- Heading in the right direction (but don't meet target)
  - VMT per capita
  - Mode share (bike, walk, transit)
- Heading in the wrong direction
  - Vehicle delay per capita
  - Vehicle delay per truck trip

Mode Share by sub-region

- We are still reviewing the data
- See handout for non-driving mode share by:
  - Sub-region
  - Regional Centers

Travel time results

- We are still reviewing the data
- See handouts for
  - Auto travel times
  - Transit travel times
  - Bicycle travel times

Upcoming discussions of initial system evaluation results

- Nov. and Dec. MTAC and TPAC meetings
- Nov. 20 Freight work group
  - Review preliminary freight system evaluation results to shape draft findings and recommendations for policymakers
- Nov. 30 Transportation equity work group
  - Review preliminary RTP equity evaluation results to shape draft findings and recommendations for policymakers
- Dec. 4 MTAC/TPAC workshop
  - Report on RTP pilot project evaluation and discuss refinements to criteria
  - Review preliminary RTP system evaluation results to further shape draft findings and recommendations for policymakers

Work group next steps

- December 7 Performance work group
  - Wrap up discussions of refinements to project evaluation criteria, system evaluation measure, targets and monitoring measures

Questions and discussion

- Initial reactions and observations?