
**APPENDIX E**

2018 Regional Transportation Plan

# Transportation equity evaluation

*An evaluation of equity, Environmental Justice and Title VI outcomes.*

**December 6, 2018**

**oregonmetro.gov/rtp**

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

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

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

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The 2018 RTP transportation equity evaluation could not have been done without the guidance, direction, and technical feedback from the members of the transportation equity work group. Over the course of two years and eleven meetings, the transportation equity work group members defined the evaluation measures and guided the baseline datasets, methodology, and assumptions for the analysis. To the members who participated over the course of the two years, whether it was only for a single meeting or all eleven, sincerest gratitude for all the efforts and participation.

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## EXECUTIVE SUMMARY

As part of the 2018 Regional Transportation Plan (RTP), Metro conducted a transportation equity evaluation of the financially constrained 2018 RTP investment strategy. The evaluation of the Plan's investment strategy stemmed from the region's elected leadership's desire to understand whether transportation investments make progress towards addressing inequities and disparities experienced by historically marginalized communities. In providing this focus for the Plan, the region undertook an outcomes-based approach to how it evaluates and considers transportation equity. In addition to informing the region's leadership on the performance of the Plan's investment strategy, the evaluation also serves as part of the region's obligation's, as a recipient of federal transportation funding, to ensure the package of investments in the Plan are not discriminating or disproportionately impacting historically marginalized communities.

**Historically Marginalized Communities**

Groups who have been denied access and/or suffered past institutional or structural discrimination in the United States, including: people of color, people with low English proficiency, people with low income, youth, older adults and people living with disabilities.

**Transportation Equity**

The removal of barriers to eliminate transportation-related disparities faced by and improve equitable outcomes for historically marginalized communities, especially communities of color.

Throughout the development of the 2018 RTP, the core tenant of the evaluation work was to bring in historically marginalized communities into the conversation and have them direct and guide the evaluation work. As a result, the development of the 2018 RTP transportation equity evaluation included representatives from community, human services, advocacy, public health as well as jurisdictional partners on the technical working group to bring together different perspectives to inform the development of the evaluation. In addition, through previous input and feedback from the 2014 Civil Rights Assessment, Metro undertook numerous engagement activities, many of which focused on gathering input from historically marginalized communities. These engagement activities ranged from online public comment surveys, with additional efforts to reach historically marginalized individuals to participate, to race-ethnicity specific focus groups to discus transportation priorities, to holding a set of Community Leader Forums and featuring community leaders with elected leaders at the Regional Leadership Forums. The feedback provided through these engagement activities, while not always specific to the discussion of the transportation equity evaluation, provided focal direction to the evaluation.

The 2018 RTP transportation equity evaluation looked at how well the region's planned long-range transportation investments performed relative to transportation priorities identified by historically marginalized communities. The identified transportation priorities

included, but were not limited to: accessibility, affordability, environmental and public health, and safety.[1] Ultimately these are the outcomes in which the Plan's investment strategy was evaluated against, to the degree feasible. There was wide recognition of related inequities and disparities faced by historically marginalized communities, especially as it intersects the transportation system, such as housing, enforcement, and public process.

*Figure E.1. A community leader providing her input at the Regional Leadership Forum*
*Source: Metro*

In significant efforts to revise the Plan to have it better serve as a performance-based planning tool, these identified transportation priorities subsequently shaped transportation-related equity goals and objectives in the Plan.

In the evaluation of the 2018 RTP investment strategy, two rounds of analysis were undertaken. The first round of analysis looked at the initial performance of the 2018 RTP investment strategy and also tested performance measures which were new and unfamiliar to the Plan. Several of the transportation equity evaluation measures were new and the first round of analysis helped to sort out how well these measures worked and informed methodological refinements. The first round analysis also served as a call-to-action to the region and to partners to make refinements to the 2018 RTP investment strategy to gain greater performance in areas regional leadership desire to see better addressed by the investment strategy. This includes transportation equity, safety, addressing climate change, providing travel options, and managing congestion. The second round assessed the 2018 RTP investment strategy performance with the adjustments from partners, in response to the call-to-action.

Overall, the 2018 RTP investment strategy has 814 transportation projects comprising a little over $15.4 billion investment by 2040. Of those 814 transportation projects, 588 transportation investments or 72%, are located within or crossing through historically marginalized communities. A little over 52% of the projects in historically marginalized communities are scheduled to be open for service by 2027, which is positive sign that

[1] Transportation priorities identified are not in prioritized order.

transportation investment in these communities are not being pushed out to the latter part of the plan. The investments in the equity focus areas represent a mix of multimodal investments from active transportation to transit capital to roadway and bridges to throughways (i.e. freeways and state highways).

The final results of the 2018 RTP transportation equity evaluation demonstrate that as it pertains to safety and accessibility, the region is further focusing transportation investment in historically marginalized communities to address active transportation infrastructure gaps and reduce crashes on facilities in historically marginalized communities. However, when looking at accessibility through the lens of whether the RTP investment strategy's effects the ability of the average households in historically marginalized communities to get to a greater number of jobs and community places (e.g. libraries, grocery stores, credit unions, medical facilities) in a reasonable trip time, the results show the Plan will increase job and community place accessibility, particularly by transit. But aside from transit, a greater increase in the number of jobs and community places are accessible to the region's average household and households in the communities with lesser concentrations of historically marginalized communities result from the Plan's investments. The transportation equity evaluation result demonstrates that despite the region's efforts to focus investments to support further access to jobs and community places for historically marginalized communities, other potential strategies are needed in conjunction with further investment to be able to advance accessibility for historically marginalized communities. Additionally, further investigation is needed to understand whether there is a disproportionate or disparate impact.

Overall, the 2018 RTP transportation equity evaluation illustrate that for some outcomes historically marginalized communities identified as a priorities for the system, the investment strategy is making progress and bring positive benefits to these communities. The evaluation also illustrated for some priorities, the region has more work to do to address these areas to support historically marginalized communities and not further exacerbating existing disparities. The mixed results of 2018 RTP transportation equity evaluation means the region must work collectively and deploy a wide range of strategies to address the accessibility disparities historically marginalized communities experience. These strategies include further investment, to better monitoring and research, to complementary land use strategies. Metro knows it has more work to do to address any potential disproportionate impact emerging from the Plan's implementation. But closing the disparities gap and advancing transportation equity cannot be done by one agency; it requires collaboration and partnership. In the greater Portland region, community, business, and elected leaders expressed support for the 2018 RTP focus on measuring transportation equity and addressing the outcomes historically marginalized communities identified for the transportation system. With the expressed support, the next step is to spring into action.

# INTRODUCTION

As part of the 2018 RTP, Metro conducted a transportation equity evaluation of the financially constrained 2018 RTP investment strategy. The purpose of the transportation equity evaluation was to look at how well the region's planned long-range transportation investments performed relative to transportation priorities identified by historically marginalized communities. These identified transportation priorities subsequently shaped transportation equity goals, objectives, policies, and implementation actions in the Plan.

The evaluation takes a system-wide look at the region's long-term investment strategy, to determine whether: 1) progress is being made towards transportation outcomes identified by historically marginalized communities; 2) to determine whether the Plan's investment strategy, in totality, is disproportionately impacting historically marginalized communities and if mitigation measures are necessary; and 3) continue to learn from the assessment to propose technical refinements for future transportation equity evaluations. The 2018 RTP transportation equity evaluation worked to incorporate and reflect previous recommendations from the 2014 Civil Right Assessment, Metro agency direction, federal corrective actions, as well as the latest research and best practices – drawing from national experts, think tanks, engagement, and academic partnerships. These different sources shaped and informed further how to measure equity across the transportation system.

In drawing from the best practices, the 2018 RTP transportation equity evaluation embedded engagement with historically marginalized communities from the beginning and throughout the evaluation process. The engagement shaped what was measured (i.e. the evaluation measures) and ground-truthed the results and findings of the evaluation, further strengthening the evaluation to address the priorities and outcomes historically marginalized communities desire from the transportation system. Elements of the engagement efforts utilized for the 2018 RTP transportation equity evaluation purposes will be discussed throughout the report, but detailed information can be found in the 2018 RTP public involvement summary in Chapter 1 of the 2018 RTP.

In addition to engagement, partnership with academia and research groups informed and shaped the 2018 RTP transportation equity evaluation. Through a grant from the National Institute of Transportation and Communities (NITC) at Portland State University's (PSU) Transportation Research and Education Center (TREC), Metro received research support to conduct background investigation on programmatic equity evaluations and transportation equity evaluation metrics for long-range transportation plans. The NITC funded effort shaped the early phases of the 2018 RTP transportation equity evaluation, particularly in defining the methods for measuring the Plan's investments for the identified transportation priorities. In the latter phases of the 2018 RTP transportation equity evaluation, Metro also received support from the Transit Research Cooperative Program (TCRP) from the Transportation Research Board (TRB) to advance the communication of the equity evaluation results to a broader audience. These elements are further discussed in the Process and Results sections of this report.

Finally, the transportation equity evaluation of the 2018 RTP, as well as its findings and next steps are part of the region's demonstrated compliance toward federal civil rights laws as they relate to transportation planning. Formal statements, for the purposes of federal regulators review of the Plan can be found in the Findings and Conclusions section.

# PROCESS

The development of the 2018 RTP transportation equity evaluation began in Fall 2015 with early stakeholder engagement to determine the priority focus areas for the 2018 RTP. Through a public online survey as well as interviews with regional leadership, including members of the Joint Policy Advisory Committee on Transportation (JPACT), the feedback indicated a strong regional desire to better understand how transportation investments can further advance equitable outcomes. In combination with the recommendations from the 2014 Civil Rights Assessment, a key focus area for the 2018 RTP is to evaluate how well the Plan's investment strategy addresses transportation priorities identified by historically marginalized communities within historically marginalized communities relative to other parts of the region. The following section summarizes the process for developing, conducting, and interpreting the results and findings of the 2018 RTP transportation equity evaluation.

## Phase I – Defining Transportation Equity Evaluation Measures

**Historically Marginalized Communities**

For the purposes of the evaluation, historically marginalized communities are:

- People of Color
- People with Limited English Proficiency
- People in Poverty

As the first steps of the 2018 RTP transportation equity evaluation, Metro staff looked to define a set of measures to evaluate the transportation investments strategy. To determine the measures, Metro staff heeded the advice of national leaders and feedback from 2014 Civil Rights Assessment and applied an approach to allow communities of color, households with lower-income, communities with limited English proficiency, older adults and younger persons to define the priorities and direct the transportation equity evaluation. To inform that effort, as part of the 2018 RTP, Metro convened a transportation equity work group comprised of advocates, labor organizations, community-based organizations as well as jurisdictional staff who focus more on race and social equity, Title VI, and environmental justice in their work. Additionally, the work group also included a member of the Metro's Diversity, Equity, and Inclusion department, who continue to work in parallel to develop and implement Metro's agency-wide strategy to advance racial equity, diversity, and inclusion. (Roster of work group members can be found in the attachments of this report.) The work group became the main advisory body to Metro staff working to develop the 2018 RTP transportation equity evaluation. Additional input and feedback on the evaluation was sought throughout the process at key milestones of the equity evaluation. A summary of the engagement, including focused efforts to gather feedback from historically marginalized communities on the 2018 RTP transportation equity evaluation as well as other components of the plan can be found in the attachments.

In taking the direction of having the 2018 RTP transportation equity measures reflect community priorities, Metro staff, as a starting place, undertook a multi-pronged approach to identify the different transportation needs, issues, concerns, and priorities of expressed by historically underrepresented communities. The multi-pronged approach consisted of:

1) Conducting a retrospective of recent public comment reports on various planning efforts;
2) Conducting a verification exercise with members of the transportation equity work group; and
3) Requesting public input through an online questionnaire, with additional outreach and efforts undertaken to gather questionnaires from historically marginalized communities.

Using the three different approaches helped to create major themes of transportation priorities. The list of identified priorities became the starting point for the next phase of work to identify methods for evaluating the Plan's investment strategy. The initial starting point list is below:

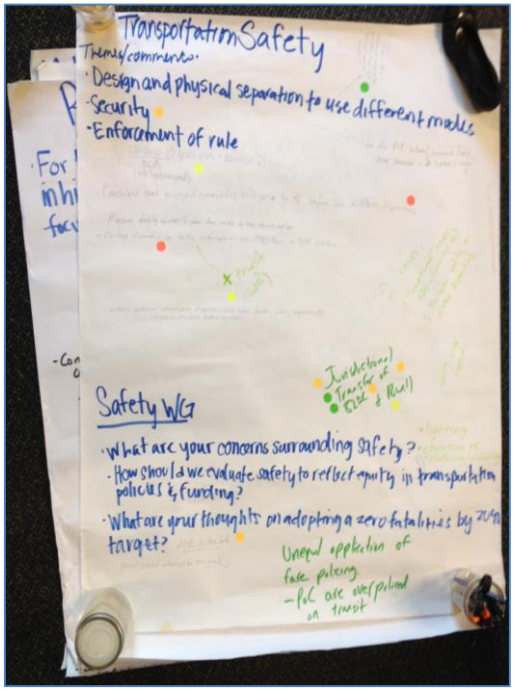


*Figure E.2. A photograph of the Transportation Equity Work Group exercise, February 2016.*
*Source: Metro*

***Table E.1. Summary of Feedback from Historically Marginalized Communities on Regional Transportation System Priorities***

| Transportation Theme | Sub-Theme | Description |
|---|---|---|
| Accessibility | Access to Places | Historically underrepresented communities, older adults, and youth are able to get to jobs, every day services, and schools easily and by different forms of transportation and at different times of day. |
| | Infrastructure | A variety of modes should be physically accessible to historically underrepresented communities, older adults, and youth; multimodal investments should be designed for universal access and prioritized. |
| | Travel Options | All places should have different travel options available to make a trip with a particular emphasis to invest in |

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|---|---|---|
| | | multimodal options in historically underrepresented communities.<br><br>All places should have different travel options available to make a trip and ultimately that means features like crosswalks, sidewalks, bikeways, and lighting. These elements should not be an afterthought in planning. |
| | Travel Time and Reliability | The travel time and the reliability of using other modes of transportation outside of a personal vehicle should be reliable, dependable, practical, competitive and timely which makes these options viable for historically underrepresented communities, older adults, and youth. |
| | Transit | It is more frequent and goes more places. |
| Safety | Infrastructure | Invest in safer more frequent crossings, overcrossings for arterials and freeways, bike lanes that are designed with physical separation of different modes and lighting throughout the region, but with particular emphasis in areas with communities of color, households with lower-incomes, older adults, and younger person. Safe routes and the infrastructure to make it safe for walking, biking, and accessing transit should not be an afterthought in planning and street design. Street retrofits should be an option and considered. Address infrastructure disparities first when funding safety improvements; pair with crash data and an equity lens. |
| | Security | People should feel a sense of personal safety and free of being a target/victim of crime when using the transportation system, regardless of time of day, day of the week, location, or mode. |
| | Enforcement | Enforce traffic rules for users and infrastructure standards when building non-automobile infrastructure.<br><br>Certain community members should not experience or feel a disproportionate burden of being targeted by enforcement officials when using the transportation system; particularly as it pertains to any form of fee or fare evasion or traffic enforcement. |
| Affordability | Housing and Transportation Costs | Housing and transportation costs are manageable for households of all incomes by making housing options, |

| | | |
|---|---|---|
| | | particularly affordable housing options, available in areas with good transportation infrastructure and transit service. |
| | Transportation costs | Reduce transportation costs for historically underrepresented communities, older adults, and younger persons with an emphasis on reducing the upfront cost of using any travel options and the expense of getting to employment centers for low income neighborhoods. |
| | Transit | Greater affordability in the use of the transit system.<br><br>Certain community members should not experience or feel a disproportionate burden of being targeted by enforcement officials when using the transportation system; particularly as it pertains to any form of fee or fare evasion or traffic enforcement. |
| Environmental Health | Disproportionate environmental and health impacts | The environmental and health impacts and conditions established by transportation infrastructure, services, and use should not disproportionately impact historically underrepresented communities, older adults, and youth.<br><br>The implementation of transportation projects should not create environmental or public health conditions which disproportionately impact historically underrepresented communities in negative ways.<br><br>The implementation of transportation projects should aspire to more than preventing further harm, but rather or create conditions which strengthen social cohesion of communities, remedy historic injustices and existing health disparities. |
| | Community health and stability | Transportation should provide opportunities to contribute positively to community health and supporting communities. |
| Involuntary Displacement | Displacement | The transportation policies and/or investments which may create market conditions for the displacement of existing communities must be addressed at the forefront of |

| | | |
|---|---|---|
| | | planning and project development. The implementation of mitigation strategies is essential and support community stability and preventing the negative redesign of a community. |
| | Shared prosperity | The benefits of transportation investments should be experience and shared with the existing communities and in tandem with community mitigation measures to minimize fears of being priced out and unable to share in the benefits. |
| Community Input/ Acknowledgement | Community input | Ask communities what and where their priorities are to understand where different transportation considerations (i.e. modes, investments) falls in community hierarchy of need and ask how they want those considerations implemented. |
| | | Support efforts to have community conversations to gather input by funding CBOs to organize community conversations and improve planning process. Focus in areas rich for displacement to have the dialogue. |
| | Acknowledgement | Acknowledge community members are just as important as other traditional planning stakeholders and in turn make communities visible. |
| | | Recognize the lived experience by communities and use the past experience to inform strategies which mitigate and prevent negative impacts of communities in conjunction with good data in decision making. |
| | Community as an actor for transportation success | Plan for people and community stability over place and make space for lived experiences in conjunction with good data in implementing transportation projects. |
| Major Social Policies | Major policies | Transportation is a significant part of the fabric of communities, but transportation and its associated policies and investments cannot resolve and address all deep social inequities. Other major policies are needed in tandem, including reducing the gap of wage disparities and even significant innovation in certain transportation policy areas. |

*Source: Various Metro public engagement reports for recent plans and projects, community engagement conducted by and on behalf of Metro, transportation equity work group feedback.*

Further detail about the public comment retrospective, the summary of the work group exercise, and the online questionnaire can be found in the attachments of this report.

## Phase II – Development of Evaluation Measures and Methodology

The development of the 2018 RTP transportation equity evaluation measures and their methodologies leveraged the research and academic support provided through the NITC grant. Once Metro staff had an initial starting point list of priorities, the team at PSU, consisting of a professor and an urban planning masters candidate from the Nohad A. Toulan School of Urban Studies and Planning, went to work in conducting a literature review of equity analyses undertaken by regional agencies and looking into the different ways in which the list of priorities have been evaluated. Metro staff had a kick off meeting with the PSU research team to discuss which analytical tools and datasets would be available for the 2018 RTP transportation equity evaluation, which ultimately set the limitations of the evaluation. The research helped to narrow which transportation priorities identified by historically marginalized communities would be most suitable for evaluating the Plan's investment strategy, based on the limitations. Based on the results of the NITC research, the technical work group was presented a recommendation of four categories and eight transportation equity evaluation measures to move forward in developing detailed methodologies and deploy as part of the 2018 RTP, as seen in Table E.2. The other priority topics raised, to the extent possible, were provided to Metro staff to help inform other work related to the development of the 2018 RTP. For example, Metro's communications and engagement staff received the public involvement and engagement comments for consideration in shaping outreach for the 2018 RTP.

***Table E.2. Historically Marginalized Communities Identified Themes and Evaluation Measures Crosswalk***

| Category (Priority) | Evaluation Measures |
|---|---|
| Accessibility | Access to Travel Options – System Completeness and Connectivity |
| | Access to Jobs (by wage) |
| | Access to Community Places |
| Safety | Share of Safety Project |
| | Exposure to Crash Risk |

| | |
|---|---|
| Affordability | Combined Housing and Transportation Expenditure and Cost Burden |
| Environmental Health | Air Pollution Exposure |
| | High Value Habitat Loss |

*Source: Metro and Portland State University research team.*

## Phase III – Evaluation Testing

Following discussions of the recommended transportation equity evaluation measures, Metro staff began working with the agency's research center and travel demand modeling staff to prepare the technical elements for each transportation equity evaluation measure prior to the solicitation of investment priorities (i.e. transportation projects) for the 2018 RTP. In conversation and through the technical preparation process of the transportation equity evaluation measures, it was determined that additional resources and expertise would be necessary to be able to develop and deploy the method for evaluating two of the seven transportation equity evaluation measures. These are:

- Affordability – Combined Housing and Transportation Expenditure and Cost Burden
- Environmental Health – Air Pollution Exposure[2]

As a result of the resource, knowledge, and capacity constraints, the affordability and the environmental health-air pollution equity evaluation measures are being deferred for development as part of the 2023 RTP. The recommendations of the deferments can be seen as part of the activities and work program items listed in Chapter 8: Implementation.

In light of recognizing these capacity constraints and broader interests, Multnomah County coordinated an effort among the county public health agencies (Washington and Clackamas) as well as the Oregon Health Authority to bring resources to the evaluation of the 2018 RTP. Through Multnomah County's coordination effort, Metro is working in partnership with the Oregon Health Authority to evaluate the 2018 RTP investment strategy with the Integrated Transport and Health Impact Modeling Tool (ITHIM) to look at public health outcomes from the Plan's investments. The region has familiarity with the ITHIM tool as it was used as part of the 2014 Climate Smart Strategy and provided a vital public health lens to the work.

[2] Metro continues to conduct transportation emissions and air pollution analysis at a region-wide scale, despite the region's formal reprieve of federal requirements pertaining the transportation emissions analysis. In the identification of transportation priorities, the concerns pertaining to air pollution relate to localized hot spot pollution in nearby communities from heavy volumes of vehicle and truck traffic, traffic congestion, and diesel fuel emissions. Currently Metro's air quality modeling tools are unable to produce fine grain localized air pollution results. More localized pollution and dispersion modeling would necessitate partnerships with environmental regulatory agencies. The more localized air pollution analysis is a desired next step for the equity analysis work.

For the remaining transportation equity evaluation measures, Metro staff utilized the development of the 2018-2021 Metropolitan Transportation Improvement Program (MTIP), happening from November 2016 – April 2017, to conduct an early test run the newly developed transportation equity evaluation measures. Since the MTIP is a smaller package of transportation investments, it served as an opportunity to see how the measures work against a short-term investment strategy and helped to refine the transportation equity evaluation measures methods prior to their deployment with the 2018 RTP. Through the 2018-2021 MTIP, the remaining six transportation equity evaluation measures tested relatively well to the 2018-2021 MTIP investment strategy. As a result, some minor refinements and adjustments were made to the individual transportation equity evaluation measures. Certain transportation equity evaluation measures when tested with the 2018-2021 MTIP did not necessary show any clear set of results and were highly debated at work group and technical advisory committee tales. These were:

- Safety - Exposure to Crash Risk
- Environmental Health – High Value Habitat Loss

At the time, the possible attribution to the lack of clear results may be related to the composition of the 2018-2021 MTIP investments. For example, many investments within the $1.6 billion dollar package are programmatic safety and roadway maintenance (e.g. repaving, bridge deck repair) investments, which are not modeled in the travel demand model, which is the main evaluation tool for the Exposure to Crash Risk measure. Recognizing the significant level of discussion and the grey results these two transportation equity evaluation measures garnered, Metro staff decided to continue to move them forward as part of the 2018 RTP evaluation, but reserved the right to withdraw them from the evaluation for the second round of evaluation.

## Phase IV – 2018 RTP First Round Evaluation & 2018 RTP Investment Strategy Refinement

With approval from JPACT, the Metropolitan Policy Advisory Committee (MPAC) and the Metro Council opened a “call for projects” from June – July 2017 and asked jurisdictional partners to nominate transportation investment priorities (i.e. transportation projects) for the 2018 RTP investment strategy. In the nomination of investments, jurisdictional partners were asked to nominate those investments which advance regional goals and objectives, which include safety, equity, transportation system and demand management, economic

competitiveness, compact form, and other goals. At the close of the call for projects, proposed was a 2040 constrained investment strategy of $14.8 billion dollar and a $6.6 billion 2040 strategic investment strategy. These two investment strategies as well as a near-term 2027 constrained investment strategy comprised the Round 1 evaluation of the 2018 RTP.

From August – November 2017, Metro conducted the first round of evaluation of the 2018 RTP investment strategy. This first round included the five evaluation measures identified as part of the 2018 RTP transportation equity evaluation as well as ten other transportation evaluation measures, such as mode share, vehicle miles traveled, traffic congestion, air pollution, greenhouse gas emissions, and others.[3]

At the completion of the first round evaluation, the results from the transportation equity evaluation were first presented at the transportation equity work group. At the work group meeting, staff facilitated a discussion with work group members asking:

- What do work group members see in the results presented? What are the conclusions to be drawn? Have the initial thoughts presented by staff appear consistent with what the work group sees in the results?
- Do the results presented seem true to your community experiences or the experiences heard vocalized by historically marginalized communities?
- Are there concerns not reflected in the results?
- What messages and takeaways should staff communicate?
- When results are at pace or slightly greater than the region, is there a disproportionate impact?

In early sharing of the results with the transportation equity work group, the input from work group shaped the findings and also ground-truth the results before presenting before other advisory committees. The sharing of the first round evaluation results and gathering input was the final meeting of the technical work group. After two years of regular meetings, the work group had completed its charge in provide input and direction to Metro staff on the development of a transportation equity evaluation method.

Following the work group meeting, the transportation equity evaluation and the broader evaluation of the 2018 RTP investment were shared at a joint work group and technical advisory committee workshop in early December 2017 posing similar questions. The robust feedback provided around the first round of results of the 2018 RTP investment strategy and also provided direction and guidance on communicating the results. The information greatly shaped the presentations over the course of December 2017 – February 2018, where Metro staff discussed the first round evaluation at other RTP work groups, technical

[3] Each of the 2018 RTP system evaluation measures had multiple components of analysis and reporting. Therefore the reporting of the results for a single evaluation measure has many different results segments.

committees, county coordinating committees, and through public comment opportunities. Additionally, a separate discussion was held with community leaders at a Community Leaders Forum. The discussion of the results and finding from the first round transportation equity evaluation can be found in the Results section of this report.

*Figure E.3. Community Leaders Forum, January 2018.*
*Source: Metro*

During the road show of presentations of the first round of results from the 2018 RTP transportation equity evaluation, the Metro Council held a work session to gain a further understanding the evaluation results. In gathering a more detailed understanding of the technical underpinnings of the analysis, its assumptions, and limitations, the Metro Council asked staff to provide further focus for the second round of the transportation equity evaluation. The direction provided to staff was to bring into further alignment the evaluation with the agency's Strategic

*Figure E.4. Community, business, and elected leaders discussing the 2018 RTP evaluation results, March 2, 2018*
*Source: Metro*

**Regional Leadership Direction for the 2018 RTP Investment Strategy Refinement**

We can make more near-term progress on key regional priorities – equity, safety, travel options and congestion.

- Advancing projects that address these outcomes to the 10-year list will improve people's lives by making travel safer, easing congestion, improving access to jobs and community places, attracting jobs and businesses to the region, saving households and businesses time and money, and reducing vehicle emissions.

This is an opportunity to reduce disparities and barriers that exist for historically marginalized communities.

- Advancing projects that improve safety and expand travel options to the 10-year list will reduce disparities and barriers, especially for people of color and households of modest means.

Prioritize projects that focus on safety in high injury corridors.

- Advance projects in high injury corridors to the 10-year list and ensure all projects in high injury corridors address safety to reduce the likelihood and severity of crashes for all modes.

Accelerate transit service expansion.

- Increase transit service as much as possible beyond Climate Smart Strategy investment levels. Focus new and enhanced transit service to connect transit to underserved communities to jobs and community places, in congested corridors and in areas with more jobs and housing.

*Continued on next page*

Plan to Advance Racial Equity, Diversity, and Inclusion. As a result, Metro staff adjusted the focus on historically marginalized communities to be towards people of color, people with limited English proficiency, and people in poverty. In identifying the areas of the region where there is a greater residential concentration of these communities, these areas have been referenced as "Equity Focus Areas" as part of the second round analysis of the Plan's refined investment strategy.

The culmination of feedback on the first round of evaluation results was presented at the final Regional Leadership Forum on March 2, 2018. The gathering of elected leaders, including members of JPACT and MPAC, the Metro Council, as well as local business and community leaders marked a point in the 2018 RTP development process of what investments to emphasize in the 2018 RTP investment strategy to better meet and align to regional goals and objectives. Feedback and direction from MPAC, JPACT, and the Metro Council directed partners relook at the 2018 RTP investment strategy and look for opportunities for refinement to make more near-term progress on regional priorities related to equity, safety, travel options, greenhouse gas reduction, and traffic congestion. Metro staff, in opening the 2018 RTP investment strategy refinement period asked jurisdictional partners to review the transportation investments nominated to see how these projects can better address equity, safety, Climate Smart, and managing congestion. The closing date to refine investment priorities was April 29, 2018.

Additionally, from a technical evaluation perspective, Metro staff recommended for the second evaluation of the 2018 RTP investment strategy, only four of six evaluation measures move forward. The two evaluation measures not assessed as part of the second round of evaluation are:

- Safety - Exposure to Crash Risk
- Environmental Health – High Value Habitat Loss

Additionally, the connectivity analysis elements of the Access to Travel Options evaluation measure are not assessed as part of the refined 2018 RTP investment strategy.

The staff recommendation emerged from the first round evaluation of the 2018 RTP investment strategy not providing a clear set of results which would inform jurisdictions how best to adjust. Metro staff acknowledges further refinement work needed for these two measures to best determine how to deploy these evaluation measures in the future.

The refinement period resulted in adjustments and focus to the 2018 RTP investment strategy. In total, 634 investment priorities saw refinements and 53 new investment priorities added. An initial preview summary of the refinements and changes to the 2018 RTP investment strategy was presented at the May 2018 meeting of JPACT, MPAC, and at the Metro Council work session on May 1st.

From the descriptions of adjustments provided by jurisdictions, many took the direction from the regional, business, and community leaders in March 2018 and looked for ways to adjust and refine the 2018 RTP investment strategy to address the seven actions. (See attachments for summaries provided by jurisdictions of refinements.) In summary, the following actions during the refinement period:

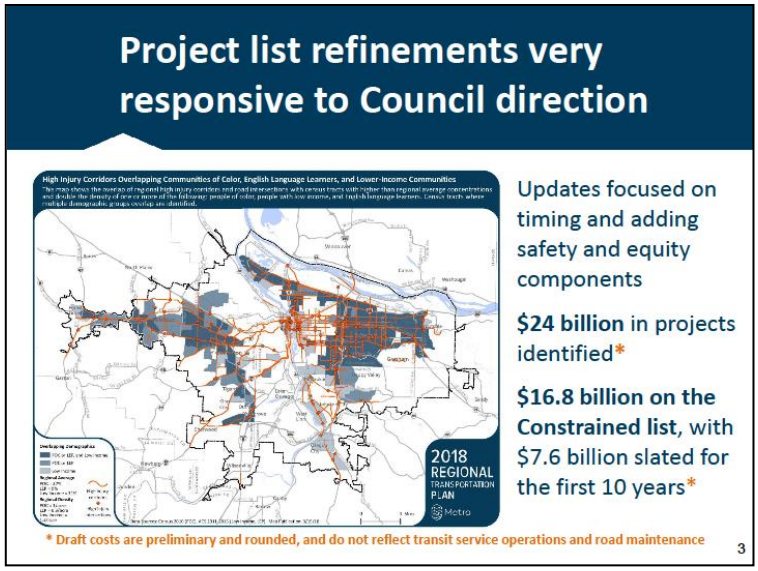



*Figure E.5. A presentation slide from the Metro Council work session on the refinement updates, May 1, 2018*
*Source: Metro*

- Advanced transportation investment priorities, particularly in active transportation which address equity, safety, and climate change to the first 10-years of the 2018 RTP;

- Provided greater clarity or refined investment priorities to reflect safety issues being addressed;
    - Projects also expressed the ancillary safety benefit provided, even if the project was not directly focused on reducing fatal or serious injuries and/or crashes.
- Unbundled a number of programmatic bucket projects and provided spatial detail to further allow the transportation equity system evaluation better reflect the system completion and equity considerations to these investments;
    - For example, a common practice is for a jurisdiction to submit a citywide sidewalk infill project as a catch-all for any sidewalk project. Instead jurisdictions, to the degree known, identified and provide more spatial detail to sidewalk and active transportation projects;
- Further assessed which projects were in the Equity Focus Areas and sought opportunities to advance projects into the 2027 constrained investment strategy.
- Transit agencies included additional service hours to the 2040 constrained network to help reach goals set forth in the region's Climate Smart Strategy.

The following table, from Chapter 6 of the 2018 RTP, summarizes the refinements to the financially constrained investment strategy.

***Table E.3. Seven key recommendations and refinement of RTP projects lists***

**Regional Leadership Direction for the 2018 RTP Investment Strategy Refinement**

Tackle congestion and manage travel demand.

- Advance lower cost projects to the 10-year list that use designs, travel information, technologies, and other strategies to support and expand travel options and maximize use of the existing system. This will help ease congestion and keep people and goods moving safely and reliably. It will be important to ensure that lower income households are not financially burdened by strategies to make road use more efficient.

Prioritize completion of biking and walking network gaps.

- Advance projects that fill gaps for biking and walking in high injury corridors or that provide connections to transit, schools, jobs and 2040 centers to the 10-year list.

We must continue to build public trust through inclusive engagement, transparency and accountability.

- Leaders agreed that it is important to continue engaging the region's diverse communities in the planning and implementation of projects to achieve desired outcomes, including equity, safety, reliability affordability and health. We should report back whether projects deliver (or don't deliver) anticipated outcomes and adjust course as needed. Improved participation, transparency and accountability with our investment decisions will help build broad support for more investment in our communities.

| | |
|---|---|
| **Make more near-term progress on key regional priorities – equity, safety, travel options and congestion.** Advance projects that address these outcomes to the 10-year list to make travel safer, ease congestion, improve access to jobs and community places, attract jobs and businesses to the region, save households and businesses time and money, and reduce vehicle emissions. |  |
| **Make more near-term progress to reduce disparities and barriers that exist for historically marginalized communities.** Advance projects that improve safety and expand travel options to the 10-year list to reduce disparities and barriers, especially for people of color and households of modest means. |  |
| **Prioritize projects that focus on safety in high injury corridors.** Advance projects in high injury corridors to the 10-year list and ensure all projects in high injury corridors address safety to reduce the likelihood and severity of crashes for all modes. |  |
| **Accelerate transit service expansion.** Increase transit service as much as possible beyond Climate Smart Strategy investment levels. Focus new and enhanced transit service to connect transit to underserved communities to jobs and community places, in congested corridors and in areas with more jobs and housing. |  |
| **Make more near-term progress to tackle congestion and manage travel demand.** Advance lower cost projects to the 10-year list that use designs, travel information, technologies, and other strategies to support and expand travel options and maximize use of the existing system. It will be important to ensure that lower income households are not financially burdened by strategies to make road use more efficient. |  |
| **Prioritize completion of biking and walking network gaps in the near-term.** Advance projects that fill gaps for biking and walking in high injury corridors or that provide connections to transit, schools, jobs and 2040 centers to the 10-year list. |  |
| **Continue to build public trust through inclusive engagement, transparency and accountability.** Continue to engage the region's diverse communities in the planning and implementation of projects to achieve desired outcomes, including equity, safety, reliability affordability and health. Report back whether projects deliver (or don't deliver) anticipated outcomes and adjust course as needed. |  |

*Source: Metro Regional Leadership Forum #4 Discussion Guide and Summary*

Part of the refinements and addition of new projects can be attributed to slight updates to the 2018 RTP revenue forecast. When the 2018 RTP call for projects began in summer 2017, the Oregon State legislature had just passed House Bill 2017, which infused new statewide

transportation revenues for an array of transportation projects across different modes (i.e. freeway expansion, active transportation, a new safe routes to school infrastructure program), pass-through funds directly to jurisdictions for either capital or maintenance projects, and significant new funds for transit agencies for transit operations and service. The Portland metropolitan region saw sizable new funding, which at the time had not been assumed as part of the revenue forecast. The new revenues aided in the flexibility of advancing and/or shifting projects into different timeframes of the Plan and adding new investment priorities.

Overall, the 2040 constrained investment strategy has 588 transportation investments (72%), out of 814 transportation investments located within or crossing through the equity focus areas.[4] A little over fifty-two percent (52%) of the projects in the equity areas are scheduled by 2027, which is positive sign that transportation investment in these communities are not being pushed out to the latter part of the Plan. The 588 transportation investments located in equity focus areas break down as the following types of projects.

***Table E.4. Modal Profile of 2027 and 2040 Constrained Investment Strategies***

| | 2018 RTP (2018-2027) | | 2018 RTP Constrained (2018-2040)[5] | |
|---|---|---|---|---|
| | Number of Projects | Investment | Number of Projects | Investment |
| Active Transportation | 132 | $ 696,842,229 | 248 | $ 1,461,206,646 |
| Freight | 13 | $ 73,716,667 | 19 | $ 112,783,667 |
| Roads and Bridges | 106 | $ 895,828,533 | 221 | $ 2,220,546,408 |
| Throughways | 13 | $ 834,500,000 | 18 | $ 4,217,866,000 |
| Transit Capital | 18 | $ 3,225,000,000 | 33 | $ 5,060,800,000 |
| Transportation Demand Management | 7 | $ 49,772,875 | 13 | $ 125,994,975 |
| Transportation System Management (Technology) | 18 | $ 68,808,400 | 36 | $ 184,217,888 |

[4] The total 814 projects include Metro programs (e.g. transit-oriented development) and other regionwide programmatic investments which do not have spatial attribution. The 588 projects in equity focus areas do not include the Metro programs and other regionwide programmatic investments and only represent capital projects.

[5] Includes the transportation investments in the first ten years of the 2018 RTP.

| | | | | |
|---|---|---|---|---|
| **Grand Total** | 307 | $ 5,844,468,704 | 588 | $ 13,383,415,584 |

*Source: Metro 2018 RTP project hub*

Further detail regarding the refinements and the profile of the refined project list can be found in the Results section and in Chapter 6 of the 2018 RTP.

## Phase V – Final 2018 RTP Transportation Equity Evaluation with Findings

Following the end of the refinement period in April 2018, Metro staff conducted a second evaluation of the 2018 RTP investment strategy. The 2018 RTP investment strategy was assessed against a total of thirteen (13) transportation system evaluation measures, four of which explicitly included a transportation equity component. The four transportation equity evaluation measures assessed were:

- Access to Travel Options – System Completeness and Connectivity
- Access to Jobs
- Access to Community Places
- Share of Safety Projects

As addressed in the previous section, two evaluation measures were not recommended for the evaluation of the final 2018 RTP investment strategy because in the initial evaluation of the 2018 RTP, the measures did not provide any clear results or information to help refine the 2018 RTP.

Initial results from the final evaluation of the 2018 RTP investment strategy began to be released in late June 2018.

Metro staff reconvened the attendees of the Community Leaders Forum to discuss the results of the second round of evaluation of the 2018 RTP investment strategy and also discuss the remaining key milestones for the 2018 RTP in late June 2018. The reconvening was based on the positive response to the initial Community Leaders Forum, where community leaders provided vital input and feedback on the 2018 RTP initial evaluation results to staff which ultimately shaped regional leaders direction to staff for the refinement period. The reconvening, scheduled two days prior to formal 2018 RTP public comment period, allowed for community leaders to learn about second round evaluation results in preparation and encouragement to submit comments. Additionally, Metro staff contacted

members and interested parties of the transportation equity work group announcing the results of the final evaluation of the 2018 RTP investment strategy. Staff encouraged work group members to review the results and provide thoughts and comments in the upcoming public comment period for the 2018 RTP.

On June 29, 2018, the public comment period opened for the draft 2018 RTP. The 2018 RTP public comment period ran through August 13, 2018. During the 45-day public comment period, Metro received:

- Over 2,400 comments by 880 online survey participants;
- 50 formal comment letters from community members, jurisdictions, non-governmental agencies, and private companies;
- 207 emailed comments;
- 7 in-person public testimonies at the August 2nd public hearing on the draft 2018 RTP.

Additionally, over 25 participants representing 13 federal and state resource agencies, economic development entities, and tribal governments participated in consultation meetings during or shortly after the comment period.

More details on the public comment period and the full comment log with Metro responses can be found in Appendix D of the 2018 RTP.

In review of all the comments received, about a dozen were directed at the 2018 RTP transportation equity evaluation. Comments received ranges from support of the policies and evaluation work to requests for additional analysis. Staff provided responses to substantive feedback and where appropriate made refinements to the 2018 RTP.

The findings and conclusion from the 2018 RTP transportation equity evaluation were finalized after the summer public comment period on the 2018 RTP. The final draft 2018 RTP with the transportation equity evaluation report was presented to the Transportation Policy Alternatives Committee (TPAC), Metro Technical Advisory Committee (MTAC), the Joint Policy Advisory Committee on Transportation (JPACT), and the Metropolitan Policy Advisory Committee (MPAC) through September and early October 2018. TPAC and MTAC recommended for approval of the 2018 RTP and the transportation equity evaluation to JPACT and MPAC at those meetings. In October 2018, MPAC and JPACT unanimously (with one abstention) made their recommendations to the Metro Council to adopt the 2018 RTP. The Metro Council provided final direction to staff on preparing the adoption package for the 2018 RTP in November 2018 and a public hearing was held on November 8th. The public hearing received four public testimonies. The final 2018 RTP with the transportation equity evaluation was adopted in December 2018.

# METHODOLOGY

To develop the 2018 RTP transportation equity system evaluation, the work began by identifying where concentrations of historically marginalized communities are located within the region and through their direction and input, defining transportation priorities to evaluate the 2018 RTP investment strategy. The transportation equity evaluation purpose is to see how the 2018 RTP investment strategy performs in advancing historically marginalized communities priorities for the transportation system and to look at whether the investments performs at a greater rate than the overall region and in communities with limited presence of historically marginalized communities. For the evaluation, the entire package of investments was evaluated in combination, not by individual investments (also known as projects), to look at how these investments interacted to advance outcomes historically marginalized communities identified system wide.

## Historically Marginalized Community Definitions

At the start of the process, Metro staff needed to start by identifying historically marginalized communities. The identification of the five communities came from stakeholders desire to see communities which have historically experienced challenges with the transportation system be reflected in the assessment. Additionally, certain communities were identified as demographic groups to address in transportation planning as part of federal civil rights and environmental justice regulations. The set of historically marginalized communities as part of the 2018 RTP transportation equity evaluate are identified and defined below. [6]

Communities included as part of the 2018 RTP transportation equity evaluation:

- People of Color
- People in Poverty
- People with Limited English Proficiency
- Older Adults

[6] People with disabilities were also identified as a historically marginalized community. Due to data limitations, people with disabilities were not included as part of the 2018 RTP transportation equity evaluation. However, recommendations and actions from TriMet's Coordinated Transportation Plan for Seniors and People with Disabilities, adopted in 2016 have been incorporated throughout elements of the 2018 RTP.

- Young Persons

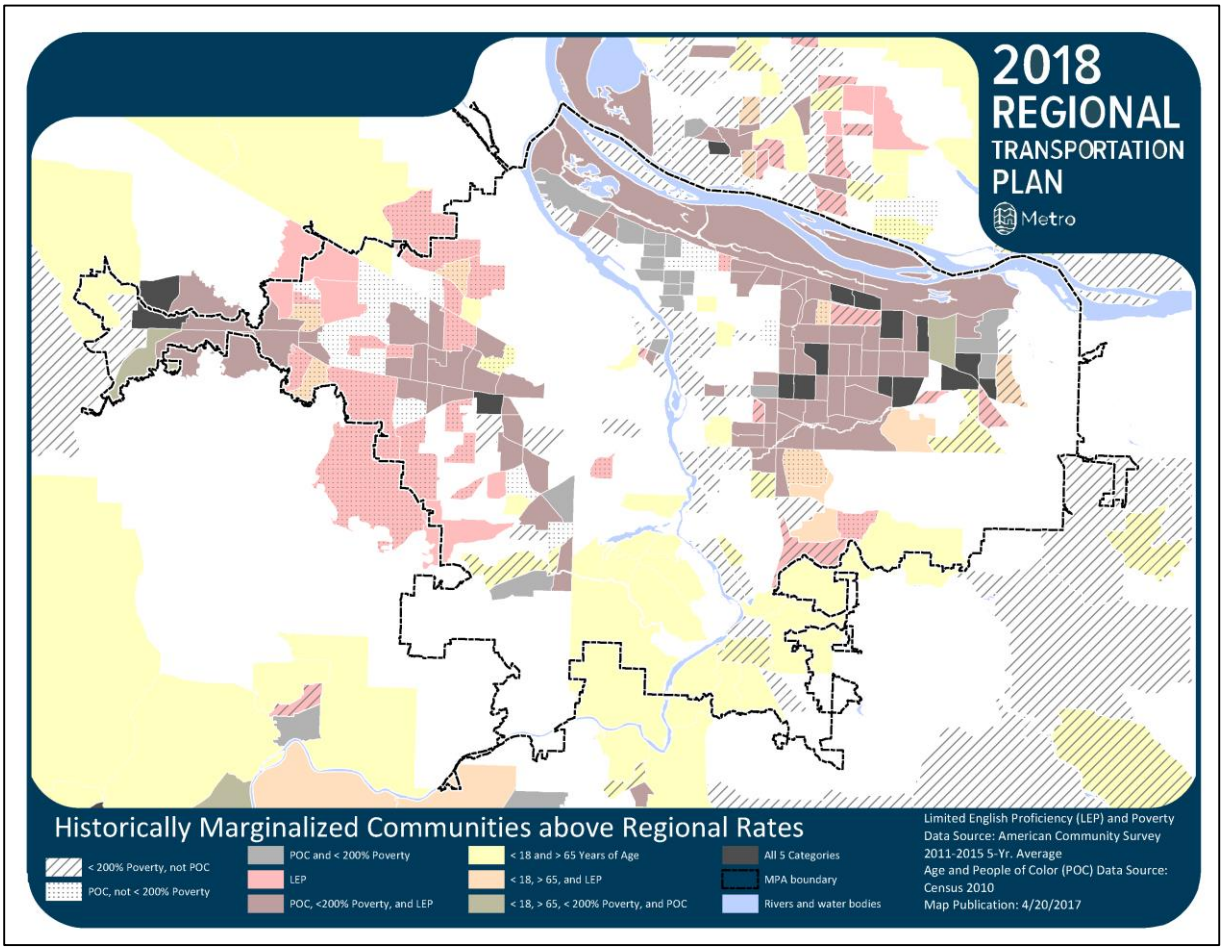
To identify locations where these communities reside in concentration, demographic data supplied by the U.S. Census Bureau helped identify communities and general spatial distribution. The regional rate (i.e. regional average) for the individual historically marginalized community (with the exception for older adults and young persons) served as the threshold for determining concentrated locations of historically marginalized communities. For older adults and younger people, the regional rate must be realized for both communities as the spatial distribution, just based on regional rate, would illustrate patterns where every area in the region would be considered a historically marginalized community. Definitions and geographic thresholds are in Table E.5 and a represented in Figure E.1.

***Table E.5. Historically Marginalized Communities***

| Community | Definition | Geography Threshold | Date Source |
|---|---|---|---|
| People of Color | Persons who identify as non-white. | Census tracts above the regional rate (26.5%) for people of color. | 2010 Decennial Census |
| People in Poverty | Households with incomes equal to or less than 200% of the Federal Poverty Level (2016); adjusted for household size | Census tracts above the regional rate (31.1%) for Household with Lower-Income | American Community Survey, 2011-2015 |
| People with Limited English Proficiency | Persons who identify as unable "to speak English very well." | Census tracts above the regional rate (8.5%) for Limited English Proficiency (all languages combined). | Oregon Education Department School Enrollment Data (LEP only) |
| Older Adults | Persons 65 years of age and older | Census tracts above the regional rate for Older Adults (11%) AND Young People (22.8%) | 2010 Decennial Census |
| Young People | Persons 17 years of age and younger | | |

*Source: Metro, 2018 RTP transportation equity work group*

Figure E.6. Historically Marginalized Communities (2018 RTP Round 1 Evaluation)




*Source: Metro*

By request of the transportation equity work group members, Metro staff developed a more focused lens of historically marginalized communities to evaluate the Plan's investment strategy. The more focused lens reflects areas in which there are higher concentrations of people of color, people in poverty, and people with limited English proficiency. To identify areas of higher concentrations, a population density threshold was applied to define geographic areas with high concentrations of people of color, people in poverty, and limited English proficiency. Additionally, people of color were weighted in the concentration. This request recognized the wishes of stakeholders that with limited amounts of investment, in what areas can the greatest concentration of historically marginalized communities be served and reached. Additionally, there were request to assess small pockets of

concentrated language isolation. Therefore, identified areas of safe harbor communities were also included as part of the focused look, known as Focused Historically Marginalized Communities. Definitions and geographic thresholds are in Table E.6 and a represented in Figure E.7.

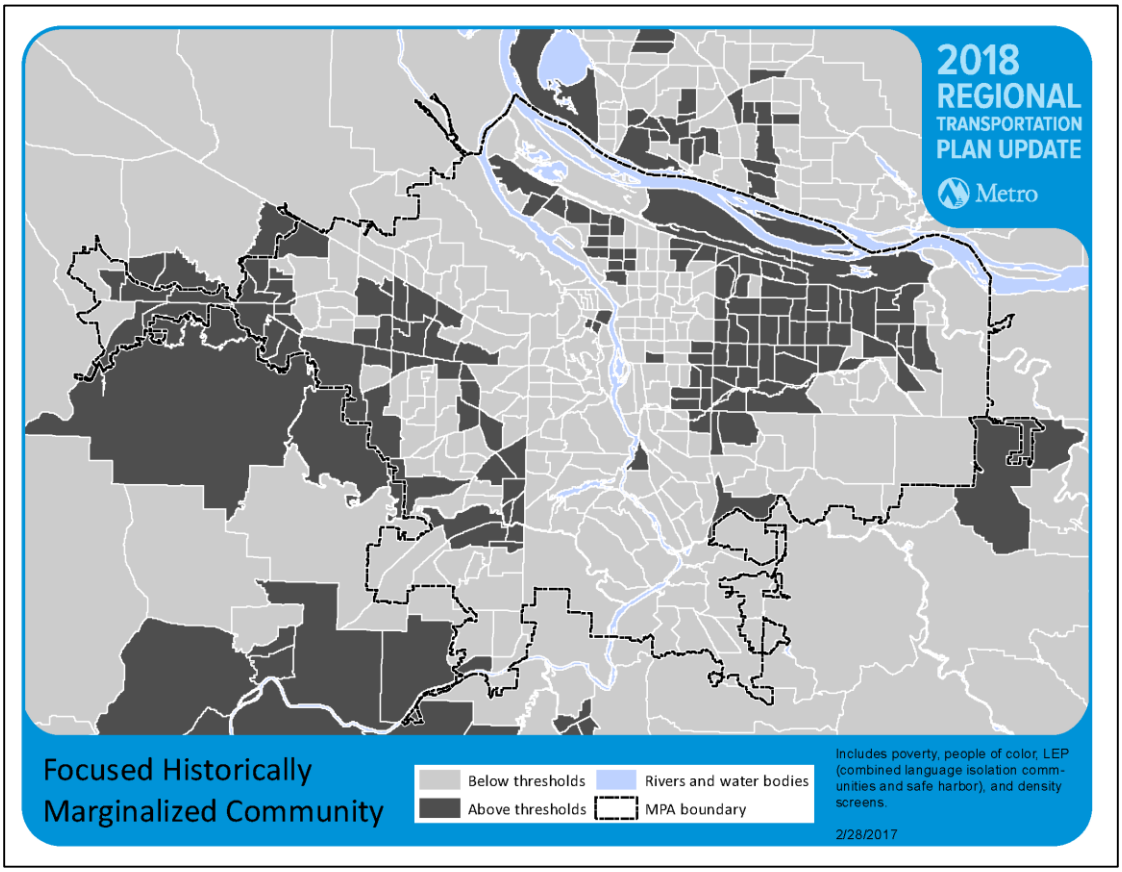
***Table E.6. Focused Historically Marginalized Communities Definitions***

| Community | Geography Threshold |
|---|---|
| People of Color | The census tracts which are above the regional rate for people of color AND the census tract has twice (2x) the population density of the regional average (regional average is .48 person per acre). |
| People in Poverty | The census tracts which are above the regional rate for low-income households AND the census tract has twice (2x) the population density of the regional average (regional average is .58 person per acre). |
| People with Limited English Proficiency | The census tracts which are above the regional rate for low-income households AND the census tract has twice (2x) the population density of the regional average (regional average is .15 person per acre) OR those census tracts which have been identified as "safe harbor" tracts for language isolation.[7] |

*Source: Metro, 2018 RTP transportation equity work group*

[7] Safe Harbor is a provision within Title VI of the Civil Rights Act of 1964 which addresses for when and how agencies are to provide language assistance to limited English proficiency persons to ensure access to all public resources. The safe harbor provision mainly addresses translation of documents and language assistance, however for analysis purposes; it may help to identify areas where additional attention is warranted because of a concentration of language isolation. Safe harbor applies when a language isolated group constitutes 5% or 1,000 persons of the total population in the given area.

Figure E.7. Focused Historically Marginalized Communities (2018 RTP Round 1 Evaluation)




*Source: Metro*

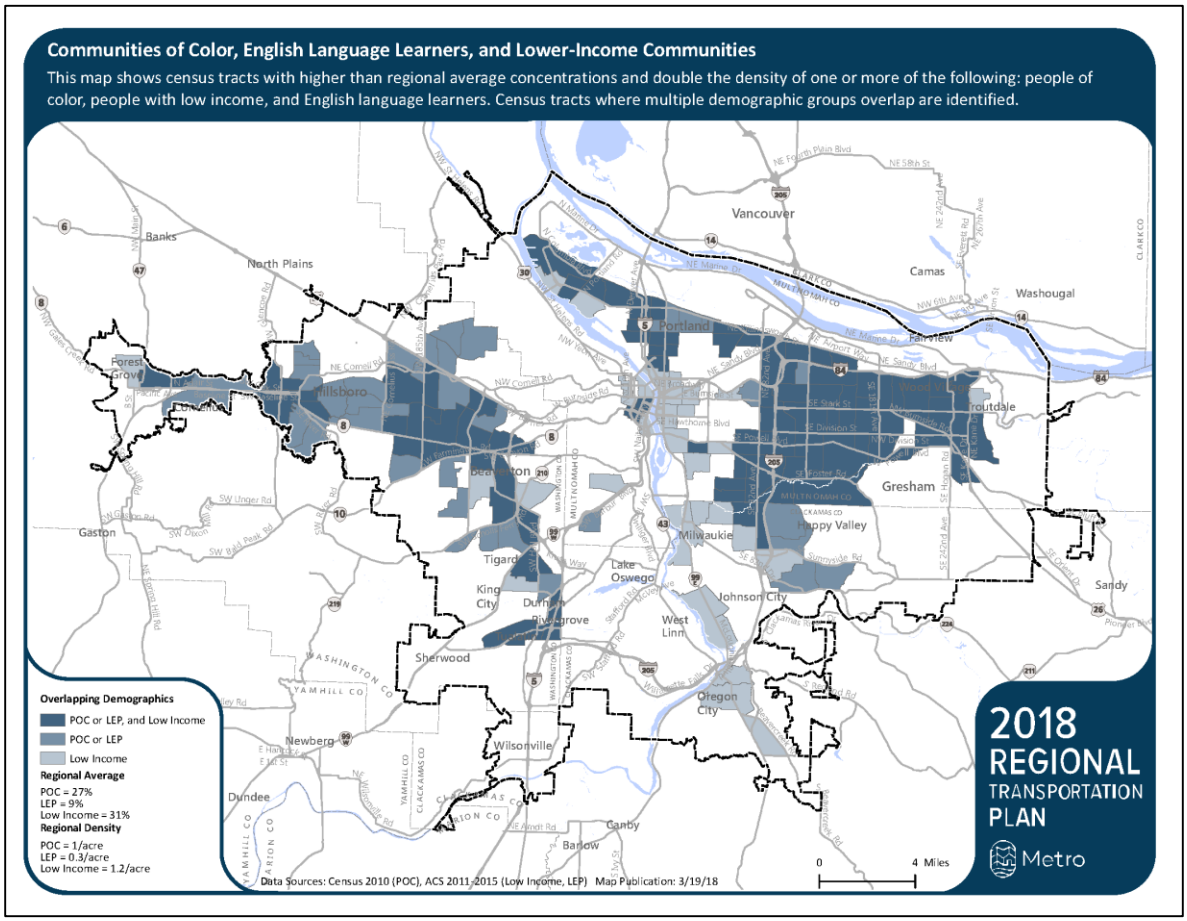
At the completion of the initial round of the 2018 RTP transportation equity evaluation, the Metro Council requested work session with staff to gather a better understanding of the evaluation results. In gathering a further understanding of the underpinnings of the transportation equity evaluation, the Metro Council directed Metro staff to bring further focus around equity and align the second round evaluation of the 2018 RTP investment strategy closer to the agency-wide Strategic Plan to Advance Racial Equity, Diversity, and Inclusion. Based on the direction, Metro staff developed an updated map identifying the locations of people of color, people with limited English proficiency, and people in poverty. The new map, called equity focus areas, uses geographic thresholds similar to the focused historically marginalized communities, but did not consider weighting of people of color and removed the safe harbor concentrated communities. Definitions and geographic thresholds are in Table E.7 and a represented in Figure E.8.

***Table E.7. Equity Focus Areas – For Final Evaluation of 2018 RTP Investment Strategy***

| Community | Geography Threshold |
|---|---|
| People of Color | The census tracts which are above the regional rate for people of color AND the census tract has twice (2x) the population density of the regional average (regional average is .48 person per acre). |
| People in Poverty | The census tracts which are above the regional rate for low-income households AND the census tract has twice (2x) the population density of the regional average (regional average is .58 person per acre). |
| People with Limited English Proficiency | The census tracts which are above the regional rate for low-income households AND the census tract has twice (2x) the population density of the regional average (regional average is .15 person per acre) |

*Source: Metro, 2018 RTP transportation equity work group*

Figure E.8. Equity Focus Areas (used as part of final round 2018 RTP evaluation)




*Source: Metro*

For the purposes of the 2018 RTP transportation equity evaluation, the maps defining the more broad historically marginalized communities and the focused historically marginalized communities geography and spatial distribution were used to evaluate the initial investment strategy. After further direction was provided by the Metro Council, the focus of the transportation equity evaluation for the final draft 2018 RTP investment strategy used the equity focus areas. As a result, comparisons between the first round of evaluation of the 2018 RTP and the second round evaluation are not like-for-like comparisons because of the significant shift in the map. Nonetheless, the exercise of the evaluation provides an understanding of the performance of the 2018 RTP investment strategy and an opportunity to refine to address those priorities historically marginalized communities desire to see from the transportation system.

## Analytical Tools

The evaluation of the 2018 RTP investment strategy requires the use of tools which are able to anticipate what behaviors or effects may occur with the implementation of transportation investments or policy decisions in the future. As part of Metro's metropolitan planning organization (MPO) function, the Data and Research department has and continues to develop a suite of tools which will be used as part of the 2018 RTP to analyze future conditions once a certain suite of transportation investments are put into place. Brief descriptions of the analytical tools are below.

*Metroscope*

Metroscope is a set of decision support tools used to model changes in economic, demographic, land use and transportation activity within the Portland metropolitan area.

- The economic model predicts employment by type of industry and the number of households by demographic category.
- The residential real estate location model predicts the locations of households.
- The non-residential real estate location model predicts the locations of employment. Both real estate models measure the amount of land consumed by development, the amount of built space produced and prices of land and built space by zone in each time period.

The Metroscope tool is being used to look at changes in access to employment areas and provide the projected overall population growth and land use activity.

In 2016, an updated land use, population, and employment forecast was adopted for the region. The 2016 adopted land use forecast was used as an input into the economic and real estate (residential and non-residential) models.

*Travel Demand Model*

The travel demand model is a travel behavior model which predicts travel activity levels:

- By mode (bus, rail, car, walk or bike) and on road segments,
- Estimates travel times between transportation analysis zones (TAZ) by time of day.
- Certain out-of-pocket costs perceived by travelers in getting from any one TAZ to any other.

*Geographic Information Systems (GIS)*

Geographic Information Systems (GIS) uses spatial data to determine relationships between different data elements and map data. For the 2018 RTP transportation equity evaluation, the transportation investments are mapped to assess the spatial relationships between the investments and historically marginalized communities. In particular, access to a connected transportation system and safety considerations are being assessed through GIS. The main GIS tool used for the transportation equity system evaluation is a proprietary program ArcGIS made by ESRI.

## Transportation Equity System Evaluation Measures

In following a best practice to have historically marginalized communities lead the assessment, the system evaluation measures for the 2018 RTP transportation equity evaluation reflect the priorities historically marginalized communities identified. The common themes identified by historically marginalized communities include: increased access, affordability, safety, and public health. These themes translated into the following system evaluation measures:

- Affordability[8]
- Access to travel options – system connectivity & completeness[9]
- Access to jobs
- Access to community places
- Share of safety projects

[8] Due to resource and capacity constraints, Metro staff deferred the affordability system evaluation measure to the 2023 RTP. Metro staff will work between the 2018 RTP and the 2023 RTP to develop an affordability analytical tool focused around household housing and transportation expenditure and cost burden. The tool development is reflected as part of the 2018 RTP Chapter 8 – Implementation.

[9] Due to unclear data results from the first round evaluation of the 2018 RTP investment strategy, the connectivity components of the Access to Travel Options measure was not recommended to move forward for the final evaluation of the 2018 RTP investment strategy. Further analysis work will be undertaken on the system completeness as a result.

- Exposure to crash risk[10]
- High value habitat impact[11]

The 2018 RTP first round evaluation took a closer look to see how well the package of transportation investments perform relative to these priority transportation issues in areas where there is a concentrated residential presence of historically marginalized communities. The results compare the region, communities with less presence of historically marginalized communities and historically marginalized communities against investment strategy conditions and no-build conditions to evaluate the change in performance.[12] Further detail of how the 2018 RTP transportation equity evaluation landed on the system evaluation measures can be found in the Process section and attachments of this report.

## Evaluated 2018 RTP Investments

The transportation equity evaluation of the 2018 RTP assessed a suite of different base/existing conditions and future scenarios to be able to place into context the effects of the 2018 RTP investment strategy. These different conditions and future scenarios help to reduce the potential noise or uncertainty introduced in the evaluation results based on projected population and employment growth and assumed land use changes. The different conditions and future scenarios establish a course regional scale baseline. Descriptions provided in Table E.8 below.

***Table E.8. Conditions-Scenarios for Comparison Purposes of the 2018 RTP Investment Strategies***

| Condition/Scenario | Description |
|---|---|
| 2015 Base Year | Represents the conditions of the regional transportation system as of 2015. Only those projects completed and open for service as of 2015 are part of the base year conditions. |
| 2027 No-Build | Represents the conditions where no further additional investments are made to the regional transportation system, expect for those which are |

[10] This system evaluation measure was deployed only in the first round analysis of the 2018 RTP investment strategy.
[11] Ibid.
[12] No build conditions references if further investment in the transportation system is not longer made aside from those transportation capital or service improvements fully funded as of October 1, 2018.

| | |
|---|---|
| | fully funded as of October 1, 2018. Includes population and employment growth through 2027 and assumed land use changes based on local plans through 2027. |
| 2040 No-Build | Represents the conditions where no further additional investments are made to the regional transportation system, expect for those which are fully funded as of October 1, 2018. Includes population and employment growth through 2040 and assumed land use changes based on local plans through 2040. |

*Source: Metro, travel demand model networks for the 2018 RTP*

Additionally, the evaluation of the 2018 RTP investment strategy was divided in two different components and assessed two investment strategies: 1) a 2027 constrained investment strategy; and 2) a 2040 constrained investment strategy. Each investment strategy builds on the previous. For example, the 2040 constrained investment strategy includes the 2027 constrained investment strategy. Descriptions provided in Table E.9 below.

***Table E.9. 2027 and 2040 Constrained Investment Strategies Descriptions***

| Condition/Scenario | Description |
|---|---|
| 2027 Constrained Investment Strategy (2018-2027) | The 2027 Constrained funding scenario identifies the highest priority projects and programs that the greater Portland region anticipates funding in the first 10-years of the plan. |
| 2040 Constrained Investment Strategy (2018-2040) | The 2040 Constrained funding scenario includes all of the projects and programs that fit within a constrained budget of federal, state and local funds the greater Portland region can reasonably expect through 2040 under current funding trends. In order to be eligible for federal or state transportation funding, a project must be included on the 2040 Constrained list. |

*Source: Metro, travel demand model networks for the 2018 RTP*

This list of transportation projects can be found in Appendix A and B of the 2018 RTP.

## Transportation Equity Evaluation – First and Second Round Evaluation

The 2018 RTP and the transportation equity evaluation were conducted in two rounds. The first round of evaluation was on the initially investment strategy developed as part of the 2018 RTP call-for-projects in 2017. The first round evaluation served as another opportunity for testing and refining the evaluation measures as well as calibrating tools, establishing assumptions and setting the base-year and no-build conditions. The first round evaluation also helped to establish a start point for the investment strategy to

understand how the region's investment would perform under key outcomes, including priorities identified by historically marginalized communities – accessibility, safety, and environmental health. The second round of evaluation of the 2018 RTP would provide opportunity to refine the investment strategy and run the evaluation with the refined investment strategy and refined methods and assumptions.

A significant factor to emerge in the midst of the 2018 RTP call-for-projects was the Oregon legislature passing House Bill 2017 (HB2017) in July 2017. HB2017 raises new revenues for the state, local jurisdictions, and transit agencies to invest into the transportation system. Some notable investments to emerge out of HB2017 includes a new employee payroll tax dedicated towards transit service and increases to the gas tax to help fund certain freeway expansion projects and pass-through funds to cities and counties for local transportation projects. Due to the timing of the legislative session and the development of the 2018 RTP, the 2018 RTP had not included HB2017 into the forecasted revenues, which established the financial envelope for the 2018 RTP call-for-projects. The call-for-projects, which took place from June 1 – July 21, 2017, therefore did not include all expected revenues. This was a significant refinement needing to be addressed between the first round evaluation of the 2018 RTP and the second round evaluation of the refined investment strategy. In particular, the significant new revenues dedicated towards transit service changed the no-build conditions between the first round and the second round evaluation. Lastly, the direction from the Metro Council to bring further focus around equity and align the second round evaluation of the 2018 RTP investment strategy closer to the agency-wide Strategic Plan to Advance Racial Equity, Diversity, and Inclusion. The Metro Council direction changed the map to focus in on three specific historically marginalized communities – people of color, limited English proficiency populations, and people in poverty. The Metro Council direction change one of the key factors to the transportation equity evaluation.

As a result the first round evaluation and the second round evaluation of the 2018 RTP investment strategy is not a direct comparison as certain key methodology areas were refined to better address measuring the transportation priorities identified by historically marginalized communities as well as reflect the new investment from HB2017. While the results cannot be a direct comparison, the shifts and changes give the region a better assessment of how its investments make progress towards key transportation priorities, including those identified by historically marginalized communities.

## Methodology – Individual Transportation Equity Evaluation Measures

A summary of how each transportation equity evaluation measure is below. Individual methodology sheets, which outline criteria and other factors for each system evaluation measure can be found in attachments of this report.

**Affordability**
Due to resource capacity and technical challenges, the affordability system evaluation measure has been deferred for development as part of the 2023 RTP. As part of the 2018 RTP, a recommendation in Chapter 8: Implementation, acknowledges the development of an affordability evaluation tool to be piloted and developed in the 2023 RTP.

**Access to Travel Options – System Completeness and Connectivity**
The evaluation measure assesses the following for the region's transportation system, region-wide, in areas with historically marginalized communities, in areas with lesser concentrations of historically marginalized communities (for second round evaluation only) and in centers, on arterials, and station communities:

1) Sidewalk, bikeway, and trail completeness: Miles of the planned regional pedestrian, bicycle, and trail networks completed; remaining miles left to complete

2) Sidewalk and bikeway completeness on major roadways: Miles of the planned regional pedestrian and bicycle networks completed; remaining miles left to complete

3) Access to Transit: Percentage of bicycle and pedestrian gaps within ½ mile of light rail, $^1/_3$ mile of streetcar, and ¼ mile of bus stops completed

4) Connectivity and density of the regional walking, bicycling and roadway networks

5) Timing of pedestrian, bicycle, trail and new street investments proposed and compared to other investments in the RTP

*Methodology Description:*

1) Sidewalk, bikeway, and trail completeness: Use a geospatial analysis to compare miles of existing facilities in 2015 and miles of projects proposed for the 2018 RTP to miles in the planned regional pedestrian, bike, trail and street networks.

    a. Calculate the miles of existing sidewalks, bikeways, and trails for the base year (2015) within the metropolitan planning area (MPA); in centers, on arterials, and station communities; and in historically marginalized communities.

    b. Calculate miles of proposed projects for the 2027 and 2040 constrained investment strategies within the MPA boundary, in centers, on arterials, and station communities, and in historically marginalized communities.

c. Calculate percent of the planned regional pedestrian and bicycle completed in the base year and 2027 and 2040 constrained investment strategies, within the MPA boundary, in centers, on arterials and station communities, and in historically marginalized communities.

2) Access to transit: Use geospatial analysis to calculate the linear miles and percentage of sidewalks and bikeways completed within ½ mile from light rail stops, 1/3 mile from street car stops, and ¼ mile from bus stops; existing and planned stops region-wide within the MPA boundary and in historically marginalized communities.

3) Network connectivity and density: Use a geospatial analysis to measure the spacing and intersection of sidewalks, bikeways, trails and streets and compare the existing networks and miles of proposed facilities in the 2027 and 2040 constrained investment strategies to planned networks to produce connectivity ratios and density levels. (Completed only during the first round evaluation of the 2018 RTP transportation equity evaluation.)

   a. Street connectivity: calculate the ratio of three-way or more intersections per Census tract for the base year and 2027 and 2040 constrained investment strategies, within the MPA boundary and in historically marginalized communities.

   b. Street density: calculate the linear miles of streets per census tract for the base year and 2027 and 2040 constrained investment strategies, within the MPA boundary and in historically marginalized communities.

   c. Sidewalk connectivity: first calculate the linear miles of streets per Census Tract for the base year and 2027 and 2040 constrained investment strategies, within the MPA boundary and in historically marginalized communities. Remove street segments with less than fifty percent of sidewalk complete. Re-calculate the linear miles of streets per census tract area. The ratio of the first two calculations is the sidewalk connectivity measure. A high ratio indicates better sidewalk connectivity.

   d. Sidewalk density: calculate the miles of street segments with more than 50 percent of sidewalks completed per census tract area for the base year and 2027 and 2040 constrained investment strategies, within the MPA boundary

and in historically marginalized communities. A higher number would indicate higher density.

e. Bikeway connectivity: first calculate the linear miles of streets per census tract for the base year and 2027 and 2040 constrained investment strategies, within the MPA boundary and in historically marginalized communities. Next, remove street segments with no bikeway. Re-calculate the linear miles of streets per census tract area. The ratio of the first two calculations is the sidewalk connectivity measure. A high ratio indicates better sidewalk connectivity.

f. Bikeway density: calculate the miles of street segments with bikeways completed per census tract area for the base year and 2027 and 2040 constrained investment strategies, within the MPA boundary and in historically marginalized communities. A higher number would indicate higher density.

g. Trail density: calculate the miles of trails completed per census tract area for the base year and 2027 and 2040 constrained investment strategies, within the MPA boundary and in historically marginalized communities. A higher number would indicate higher density.

4) Timing of investments: Calculate the percentage of sidewalk, bikeway, and trail proposed for the 2027 constrained investment strategy within the MPA and in areas with historically marginalized communities.

*Output Units:* Miles and percentage (%) of bikeways, sidewalks, trails and new street connections, region-wide within MPA and in historically marginalized communities.

*Dataset Used:* Geospatial project information for proposed transportation projects provided from project sponsors

*Tools Used for Analysis:* ArcGIS

*Key Assumptions, Definitions, or Other Analytical Considerations to Method:*

- Connectivity is defined as the directness of links and the density of connections in path or road network. A well connected road or path network has many short links, numerous intersections, and minimal dead-ends (cul-de-sacs). As connectivity increases, travel distances decrease and route options increase, allowing more direct travel between destinations, creating a more accessible and resilient system.
- Completeness is defined as the percentage of miles of the planned pedestrian, bicycle or roadway network that has been completed.

- 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.

**Access to Jobs**

The evaluation measure assesses the following for the region's transportation system, region-wide, in areas with historically marginalized communities, and in areas with lesser concentrations of historically marginalized communities (for second round evaluation only):

1) Number and percentage of jobs (by wage profile: low, middle, high, and all jobs) reached in a given time window by different travel modes (auto, transit, bike, walk), region-wide and for historically marginalized communities.
2) The change in the number and percentage of jobs reached with the 2027 and 2040 constrained investment strategies by wage profile and mode for the region and in historically marginalized communities.
3) Comparison of differences in the number and percentage of low and middle-wage jobs reached in a given time window and by different travel modes for the region and specifically for historically marginalized communities

The evaluation measure is calculated by using forecasted data from Metroscope to identify and geographically distribute jobs throughout the region, including categorized low-wage and middle-wage jobs (defined in assumptions). The analysis determines the weighted average number of jobs, with emphasis on low and middle-wage jobs, reached using the existing transportation system by travel mode (automobile, transit, bicycle, and walking) in a given travel time window for the entire region, equity focus areas, and non-equity focus areas to determine base year conditions. The next step is to conduct the same assessment under no-build conditions to determine the weighted average number of jobs as a result of employment growth. Then lastly using the 2027 and 2040 constrained investment

strategies determine the weighted average accessibility to forecasted jobs, including more focused look at low and middle-wage jobs, by mode for the entire region and in equity focus areas. Lastly, the measure will look at the change in the accessibility to jobs between the no-build and the 2027 and 2040 constrained investments, but with a particularly emphasis on the change in access to low and middle-wage jobs in equity focus areas and non-equity focus areas.

*Output Units:* Weighted average of jobs and change in jobs, by wage profile, accessed by mode (Auto; Transit; Bike; Walk)

*Dataset Used:* Geospatial project information for proposed transportation projects provided by project sponsors; forecasted employment/jobs

*Tools Used for Analysis:* Metro's Travel Demand Model, Metro's Metroscope Model

*Key Assumptions to Method:*

- Definition of Low-Wage Jobs: Jobs which pay an annual salary between $0 - $39,999.
- Definitions of Middle-Wage Jobs: Jobs which pay an annual salary between $40,000 –$65,000.

*Methods for Defining and Identifying All Jobs:* The projections (total jobs) and geographic distribution of employment is based on underlying U.S. Bureau of Labor Statistics data and assumptions regarding growth for the employment industries in MetroScope. (See MetroScope documentation regarding employment forecast.)

*Methods for Defining and Identifying Low and Middle-Wage Jobs:* The annual salary band was based on the average household size of three (3) and a combination of different income, program eligibility, and self-sufficiency definitions (HUD median income, University of Washington self-sufficiency index, federal poverty level, and uniform relocation assistance and real property acquisition act) The definition of low and middle-wage jobs is not taking into consideration employer benefits provided as part of the identification of wages.

*Distribution of Low and Middle-Wage Jobs Assumptions:* The distribution of low and middle-wage jobs is based on underlying U.S. Bureau of Labor Statistics data and assumptions regarding growth for the employment industries in MetroScope. (See MetroScope documentation regarding employment industry forecast assumptions.) The low and middle-wage band will not change according to inflation. Low and middle-wage jobs were determined by the wage profile of each MetroScope industry, looking at the percentage of jobs, which paid within the annual salary range. This range was applied to the employment forecast for the future year to determine the distribution.

*Travel Time Windows by Mode:*

- Automobile – 30 minutes*

- Transit – 45 minutes*
- Bicycle – 30 minutes
- Walk – 20 minutes

*Includes access and egress times.

*Travel Time Assumptions:* Travel time windows by mode were developed with information from the Oregon Household Activity Survey (OHAS) and research from around the country on travel time by different modes for different types of trips. Additionally, internal Metro staff consultation was conducted and work groups were provided the opportunity to give input.

*Transit Service Networks Used:*

- Peak – Represented as transit service running from 4pm – 6pm
- Off-Peak – Represented as transit service running from 12pm – 1pm

**Access to Community Places**

The evaluation measure looks to assess the following for the region's transportation system, region-wide, in historically marginalized communities, and in areas with lesser concentrations of historically marginalized communities (second round evaluation only):

1) Number and percentage of existing community places (i.e. places which provide services or items) reached on the existing transportation system by travel mode (e.g. driving, transit, biking, and walking) in a given travel time, region-wide and in historically marginalized communities.
2) The change in the number and percentage of existing community places reached across travel modes with the 2027 and 2040 constrained investment strategies region-wide and in historically marginalized communities.
3) Compare the differences between the number and percentage of community places accessible in historically marginalized communities to the entire region by travel mode with the 2027 and 2040 constrained investment strategies.

The Access to Community Places performance measure is calculated by using existing data from the U.S. Bureau of Labor Statistics to identify the existing community places

which provide key services and/or daily needs (defined in assumptions) for people in the region. The analysis determines the weighted average of community places reached using existing transportation system by different travel mode (automobile, transit, bicycle, and walking) in a given travel time window for the entire region, equity focus areas, and non-equity focus areas to determine base year conditions. The same assessment is to conduct for no-build conditions to determine the weighted average number of community places accessible without investment. Then lastly using the 2027 and 2040 constrained investment strategies determine the weighted average accessibility to determine the investments impact on accessibility to community places by mode for the entire region, equity focus areas, and non-equity focus areas. Lastly, the measure will look at the change in the accessibility to these existing community places between the no-build and future year with added transportation investments, with an emphasis in looking at the change in equity focus areas relative to non-equity focus areas and the region. The report out for this measure will show the percent change in access to community places by mode for each package.

*Output Units:* Number and percent change of community places accessed by mode (# - Auto; # - Transit; # - Bike; # - Walk)

*Key Assumptions to Method:*

*Dataset Used:* Geospatial project information for proposed transportation projects from project sponsors; U.S. Bureau of Labor Statistics – Quarterly Census of Employment and Wages (2013) and North American Industry Classification System (NAICS) codes

*Tools Used for Analysis:* Metro Travel Demand Model and ArcGIS

*Definitions of Places:* Selection of places in the North American Industry Classification System (NAICS) codes. Codes include those used as part of TriMet's Transit Equity Index with select additions based on consultation with 2018 RTP work groups, TPAC, and Metro Planning and Development Department and Diversity, Equity, and Inclusion staff. Table E.10 provides the full list of NAICS codes.

***Table E.10. NAICS Codes for Community Places***

| Category | NAICS Code | Geography |
|---|---|---|
| Civic | 491110 | Postal Service |
| | 519120 | Libraries and Archives |
| | 611110 | Elementary and Secondary Schools |
| | 611210 | Junior/Community Colleges |
| | 611310 | Colleges, Universities, and Professional Schools |

| | | |
|---|---|---|
| | 624110 | Child and Youth Services |
| | 624120 | Services for the Elderly and Persons with Disabilities |
| | 624190 | Other Individual and Family Services |
| | 624210 | Community Food Services |
| | 624229 | Other Community Housing Services |
| | 624230 | Emergency and Other Relief Services |
| | 624310 | Vocational Rehabilitation Services |
| | 624410 | Child Day Care Services |
| | 624221 | Temporary Shelters |
| | 813110 | Religious Organizations |
| Essential Retail | 444130 | Hardware Stores |
| | 446110 | Pharmacies and Drug Stores |
| | 452111 | Department Stores |
| | 452990 | All Other General Merchandise Stores |
| | 812111 | Barber Shops |
| | 812112 | Beauty Salons |
| | 812310 | Coin-Op Laundry |
| | 812320 | Dry Cleaning and Laundry Service |
| Financial/Retail | 522110 | Commercial Banking |
| | 522120 | Savings Institutions |
| | 522130 | Credit Unions |
| Food | 445110 | Supermarkets and Other Grocery (except convenience) Stores |

| | | |
|---|---|---|
| Medical | 621111 | Offices of Physicians (except Mental Health Specialists) |
| | 621112 | Office of Physicians, Mental Health Specialists |
| | 621210 | Offices of Dentists |
| | 621310 | Offices of Chiropractors |
| | 621320 | Offices of Optometrists |
| | 621330 | Offices of Mental Health Practitioners (except Physicians) |
| | 621340 | Offices of Physical, Occupational, and Speech Therapists and Audiologists |
| | 621391 | Offices of Podiatrists |
| | 621399 | Offices of All Other Miscellaneous Health Practitioners |
| | 621410 | Family Planning Centers |
| | 621420 | Outpatient Mental Health and Substance Abuse Centers |
| | 621491 | HMO Medical Centers |
| | 621492 | Kidney Dialysis Centers |
| | 621498 | All Other Outpatient Care Centers |
| | 621512 | Diagnostic Imaging Centers |
| | 622110 | General Medical and Surgical Hospitals |
| | 622210 | Psychiatric and Substance Abuse Hospitals |
| | 622310 | Specialty (except Psychiatric and Substance Abuse) Hospitals |

*Source: U.S. Census Bureau, North American Industry Classification System*

*Travel Time Windows by Mode:*

- Automobile – 20 minutes*
- Transit – 30 minutes*
- Bicycle – 20 minutes
- Walk – 20 minutes

*Includes access and egress times.

**Share of Safety Projects**

The Share of Safety Projects evaluation assesses the following for the region's transportation system region-wide, in historically marginalized communities, and in areas with lesser concentrations of historically marginalized communities (second round evaluation only):

1) Number and percentage of the region's proposed transportation projects are identified as safety projects
2) Percentage of the total of the 2027 and 2040 constrained investment strategies (cost) are attributed to safety projects
3) Percentage of the total number of transportation safety investments are located in historically marginalized communities
4) Comparison of differences of transportation safety investment levels (cost) in areas with historically marginalized communities
5) Number of projects and percentage of investment on the region's high injury corridors (HIC), with a further look at overlap of the project and investment on the region's HIC with historically marginalized communities.

The method for calculating the Share of Safety Projects evaluation measure entails:

1) Identifying safety projects in the 2027 and 2040 constrained investment strategies. (Safety projects are identified by agencies submitting the projects.)
2) Calculating the number of safety projects in the 2027 and 2040 constrained investment strategies region-wide, in historically marginalized communities;
3) Calculating the cost of safety projects in the 2027 and 2040 constrained investment strategies region-wide, in historically marginalized communities;
4) Identify which safety projects are on Regional High Injury Corridors.

*Output Units:* Number and percentage (%) of transportation safety projects compared to total RTP investment packages; percentage of total cost of 2027 and 2040 constrained investment strategies; percentage of transportation safety investments per capita region-wide, in historically marginalized communities and on high injury corridors.

*Definitions:* Safety Projects in the RTP are capital infrastructure projects with the primary purpose of reducing the occurrence of traffic related fatalities and serious injuries, allocating a majority of the project cost to a documented safety countermeasure(s) to address a specific documented safety problem (as indicated by location-specific data on fatalities and serious injuries, and/or where it is determined that the specific project can, with confidence, produce a measurable and significant reduction in such fatalities or serious injuries), or addresses systemic safety for vulnerable users, including people walking and bicycling, people with disabilities, older adults and youth.

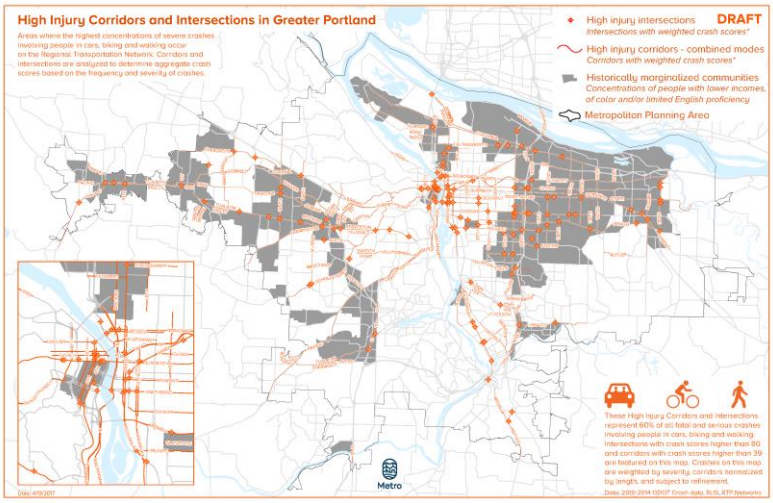



*Figure E.9. Map of the Portland Region's High Injury Corridors*
*Source: Metro, Regional Transportation Safety Strategy*

Safety countermeasures are actions taken to decrease the number of traffic injuries and fatalities, either through systemic or hot spot safety projects. Safety countermeasures may include geometric design, engineering solutions, systemic safety projects, signalization, signs, markings and operational upgrades and intelligent transportation systems. Countermeasures should be selected based on analytical techniques that prove effectiveness. Examples of proven safety countermeasures include, but are not limited to, FHWA's nine proven safety countermeasures: road diets, medians and pedestrian crossing islands, pedestrian hybrid beacons, roundabouts, access management, retroreflective backplates, safety edge, enhanced curve delineation, and rumble strips. Systemic safety projects are applied over an entire road/corridor to reduce crashes and risks along the entire roadway/corridor.

Criteria to identify specific documented safety problem

- On high risk bike/pedestrian corridor identified in ODOT Pedestrian and Bicycle Safety Implementation Plan
- On Metro's identified regional High Injury Corridor
- High crash corridor identified in state, city or county safety plan
- Area with one fatal or severe crash in the last five years
- High injury intersection

Identifying safety countermeasure projects

- Countermeasures identified in ODOT's Highway Safety Improvement Program (HSIP) Countermeasures and Crash Reduction Factors

- Bicycle and pedestrian projects identified by the FHWA as eligible for HSIP funding, if correcting or improving a hazardous road location or feature and consistent with Oregon Transportation Safety Action Plan
- Paths/trails and bridges/undercrossing if directly adjacent to the high injury location (e.g. path alongside high injury corridor

Projects not identified as safety projects

- Pavement/preservation/replacement projects
- Trail/multi-use path/ bicycle-pedestrian bridge projects – unless directly adjacent to a roadway/bridge with a safety issue
- ADA transition plans, stand alone ADA projects
- Transit project, e.g. bus replacement, (not including bicycle/pedestrian access to transit projects)
- Majority of project cost going to capacity/mobility

Exposure to Crash Risk

The evaluation measure will assess the following for the region's transportation system region-wide, in areas with historically marginalized communities, and in areas with lesser concentrations of historically marginalized communities (second round evaluation only):

1) Modeled absolute vehicle miles traveled for each TAZ for the base year, no-build, and with the proposed package of transportation investments?
2) Calculate the percent change in vehicle miles traveled as a result of the investment strategy relative to the no-build
3) Evaluate the difference in exposure to vehicle miles traveled in TAZ's with historically marginalized communities?

To calculate the Exposure to Crash Risk system evaluation measure:

1) For Base Year (2015) and no-build (2027 and 2040) aggregate non-freeway average weekday VMT vehicle miles traveled (VMT) within each transportation analysis zone (TAZ) wholly or partially within the MPA boundary.

2) Calculate the change in VMT per TAZ with the inclusion of the 2027 and 2040 constrained investment strategy. Change is relative to TAZs within the MPA boundary.

3) Calculate the overall change (decrease or increase) in VMT region-wide and historically marginalized communities.

4) Illustrate results in a series of maps that also identify historically marginalized communities.

*Tools Used for Analysis:* Metro's travel demand model and ArcGIS

*Dataset Used:* Geospatial project information for proposed transportation projects provided by jurisdiction; forecasted vehicle miles traveled by TAZ from the travel demand model

*Assumptions:* VMT on limited access highways (freeways) are excluded from the analysis because the crash characteristics of limited access highways are significantly different from other types of roadways (freeways have the lowest serious crashes per VMT by roadway class). Non-freeway VMT includes 2015 auto and truck vehicle miles traveled on all non-freeway roadway links as defined in Metro's travel demand model. Limited access highways in Oregon excluded from analysis:

- Highway 26 W
- Highway 217
- Highway 224 (The Sunrise Corridor)
- Highway 26 E (starting from the Burnside intersection in the City of Gresham)
- Oregon 213 (Redland to Beavercreek Road)
- Interstate 5
- Interstate 205
- Interstate 84
- Interstate 405

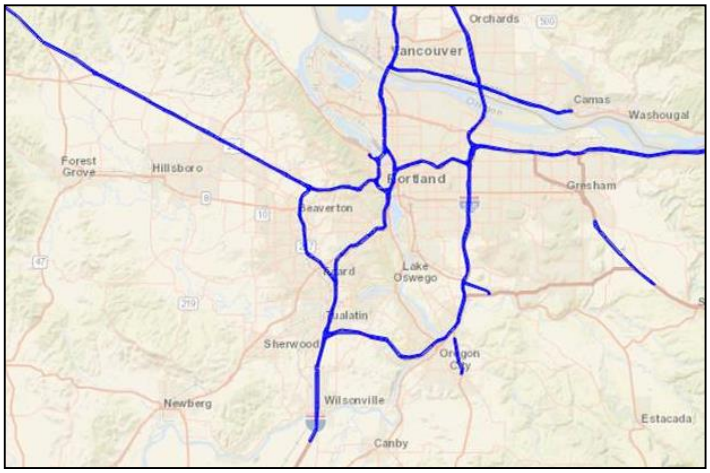



*Figure E.10 Map of limited access facilities excluded from the evaluation.*
*Source: ODOT*

Considerations of VMT as a Test Proxy for Crash Risk: Research has found a correlation between VMT and traffic crashes; the more auto traffic a person is exposed to (inside or outside of the vehicle) the higher the risk of a crash.[13] This analysis does not forecast actual

[13] 2015 Motor Vehicle Crashes: Overview, US DOT, National Highway Traffic Safety Administration National Center for Statistics and Analysis

crashes. The measure relies on the correlation between vehicular travel to the occurrence of crashes and relies on the travel-demand model to output the amount of VMT.

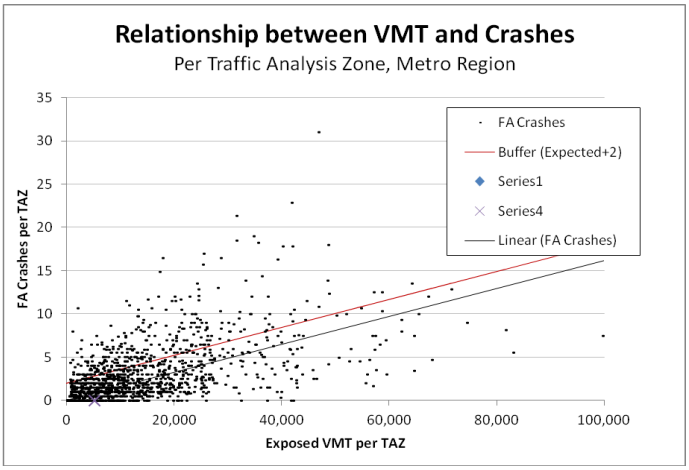



*Figure E.11. Analysis demonstrating VMT correlation to crashes*
*Source: Metro*

Analysis conducted showed correlation between VMT and crashes in the region; the $R^2$ was just over 0.25, so ¼ of the crash relationship can be explained by exposed VMT at the TAZ level.

Strength of correlation: for simpler relationships we'd like to see a higher $R^2$, but the reality is the complexity of safety analysis means no single factor is overarching. One quarter of the relationship is significant, and results were discussed/ vetted with safety professionals.

There are two major reasons why it can be fine to have low $R^2$ values.

In some fields, it is entirely expected that $R^2$ values will be low. For example, any field that attempts to predict human behavior, such as psychology, typically has $R^2$ values lower than 50%. Humans are simply harder to predict than, say, physical processes.

Furthermore, if the $R^2$ value is low but present are statistically significant predictors, it is still possible to draw important conclusions about how changes in the predictor values are associated with changes in the response value. Regardless of the $R^2$, the significant coefficients still represent the mean change in the response for one unit of change in the predictor while holding other predictors in the model constant. Obviously, this type of information can be extremely valuable.

The Exposure to Crash Risk transportation equity evaluation measure was only used for the first round evaluation of the 2018 RTP investment strategy.

**High Value Habitats Impact**

The evaluation measure looks to assess the following for the region's transportation system:

1) Percentage of the 2027 and 2040 constrained investment strategies roadway projects are in proximity to (e.g. intersect or overlap with) and may have a potential conflict with the region's high value habitats;
2) Percentage of high value habitats are in proximity to (e.g. intersect or overlap with) historically marginalized communities;
3) Calculate the overlap of 2027 and 2040 constrained investment strategies roadway projects which may have a potential conflict with the region's high value habitats and historically marginalized communities;
4) Compare whether the percentage of high value habitats with potential conflict with 2027 and 2040 constrained investment strategies roadway projects are greater in historically marginalized communities than the region.

The method for calculating the evaluation measure entails a geospatial analysis the 2027 and 2040 constrained investment strategies, specifically roadway projects, which are in proximity to (e.g. intersect or overlap with) the region's high value habitats. Following, a geospatial analysis looks at the percentage of projects which intersect high value habitats region-wide and in historically marginalized communities, the last step is to look at the combined overlap of the roadway projects, the region's high value habitats, and historically marginalized communities and to determine whether a greater percentage of the region's high value habitat within historically marginalized communities are at risk for potential impact from the 2027 and 2040 constrained investment strategies roadway projects.

*Output Units:* Percentage (%) of transportation projects intersecting identified resource habitats

*Dataset Used:* Geospatial project information for the 2027 and 2040 constrained investment strategies from project sponsors; geospatial resource conservation information from Metro identified resource and conservation habitat areas

*Tools Used for Analysis:* ArcGIS

*Definition of Resource Habitats:* Resource habitats are those areas with the top 25% modeled score of high value habitat or riparian quality. Habitat quality took into account factors such as habitat interior, influence of roads, total patch area, relative patch area, habitat friction, wetlands, and hydric soils. The riparian areas took into account criteria of floodplains, distance from streams, and distance from wetlands. The analysis and modeled scoring was conducted for the entire Portland-Vancouver region and conducted through a collaborative effort with partners across the region and topic area experts through the development in the Resource Conservation Strategy process. More detail about the high value habitats can be found at [www.regionalconservationstrategy.org](http://www.regionalconservationstrategy.org).

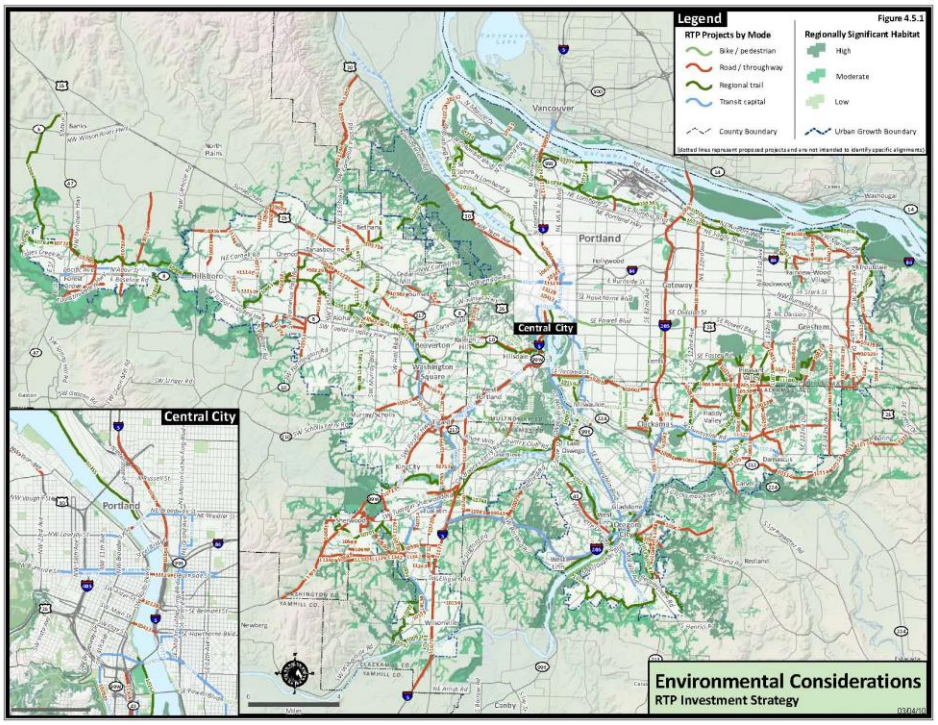



*Figure E.12. Example of Analysis – 2014 RTP Investments Overlapping High Value Habitats*
*Source: Metro, 2014 RTP*

The High Value Habitat transportation equity evaluation measure was only used for the first round evaluation of the 2018 RTP investment strategy. The High Value Habitat analysis was used for the second round evaluation of the 2018 RTP investment strategy for the purposes of assessing potential environmental impacts.

# RESULTS

The evaluation of the 2018 RTP investment strategy took place in two stages. The first round of evaluation assesses the initial Plan's investment strategy. The first round evaluation gets a sense of how these investment priorities will perform towards reaching key goals for the regional transportation system and provides an opportunity for the stakeholders across the region to weigh in on the results of the initial 2018 RTP investment strategy and recommend refinements to the investment strategy. The second round of evaluation assesses the refined 2018 RTP investment strategy. The refined 2018 RTP investment strategy represents to final draft strategy and informs the performance the package of investments in reaching goals and objectives for the transportation system. While this report also discusses the performance on the initial draft investment strategy, the final draft strategy is the basis for this report's findings, conclusions, and determination of disproportionate impacts and for the purposes of federal compliance.

## 2018 RTP Transportation Equity Evaluation – Background on First Round

The 2018 RTP transportation equity evaluation assessed region's proposed investment strategy in two components:

1) 2027 constrained investment strategy; and

2) 2040 constrained investment strategy.

For federal and state compliance purposes, the 2040 RTP constrained investment strategy is the main emphasis and discussion of the results. However, in recognition of feedback provided from the transportation equity work group on looking at the timing of investments and also addressing issues of existing access and safety disparities experienced by historically marginalized communities, the 2027 investment strategy, representing the first ten years of the Plan was also evaluated and will be discussed. A summary of the investment for the first round of evaluation of the 2018 RTP shown in Table E.11

***Table E.11. Component Summary for the First Round Evaluation of the 2018 RTP Investment Strategy***

| | 2027 Constrained Investment Strategy (2018-2027) | 2040 Constrained Investment Strategy (2018-2040) |
|---|---|---|

| | | |
|---|---|---|
| Amount of Investment[14] | $6.2 billion | $14.7 billion |
| Percentage of Total 2018 RTP Investment* | 42.1% | 100% |
| Number of Projects | 374 | 762 |

*Source: Metro, 2018 RTP project hub*

In addition to the investment strategies which were evaluated, three additional no-build scenarios were developed for the purposes of making comparisons to better understand the investment strategy performance. These include:

1) 2015 base year scenario;
2) 2027 no-build scenario and;
3) 2040 no-build scenario.

The 2015 base year scenario represents transportation projects completed and open for service as of 2015. The 2027 and 2040 no-build scenario represents a future condition where no further investment is made into the region's transportation system aside from those which are fully funded as of 2018.

Full details of the first round of the 2018 RTP transportation equity evaluation can be found in the attachments to this report.

## Results by 2018 RTP Transportation Equity Evaluation Measure – First Round

Access to Travel Options – System Completeness and Connectivity

*Results Summary*

In general, 2027 and 2040 investment strategies increase the miles of sidewalks, trails, and on and off-street bikeways. The additional miles of system completeness for active transportation ranges from 1% - 2% for trails and off-street bikeways to 12% - 17% for sidewalks. These increases demonstrate the 2027 and 2040

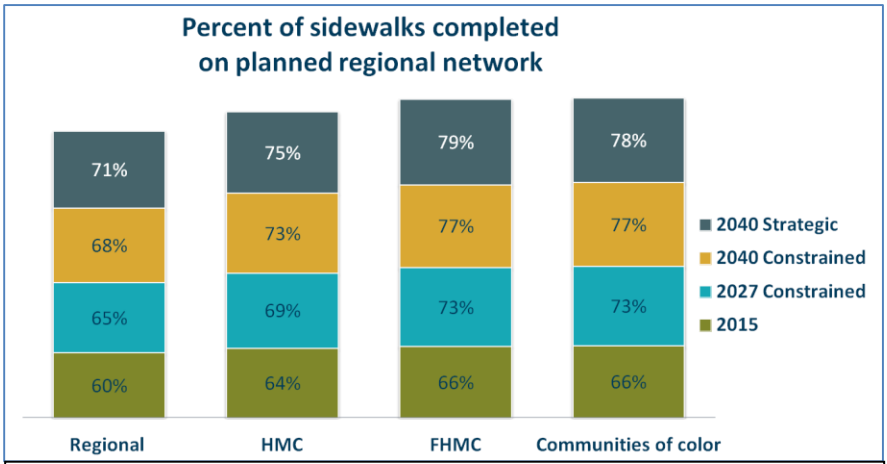



*Figure E.13. Sidewalk Network Completion from First Round Evaluation*
*Source: Metro, 2018 RTP system evaluation*

[14] Reflects 2016 dollars.

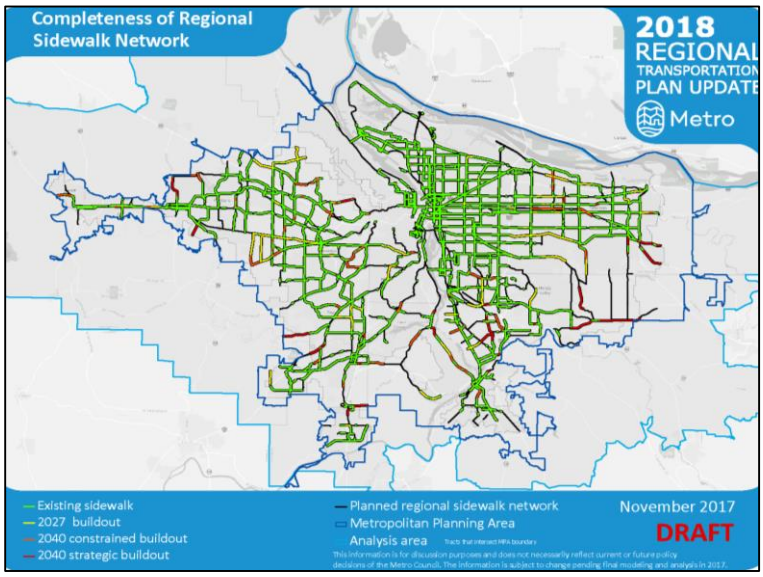



*Figure E.14. Completeness of Regional Sidewalk Network from First Round Evaluation*
*Source: Metro, 2018 RTP system evaluation*

constrained investment strategies are making capital investments into the active transportation network, which is the least complete of the different modal networks (e.g. roads, transit, etc.) Some of the larger increases of additional active transportation network miles are observed in focused historically marginalized communities (i.e. areas where there is a greater density of people of color, people in poverty, and language isolation). The result of the increased miles of sidewalks, bikeways, and trails demonstrates progress in completing the active transportation network in areas with historically marginalized communities.

Additionally, major streets (i.e. arterials) and the active transportation gaps within short distances of transit are also being completed with the 2027 and 2040 constrained investment strategies. Greater completion is observed in historically marginalized communities, and focused historically marginalized communities and in communities of color compared to the overall region.

The 2027 and 2040 constrained investment strategies also make progress in furthering connectivity of the bicycle network. In looking at the intersection density of the region's planned bikeways, a greater rate of 3-way ore more intersections completeness with bicycling facilities are observed in historically marginalized communities, areas with a higher density of people of color, people in poverty, and language isolation, and communities of color. The greater rate indicates increased connectivity of the bikeway system.

While investment is increasing overall, the rate of active transportation investment in the 2018 RTP is slightly higher in the outer years of the Plan compared to the 2027 constrained

investment strategy. (See Table E.12) Understanding the timing of active transportation investments was an issue identified by work group members as a necessity to look at to ensure a balance of investment in active transportation, particularly in historically marginalized communities, across the entire Plan period. Recognizing the 2018 RTP represents the investment strategy for the regional transportation system for the next 20 years plus, the issue identified by the work group is to ensure active transportation investments are not getting slated for the outer years of the plan.

***Table E.12 Summary of the Timing of 2018 RTP Active Transportation Investment****

| | 10-Year Strategy (2018-2027) | | | Financially Constrained RTP (2018-2040) | | |
|---|---|---|---|---|---|---|
| | $ | # | % | $ | # | % |
| RTP Investment Strategy | $6.2 B | 374 | 29% | $14.7 B | 762 | 69% |
| Active Transportation | $642 M | 133 | 10% | $1.5 B | 293 | 10% |
| Average Annual Active Transportation Investment | | $64.2M | | | $68.2 M | |
| Expected Rate** | | -- | | | $1.48 B | |

*Includes all identified active transportation investments in the 2018 RTP.
**If the 2018 RTP 10-Year investment strategy annual rate of active transportation investment is carried forward.
*Source: Metro, 2018 RTP system evaluation*

**Access to Jobs**
*Results Summary*

In looking at the Access to Jobs, particularly low and middle-wage jobs, the 2027 and 2040 constrained investment strategies does increase access to jobs regionwide and in historically marginalized communities, communities of color, and in focused historically marginalized communities (i.e. areas where there is a greater density of racial diversity, poverty, and language isolation). The increase in access to jobs is observed across all modes of transportation (e.g. walking, bicycling, transit and driving) and regardless of time of day. The increase ranges from .4% - 19% increases (leading to range of 18 more jobs accessible by a 20 minute walk to another 14,000 jobs accessible within a 45 minute transit ride). In general, this is a positive sign that the 2027 and 2040 constrained investment strategies are increasing the overall access to jobs, including the number of low and middle wage jobs, within a reasonable commute.

However, while the 2027 and 2040 constrained investment strategies increase the number of jobs, particularly low and middle-wage, within a reasonable commute is a positive sign, consistently historically marginalized communities, communities of color, and focused

historically marginalized communities (i.e. areas with a greater density of racial diversity, poverty, and language isolation) see a rate of increase which is lesser than the region overall. This is consistently seen across all modes regardless of time of day and regardless of wage profile of job. For example, within the first ten years of the investment strategy, communities of color access to middle-wage jobs within a reasonable transit commute during off-hours increased by 17.9%, but the region saw a 19% increase overall. This means that while the 2018 RTP investment strategy is bringing forward positive job access benefits, historically marginalized communities are not seeing the same gains. As a result, the 2027 and 2040 investment strategies may produce a possible disproportionate impact. The result may also be an indication further investment is needed in the transportation system sooner. (See Table E.13 for results.)

Lastly, a technical lesson learned on the access to jobs results for bicycling and walking. Due to the coarseness of the travel demand model and how it looks at travel behavior, the travel demand model may not be the strongest analytical tool for understanding accessibility for bicycling and walking for time-based travel sheds (i.e. how many places reached within a given time). In general, in making active transportation investments and further completing the regional network, the result may increase more time spent in active travel (i.e. walking or bicycling) by individuals due to factors like attractiveness of the facility, connections, speed and avoiding automobile traffic congestion.

***Table E.13. Percent Change in Jobs Reached with the 2027 and 2040 Constrained Investment Strategies by Mode and by Community***

| Job Access -- % of All Jobs in Region | | | | | | |
|---|---|---|---|---|---|---|
| | % change 2027 Constrained over 2027 No Build | | | | | |
| | AP | AOP | TP | TOP | B | W |
| Region | 1.5% | 0.7% | 14.7% | 19.0% | 1.0% | 0.4% |
| Historically Marginalized Communities | 1.2% | 0.6% | 13.7% | 16.8% | 0.7% | 0.2% |
| Communities of Color | 1.0% | 0.6% | 13.2% | 17.8% | 0.5% | 0.1% |
| Focused Historically Marginalized Communities | 1.0% | 0.6% | 13.8% | 17.6% | 0.4% | 0.1% |
| Job Access -- % of Low-Wage Jobs in Region | | | | | | |

| | % change 2027 Constrained over 2027 No Build | | | | | |
|---|---|---|---|---|---|---|
| | AP | AOP | TP | TOP | B | W |
| Region | 1.5% | 0.7% | 14.7% | 19.0% | 1.0% | 0.4% |
| Historically Marginalized Communities | 1.2% | 0.6% | 13.7% | 16.7% | 0.7% | 0.2% |
| Communities of Color | 1.0% | 0.6% | 13.2% | 17.7% | 0.5% | 0.1% |
| Focused Historically Marginalized Communities | 1.0% | 0.6% | 13.8% | 17.6% | 0.3% | 0.1% |

Job Access -- % of Medium-Wage Jobs in Region

| | % change 2027 Constrained over 2027 No Build | | | | | |
|---|---|---|---|---|---|---|
| | AP | AOP | TP | TOP | B | W |
| Region | 1.5% | 0.7% | 14.7% | 19.0% | 1.0% | 0.4% |
| Historically Marginalized Communities | 1.2% | 0.6% | 13.7% | 16.8% | 0.7% | 0.2% |
| Communities of Color | 1.0% | 0.6% | 13.2% | 17.9% | 0.5% | 0.1% |
| Focused Historically Marginalized Communities | 1.0% | 0.6% | 13.8% | 17.7% | 0.4% | 0.1% |

*AP = Automobile Peak Period; AOP =Automobile Off-Peak Period; T-P = Transit Peak Period; T-OP = Transit Off-Peak Period; B = Bicycle; W = Walking*
*Source: Metro, 2018 RTP system evaluation*

**Access to Community Places**

*Results Summary*

In the 2027 and 2040 constrained investment strategies, access to community places tend to increase based on the transportation investments. This means, that the number of places which can be reached by automobile and transit (during the rush hours and non rush hours) increases overall for the region and within historically marginalized communities, communities of color, and focused historically marginalized communities (i.e. in areas with a greater density of racial diversity, poverty, and language isolation). This is a positive outcome and can be attributed to the 2027 and 2040 constrained investment strategies because the evaluation did not project and spatially distribute new community places (e.g. grocery stores, libraries, drug stores, medical services, etc.) to emerge as a result of population growth. The access to community places was measured based on the existing locations of community places. The benefit in conducting the evaluation using existing community places isolated the performance of the investment strategies in terms of access, but it is also not a full picture of performance because the analysis was unable to recognize the likely growing number of community places to emerge, especially in existing less

developed areas expected to grow. There is an underlying assumption that access will be further realized with the anticipation of new community places opening for service.

While the 2027 and 2040 constrained investment strategies contribute to increased access to community places overall, historically marginalized communities tend to see less increased access compared to the overall region by cars and transit regardless of the time of day. The difference in access range from .2% - 1.3%, but the difference in percentage translates to an additional 15 – 20 places accessible by automobile or 66 – 72 places by transit, depending on the time of day. (Total places within 20 minute drive and 30 minutes for transit are between 1,500 – 2,000 by automobile and 300 – 400 by transit respectively.) (See Table E.14)

Nonetheless, communities of color and focused historically marginalized communities (i.e. areas with a greater density of racial diversity, poverty, and language isolation) generally saw increased access to community places with the 2018 RTP investment strategy, specifically by transit regardless of the time of day and automobile during the non-rush hours. The increase outperformed the region by .1% - 2.8% to community places. The greater increase in access to community places in these communities compared to the overall increased experienced by the region is a positive outcome of the 2027 and 2040 constrained investment strategies. This may be a demonstration of local jurisdictions focusing investments in places with greater densities and rates of racial diversity, poverty, and language isolation which are currently underserved by service and infrastructure investment.

In general, the 2027 constrained investment strategy does underperform in access to community places relative to the region in different profile types of historically marginalized communities. There could be some very reasonable rational to the underperformance relative to the region. But the access to community places results for the 2070 constrained investment strategy may also be an indication a greater level of investment needed for the transportation system in the first ten years within these communities.

Also, as noted in the results discussion of access to jobs, the travel demand model may not be the strongest analytical tool for understanding accessibility for bicycling and walking for time-based travel sheds because investments may increase more active travel.

***Table E.14 Percent Change in Community Places Reached with the 2027 Constrained Investment Strategy by Mode of Travel and by Community***

| | % change 2027 Constrained over 2027 No Build | | | | | |
|---|---|---|---|---|---|---|
| | AP | AOP | TP | TOP | B | W |
| Region | 1.5% | 0.7% | 16.0% | 22.0% | 0.3% | 0.5% |
| Historically Marginalized Communities | 1.3% | 0.7% | 15.7% | 20.7% | 0.3% | 0.2% |
| Communities of Color | 1.2% | 0.8% | 17.3% | 24.6% | 0.4% | 0.2% |
| Focused Historically Marginalized Communities | 1.3% | 0.8% | 18.7% | 24.8% | 0.4% | 0.3% |

*AP = Automobile Peak Period; AOP =Automobile Off-Peak Period; T-P = Transit Peak Period; T-OP = Transit Off-Peak Period; B = Bicycle; W = Walking*
*Source: Metro, 2018 RTP system evaluation*

***Table E.15 Percent Change in Grocery Stores Reached with the 2027 Constrained Investment Strategy by Mode of Travel and by Community***

| | % change 2027 Constrained over 2027 No Build | | | | | |
|---|---|---|---|---|---|---|
| | AP | AOP | TP | TOP | B | W |
| Region | 1.5% | 1.5% | 16.0% | 16.0% | 0.3% | 0.5% |
| Historically Marginalized Communities | 1.3% | 1.3% | 15.7% | 15.7% | 0.3% | 0.2% |
| Communities of Color | 1.2% | 1.2% | 17.3% | 17.3% | 0.4% | 0.2% |
| Focused Historically Marginalized Communities | 1.3% | 1.3% | 18.7% | 18.7% | 0.4% | 0.3% |

*AP = Automobile Peak Period; AOP =Automobile Off-Peak Period; T-P = Transit Peak Period; T-OP = Transit Off-Peak Period; B = Bicycle; W = Walking*
*Source: Metro, 2018 RTP system evaluation*

**Share of Safety Projects**

*Results Summary*

The 2027 and 2040 constrained investment strategies illustrate the share of safety projects and investments levels are at a greater rate in historically marginalized communities, focused historically marginalized communities, and communities of color compared to the region. Furthermore, the majority of safety investments are in historically marginalized communities and on high injury corridors located in historically marginalized communities. (See Table E.16 and

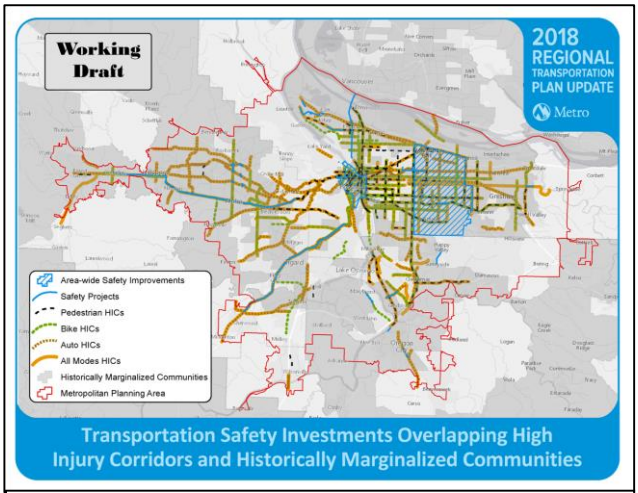



*Figure E.15. Transportation Safety Investment on High Injury Corridors Overlapping Historically Marginalized Communities*
*Source: Metro, 2018 RTP System Evaluation*

E.17) Nonetheless, the 2040 constrained investment strategy has only 45 projects out of the 762 projects where the primary objective is to reduce crashes, particularly those crashes that result in fatalities and serious injuries. For the region to achieve its Vision Zero goal, then greater investment in safety may be necessary than the proposed level of 4% of the 2040 constrained investment strategy. On positive notes, the 2027 constrained investment strategy has the largest proportion of projects and investment level in safety compared to the 2040 constrained investment strategy. (See Table E.16) Additionally, there are a number of transportation investments (327) within the 2040 constrained investment strategy which identified reducing fatalities and serious injuries or reducing crashes as a secondary objective of the project. Recognizing the aim of transportation investments is to achieve multiple objectives, there may be a greater level of safety investment in the 2027 and 2040 constrained investment strategies than represented in the analysis.

***Table E.16. Transportation Safety Investment Levels and Per Capita Expenditure with 2027 and 2040 Constrained Investment Strategy by Community***

| | 10-Year Investment Strategy (2018-2027) | | | | |
|---|---|---|---|---|---|
| | **Total projects** | **% of project total** | **safety cost** | **% of investment total** | **Cost per person** |
| Total 2018 RTP Safety Projects (10-year strategy only) | 30 (of 374) | 8% | $484 M | 8% | $254 |
| Within HMC (transportation safety only) | 29 | 97% (of 8%) | $475 M | 7.6%/(95% of 8%) | $360 |
| Within FHMC (transportation safety only) | 24 | 80% (of 8%) | $479 M | 7.7%/(96% of 8%) | $642 |
| Within Communities of Color (transportation safety only) | 24 | 80% (of 8%) | $468 M | 7.5%/(94% of 8%) | $593 |
| | **Financially Constrained RTP (2018-2040)** | | | | |

| | Total projects | % of project total | safety cost | % of investment total | Cost per person |
|---|---|---|---|---|---|
| Total 2018 RTP Safety Projects (2018-2040 constrained) | 45 (of 762) | 6% | $598 M | 4% | $274 |
| Within HMC (transportation safety only) | 43 | 96% (of 6%) | $552 M | 3.7%/(93% of 4%) | $366 |
| Within FHMC (transportation safety only) | 34 | 76% (of 6%) | $517 M | 3.5%/(88% of 4%) | $607 |
| Within Communities of Color (transportation safety only) | 37 | 82% (of 6%) | $525 M | 3.6%/(90% of 4%) | $612 |

*Source: Metro, 2018 RTP system evaluation*

***Table E.17 Transportation Safety Projects Located on the High Injury Corridors that also Overlap Historically Marginalized Communities***

| Investment Strategy | HMC | FHMC | Communities of Color |
|---|---|---|---|
| 2027 Constrained | 24 of 30/80% | 21 of 30/70% | 21 of 30/70% |
| 2040 Constrained | 31 of 45/69% | 28 of 45/62% | 28 of 45/62% |

*Source: Metro, 2018 RTP system evaluation*

**Exposure to Crash Risk**

*Results Summary*

The 2027 and 2040 constrained investment strategies demonstrates an overall increase in vehicle miles traveled due to the nature of population growth and economic activity. In general, this means exposure to non-freeway vehicle miles traveled will increase overtime.

While overall vehicle miles traveled is increasing, the 2027 and 2040 constrained investment strategy, once controlled for population and employment, sees a slight decrease in non-freeway vehicle miles traveled exposure in historically marginalized communities, communities of color, and focused historically marginalized communities, compared to the region overall. (See Table E.18) This result demonstrates with greater investment and the multimodal profile of the 2027 and 2040 constrained investment strategies is providing options for various trips and reducing non-freeway vehicle miles traveled. The greater challenge is reducing vehicle miles traveled when an increased number of trips are being

taken by all different modes. However, the per capita results is a positive sign the 2027 and 2040 constrained investment strategies are working decrease exposure to one of the main factors which contribute to crashes, particularly in historically marginalized communities.

***Table E.18 Absolute Vehicle Miles Traveled with the 2027 and 2040 Constrained Investment Strategies by Community***

| 2027 No Build Region wide VMT | 2027 Constrained Region wide VMT | Difference in VMT (Constrained – Base Year) | Percent Difference |
|---|---|---|---|
| 25,759,338 | 25,579,276 | -180,062 | -0.7% |
| 2027 No Build HMC VMT | 2027 Constrained HMC VMT | Difference in VMT (Constrained – HMC Base Year) | Percent Difference |
| 17,117,839 | 16,968,580 | -149,259 | -0.9% |
| 2027 No Build FHMC VMT | 2027 Constrained FHMC VMT | Difference in VMT (Constrained – FHMC Base Year) | Percent Difference |
| 10,041,224 | 9,965,249 | -75,975 | -0.8% |
| 2027 No Build POC VMT | 2027 Constrained POC VMT | Difference in VMT (Constrained – POC Base Year) | Percent Difference |
| 10,679,460 | 10,580,265 | -99,195 | -0.9% |
| 2040 No Build Region wide VMT | 2040 Constrained Region wide VMT | Difference in VMT (Constrained – No Build) | Percent Difference |
| 29,963,906 | 29,198,802 | -765,104 | -2.6% |
| 2040 No Build HMC VMT | 2040 Constrained HMC VMT | Difference in VMT (Constrained – HMC No Build) | Percent Difference |
| 19,869,637 | 19,316,297 | -553,340 | -2.8% |
| 2040 No Build FHMC VMT | 2040 Constrained FHMC VMT | Difference in VMT (Constrained – FHMC No Build) | Percent Difference |
| 11,661,297 | 11,356,738 | -304,558 | -2.6% |

| 2040 No Build POC VMT | 2040 Constrained POC VMT | Difference in VMT (Constrained – POC No Build) | Percent Difference |
|---|---|---|---|
| 12,387,947 | 12,047,468 | -340,479 | -2.7% |

*Source: Metro, 2018 RTP system evaluation*

**High Value Habitat Impact**

*Results Summary*

The 2027 and 2040 constrained investment strategies increase the number of roadway investments which overlap or intersect high value habitats at a greater rate in historically marginalized communities, focused historically marginalized communities, and communities of color than the region. (See Table E.19) This means there is a greater rate of high value habitat with a risk of a potential impact in historically marginalized communities. But because the environmental impacts are determined during the project development and design of the project, the known impact and potential options to avoid, minimize, and mitigate are not yet determined. As a result, to ensure there is not potential disproportionate impact, the implementation of theses transportation will require monitoring.

***Table E.19 2027 and 2040 Constrained Investments Intersecting High Value Habitats and Historically Marginalized Communities & Focused Historically Marginalized Communities[15]***

| | High Value Habitat (HVH) Units | | 2027 Constrained Investment Strategy | | 2040 Constrained Investment Strategy | |
|---|---|---|---|---|---|---|
| | **Total** | **%** | **Total** | **%** | **Total** | **%** |
| Region wide | 14452 | 100% | 1278 | 9% | 2016 | 14% |
| Historically Marginalized Communities (HMC) | 8882 | 61% | 955 | 11% | 1433 | 16% |
| Focused HMC | 4241 | 29% | 564 | 13% | 829 | 20% |
| People of Color | 2480 | 17% | 349 | 14% | 578 | 23% |

*Source: Metro, 2018 RTP system evaluation*

## Resulted Refinements from the 2018 RTP First Round Evaluation

[15] Indicates 2018 RTP which detailed spatial information was provided.

In winter 2017-2018, Metro staff conducted a rollout of the results from the 2018 RTP transportation equity system evaluation. The following different entities received a presentation on the first round of results:

- Transportation Equity Work Group
- County Coordinating Committees
- Technical advisory committees (TPAC and MTAC)
- Special work shop of TPAC, MTAC, and RTP work group members
- Community Leaders Forum
- Regional Leadership Forum

The presentation of the results of the 2018 RTP transportation equity system evaluation led to numerous discussions by community stakeholders and elected leaders. Many expressed disappointment with the results from the first round evaluation of the 2018 RTP investment strategy and how it performed relative to equity outcomes of accessibility, safety, and environmental health. Advocates and several elected leaders expressed disappointment and concern the 2027 and 2040 constrained investment strategies do not meet the goals outlined by the Climate Smart Strategy. Several stakeholders connected and provided feedback to Metro staff that falling short of the Climate Smart Strategy was also falling short on different equity outcomes as it relates to accessibility by transit and active transportation.

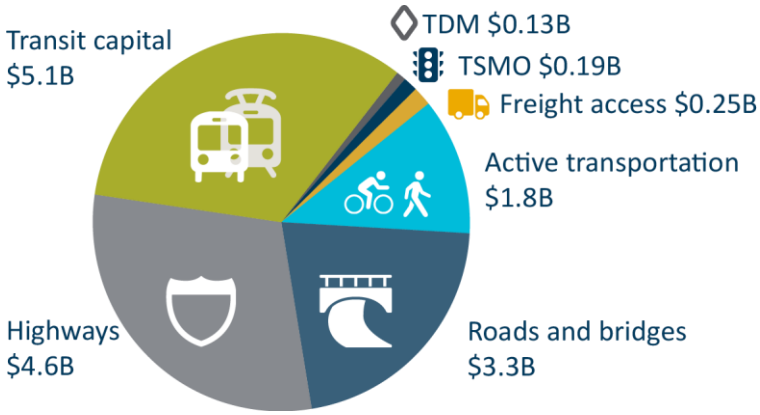
Additionally, numerous elected leaders expressed concern and alarm on the growing rate of traffic congestion projected in the future due to projections in population growth and economic activity.

At the March 2, 2018 Regional Leadership Forum, community, business, and elected leaders discussed in small group-workshop format as to what measures should be taken to refine the 2027 and 2040 constrained investment strategies to have the transportation system perform better for historically marginalized communities and across other transportation system performance measures. The discussions by leaders led to the culmination in late March 2018, where JPACT, MPAC, and the Metro Council directed the region to look back at their nominated transportation investment priorities from the first round and requested jurisdictions submit refinements which further addresses safety, equity, and climate change

goals for the region. Additionally with the pressing concern around the projected congestion on the system, regional leadership also directed the region to advance strategies, such as system management and demand management, for managing traffic congestion.

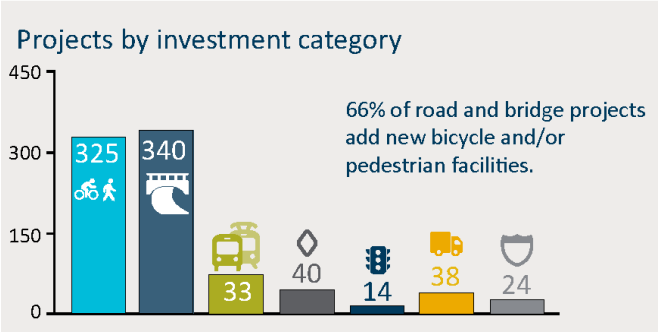
On March 27, 2018 Metro staff formally opened the refinement period for the 2018 RTP. As part of the refinement period, updated financial forecast information was provided to the coordinating committees. Jurisdictions had until April 27, 2018 to submit refinements to the 2018 RTP investment priorities to better address the desired outcomes for the system, particularly as it pertains to advancing equity. In total, the overall number of projects in the 2040 constrained investment strategy increased to 814 from the previous 762. Within the 2027 constrained investment strategy, the number of projects increased to 416 from 374. The increase in the number of individual investments can be attributed to a number of factors, including new revenues adopted by the Oregon State Legislature in the midst of the development of the 2018 RTP, programmatic categories of projects getting unbundled as individual projects, and large scale capital infrastructure projects being broken down into phases.

Figure E.16. Investment Profile of 2018 RTP Investment Strategy – Refined




*Source: Metro, 2018 RTP project hub*

Figure E. 17. Projects by Investment Category - 2040 Constrained Investment Strategy – Refined



*Source: Metro, 2018 RTP project hub*

More specifically for the projects located in equity focus areas, the projects breakdown by mode as the following:

***Table E.20. Profile of 2027 and 2040 Constrained Investments Overlapping Equity Focus Areas by Mode***

| | 2018 RTP (2018-2027) | | 2018 RTP Constrained (2018-2040) | |
|---|---|---|---|---|
| | Number of Projects | Investment | Number of Projects | Investment |
| Active Transportation | 132 | $ 696,842,229 | 248 | $ 1,461,206,646 |
| Freight | 13 | $ 73,716,667 | 19 | $ 112,783,667 |
| Roads and Bridges | 106 | $ 895,828,533 | 221 | $ 2,220,546,408 |
| Throughways | 13 | $ 834,500,000 | 18 | $ 4,217,866,000 |
| Transit Capital | 18 | $ 3,225,000,000 | 33 | $ 5,060,800,000 |
| Transportation Demand Management | 7 | $ 49,772,875 | 13 | $ 125,994,975 |
| Transportation System Management (Technology) | 18 | $ 68,808,400 | 36 | $ 184,217,888 |

*Source: Metro, 2018 RTP project hub*

The profile of the 2027 and 2040 constrained investment strategy show the combined investment of transit capital projects and active transportation projects in equity focus areas reaches over $3.9 billion in 2027 and $6.5 billion by 2040. These comprise around 44% of the Plan's investment by 2040.[16]

[16] Only includes capital projects and does not include Metro programs and other regionwide programs, such as transit service and regionwide bus purchases, which would also have equity benefits.

Further discussion regarding the refinement period and the process can be found in the Process section of this report. Further discussion about the 2027 and 2040 constrained investment strategies can be found in Chapter 6 of the 2018 RTP.

## 2018 RTP Transportation Equity System Evaluation – Second Round Background and Results

In the second and final round, 2018 RTP transportation equity evaluation assessed the region's revised 2027 and 2040 investment strategies. A summary of the refined 2027 and 2040 constrained investment strategies for the second and final round of evaluation of the 2018 RTP shown in Table E.21.

***Table E.21. Summary of 2027 and 2040 Constrained Investment Strategy***

| | 2027 Constrained Investment Strategy | 2040 Constrained Investment Strategy |
|---|---|---|
| Amount of Investment[17] | $6.8 billion | $15.4 billion |
| Amount of Investment in Equity Focus Areas | $5.8 billion | $13.3 billion |
| Percentage of Total 2018 RTP Investment* | 43% | 70%/100% |
| Percentage of Total 2018 RTP Investment in Equity Focus Areas | 85% | 86% |
| Number of Projects | 416 | 814 |
| Number of Projects in Equity Focus Areas | 307 | 588 |

*Source: Metro, 2018 RTP project hub*

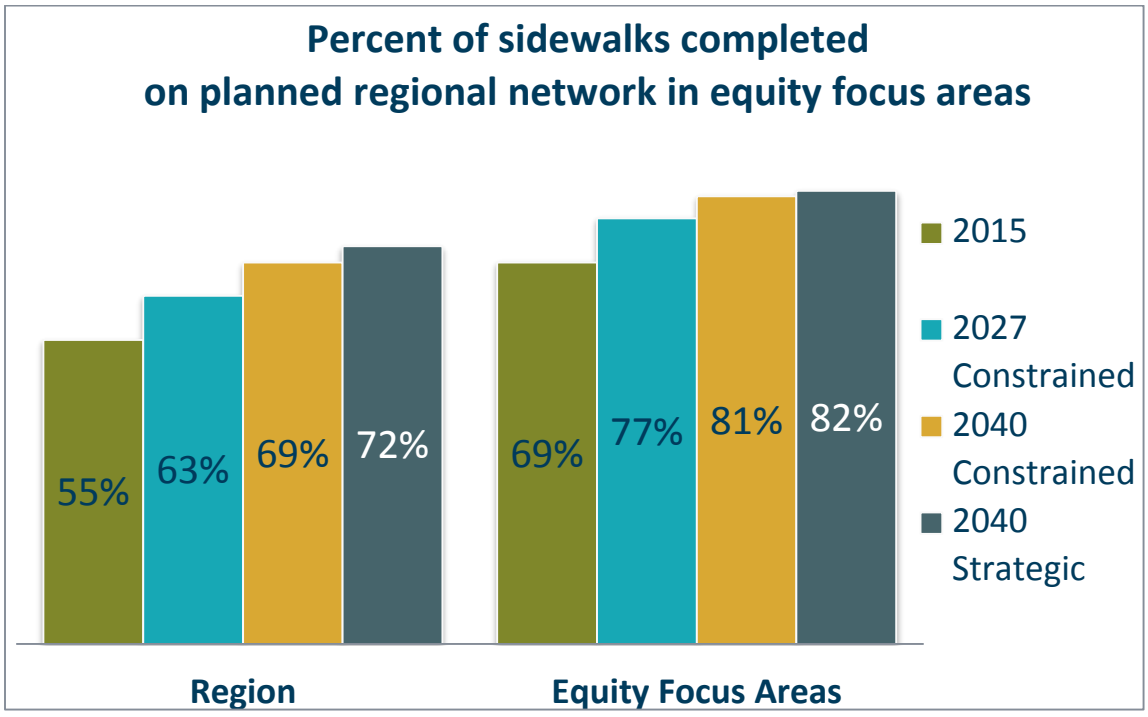
**Access to Travel Options – System Completeness and Connectivity Results Summary**

Equity focus areas see a higher level of active transportation (i.e. sidewalk, on-street bikeway, and trail) completion compared to the overall completion rate for the region and in non-equity focus areas. In general, completion rates for planned miles of sidewalks, on-street bikeways and trails exceed region and non-equity areas of one to three percent. When looking more closely at specific facilities, such as arterials, a slightly lower rate of active transportation system completion in equity focus areas is planned compared to the overall regional active transportation network. In 2040, arterials see between 20 to 16 percent increase in miles of sidewalk and on-street bikewaycompletion, which is lower than the region overall at 24 to17 percentincrease. The results illustrate that in the refinement phase, partners placed further focus to complete the active transportation network in equity focus areas while also balancing considerations like urban arterial facility and in proximity to a transit stop.

[17] Reflects 2016 dollars.

Furthermore, what is also observed is that greater levels of completion are in equity focus areas within the first 10-years (2018-2027) of the 2018 RTP investment strategy. In general, a greater proportion of the active transportation investment relative to other types of transportation investment is in the first 10-years of the plan (28.8 percent of 2018-2027 investment; 14.9 percent of 2028-2040 financially constrained). When looking at completion rate of the on-street bicycle network in equity focus areas by 2040, the increase is 14 percent, and the first 9 percent of that growth in miles of completed on-street bicycle network is slated between 2018-2027. The remaining 5 percent growth in miles of on-street bicycle network is set for the outer years of the investment strategy. This is a change from what was observed in the first round of performance evaluation of the 2018 RTP where more active transportation investments were planned for the outer years. Jurisdictional partners responded to leadership direction to advance and further complete the active transportation network in the first 10-years of the 2018 RTP. The one area where this statistic diverges slightly is with regional trails, where 4 percent of completion is observed in the first 10-years and 8 percent in the out part (2028-2040) of the plan.

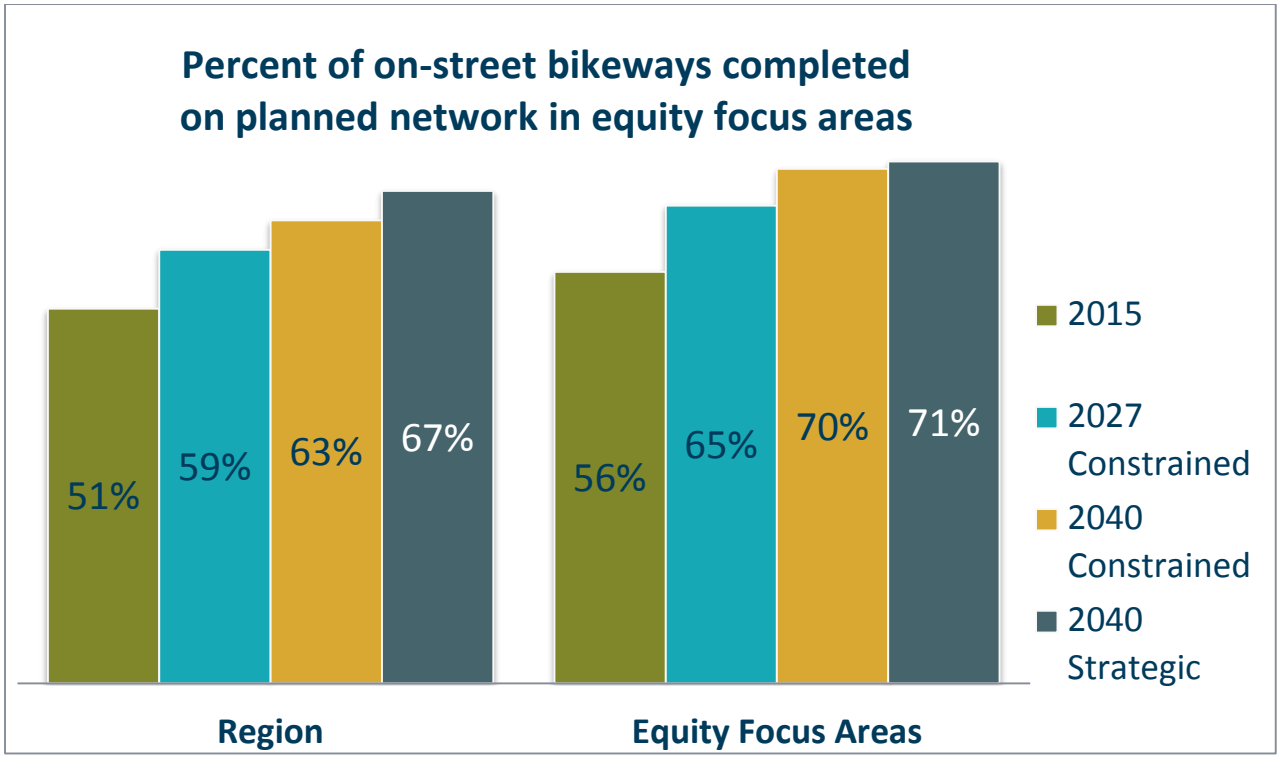
Figure E.18. Sidewalk Completion on the Planned Regional Network in Equity Focus Areas Compared to the Region



*Source: Metro, 2018 RTP system evaluation*

Nonetheless, the active transportation network does not see 100 percent completion in any category in equity focus areas by 2040. Sidewalk completion on the planned network tops out at 83 percent in communities of color, communities with lower incomes and communities with limited English proficiency, 58 percent in 2040 centers and 80 percent on arterials . When looking further, sidewalk completion in proximity to transit stops (e.g. bus, streetcar, or light rail) see 83 percent (with the 2040 financially constrained investment strategy) through 84 percent (with the 2040 strategic investment strategy) completion. The overall 2018 RTP investment level in active transportation ranges between $1.84 billion (in the 2040 financially constrained) to $2.98 billion (in the 2040 strategic). This range makes up between 10.7 percent – 12.4 percent of the overall 2018 RTP investment strategy. (Full system completion tables in attachments.)

Figure E.19. On-Street Bicycle Completion on the Planned Regional Network in Equity Focus Areas Compared to the Region




*Source: Metro, 2018 RTP system evaluation*

While falling short of the region's target to complete the active transportation network, the focus on advancing active transportation projects in the first ten years of the Plan and placing active transportation investments in equity focus areas at a greater levels than the non-equity focus areas indicate there is not an disproportionate or disparate impact.

Based on the results of the active transportation system completeness evaluation for the refined 2040 constrained investment strategy, the focus to place active projects in equity focus areas and advance them to the 2027 constrained investment strategy clearly indicates there is not a disproportionate impact to historically marginalized communities.

**Access to Jobs Results Summary**

***Table E.22. Change in the Number of Jobs (by Wage Profile) Accessible within a Typical Commute Time Regionwide (adjusted by form of travel) from the 2027 and the 2040 Constrained Investment Strategies***

| | Change in Total Number of Jobs Accessible in 2027 (2027 Constrained over 2027 NB) | | | | | |
|---|---|---|---|---|---|---|
| | *Auto – Rush Hour* | Auto – Non Rush Hour | *Transit – Rush Hour* | Transit – Non Rush Hour | Bike | Walk |
| All Jobs | 15,169 | 8,460 | 21,448 | 19,371 | 907 | 18 |
| Low Wage Jobs | 7,194 | 4,040 | 10,197 | 9,192 | 411 | 9 |
| Middle Wage Jobs | 4,168 | 2,318 | 5,883 | 5,322 | 258 | 5 |
| High Wage Jobs | 3,807 | 2,102 | 5,368 | 4,857 | 239 | 4 |
| | Change in Total Number of Jobs Accessible in 2040 (2040 Constrained over 2040 NB) | | | | | |
| | *Auto – Rush Hour* | Auto – Non Rush Hour | *Transit – Rush Hour* | Transit – Non Rush Hour | Bike | Walk |
| All Jobs | 36,268 | 37,062 | 40,694 | 40,185 | -509 | 70 |
| Low Wage Jobs | 17,118 | 17,512 | 18,671 | 18,452 | -255 | 32 |
| Middle Wage Jobs | 10,017 | 10,223 | 10,929 | 10,829 | -131 | 20 |
| High Wage Jobs | 9,165 | 9,362 | 10,065 | 9,960 | -122 | 18 |

*Source: Metro, 2018 RTP system evaluation*

In general, the 2027 and 2040 constrained investment strategy increases the number of jobs the average household can reach within a commute time adjusted by travel mode.

With the first ten years of investment, the average household will see a range of 18 more jobs by walking to 21,000 more jobs by transit accessible due to the investment strategy. (See Table E.22) The additional number of jobs accessible means, the average household in the region is able to reach upwards of 49% of all the jobs within a typical commute time, depending on the form of travel. Interesting to note is the average household is able to reach approximately 10% of the region's 1 million projected jobs by either transit, during the rush hour, or by bicycle within their respective commuting times (45 minutes for transit, 30 minutes for bicycling). (See attachments for full accessibility tables) By far, the investment in transit in the 2018 RTP show larger gains in the number of jobs accessible, where nearly 25% more jobs become accessible to the average household within a 45 minute transit trip. (See attachments for full accessibility tables) In comparison, driving and biking saw closer to .8% (biking) to 1.6% (driving) increased job access in the typical 30 minute commute time. This illustrates the multimodal investments in the 2027 constrained investment strategy is making a positive impact in increasing the number of jobs accessible across different forms of travel, giving households more options for commuting to work.

While the 2027 constrained investment strategy see increases in the number of jobs accessible, the additional investment slated for 2028 through 2040 in the 2040 constrained investment strategy only further increases the number of jobs the average household can reach within a typical commute time. For driving, transit, and walking, the increase in the number of jobs at a minimum doubles with some cases the increase being 3 or 4 times greater than the gains seen within the first ten years. The one exception is bicycling, where a decrease in the number of jobs accessible within a 30 minute bicycle ride is projected. The decrease may be due to the greater number of route and facilities options available for bicycle commutes and as a result creating further out of direction travel or longer than 30 minute bicycle commute trips. In general the average household will see a range 70 more jobs by walking to over 40,000 more jobs by transit, accessible due to the long-range investment strategy. Similar to 2027, transit will see the greatest increase in the number of jobs accessible within a 45 minute transit commute at upwards of 42% more jobs.

***Table E.23. Change in the Number of Jobs Accessible, by Wage Profile, Within a Typical Commute Time for Different Communities (adjusted by form of travel) from the 2027 and the 2040 Constrained Investment Strategies***

| | Change in Total Number of Jobs Accessible in 2027 (2027 Constrained over 2027 NB) | | | | | |
|---|---|---|---|---|---|---|
| | All Jobs | | | | | |
| | *Auto – Rush Hour* | Auto – | *Transit – Rush Hour* | Transit | Bike | Walk |
| Region | 15,169 | 8,460 | 21,448 | 19,371 | 907 | 18 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Equity Focus Areas | 13,210 | 7,534 | 24,155 | 21,549 | 365 | 11 |
| Non-Equity Focus Areas | 16,694 | 9,087 | 17,157 | 15,797 | 1,467 | 25 |
| | | | Low Wage Jobs | | | |
| | *Auto – Rush Hour* | Auto – | *Transit – Rush Hour* | Transit | Bike | Walk |
| Region | 7,194 | 4,040 | 10,197 | 9,192 | 411 | 9 |
| Equity Focus Areas | 6,277 | 3,595 | 11,502 | 10,235 | 162 | 5 |
| Non-Equity Focus Areas | 7,906 | 4,343 | 8,138 | 7,486 | 667 | 13 |
| | | | Middle Wage Jobs | | | |
| | *Auto – Rush Hour* | Auto – | *Transit – Rush Hour* | Transit | Bike | Walk |
| Region | 4,168 | 2,318 | 5,883 | 5,322 | 258 | 5 |
| Equity Focus Areas | 3,621 | 2,067 | 6,622 | 5,919 | 103 | 3 |
| Non-Equity Focus Areas | 4,596 | 2,488 | 4,711 | 4,341 | 417 | 6 |
| | Change in Total Number of Jobs Accessible in 2040 (2040 Constrained over 2040 NB) | | | | | |
| | | | All Jobs | | | |
| | *Auto – Rush Hour* | Auto – | *Transit – Rush Hour* | Transit | Bike | Walk |
| Region | 36,300 | 37,097 | 39,665 | 39,241 | -509 | 70 |
| Equity Focus Areas | 34,139 | 37,472 | 44,659 | 44,791 | -1,242 | 65 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Non-Equity Focus Areas | 37,027 | 34,746 | 31,726 | 30,697 | 350 | 72 |
| | | | Low Wage Jobs | | | |
| | *Auto – Rush Hour* | Auto – | *Transit – Rush Hour* | Transit | Bike | Walk |
| Region | 17,118 | 17,512 | 18,671 | 18,452 | -255 | 32 |
| Equity Focus Areas | 17,508 | 16,480 | 14,897 | 14,415 | 130 | 35 |
| Non-Equity Focus Areas | 16,063 | 17,631 | 21,055 | 21,079 | -583 | 28 |
| | | | Middle Wage Jobs | | | |
| | *Auto – Rush Hour* | Auto – | *Transit – Rush Hour* | Transit | Bike | Walk |
| Region | 10,017 | 10,223 | 10,929 | 10,829 | -131 | 20 |
| Equity Focus Areas | 9,433 | 10,334 | 12,290 | 12,360 | -341 | 19 |
| Non-Equity Focus Areas | 10,202 | 9,563 | 8,758 | 8,473 | 115 | 19 |

*Source: Metro, 2018 RTP system evaluation*

For the average household within an equity focus area, the number of jobs accessible within a typical commute time by different forms of travel is expected to increase. The average household in an equity focus area will see upwards of 11 more jobs within a 20 minute walk to over 24,000 more jobs in 45 minute transit trip due to the 2027 constrained investment strategy. With the addition of investments beyond 2027 to 2040, the increase in the number of jobs accessible for the average household in equity focus areas goes up to 65 more jobs within a 20 minute walk to over 44,000 more jobs in a 45 minute transit trip. When looking more specifically at low-wage and middle-wage jobs, as a result of the 2018 RTP investment strategy the average household in equity focus areas see the number of middle and low wage jobs accessible in a 45 minute transit commute increase 42% by 2040.

The positive take away from the 2027 and 2040 constrained investment strategies is there is an increase in the number of jobs accessible to the average household in the equity focus areas within a typical 45 minute transit commute trip. This pattern hold true regardless of the time of day (e.g. rush hour travel, where typically more transit service is out on the streets, or non-rush hour travel which is any other time of day). Additionally, what is also seen is with the 2027 constrained investment strategy is an increase of

21,000 more jobs are accessible in a 45 minute transit commute for the average household in an equity focus area. But by 2040, the additional investment increases the number of jobs accessible within a 45 minute transit commute jumps up to over 44,000 for the average household in the equity focus areas. A similar pattern is observed when looking at both low and middle wage jobs. The number of low and middle wage jobs accessible within a 45 minute transit commute for the average household in equity focus areas increases by a little over 10,000 (low wage) and a little under 6,000 (middle wage) in 2027 to just over 21,000 (low wage) and over 12,300 (middle wage) jobs in 2040. The result shows the region is focusing transit investments in equity focus areas to support the travel needs of historically marginalized communities.

Nonetheless, in some cases, the average household in the region and the average household in non-equity focus areas see a greater increase in the number of jobs within a typical driving, bicycling or walking commute compared to the equity focus areas. For example, with the 2027 constrained investment strategy, the non-equity focus areas see an increase of 1,467 more jobs accessible by bicycle in a 30 minute commute, whereas equity focus areas see an increase of 365 more jobs in a 30 minute commute due to the 2027 constrained investment strategy. This same pattern of non-equity areas seeing an increase in the number of jobs accessible is observed when looking at jobs by their wage profile (low, medium, high) primarily in driving, bicycling, and walking with the 2027 and 2040 constrained investment strategies. For example, the average household in the region and in non-equity focus areas can reach 10,000 additional middle wage jobs within a 30 minute driving commute, where the average household can reach a little over 9,500 additional middle wage jobs as a result of the investment strategy. (See attachments for full results tables)

There are some potential different reasons for why the average household in the region and in non-equity focus areas see a greater increase in the number of jobs accessible within a typical driving, biking, or walking commute, regardless of wage profile of job type. For driving, the issue of traffic congestion may be impacting why equity focus areas may see a lesser increase in the number of jobs accessible within a 30 minute driving commute. Another factor may also be the changing land use mix of the region where the typical commute distance to work is getting longer and therefore resulting in longer travel time. For walking and bicycle, it is possible as more transportation investments build out the active transportation network, specifically in equity focus areas, more active transportation route options become available which are more attractive. From the results of Access to Travel Options performance measure, the region did focus active

transportation investments in equity focus areas. The increased number of available route options may encourage people commuting to work to bike a little bit further or slightly out of direction to access a better bicycling or walking facility. The result is more time spent in active travel, which may be an indirect public health benefit. Whereas in the non-equity focus area, especially in the less developed areas of the region, a new bicycle facility which may have not existed and without other route options would vastly open up access for commuting. The results may illustrate the swings or a decrease in the number of jobs accessible within a 20 minute walk commute or 30 bicycle commute is not a detrimental result because it is impacting travel behavior and choice. More analysis would be needed to fully understand these results.

While it is disappointing to see equity focus areas seeing lesser increases of number of jobs accessible by driving, bicycling, and walking compared to the region overall and non-equity focus areas, one consideration to take into account is that equity focus areas have a greater number of jobs accessible within a typical commute across all forms of travel. For example, in 2027 without the constrained investment strategy, the average household in equity focus area can reach a little over 107,000 jobs, which is about 10% of all the region's jobs by transit in a 45 minute commute. For the non-equity focus areas, the average household can reach a little over 57,000 jobs and the average household in the region can reach a little over 86,000 jobs by transit in the same 45 minute window. (See attachments for full accessibility tables) This means the region has already been focusing on placing transportation investments in equity focus areas and only trying to further gain more efficiency. When looking at the number of jobs within a 30 minute bicycle commute, by 2040 the average household in an equity focus area can reach 137,000 jobs, whereas the average household in the region and in non-equity focus areas can reach 128,000 and 110,000 subsequently.)

The mixed results demonstrate more investigation is necessary to understand how to improve and increase the number of jobs accessible in a reasonable commute for the average household in equity focus areas across all forms of travel. While the 2040 constrained investment strategy has determined a successful approach for transit and transit service, it is necessary to dig in and understand how to increase the number of jobs accessible by bicycling and walking in particular. This is because historically marginalized communities tend to use transit, bicycling, and walking for more of their travel trips. In addition to further investment, other strategies may be necessary, such as land use strategies, travel options education and demand management. But more analysis is necessary to understand the results further and determine the appropriate set of strategies to make improvements. As a result of these mixed results, further investigation is necessary to determine whether there is a potential disproportionate or disparate impact.

**Access to Community Places Results Summary**

The 2027 and 2040 constrained investment strategies increase the number of community places accessible within a short driving and transit trip. With the 2027 constrained investment strategy, the average household in the region can get to 33 to 57 more community places in a short driving trip, or 78 to 100 more community places in a short transit trip depending on the time of day. (See attachments for full results tables.) With further investment slated for after 2028, the investment only further increases the number of community places reached in a short driving or transit trip to upwards of 76 to 143 more community places accessible to the average household.

While the 2027 and 2040 constrained investment strategies show positive progress in the greater number of places accessible, little or no change in the number of community places accessible in a short walking or bicycling trip is observed as a result of the investment strategies. In general, the average household in the region can reach 66 community places in a short walk and 360 community places in a short bicycle ride. In certain circumstances, the investment strategies result in one more community place being reached by bike or walk for the average household in the region. When looking at certain areas or more closely into communities, the increase in the number of community places within a short walking or bicycling trip may have gone up significantly due to the investment strategy.

One significant factor to note is that the analysis is based on the locations of existing community places and it is not considering the possibility of new community places to open as a result of population and employment growth. The reason for this is because Metroscope spatially distributes non-residential land uses and employment at a coarse granularity. More fine detail on the locations of community places is necessary to conduct the analysis. As a result, the increase in the number of community places which can be reached within a short driving, transit, walking, or bicycling trip may be greater than shown.

***Table E.24 Change in the Number of Community Places Accessible within a Typical Commute Time Regionwide (adjusted by form of travel) with the 2027 and 2040 Constrained Investment Strategies***

| | Change in Total Number of Community Places Accessible in 2027 (2027 Constrained over 2027 NB) | | | | | |
|---|---|---|---|---|---|---|
| | *Auto – Rush Hour* | Auto – Non Rush Hour | *Transit – Rush Hour* | Transit – Non Rush Hour | Bike | Walk |

| | | | | | | |
|---|---|---|---|---|---|---|
| All Community Places | 57 | 33 | 100 | 78 | 1 | 0 |
| Food | 2 | 1 | 3 | 3 | 0 | 0 |
| Medical | 21 | 12 | 36 | 27 | 0 | 0 |
| Other | 34 | 20 | 61 | 48 | 1 | 0 |

Change in Total Number of Community Places Accessible in 2040 (2040 Constrained over 2040 NB)

| | *Auto – Rush Hour* | Auto – Non Rush Hour | *Transit – Rush Hour* | Transit – Non Rush Hour | Bike | Walk |
|---|---|---|---|---|---|---|
| All Community Places | 114 | 76 | 143 | 139 | 0 | 1 |
| Food | 4 | 2 | 5 | 5 | 0 | 0 |
| Medical | 42 | 28 | 52 | 50 | 0 | 0 |
| Other | 69 | 46 | 86 | 84 | 0 | 0 |

*Source: Metro, 2018 RTP system evaluation*

When looking more closely at the analysis in the equity focus areas, the 2027 and 2040 constrained investment strategies result in more community places which can be reached in a short transit trip compared to the region and non-equity focus areas. This means the average household in the equity focus areas see a greater increase in the number of community places reached in a short transit trip compared to the average household in the region or in non-equity focus areas as a result of the investment strategy. The equity focus areas see an increase of 90 to 120 more community places reached in a 30 minute transit trip, depending on the time of day with the 2027 constrained investments. The number of community places further increases to 165 more reached with further investment by 2040. Whereas, the region and non-equity areas see an increase range from 60 to 109 (non-equity focus areas) and 78 to 143 (region) with the 2040 constrained investment strategy.

While the significant increases in the number of community places reached in a short transit trip for the average household in a equity focus area is a positive sign, when it comes to other forms of travel (e.g. driving, walking, and bicycling), the region and non-equity focus areas seem a greater increase in the number of community places reached within a short trip. For example, in a 20 minute drive, depending on the time of day, the average household in the region can reach 114 more community places in 2040 as a result of investments. This is 13 more community places than the average household in an equity focus area. This means the average household in the region and in a non-equity focus area is seeing greater

benefit in reaching community places in a short trip as a result of the 2040 constrained investment strategies compared to the average household in an equity focus area.

As described earlier in this section, minimal change was observed in the number of community places reached in a short bicycle or walking trip in the region. The same result is seen in non-equity focus areas and in equity focus areas. While the change is a difference of one more community place reached within a short bicycle or walking trip, the increase was generally observed more consistently in non-equity focus areas than equity focus areas. As described earlier in this section, the results may not fully show the increased numbers of community places reached as a result of the 2027 and 2040 constrained investment strategies since the analysis did not account for future community places to open as a result of population and employment growth creating new demand for places like grocery stores, doctors/dental offices, and other retail or services.

Additionally, as described more fully in the Access to Jobs analysis, the results for the number of community places reached within a short trip (15 minutes for bicycling, 20 minutes for walking) may not fully capture the benefits being gained by implementing the active transportation investments in the 2027 and 2040 constrained investment strategies. As new sidewalks and bike paths get built, new route options become available which may attract more out of direction travel to have a more pleasant walking or bicycling experience. This may result in trips taking longer than 15 or 20 minutes to get to different destinations, but more time spent in active travel and the associated health benefits.

As a result of these mixed results, further investigation is necessary to determine whether there is a potential disproportionate or disparate impact.

***Table E.25. Change in the Number of Community Places within a Short Trip for Different Communities (adjusted by form of travel) with the 2027 and 2040 Constrained Investment Strategies***

| | Change in Total Number of Community Places Accessible in 2027 (2027 Constrained over 2027 NB) | | | | | |
|---|---|---|---|---|---|---|
| | All Community Places | | | | | |
| | *Auto – Rush Hour* | Auto – | *Transit – Rush Hour* | Transit | Bike | Walk |
| Region | 57 | 33 | 100 | 78 | 1 | 0 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Equity Focus Areas | 52 | 31 | 120 | 90 | 1 | 0 |
| Non-Equity Focus Areas | 59 | 35 | 72 | 60 | 1 | 1 |

Change in Total Number of Community Places Accessible in 2040 (2040 Constrained over 2040 NB)

| | All Community Places | | | | | |
|---|---|---|---|---|---|---|
| | *Auto – Rush Hour* | Auto – | *Transit – Rush Hour* | Transit | Bike | Walk |
| Region | 114 | 76 | 143 | 139 | 0 | 1 |
| Equity Focus Areas | 101 | 69 | 165 | 161 | 0 | 0 |
| Non-Equity Focus Areas | 123 | 79 | 109 | 105 | 1 | 1 |

*Source: Metro, 2018 RTP system evaluation*

**Definitions**

**Safety project**
A project which has the primary purpose reducing fatal and severe injury crashes or reducing crashes by addressing a documented safety problem at a documented high injury or high risk location with one or more proven safety counter measures.

**Safety benefit project**
A project that includes design features that increase safety for one or more roadway user, but may not necessarily address an identified safety issue at an identified high injury or high risk location.

**Share of Safety Projects Results Summary**

The share of safety projects in the refined 2027 and 2040 constrained investment strategies increased to 132 projects, or sixteen percent (16%) of all projects. As established in the Regional Transportation Safety Strategy, a safety project is defined as the project's primary purpose is reducing fatal and severe injury crashes. Seventy-nine percent (79%) of these safety projects (104 of 132) are located on a high injury corridor and seventy-three percent (73%) are in an equity focus areas. Of the safety projects, a total of 82 projects are slated for implementing within the first ten years of the investment strategy, where eighty-two percent (82%) of those safety projects are in equity focus areas. A total of $1 billion dollars of investment in safety is identified in the 2040 constrained investment strategy, where $691 million is slated by 2027. These results are an indication that the region is prioritizing addressing safety issues in historically marginalized communities, especially on the high injury corridors in those same communities, which have a history of crashes.

Notable were the changes partners made to better align the plan with advancing those transportation priorities – accessibility and safety – identified by historically marginalized

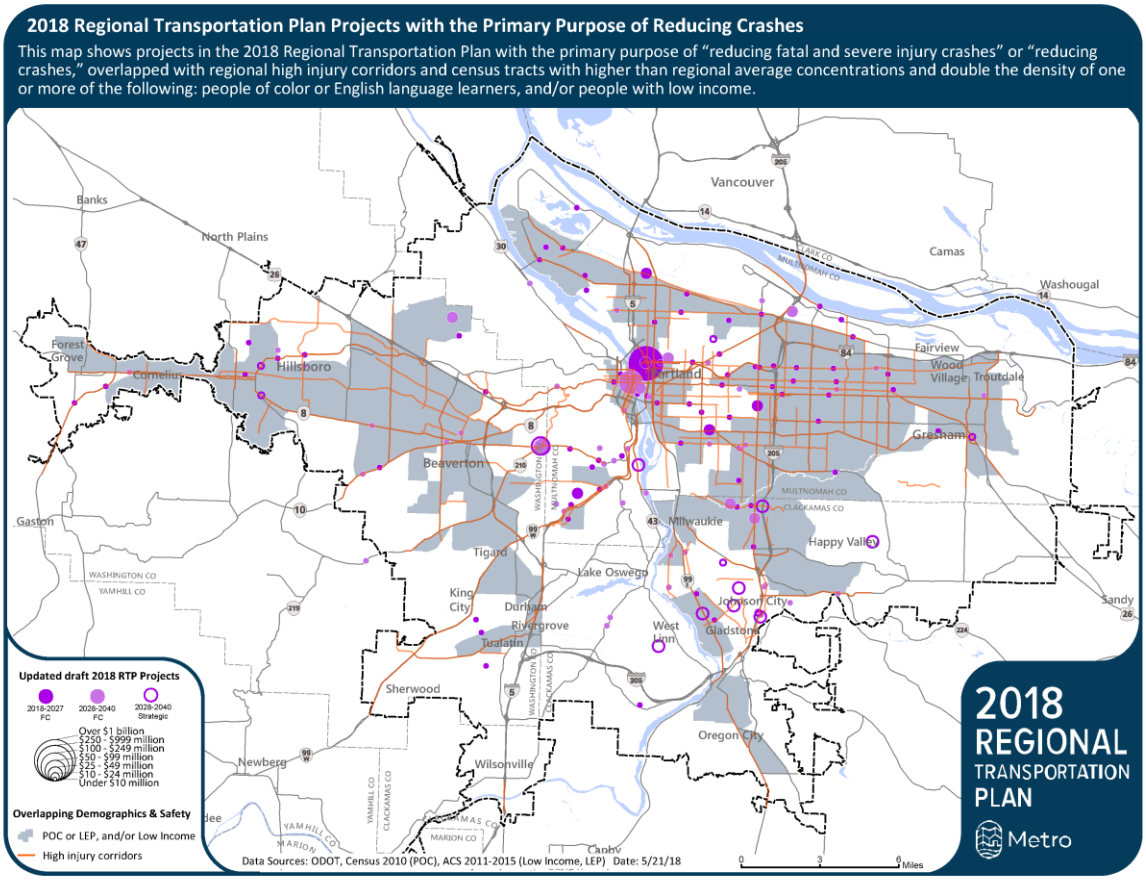
communities. As for safety projects, compared to the first round, the refined 2040 constrained investment strategy has 132 projects which now include reducing those crashes which result in fatal or serious injuries as a primary objective. This is a significant shift compared to the first round evaluation of the 2040 constrained investment strategy, which had 45 transportation investments where the primary objective is to reduce crashes resulting in fatalities or serious injuries.

Additionally, in light of discussions at the work groups and the technical advisory committees, the second round evaluation of the 2027 and 2040 constrained investment strategies looked at projects which provide a safety benefit. (See definitions text box.) In total 551 projects, or sixty-seven percent (67%) of all projects, have been identified to provide a safety benefit. Sixty-five percent (65%) of the safety benefit projects are on a high injury corridor, and seventy percent (70%) are located in an equity focus area. In total, 284 projects provide a safety benefit on a regional high injury corridor travesing an equity focus area. Furthermore, of those 284 projects, 84 are explicitly focused on reducing fatalities or serious injuries.

Moreover, the 2018 RTP investment strategy includes a number of programs that impact safety. While not capital projects, the Safe Routes to School, Transit Oriented Development and Transportation System Management and Operations programs provide safety benefits through education, traveler information and further management of the system, signal priority, and other strategies.

Based on the results of the share of safety projects evaluation for the refined 2040 constrained investment strategy, the focus to place safety and safety benefit projects in equity focus areas clearly indicates there is not a disproportionate impact to historically marginalized community.

Figure E.20. Safety Projects Which Overlap High Injury Corridors and Equity Focus Areas




*Source: Metro, 2018 RTP system evaluation*

## FINDINGS, RECOMMENDATIONS, AND CONCLUSIONS

The 2018 RTP transportation equity evaluation was a significant effort and evolution for Metro in its ability to measure and assess equity in its long-range transportation plan. Prior to the 2018 RTP, the transportation equity evaluation primarily took the approach of looking at whether the Plan was investing in historically marginalized communities. While in general those analyses demonstrated the region continues to make investment in historically marginalized communities, it generally did not distinguish whether those investments would have an effect on outcomes historically marginalized communities want from the transportation system. The feedback and lessons learned from the 2014 RTP Civil Rights Assessment and the region's leaders desire to better understand the effects of the its transportation investments for historically marginalized communities ushered in a paradigm shift in how the region measures and approaches equity.

The significant shift resulted in the approach to measure the priorities and outcomes historically marginalized communities want most from the transportation system. This ultimately meant the evaluation of the Plan necessitated a wholesale change to better understand what marginalized communities desire to see from the transportation system and a willingness to venture into a territory with very few models or examples.

Nonetheless, Metro commitment to find ways to measure transportation equity in the 2018 RTP led to a different process. Metro started by engaging different partners who have not been a part of the RTP process in the past and meaningfully engage historically marginalized communities. This engagement effort provided focus for the transportation equity evaluation work and identified a need to measure different dimensions of accessibility, safety, affordability, and environmental health with a focus on disparities and outcomes for historically marginalized communities. Generous support through a National Institute of Transportation and Communities grant allowed Metro to work in collaboration with Portland State University to research and inform the methodology for measuring four key priorities with a spotlight on equity. Throughout the process of developing system evaluation measures pertaining to accessibility, safety, affordability, and environmental health, Metro staff went on technical journey and continues to test, learn, and evolve the state of the practice.

The process undertaken to evaluate transportation equity in the 2018 RTP also had other effects to the Plan. The engagement undertaken forged new partnerships and stakeholder

relationships. It also highlighted a number of intersectional and adjacent issues historically marginalized communities want to see addressed with the transportation system, but are not necessarily issues well addressed by the Plan's capital investments. Ultimately, this better understanding of the priorities historically marginalized communities desire to see for the transportation system helped to shape the transportation equity policies within the 2018 RTP and the components to the Plan, particularly the Regional Transit Strategy, the Regional Transportation Safety Strategy, and the Emerging Technology Strategy. The end result is that the 2018 RTP includes a clarified definition of transportation equity and seven new policies focused on transportation equity, which urges the region's to work in partnership to prioritize investments, further engage marginalized communities in the Plan's implementation, and proactively address intersectional issues including gentrification and displacement.

The results of the equity-focused evaluation of the 2018 RTP long-range capital investment provide insight on potential outcomes and effects historically marginalized communities will experience with regional transportation system. The newly developed transportation equity policies in combination with a proposed implementation work plan identifies the work which needs to be done next and the on-going efforts to address and achieve transportation equity for historically marginalized communities.

## Safety and Access to Travel Option – System Completeness Analysis Findings

The results of the 2018 RTP transportation equity evaluation illustrate the region's long-range investment strategy focus on completing the regional active transportation network (e.g. sidewalks, crossings, bicycle lanes) in historically marginalized communities, greater so than the region and in communities with lesser concentrations of historically marginalized populations. Furthermore, the Plan's prioritizes active transportation network completion in historically marginalized communities within the first ten years of the investment strategy, meaning the benefits of completing sidewalks and bikeways will come to fruition sooner rather than later. As areas which have historically seen a lack of transportation investment and survey data showing historically marginalized communities tend to use active transportation more often for travel trips, this prioritization reflects the region is working to advance outcomes that serve historically marginalized communities. Nonetheless, the region does fall short of a goal to get to full completion of the active transportation network by 2040.

Similarly to the completion of the active transportation evaluation measure, the results of the 2018 RTP transportation equity evaluation also illustrate the long-range investment strategy focuses on addressing safety issues, particularly on the region's high injury corridors which traverse historically marginalized communities. A greater number of transportation safety projects identified in the Plan are in historically marginalized communities compared to communities with lesser concentrations of historically marginalized populations. Again, the results illustrate investments in safety – to reduce

crashes, especially those to result in fatalities and serious injuries – are prioritized in historically marginalized communities to address safety issues. This is vitally important as transportation safety statistics have shown that historically marginalized communities are disproportionately impacted by crashes.

The results of the active transportation network and the safety evaluation measures for the transportation equity evaluation reflect efforts made during the call-for-projects and the refinement period in developing a constrained investment strategy which better addresses key outcomes for the Plan. As a result, when it comes to completing the active transportation network and the investment level in transportation safety, the 2018 RTP investment strategy is expected to improve safety and make walking, bicycling, and taking transit easier for historically marginalized communities.

## Access to Jobs and Community Places Findings

The 2018 RTP transportation equity evaluation also measured two dimensions of accessibility: access to jobs and access to community places by different form of travel (e.g. driving, transit, bicycling, and walking) in a reasonable travel time. When looking at the RTP investment strategy's effect on whether the average household in historically marginalized communities are able to get to a greater number of jobs and community places (e.g. libraries, grocery stores, credit unions, medical facilities) in general accessibility will increase. In particular, the 2018 RTP investment strategy will provide significant benefit and increase the number of jobs (regardless of wage profile – low, middle, high) and community places accessible within a reasonable transit commute for historically marginalized communities. The transit result is significant and positive in light of knowing from survey data historically marginalized communities use transit for more trips and upwards 42 percent of transit trips are taken by people of color and people in poverty for commuting to work or school purposes. The increased number of jobs and community places accessible within reasonable transit trip will provide significant benefits to historically marginalized communities in the near and long-term.

However, with the exception for transit, the region's average household and households in the communities with lesser concentrations of historically marginalized communities will see a greater increase in the number of jobs and community places accessible by driving (in most cases), walking, and bicycling as a result of the investment strategy. The result demonstrates despite the region's efforts to focus investments to support further access to jobs and community places for historically marginalized communities, other potential strategies are needed in conjunction with further investment to be able to improve accessibility for historically marginalized communities.

The mixed results from the access to jobs and community places measures are disappointing despite the region's efforts to increase accessibility for historically marginalized communities. Nonetheless, the 2018 RTP transportation equity evaluation looked at aggregate system performance of the regional transportation system in historically marginalized communities, communities with lesser concentrations of historically marginalized populations, and the region as a whole. The evaluation did not assess at a community or project level the effects of investments on the priority areas identified by historically marginalized communities. Therefore, the analysis coarseness may not show the immediate relative effects, whether positive or negative, the transportation investments provide for historically marginalized communities.

Based on the mixed results of the access to jobs and community places measures, the 2018 RTP transportation equity evaluation illustrate a potential disproportionate impact when it comes to historically marginalized communities accessing jobs and community places within a short travel trip by driving, bicycling, and walking..

## Overall 2018 RTP Transportation Equity Evaluation Findings

The 2018 RTP transportation equity evaluation demonstrates in some areas, such as safety and building out walking and bicycling infrastructure, the region's long-range capital investment plan will provide greater benefits to historically marginalized communities. But the transportation equity evaluation also demonstrates, particularly as it pertains to accessibility to jobs and community places, the investment program will not provide the same level of benefit to historically marginalized communities compared to others.

At the outset of developing the work plan and the public participation plan for the 2018 RTP update, Metro as a MPO and public agency made a collective and intentional decision to take a different approach to engaging with stakeholders, particularly communities who have been historically marginalized and underserved. The intentional approach supported technical staff in engaging with non-traditional stakeholders and identified the priorities historically marginalized communities see for the transportation system. This engagement and subsequent Metro Council policy direction served as the basis for developing a new technical method to evaluate the 2018 RTP. The engagement and listening to communities led to other meaningful conversations on a number of intersectional and adjacent issues historically marginalized communities want to see addressed with the transportation system, but are not necessarily issues well addressed by the Plan's capital investments. Ultimately, this better understanding of historically marginalized communities needs, challenges, and desires for the transportation system motivated a regional conversation to develop a set of transportation equity policies within the 2018 RTP and the components to the Plan. This symbolizes how a task to evaluate equity in the Plan led to broader outcomes to address equity.

Therefore the overall findings and conclusions to the 2018 RTP evaluation considers both the process to develop transportation equity evaluation and its results. In consideration of the public process, the engagement undertaken, the transportation equity policies and the evaluation results, the findings of the 2018 RTP transportation equity evaluation illustrate there is not a disproportional impact of the Plan's investment to historically marginalized communities as a whole. Nonetheless, to implement the Plan and realize its outcomes, significant work remains to improve accessibility for historically marginalized communities in the region and monitor progress.

## Next Steps

Overall, the 2018 RTP transportation equity evaluation illustrates that for some outcomes historically marginalized communities identified as a priority for the system, the investment strategy is making progress and bring positive benefits to these communities. The evaluation also illustrates for some priorities, the region has more work to do to address these to support historically marginalized communities and not further exacerbate disparities. The mixed results of 2018 RTP transportation equity evaluation means the region must work collectively to continue to advance outcomes identified by historically marginalized communities, close the disparities gap, and to prevent any potential disproportionate impacts. The work to address transportation equity is not a small feat, but is not insurmountable. Already, the region has identified as part of the 2018 RTP implementation (in Chapter 8 of the Plan), more work related to monitoring, research, planning, and complementary land use strategies which can be deployed in tandem to the implementation of the investment strategy to achieve the region's vision for the transportation system. Some specific areas pertaining to the outcomes historically marginalized communities identified which are slated for further work as part of 2018 RTP implementation includes:

- Transportation Equity Analysis and Monitoring – Improved data collection, with an emphasis on data disaggregated by demographic characteristics to support future transportation equity evaluation and current monitoring of the implementation of the 2018 RTP. Also develop a disparities baseline to include an in-depth existing conditions analysis which disaggregates by demographic characteristics, with a particular focus on accessibility, affordability, safety, and environmental health outcomes, such as localized air pollution exposure.
- Transit Planning – Implementation of new revenues from House Bill 2017 dedicated for transit service through annual service planning that TriMet and SMART are responsible.

- Enhanced Transit Concept (ETC) Pilot Program – Identifications and implementation of regional scale, corridor scale, and/or spot-specific improvements that enhance the speed and reliability for buses or streetcar moving through traffic.
- Transportation Safety Data Collection – Coordination with federal, state, regional and local partners to acquire, collect and maintain the data currently used for transportation safety related analysis. This data includes, but is not limited to, crash, roadway network, traffic volume and vehicle mile traveled data as well as new data required to provide more in-depth analysis, including race and ethnicity of crash victims, posted speed, and enhanced bicycle and pedestrian count data.
- Housing and Transportation Expenditure Tool Development – Continued development of a prototype tool looking at out-of-pocket expenditure for housing and transportation and effects of future transportation investments and the housing and transportation expenditures that result.
- Displacement Monitoring Tool Development – Development of a streamlined displacement risk assessment tool. Tool to be modeled after the displacement risk analysis being undertaken as part of the Southwest Corridor Equitable Development Strategy (SWEDS).
- Crash Prediction Modeling Tool Development – Coordination with federal partners and other metropolitan planning organizations to develop and pilot the use of crash prediction modeling tools to assess safety performance system wide.
- Advance Methods to Evaluate Accessibility in Equity Focus Areas - Further develop a refined methodology to measure accessibility in equity focus areas with an emphasis of disaggregating the assessment to a sub-regional scale to better understand access deficiencies.

Other additional activities identified to support the implementation of the 2018 RTP and would address the different factors impacting accessibility in historically marginalized communities include:

- Transportation System Management and Operations (TSMO) Strategy Update – Update to a ten year strategy to reflect the changing transportation technology-driven infrastructure and system needs, and to increase transportation system efficiency and support innovative ways to use technology to actively manage demand, manage the system and to improve operations.
- Multimodal Transportation Network Data Collection – Continue to update multimodal data in the Regional Land Information System (RLIS), including inventories of sidewalks and bike facilities are tied to these networks to allow for multimodal analysis.

In addition to the new transportation equity policies as part of the 2018 RTP, the direction will guide Metro's planning, funding allocation, and implementation efforts as well as the

different 2018 RTP implementation activities discussed previously. Metro knows it has more work to do to implement these policies and work to address any potential disproportionate impact emerging from the long-range transportation plan implementation. But closing the disparities gap and advancing transportation equity cannot be done by one agency; it requires collaboration and partnership. In the greater Portland region, community, business, and elected leaders have expressed support for the 2018 RTP focus on measuring transportation equity and addressing the outcomes historically marginalized communities identified for the transportation system. With the expressed support, the next step is to spring into action and begin the implementation activities identified in the 2018 RTP.

## ATTACHMENTS

1. **Transportation Equity Work Group Roster**
2. **Transportation Equity Work Group Meeting Packets**
3. **2018 RTP Engagement Efforts Summary**
4. **Materials Related to Historically Marginalized Communities Identifying Transportation Priorities**
5. **Jurisdictions Refinements Summary Letters**
6. **Transportation Equity Evaluation Measure Methodology Sheets**
7. **Access to Travel Options – System Completeness Results Tables**
8. **Access to Jobs and Community Places Results Tables**
9. **Timeline of Exclusion – Historical Moments in Oregon and U.S. Perpetuating Racial Exclusion and Discrimination**

**Transportation Equity Work Group |** *as of 10/18/17*

| | Name | Affiliation |
|---|---|---|
| 1. | Grace Cho | Metro lead |
| 2. | Scotty Ellis | Metro Diversity Equity Inclusion Program |
| 3. | Carl Green | TriMet |
| 4. | Zan Gibbs<br>April Bertelsen (alternate) | City of Portland |
| 5. | Karen Savage<br>Erin Wardell (alternate) | Washington County |
| 6. | Dan Riordan | City of Forest Grove |
| 7. | Dan Rutzick<br>Gregg Snyder (alternate) | City of Hillsboro |
| 8. | Jay Higgins | City of Gresham |
| 9. | Jessica Berry | Multnomah County - Planning |
| 10. | Steve Williams | Clackamas County |
| 11. | Nancy Kraushaar | City of Wilsonville/Cities of Clackamas County |
| 12. | Heidi Guenin | GridWorks/Community Member |
| 13. | Aaron Golub | Portland State University |
| 14. | Kay Durtschi | Community Member |
| 15. | Corky Collier | Columbia Corridor Business Association |
| 16. | Duncan Hwang | Asian Pacific American Network of Oregon (APANO) |
| 17. | Jared Franz | Community member |
| 18. | Talia Jacobsen | Oregon Department of Transportation |
| 19. | Cora Potter | Ride Connection - Paratransit transit provider |
| 20. | Noel Mickelberry | Oregon Walks |
| 21. | Kari Schlosshauer | National Safe Routes to School Partnership |
| 22. | Sarah Armitage/Stephanie Caldera | Oregon Department of Environmental Quality |
| 23. | Eddie Hill | Ground Work |
| 24. | Nicole Phillips | OPAL/Bus Riders Unite |
| 25. | Brendon Haggerty/Andrea Hamberg | Multnomah County - Public Health |
| 26. | Steven Nakana | Port of Portland |
| 27. | Emma Brennan | Oregon Tradeswomen |
| 28. | Scott France | Clackamas County Health Department |
| 29. | Kathleen Johnson | Washington County Health Department |

# 2018 RTP/2018-21 MTIP | TRANSPORTATION EQUITY ANALYSIS WORK PLAN

*Getting there equitably*

Attachment

| PHASE 1 | PHASE 2 | PHASE 3 | PHASE 4 | PHASE 5 |
|---|---|---|---|---|
| PROJECT START UP | DOCUMENT EXISTING POLICIES AND TRENDS | ESTABLISH ANALYSIS METHODS AND PRIORITIZE EQUITY OUTCOMES | CONDUCT ANALYSIS AND PREPARE FINDINGS AND RECOMMENDATIONS | ADOPTION |
| **Summer to Dec. 2015** | **Dec. 2015 to March 2016** | **April 2016 to Feb. 2017** | **2017** | **Summer 2017 to Sept. 2018** |
| Define the work plan including the analysis purpose, schedule, goals, and objectives | Review regional demographic and socioeconomic trends and challenges facing the communities being evaluated | Engage communities to confirm trends and challenges and confirm transportation needs and priorities | Evaluate the package of transportation investments proposed for the 2018-2021 MTIP and 2018 RTP | Define recommendations for the 2021-2024 MTIP policy and future transportation equity analysis |
| Review and refine, as necessary, the community definitions and thresholds of the communities being evaluated and come to agreement on overarching definition of transportation equity. | Review existing system conditions and implications for the different communities | Prioritize equity outcomes and transportation needs to be addressed in analysis | Review results and develop evaluationfindings | Adopt the transportation equity analysis as part of the 2018-2021 MTIP (Summer 2017) |
| Identify work group purpose and membership | Review 2014 Civil Rights Assessment and review of existing federal, state, and regional policies related to transportation equity to identify policy gaps | Update equity-related RTP goals and performance targets | Develop recommendations and refinements to 2018 RTP policies, projects and implementation actions to advance equity outcomes | Adopt transportation equity analysis as part of the 2018 RTP (Sept. 2018) |
| Kick off transportation equity research partnership effort with PSU | | Develop indicators and analysis methods to measure priority outcomes | Develop recommendations for future transportation equity analysis | |
| | | Use priority outcomes and needs to inform the project solicitation process for the 2018 RTP and the 2019-2021 RFFA | | |
| **DELIVERABLES** | | | | |
| **Work plan** | **Mix of technical memorandums, maps or web-based map viewer, reports outlining existing conditions and policies**<br><br>**Updated existing conditions section for 2018 RTP** | **Finalize list of priority transportation equity outcomes for evaluation** | **MTIP and RTP evaluation and methodology report** | **2018-2021 MTIP Transportation Equity Analysis**<br><br>**2018 RTP Transportation Equity Analysis**<br><br>**Title VI and Environmental Justice Compliance Documentation** |

DRAFT OCTOBER 2015

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Metro | *Memo*

Date: September 21, 2015
To: Grace Cho, Transportation Equity Analysis Project Manager
From: Justin Sherrill, Metro Communications Media and Marketing Intern
Subject: Identified Transportation Needs and Priorities – Public Comment Retrospective

**Overview:**
To support the 2018 Regional Transportation Plan (RTP) update and 2018-2021 Metropolitan Transportation Improvement Program (MTIP), Metro conducted a review of recent public input and comments related to the transportation needs of historically underrepresented communities as well as older adults and younger persons to help identify priority outcomes to be evaluated through the transportation equity analysis of the 2018 RTP and 2018-2021 MTIP.

The top four themes identified in this review are:
- Affordability
- Access to services
- Safety
- Involuntary displacement

**Introduction:**
This retrospective is intended to provide a macro-level overview of recurrent themes of public comments gathered in the engagement reports of several recently completed planning efforts. The themes addressed were chosen on the basis of their particular significance with and impact on historically underrepresented communities as well as older adults and younger persons in the region. The public comment reports reviewed include:
- the 2014 Regional Transportation Plan
- the 2014 Active Transportation Plan
- 2014 Climate Smart Strategy
- Powell-Division Transit and Development Project

The public comment reports for these projects were examined, and cross-referenced with their associated comment logs as needed, with an eye for finding common themes and language between reports. The findings are summarized in the following four sections. Attached is a more detailed explanation of the methodology used to identify the themes discussed in this assessment.

**Identified Public Comment Themes**

**Affordability:** Affordability is the most prominent and consistent theme from the pool of comments gathered from these reports. All historically underrepresented communities as well as older adults and younger persons in the region are significantly impacted by the economic costs of Metro's transportation projects and policies, and all are conscious to some degree of the financial burden associated with these projects. However, different communities expressed how they encounter these costs in different ways. For instance, groups and individuals representing low-

income communities consistently voiced concern that increased fares and fees would have a barrier effect on residents who are dependent on a particular form of transportation.

For example, in the public comment reports for the Powell-Division Transit Corridor Project and 2014 RTP, investments in expanding and improving the region's transit network were generally met with approval by advocates for low-income and older residents, but there were also consistent appeals for reduced-fare programs for historically marginalized communities to make those networks affordable.

Another way affordability was discussed in comments was as a higher public cost passed to residents as a result of the proposed projects or policies, and how these might function as an inequitable financial burden placed on those who do not or cannot utilize the transportation options they are being asked to support. Related to this, there was notable number of comments demanding that one particular mode or project be funded at the expense of defunding others. For example, funding the expansion and maintenance of existing roads over active transportation investment (and vice versa) was a reoccurring theme.

In reviewing the individual comments in more detail, the feedback from the public demonstrated conflicting priorities. Seen in aggregate, however, the comments show that a multi-modal transportation network is the surest means of providing transportation options to the greatest number (and greatest variety) of residents. The 2014 ATP report contained a sizeable portion of comments supporting this multi-modal strategy.

While affordability and cost are the most prominent themes, the comments also show a broad trend of support for sustainable practices and policies at the regional level. However, this support does not come without concern of the distribution of the costs of "going greener." Considerable concern remains around the question of how vulnerable communities will afford to adapt to growth and change in the region.

For example, comments on the 2014 Climate Smart Strategy emphasized finding ways to fund the proposed strategies in ways that do not unfairly affect commuting, low-income families who are dependent on their cars for work or child-care. Specifically, proposals for a vehicle mile traveled (VMT) tax remained a contentious issue, with equal support and opposition from respondents.

Comments on behalf of organizations or coalitions are also concerned with the lack of a clear-cut method for tracking the end cost that historically underrepresented communities as well as older adults and younger persons will have to bear. Furthermore, if not enough action is taken to mitigate the local effects of climate change, these same communities will often bear the burden of the various health and economic related impacts to our region. These include but are not limited to illnesses related to air pollution and heat, as well as decreased water quality and supply.

**Access and Service[1]:** Concern about access is one of the most consistent themes found across the reports, and one that is especially significant for vulnerable communities. All residents are

[1] In this summary report, **access** is used to describe the physical layout of Metro's transportation networks and how it impacts residents' abilities to utilize the transportation network and options provided to travel to their desired destinations. Examples include accommodations for disabled or mobility-impaired riders at transit stations or the whether the planned pedestrian route of a newly created bus line is in close proximity to transit-dependent riders. **Service** denotes the frequency, efficiency, reliability or maintenance of these

impacted positively or negatively by their relative proximity to various modes of transportation, as well as their ability to reach places to work, live and play via those modes. It is worth noting that there was a consistent theme of support for improving and expanding the region's transit networks and active transportation routes (found in ATP, RTP, Climate Smart Strategy, Powell-Division), while at the same time, there was a chorus of dissatisfaction with the access and service of these same networks. Many comments voiced concern about new projects and developments negatively affecting the access and service of preexisting transportation networks, either through direct disruption or by stretching limited resources too thin.

Route permanence and consistency of service were voiced as core needs for various historically underrepresented communities as well as older adults and younger persons. Comments from those who are transit-dependent and low-income expressed how disrupted service or the removal of a route can have a harmful effect on their ability to get to work on time or to access child/elder care, to name just two examples.

**Safety:** Safety emerged as a prominent theme found in the public comments of all reports. Similar to access and service, this theme could also be divided into two interpretations of safety.

The first interpretation has to do with the physical infrastructure or "designed" safety of the region's transportation system. Found prominently in the ATP and RTP reports, examples generally dealt with features such as wider bike lanes, more crosswalks, and other ways to increase the physical separation of modes and create an atmosphere of feeling safe while using that mode. Comments expressed that the physical structure of the region's transportation system could still be improved or altered to make them more accessible to people of varying levels of mobility, ability, age and experience.

The other interpretation of safety was more related to personal security as it has to do with monitoring and moderating the conduct of the region's transit users to protect those who might feel particularly vulnerable using such transportation options. Found in several reports, but most prominently in the Powell-Division comments, this concern for safety is mostly related to the region's transit networks. A consistent theme to emerge from Powell-Division was support for the project and use after completion, "if it felt safer."

**Involuntary Displacement:** Involuntary displacement emerged as a prominent theme found in all reports, but primarily in the Powell-Division Project public engagement report. The attention to this topic attracted more attention in part because the possible benefits and downsides become more tangible for these large-scale, near-term capital investments. Numerous comments from this report dealt with residents' fears of involuntary economic displacement resulting from the redevelopment of neighborhoods likely to follow the construction of the transit route. Concerns voiced in comments largely dealt with fears of rents and property taxes being raised to untenable levels for many of the corridor's more vulnerable residents.

Advocates and members of communities of color and low-income communities expressed doubts as to how Metro and other project partners will work to prevent or even mitigate such negative effects in the areas surrounding the proposed Powell-Division corridor. Many of the same groups were curious as to how Metro and other project partners will ensure that this project spurs economic growth and help existing businesses, while also connecting disadvantaged residents to jobs.

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aforementioned networks. Examples can range from the timeliness of a streetcar to the width and condition of a bike path. Both are included in this section because both are highly interconnected.

The public comment summaries of these projects were examined, and cross-referenced with their associated comment logs as needed, with an eye for finding common themes and language between reports. The findings are summarized in the following four sections. Attached is a more detailed explanation of the methodology behind identifying the themes discussed in this assessment.

**Table I: Public Comment Report Reviewed for Different Plan and Relative Theme Rankings**

| | 2014 Regional Transportation Plan | 2014 Active Transportation Plan | Powell-Division Transit and Development Project | Climate Smart Strategy |
|---|---|---|---|---|
| **Affordability/Public Cost** | Highest | High | High | Highest |
| **Access/Service** | High | Highest | Highest | Mid |
| **Health/Safety** | Low | Mid | Low | High |
| **Involuntary Displacement** | Mid | Low | Mid | Low |

**Addendum: Methodology**

Because of the wide variation between all the reports' public comment sample sizes and demographic makeup, as well as survey methods, no attempt was made to compare the prevalence of themes *across* reports. Rather, this assessment attempted to discern the prevalence of the various themes in relation to each other within each report. First, each survey summary was consulted to identify the most prominent topics discussed in the comment surveys. Second, the reports' comment appendices were examined in order to back up the findings in the summaries and determine a relative ranking of the four themes. The four themes were ranked in order of "Highest", "High", "Mid", and "Low". Broad trends can be identified across the reports, but with the understanding that there are some significant demographic differences between the reports' commenter populations.

Date: November 24, 2015

To: Grace Cho, Transportation Equity Analysis Project Manager

From: Charlie Tso, Regional Planning Intern

Subject: Identified Transportation Needs and Priorities – Public Comment Retrospective

## I. Background

To support the 2018 Regional Transportation Plan (RTP) update and 2018-2021 Metropolitan Transportation Improvement Program (MTIP), Metro conducted a review of recent public input and comments related to the transportation needs of historically underrepresented communities as well as older adults and younger persons to help identify priority outcomes to be evaluated through the transportation equity analysis of the 2018 RTP and 2018-2021 MTIP.

The top four themes identified in this review are:

- Access
- Safety
- Affordability

## II. Introduction

This memo provides an overview of common themes emerged from the public comments in two different public engagement reports: the Southwest Corridor Public Engagement Report and the Metro Diversity, Equity, and Inclusion (DEI) Equity Focus Groups Report[1]. It is important to note that the purpose, process of engagement, and methods of these two reports are very different. The questions in the Southwest Corridor Public Engagement Report were intended to solicit feedback on options for high capacity transit in the Southwest Corridor and concerns about project impact. The Metro DEI Equity Focus Groups Report asked questions related to improving community engagement and helped inform the draft of Metro's Strategic Plan to Advance Racial Equity, Diversity and Inclusion. The discussion groups were facilitated by Multicultural Collaborative and focused on topics such as housing, transportation, parks, etc. The Southwest Corridor Public Engagement Report focuses on feedback from business and neighborhood groups and placed-based dialogues whereas the Metro DEI Equity Focus Groups Report spoke with historically underrepresented communities as well as older adults and younger persons.

The Metro DEI Equity Focus Groups spoke with people from the following seven communities: Native American, Asian Pacific Islander, African American, Latino, Slavic and Russian, African Immigrant and Youth. Twenty-two different groups were engaged for the Southwest Corridor Public Engagement Report. The groups represented include South Portland, Hillsdale, Mt. Sylvania, Tigard, and Tualatin. Because the context and the stakeholders are different between the two reports, this memo summarizes the comment themes using broad concepts to encompass the

[1] http://www.oregonmetro.gov/public-projects/equity-strategy/community-input

various needs, concerns, and feedback documented in the reports. Overall, communities of different cultures, backgrounds, and places in the region share concerns about access, safety, and affordability in transportation / public transit.

*See Appendix A, B, and C for more details in the comments derived from each report.*

## III. Public Comment Themes

*1. Access:*

Having reliable transportation access is a shared concern among the communities in both Metro DEI Discussion Groups Report and the Southwest Corridor Public Engagement Report. Having safe access to jobs is important to historically underrepresented communities as well as older adults and younger persons. Specifically, providing transit services to living wage jobs, jobs in industrial areas, and for workers who have night and weekend schedules is critical.

In addition, many historically underrepresented communities expressed the importance of bringing transit connections to their neighborhoods and job opportunities. The importance of access to jobs and neighborhoods is echoed in the comments from the Southwest Corridor Public Engagement Report. There is wide consensus on improving access to Marquam Hill, Portland Community College Sylvania Campus, and bringing benefits of transit access to neighborhoods.

Other comments about access include improving transit access to parks and natural areas, reducing the difficulties of using transit due to language barriers, and maintaining access to businesses in the Southwest Corridor during constructions of transportation projects.

*2. Safety:*

Safety emerged as a prominent theme found in the public comments of all reports included in this memo. From both reports, there are comments from different groups about strategies Metro can use to enhance the safety of people taking transit, walking, and biking. Specifically, it was mentioned that lack of proper lighting and cleanness at bus shelters, lack of shelters and unsafe transit stops without sidewalks make people taking transit feel unsafe. Increasing funding better infrastructure like sidewalks and bicycle routes for people of all ages is also mentioned as a strategy. Additionally, one cultural group suggested more enforcement for both people in cars and people on bikes as a way to improve traffic safety.

*3. Affordability*

Affordability is not mentioned as a concern in the Southwest Corridor Public Engagement Report but strong concern for communities in the Metro DEI Equity Focus Groups Report. Four out of eight of these groups expressed that affordability in public transit is an issue that needs to be addressed. Specifically, Youth, Native American, Asian Pacific Islander, and Latino groups all explicitly said that Metro needs to be a convener to develop a regional approach to address transit affordability for youth, elders, and low income people.

Although there was no comment regarding the affordability of public transit or other transportation modes from the Southwest Corridor Public Engagement report, the cost of using

public transit or other modes may still affect quality of life for households and communities in the Southwest Corridor.

## Appendix

### A. Key Themes to Advance Equity in the Region from Metro DEI Equity Focus Groups Report

| | Transit Access to Parks and Natural Areas | Transit access for workers with night/weekend schedules | Transit access to living wage jobs and jobs at industrial areas | Affordable housing accessible by public transit | Transit Oriented Developments that connect neighborhoods to opportunities | Reduce language barriers to make buying fares and taking transit easier. | Adequate lighting and cleanness at bus shelter and transit stations. | Safety on the MAX | Funding for sidewalks and safe bicycle routes for people of all ages | Actively support Vision Zero | Improve road safety between cars and bicycles by enforcing traffic laws for users of both modes. | Regional approach to address transit affordability for elders, youth, and low-income people |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Native American | **x** | | | | | | | | | | | **x** |
| Youth | **x** | **x** | **x** | | | | **x** | | | | | **x** |
| Asian Pacific Islander | | | | | | | **x** | | **x** | **x** | | **x** |
| African American | | | | **x** | **x** | | | | | | | |
| Latino | | | | | | **x** | | | | | | **x** |
| Slavic Russian | | | | | | | | **x** | | | **x** | |
| African Immigrant | **x** | | | **x** | **x** | | | | | | | |
| Community leaders from culturally specific groups | | **x** | **x** | | | | | | | | | |

B. **Comment Summary from Southwest Corridor Public Engagement Plan**

- Increase transportation choices and create reliable / faster transit services
- Provide transportation choices for seniors, low income and people who do not drive
- Improve transit service to job and education opportunities
- Provide access and benefits to neighborhoods; don't just pass through on the way to somewhere else
- Improve safety for people who take transit
- Improve safety for people walking and biking
- Maintain community affordability

C. **List of groups engaged in Southwest Corridor Public Engagement Plan**

- National College of Natural Medicine
- South Portland Neighborhood Association
- Hillsdale Neighborhood Association
- Far Southwest Neighborhood Association
- Homestead Neighborhood Association
- Southwest Neighborhoods, Inc. Transportation Subcommittee
- Hillsdale residents
- Concerned Citizens for Social Justice
- Drinking Liberally in Tigard
- Portland Business Alliance
- Tigard Downtown Alliance
- Tigard Transportation Advisory Committee
- Supa Fresh Farm, Youth Source
- Oregon Somali Family Education Center
- Greenburg Oaks residents, Community Partners for Affordable Housing
- Lair Hill residents and business owners
- Southwest Neighborhoods Inc. Leadership
- PCC Sylvania leadership
- Upstream Public Health
- 1000 Friends of Oregon
- Coalition for a Livable Future
- Center for Intercultural Organizing

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Metro | *Memo*

Date: May 5, 2016
To: Transportation Equity Working Group and interested parties
From: Grace Cho, Associate Transportation Planner
Subject: Synthesis of Feedback, Community Priorities Findings and Draft 2018 RTP Transportation Equity Evaluation Measures for Further Exploration

**Purpose**
Provide the Transportation Equity work group an overview of the input and findings (to date) leading to the proposed 2018 RTP draft transportation equity measures for further exploration. Outline the next steps in the process prior to work group action at the June 30th meeting.

**Introduction**
As the Portland region prepares to make its next set of investments in the transportation system, an equity analysis can help inform how transportation investments affect the communities where people have the fewest options for travel to meet everyday needs. Understanding these effects helps the region make more informed, equitable decisions about where transportation dollars go, especially as the region weighs many competing priorities for the transportation system.

The Transportation Equity Analysis (TEA) for the 2018 RTP and the 2018-2021 MTIP serves as the equity assessment to focus on better understanding how near and long-term transportation investments are effecting:

- Communities of color;
- Households with lower-income;
- Communities with limited English proficiency;
- Older communities; and
- Youth

As a first step in to begin the assessment is to define a set of measures to evaluate the transportation investments package against. To determine the measures, Metro staff is applying an approach to allow communities of color, households with lower-income, communities with limited English proficiency, older adults and younger persons to define their priorities and direct the measures. This approach is considered a best practice to social equity and transportation planning and more importantly, it is what Metro staff has heard through feedback.

Therefore, the work to define the draft transportation equity measures are intended to reflect community identified priorities to the degree the assessment of the regional investment package for 2018 RTP and the 2018-2021 MTIP can address them. An intention has been placed on sourcing and gathering community input for this process.

**Identifying Community Priorities**

In taking the direction of the having the 2018 RTP transportation equity measures reflect community priorities, Metro staff has undertaken a multi-pronged approach to cull and identify the different transportation needs, issues, concerns, and priorities of historically underrepresented communities as well as older adults and youth. The multi-pronged approach consisted of: 1) conducting a retrospective of recent public comment reports on various planning efforts; 2) conducting an exercise with members of the 2018 RTP Transportation Equity work group; and 3) requesting public input through an online questionnaire.

**Historically Underrepresented Communities** refers to the following communities:

- Communities of Color
- Households with Lower-Incomes ($50K and less)
- People with Limited English Proficiency

Using the three different approaches for collecting and identifying transportation concerns, needs, and priorities from communities of color, households with lower-income, communities with limited English proficiency, older adults and younger persons allowed staff to see the emerging themes of patterns. A brief overview of each approach is described below.

Public Comment Retrospectives

To support the 2018 Regional Transportation Plan (RTP) update and 2018-2021 Metropolitan Transportation Improvement Program (MTIP), Metro staff conducted a review of recent public input and comments related to the transportation needs of historically underrepresented communities as well as older adults and younger persons. The retrospective was conducted across six public comment documents:

- Southwest Corridor Public Engagement Summary (October 2014 – July 2015t)
- Metro Diversity, Equity, and Inclusion (DEI) Discussion Groups Groups Report (August 5, 2015)
- Public Comment Report for the 2014 Regional Transportation Plan (June 2014)
- 2014 Regional Active Transportation Plan Public Comment Report (June 2014)
- Climate Smart Strategy Public Comment Report (Dec. 9, 2014)
- Powell-Division Transit and Development Project Public Engagement Reports (March 16, 2015; September 29, 2014; June 23, 2014)
- Powell-Division Transit and Development Project – City of Gresham and Multicultural Engagement Report (February 2015)

In reviewing the public comment documents, staff looked to identify comments from members or representative community organizations for historically underrepresented communities, older adults, and youth. Additionally, any general comments made which addressed or considered one of the five communities was also included. The identified comments were synthesized into emerging themes and helped to establish a starting point of needs and priorities.

Transportation and Equity On-line Questionnaire

From January through February 2016 Metro hosted an online questionnaire to garner public feedback on several programs. The questionnaire included questions to inform the regional flexible funds allocation (RFFA), development of the 2018 Regional Transportation Plan, the DEI strategic plan to advance racial equity, diversity and inclusion, and the equitable housing program.

The questionnaire was marketed as the "Transportation and Equity" survey because of its emphasis on social equity concerns and the transportation system. Throughout the month the questionnaire was open, more than 5800 completed the survey.

To organize and synthesize the input, Metro staff reviewed the overall summary of responses to gather a sense of what transportation and equity themes were emerging. From the overall responses, equitable access to different travel options, cost, and more transit service emerged as priorities for the transportation system when considering social equity. Following the identification of the overall theme, Metro staff drew a subset of the responses from those who self-identified as a person of color or coming from a household of lower income. The subset was looked at more closely to see how they diverged from the overall responses and to look at other potential themes, sub-themes, or other issues. These responses trended to show the overall themes of access, costs, and transit were important, but also community health emerged as another area of importance for historically underrepresented communities when considering the transportation system.

Transportation Equity Work Group Exercise

At the February 2016 meeting of the Transportation Equity work group, members were asked to participate in a table exercise to brainstorm comments around the following questions:

- What are the transportation priorities you hear from your community?
- What are the biggest transportation needs?
- Based on that, what should be the focus of the evaluation?

The work group members were asked to consider more specifically what they have heard from historically underrepresented communities as well as older adults and younger persons in undertaking the exercise. The brainstorming session resulted in a list of transportation concerns, needs, and priorities, ranging from physical safety for people biking and walking on the region's streets to the availability of travel options to concerns over displacement. The exercise helped to reinforce themes heard through the retrospective, but the brainstorm exercise also added further depth, complexity, and nuance to the sub-themes emerging.

**Findings of Community Identified Priorities**

Utilizing the multi-prong approach to identify communities priorities led to synthesizing an enormous amount feedback and input gathered to date. From the significant amount of qualitative data collected and in respecting the time community members took to provide the feedback, Metro staff used the three main efforts to develop an initial set of findings of community identified priorities. These findings reflect, in aggregate, the major transportation-related needs, concerns, and priorities of the region's communities of color, households with lower-incomes, limited English proficiency populations, older adults, and young people.

The method to identify these community priorities was to look at the major themes and sub-themes which continued to emerge from each approach, but tease out the transportation needs, concerns, and priorities identified by historically underrepresented communities as well as older adults and young persons. In identifying these themes, some engagement efforts were targeted specifically at gathering input from historically underrepresented communities, such as Metro's Diversity, Equity, and Inclusion community discussions or emphasized social equity considerations such as the transportation and equity online questionnaire in early 2016. These targeted efforts made it easy toto identify the themes coming from historically underrepresented communities. However other public comments efforts, such as the 2014 RTP, the 2014 Regional Active Transportation Plan or the Southwest Corridor Engagement Report, sought to gather feedback from anyone and everyone.

Therefore, the approach was to find those themes which illustrated particular significance or resonance with historically underrepresented communities and cross-reference to the public comment logs to help verify the themes.

The feedback and input varied, ranging from a need for transportation infrastructure in areas where historically underrepresented communities live to greater public engagement to broader policy issues that would help address social inequities and social cohesion. In developing the findings, it was decided the feedback would not be filtered for applicability to the transportation system or in aiding the development of the 2018 RTP transportation equity evaluation at this stage of the work. The community identified priorities were to represent those themes and sub-themes which continued to emerge throughout feedback and comments. The themes results of the draft findings of community identified priorities, identified in Table 1.

*Table 1. Draft Findings of Community Identified Priorities**

| ***Transportation Theme*** | ***Sub-Theme*** | ***Description*** |
|---|---|---|
| Accessibility | Access to places | Historically underrepresented communities, older adults, and youth are able to get to jobs, every day services, and schools easily and by different forms of transportation and at different times of day. |
| | Infrastructure | A variety of modes should be physically accessible to historically underrepresented communities, older adults, and youth; multimodal investments should be designed for universal access and prioritized. |
| | Travel options | All places should have different travel options available to make a trip with a particular emphasis to invest in multimodal options in historically underrepresented communities. |
| | | All places should have different travel options available to make a trip and ultimately that means features like crosswalks, sidewalks, bikeways, and lighting. These elements should not be an afterthought in planning. |
| | Travel time and reliability | The travel time and the reliability of using other modes of transportation outside of a personal vehicle should be reliable, dependable, practical, competitive and timely which makes these options viable for historically underrepresented communities, older adults, and youth. |
| | Transit | It is more frequent and goes more places. |
| Transportation Safety | Infrastructure | Invest in safer more frequent crossings, overcrossings for arterials and freeways, bike lanes that are designed with physical separation of different modes and lighting throughout the region, but with particular emphasis in areas with communities of color, households with lower-incomes, older adults, and younger person. Safe routes and the infrastructure to make it safe for walking, biking, and accessing transit should not be an afterthought in planning and street design. Street retrofits should be an option and considered. Address infrastructure disparities first when funding safety improvements; pair with crash data and an equity lens. |

| *Transportation Theme* | *Sub-Theme* | *Description* |
|---|---|---|
| | Security | People should feel a sense of personal safety and free of being a target/victim of crime when using the transportation system, regardless of time of day, day of the week, location, or mode. |
| | Enforcement | Enforce traffic rules for users and infrastructure standards when building non-automobile infrastructure. |
| | | Certain community members should not experience or feel a disproportionate burden of being targeted by enforcement officials when using the transportation system; particularly as it pertains to any form of fee or fare evasion or traffic enforcement. |
| Affordability | Housing and transportation costs | Housing and transportation costs are manageable for households of all incomes by making housing options, particularly affordable housing options, available in areas with good transportation infrastructure and transit service. |
| | Transportation costs | Reduce transportation costs for historically underrepresented communities, older adults, and younger persons with an emphasis on reducing the upfront cost of using any travel options and the expense of getting to employment centers for low income neighborhoods. |
| | Transit | Greater affordability in the use of the transit system. |
| | | Certain community members should not experience or feel a disproportionate burden of being targeted by enforcement officials when using the transportation system; particularly as it pertains to any form of fee or fare evasion or traffic enforcement. |
| Public Health | Disproportionate environmental and health impacts | The environmental and health impacts and conditions established by transportation infrastructure, services, and use should not disproportionately impact historically underrepresented communities, older adults, and youth. |
| | | The implementation of transportation projects should not create environmental or public health conditions which disproportionately impact historically underrepresented communities in negative ways. |
| | | The implementation of transportation projects should aspire to more than preventing further harm, but rather or create conditions which strengthen social cohesion of communities, remedy historic injustices and existing health disparities. |
| | Community health and stability | Transportation should provide opportunities to contribute positively to community health and supporting communities. |
| Involuntary Displacement | Displacement | The transportation policies and/or investments which may create market conditions for the displacement of existing communities must be addressed at the forefront of planning and project development. The implementation of mitigation strategies is essential and support community stability and preventing the negative redesign of a community. |
| | Shared prosperity | The benefits of transportation investments should be experience and shared with the existing communities and in tandem with community mitigation measures to minimize fears of being priced |

| *Transportation Theme* | *Sub-Theme* | *Description* |
|---|---|---|
| | | out and unable to share in the benefits. |
| Community Input/ Acknowledgement | Community input | Ask communities what and where their priorities are to understand where different transportation considerations (i.e. modes, investments) falls in community hierarchy of need and ask how they want those considerations implemented. |
| | | Support efforts to have community conversations to gather input by funding CBOs to organize community conversations and improve planning process. Focus in areas rich for displacement to have the dialogue. |
| | Acknowledgement | Acknowledge community members are just as important as other traditional planning stakeholders and in turn make communities visible. |
| | | Recognize the lived experience by communities and use the past experience to inform strategies which mitigate and prevent negative impacts of communities in conjunction with good data in decision making. |
| | Community as an actor for transportation success | Plan for people and community stability over place and make space for lived experiences in conjunction with good data in implementing transportation projects. |
| Major Social Policies | Major policies | Transportation is a significant part of the fabric of communities, but transportation and its associated policies and investments cannot resolve and address all deep social inequities. Other major policies are needed in tandem, including reducing the gap of wage disparities and even significant innovation in certain transportation policy areas. |

** The themes are not in any form of ranking or prioritized order.*

**Proposed Draft 2018 RTP Transportation Equity Measures for Further Exploration**

Based on the findings of the community identified priorities, the next step was to focus in on the themes which lend best to an evaluation of future proposed transportation investments. In looking across the findings, the following themes continued to be reiterated and fit within the context of an investment package assessment. These community identified priorities are:

- Affordability
- Accessibility
- Transportation Safety
- Public Health
- Transit*

** Transit was not explicitly identified as a theme, however, the level of feedback and comments directed at the transit system and its intersection with affordability and access themes warranted identifying it explicitly.*

As noted, because of the widely varying feedback gathered and a conscious decision not to filter the findings, the community identified priorities represent a wide range of important subjects to members of historically underrepresented communities, older adults, and young people. For Metro staff, the task at hand was to understand the important subjects identified by communities and interpret how to utilize the information in a way that best supports the analytical work for the 2018 RTP and the 2018-2021 MTIP.

The interpretation of the community identified priorities began through a process of reviewing each theme and sub-theme. With each theme and sub-theme reviewed, two questions were applied:

1. Does this community priority make sense and be further informed through a transportation system evaluation?
2. How can this priority be measured across the transportation system?

Using these two questions as a form of screen to look at the community priorities, several themes were decided not to be explored further under the context of the 2018 RTP transportation equity evaluation. While these priorities may fall outside the scope of measuring the regional transportation investment package, they serve useful to inform other elements of transportation planning, such as communications and messaging and designing a public process. Therefore, all the community identified priorities were categorized under four groupings:

- potential measures for further exploration
- communications and messaging
- process
- other.

The groupings (as shown in Table 2) allow for Metro staff to determine the most appropriate place for these different concerns, needs, and community identified priorities to be addressed. The groupings are also being used a mechanism to recognize the feedback provided to Metro staff and also organize the best ways in which to address the comment. It is also important to note that those community identified priorities not selected for further exploration and consideration in the 2018 RTP transportation equity evaluation does not mean the feedback is rendered useless or ignored. In respect to the time and effort provided by communities, these priorities will continue to be seen to as part of 2018 RTP transportation equity analysis and will be re-examined and further discussed as part of developing

**Short Descriptions of Categories for the Community**

**Potential Measures for Further Exploration** –Priorities which address transportation concerns and needs in which the regional transportation investment package evaluation can potentially address and lead to information to inform and shape transportation system policies or projects or performance.

**Communications and Messaging** – Priorities which address how to effectively communicate or discuss the transportation system, modes, infrastructure and/or service inequities

**Process** – Priorities which address how to design the public involvement and/or community engagement process.

**Other** – Priorities which fall outside the scope of the other groups and/or touch upon greater social issues or of issues in which the regional transportation plan is not the best mechanism for addressing. Examples such as raising the minimum wage or racial profiling in enforcement are examples of this grouping.

recommendations on future public processes, RTP policy refinements as well as recommendations for a short list of actions to work towards as part of RTP implementation.

*Table 2. Categorized Community Identified Priorities*

| ***Transportation Theme*** | ***Description*** | ***Category*** |
|---|---|---|
| Accessibility | Historically underrepresented communities, older adults, and youth are able to get to jobs, every day services, and schools easily and by different forms of transportation and at different times of day. | Potential Measure for Further Exploration |
| | A variety of modes should be physically accessible to historically underrepresented communities, older adults, and youth; multimodal investments should be designed for universal access and prioritized. | Potential Measure for Further Exploration |
| | All places should have different travel options available to make a trip with a particular emphasis to invest in multimodal options in historically underrepresented communities. | Potential Measure for Further Exploration |
| | All places should have different travel options available to make a trip and ultimately that means features like crosswalks, sidewalks, bikeways, and lighting. These elements should not be an afterthought in planning. | Communications and Messaging |
| | The travel time and the reliability of using other modes of transportation outside of a personal vehicle should be reliable, dependable, practical, competitive and timely which makes these options viable for historically underrepresented communities, older adults, and youth. | Potential Measure for Further Exploration |
| | It is more frequent and goes more places. | Potential Measure for Further Exploration |
| Transportation Safety | Invest in safer more frequent crossings, overcrossings for arterials and freeways, bike lanes that are designed with physical separation of different modes and lighting throughout the region, but with particular emphasis in areas with communities of color, households with lower-incomes, older adults, and younger person. Safe routes and the infrastructure to make it safe for walking, biking, and accessing transit should not be an afterthought in planning and street design. Street retrofits should be an option and considered. Address infrastructure disparities first when funding safety improvements; pair with crash data and an equity lens. | Potential Measure for Further Exploration |
| | People should feel a sense of personal safety and free of being a target/victim of crime when using the transportation system, regardless of time of day, day of the week, location, or mode. | Other |
| | Enforce traffic rules for users and infrastructure standards when building non-automobile infrastructure. | Other |
| | Certain community members should not experience or feel a disproportionate burden of being targeted by enforcement officials when using the transportation system; particularly as it pertains to any form of fee or fare evasion or traffic enforcement. | Other |
| Affordability | Housing and transportation costs are manageable for households of all incomes by making housing options, particularly affordable housing options, available in areas with | Potential Measure for Further Exploration |

| *Transportation Theme* | *Description* | *Category* |
|---|---|---|
| | good transportation infrastructure and transit service. | |
| | Reduce transportation costs for historically underrepresented communities, older adults, and younger persons with an emphasis on reducing the upfront cost of using any travel options and the expense of getting to employment centers for low income neighborhoods. | Potential Measure for Further Exploration |
| | Greater affordability in the use of the transit system. | Potential Measure for Further Exploration |
| | Certain community members should not experience or feel a disproportionate burden of being targeted by enforcement officials when using the transportation system; particularly as it pertains to any form of fee or fare evasion or traffic enforcement. | Other |
| Public Health | The environmental and health impacts and conditions established by transportation infrastructure, services, and use should not disproportionately impact historically underrepresented communities, older adults, and youth. | Potential Measure for Further Exploration |
| | The implementation of transportation projects should not create environmental or public health conditions which disproportionately impact historically underrepresented communities in negative ways. | Potential Measure for Further Exploration |
| | The implementation of transportation projects should aspire to more than preventing further harm, but rather or create conditions which strengthen social cohesion of communities, remedy historic injustices and existing health disparities. | Communications and Messaging |
| | Transportation should provide opportunities to contribute positively to community health and supporting communities. | Communications and Messaging |
| Involuntary Displacement | The transportation policies and/or investments which may create market conditions for the displacement of existing communities must be addressed at the forefront of planning and project development. The implementation of mitigation strategies is essential and support community stability and preventing the negative redesign of a community. | Other |
| | The benefits of transportation investments should be experience and shared with the existing communities and in tandem with community mitigation measures to minimize fears of being priced out and unable to share in the benefits. | Communications and Messaging |
| Community Input/ Acknowledgement | Ask communities what and where their priorities are to understand where different transportation considerations (i.e. modes, investments) falls in community hierarchy of need and ask how they want those considerations implemented. | Process |
| | Support efforts to have community conversations to gather input by funding CBOs to organize community conversations and improve planning process. Focus in areas rich for displacement to have the dialogue. | Process |
| | Acknowledge community members are just as important as other traditional planning stakeholders and in turn make communities visible. | Communications and Messaging/Process |
| | Recognize the lived experience by communities and use the past experience to inform strategies which mitigate and prevent negative impacts of communities in conjunction with | Communications and Messaging/Process |

| *Transportation Theme* | *Description* | *Category* |
|---|---|---|
| | good data in decision making. | |
| | Plan for people and community stability over place and make space for lived experiences in conjunction with good data in implementing transportation projects. | Communications ad Messaging |
| Major Social Policies | Transportation is a significant part of the fabric of communities, but transportation and its associated policies and investments cannot resolve and address all deep social inequities. Other major policies are needed in tandem, including reducing the gap of wage disparities and even significant innovation in certain transportation policy areas. | Other |

Following the categorization, the resulting themes are sub-themes listed indicate which community identified priorities Metro staff would like to further explore as draft 2018 RTP transportation equity evaluation measures. These are identified in Table 3.

*Table 3. Proposed Draft 2018 RTP Transportation Equity Measures for Further Exploration*

| *Theme* | *Sub-Themes* | | | |
|---|---|---|---|---|
| **Affordability** | Housing and transportation costs | | Transportation costs | |
| **Accessibility** | Access to places | Infrastructure | Travel options | Travel time and reliability |
| **Transportation Safety** | Infrastructure | | Infrastructure disparities | |
| **Public Health** | Disproportionate environmental and health impacts | | | |
| **Transit*** | Transit costs | Transit access | Transit reliability | |

** Consolidates the transit-related community identified priorities, which were initially categorized under other themes.*

**Feedback from the Transportation Equity Work Group**

Based on the findings of community identified priorities and the screening to further explore potential draft transportation equity measures, Metro staff seeks input from the work group members on the following questions:

1. Do the community identified priorities summarized in this memo reflect what you have heard from your community members? Is there a transportation need, concern, or priority missing and unaddressed?
2. Are the draft 2018 RTP transportation equity measures proposed for further exploration on the right track? Are these the right measures for which to seek further confirmation during the engagement planned for May and June?
3. Do work group members support Metro and NITC grant-funded staff moving forward into a research and method exploration phase with the draft 2018 RTP transportation equity measures? This exploratory work would begin prior to the June meeting to help inform further narrowing and recommendations by the work group.
4. Does the proposed approach of identifying what community priorities may be addressed as part of the 2018 RTP transportation equity analysis and what community priorities may be addressed as part of other 2018 RTP discussions or beyond seem reasonable?

**Next Steps**
Prior to the June 30th work group meeting, Metro staff will undertake several activities to help inform the work group's recommendation on the measures to be used in the 2018 RTP transportation equity analysis. These activities include:

1. Conducting targeted engagement activities to validate the priorities and themes with particular emphasis on the draft measures.
2. Researching evaluation methods for the draft measures to understand what approaches and methods are established and understand the advantages and disadvantages of the methods.
3. Coordinating with the other 2018 RTP work groups to understand their approaches and recommendations on overlapping topics and developing a strategy to support analyses for both work groups. For example, work with the lead of the Transportation Safety work group and the Regional Transit Strategy to determine how to address the community priorities pertaining to transportation safety and transit.

Aside from the targeted spring engagement activities, it would be anticipated the research and coordination activities would likely extend beyond the June 30th work group meeting.

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Metro | *Memo*

Date: June 23, 2016

To: Transportation Equity Working Group and interested parties

From: Grace Cho, Associate Transportation Planner

Subject: Research Findings and Staff Recommendations for Transportation Equity System Evaluation Measures

**Purpose**
Provide the Transportation Equity work group an overview of the research findings and subsequent staff recommendations for which transportation equity system evaluation measures to assess the 2018 RTP and the 2018-2021 MTIP.

**Introduction**
As the Portland region prepares to make its next set of investments in the transportation system, an equity analysis can help inform how transportation investments affect the communities where people have the fewest options for travel to meet everyday needs. Understanding these effects helps the region make more informed, equitable decisions about where transportation dollars go, especially as the region weighs many competing priorities for the transportation system.
The Transportation Equity Analysis (TEA) for the 2018 RTP and the 2018-2021 MTIP focuses to provide a better understanding of how near and long-term transportation investments are effecting:

- Communities of color;
- Households with lower-income;
- Communities with limited English proficiency;
- Older communities; and
- Youth

**Defining Evaluation Measures: Process to Date**
The first step of the assessment is to define a set of measures to evaluate the 2018 RTP investments package against. To determine the measures, Metro staff used a multi-pronged approach to identify the different transportation needs, issues, and concerns expressed by historically underrepresented communities as well as older adults and youth. The multi-pronged approach resulted in the list of community priorities, which were then screened to filter those priorities which could be analyzed through an evaluation of a future transportation investment package. A draft set of transportation equity measures were proposed to the work group. These measures are shown in Table 1.

*Table 1. Proposed Draft 2018 RTP Transportation Equity Measures for Further Exploration*

| ***Theme*** | ***Sub-Themes*** | | | |
|---|---|---|---|---|
| **Affordability** | Housing and transportation costs | | Transportation costs | |
| **Accessibility** | Access to places | Infrastructure | Travel options | Travel time and reliability |
| **Transportation** | Infrastructure | | Infrastructure disparities | |

| | | | |
|---|---|---|---|
| **Safety** | | | |
| **Public Health** | Disproportionate environmental and health impacts | | |
| **Transit*** | Transit costs | Transit access | Transit reliability |
| **Community Stabilization**** | Involuntary displacement | Mitigation | |

** Consolidates the transit-related community identified priorities, which were initially categorized under other themes.*
***Represents work group recommendation for further review.*

Following work group discussion, an additional draft measure, **community stabilization**, was proposed and put forward for additional research as members had interest in seeing what the research on the topic might reveal. Community stabilization was also identified as part of the community findings, but identified by Metro staff as a topic to be addressed through the other potential products from the transportation equity work. The work group expressed support for staff to move forward with researching the proposed transportation equity measures and report back on the results and recommendation at the June meeting.

**System Evaluation Research and Findings**

Since the May 12th work group meeting, Metro staff collaborated with a small team from PSU Nohad A. Toulan School of Urban Studies and Planning to define system evaluation measures associated with the proposed priorities identified in Table 1. The emphasis evaluation measures is driven by the task to define how to assess the 2018 RTP and the 2018-2021 MTIP transportation investment packages with an equity lens. Recognizing this emphasis, the PSU work focused on the identification of *system evaluation measures* and was not asked to identify monitoring measures at this time. System monitoring measures will also be part of the recommendation package to emerge from the transportation equity analysis work, but the discussion of the system monitoring measures is scheduled to take place after the evaluation of the 2018 RTP investment package to determine what should be monitored to assess progress.

**System Evaluation vs. Monitoring Measures**

**System Evaluation Measure** Compares the base year conditions with an alternative, future scenario to document how well that future scenario performs to the base year conditions.

**System Monitoring Measure** Relies on collected and observed data to compare past conditions with base year conditions to compare and assess progress.

The PSU team presented a research paper which outlines 20 potential system evaluation measures which address the community identified priorities and fit within the context of the transportation equity analysis for the 2018 RTP and the 2018-2021 MTIP. Further information and detail about the research paper can be found as **Attachment A – Recommended Equity Measures for Further Review**.

Metro staff then reviewed the potential 20 system evaluation measures using a set of factors to determine whether the measure should be included in a staff recommended list of transportation equity system evaluation measures. These factors are:

- The strength of the system evaluation measure's ability to inform the priority outcome from an equity perspective (e.g. ability to parse the measure to look at differences across communities);
- The potential alignment with and ability to inform the 2018 RTP performance targets;
- The potential alignment with other2018 RTP focus areas (e.g. transportation safety, transit) and ability to inform those efforts; and
- Metro staff's ability to conduct analysis of the system evaluation measure in the timeframe of the 2018 RTP.

Metro staff also modified certain system evaluation measures which emerged from the research to tailor the measure more towards the community identified priorities. For example, the access to places measure was divided to separate jobs from other existing essential destinations because there was significant feedback from historically underrepresented communities about the importance of getting to work.

From the factors, Metro staff has narrowed the set of 20 potential measures to 11 recommended system evaluation measures to pursue as part of the transportation equity analysis for the 2018 RTP and 2018-2021 MTIP. The recommended system evaluation measures can be seen in Table 2. These recommended system evaluation measures are still in need of defining a number of methodology considerations and must undergo beta testing to see whether to determine how effectively the evaluation measures speak to measuring the community identified priorities. Nonetheless, through the research from PSU and initial discussions with technical staff, the 11 recommended system evaluation measures remain promising metrics to assess transportation equity in the proposed 2018 RTP investment package and the 2018-2021 MTIP.

In addition to the research work conducted by PSU, Metro staff has consulted with Multnomah County Public Health Department staff to coordinate and define the public health system evaluation measure. As a result of the conversations, Metro and Multnomah County Public Health Department staff are working together to look at a mix of two potential options to support the system evaluation:

1. Assessing directional change of health outcomes based on the 2018 RTP investment package and observe differences across communities; and/or
2. Assessing the magnitude of transportation impacts on population health resulting from the transportation investment package for the 2018 RTP.

Multnomah County Public Health Department staff has reached out to other public health partners to determine how the different entities may coordinate and participate on the two options. The details are yet to be finalized and therefore the two options are proposed as pending as part of the recommendation. Nonetheless, Metro staff is encouraged by the partnership with Multnomah County Public Health and the health lens which can be brought forward with the transportation equity analysis. In the interim, other public health-related transportation equity system evaluation measures have been proposed if the possibility of the partnership is unable to come to fruition given limited resources.

At this time not all the community identified priorities from the exploration phase will move forward for the transportation system evaluation of the 2018 RTP and the 2018-2021 MTIP. For several community identified priorities, the research findings did not produce a system evaluation measure which can meet the staff recommendation factors. For example, travel time reliability was an identified community priority, but the research findings put forward system evaluation measures which would not produce meaningful information when looked at a community

geography. These priorities remain important and are not intended to be dismissed, but rather the discussion of these community identified priorities may take place further along in the 2018 RTP development process. For example, several priorities, such as community stabilization, can be a part of the system monitoring recommendations. Metro staff continues to track these different priorities and will look to identify where in the 2018 RTP development process to begin the discussion.

*Table 2. Recommended Transportation Equity System Evaluation Measures for the 2018 RTP and 2018-2021 MTIP*

| No. | Community Priority | System Evaluation Measure Description | Other Consideration |
|---|---|---|---|
| 1. | Affordability | Combined Housing and Transportation Expenditure: The sum of the housing and transportation expenditures in a given geography and key communities. Determine a potential cost burden to assess which households are experiencing the greatest combined expenditure. Assess the change of the expenditures in the given geography and key communities with added transportation investments. Look at the change of combined housing and transportation expenditure. | Coordination with other Metro planning and development efforts including equitable housing and urban growth management process. |
| 2. | Accessibility – Access to Places* | Access to Jobs: The sum of the total number of family wage jobs which are accessible to key community geographies by automobile, transit, and bicycle in a given commute time window. Assess the change in key community geographies with added transportation investments. | Must be coordinated in detail with the Regional Transit Strategy & Work Group |
| 3. | Accessibility – Access to Places | Access to Existing Essential Destinations OR Existing Daily Needs: The sum of the total number of existing essential destinations or existing daily needs which are accessible to key community geographies by automobile, transit, and bicycle in a given travel time window. Depending on whether essential destinations or daily needs is selected, the travel times will change. Assess the change in key community geographies with added transportation investments. | |
| 4. | Accessibility – Access to Places | Transit Access Disadvantage: The sum of the total number of existing essential destinations or existing daily needs which are accessible to key community geographies by automobile and transit. For each key community geography, look at the ratio of essential destinations accessible by transit compared to automobile. Attention is paid to lower transit/automobile access ratio community geographies to determine how the ratio changes with added future transportation investments. | |
| 5. | Accessibility – Infrastructure | Intersection of Transportation Investments, Timing, and Communities: Transportation investments are | Must be coordinated with |

| No. | Community Priority | System Evaluation Measure Description | Other Consideration |
|---|---|---|---|
| | | mapped to illustrate which overlap with key community geographies. Transportation investments are also categorized by timeframe to assess whether investments are being made evenly over time in certain communities and addressing near-term transportation needs. | the broad 2018 RTP work program. |
| 6. | Safety – Infrastructure Disparities | Safety Investments on the High Injury Network: Identified transportation safety investments are mapped to illustrate which overlap with the high injury network and in key community geographies. Assess whether investments are being made evenly in certain communities with evident transportation safety issues (as indicated by the categorization as a high injury facility). | Must be coordinated in detail with the Regional Transportation Safety Action Plan & Safety Work Group |
| 7. | Safety – Exposure | Non-Interstate Vehicles Miles Traveled Exposure: The sum of all non-interstate vehicle miles traveled (VMT) would be totaled for key community geographies and based on the transportation investment program, look at how VMT changes in key community geographies and correlate traffic safety exposure. | |
| 8. | Public Health – Environmental and Health Impacts | Vehicles Miles Traveled Exposure: The sum of all vehicle miles traveled (VMT) would be totaled for a key community geographies and based on the transportation investment program, look at how VMT changes in the key community geographies and correlate air pollution emissions concentration exposure. | These measures may or may not move forward as part of the transportation equity analysis if the partnership with Multnomah County Public Health happens. |
| 9. | Public Health – Environmental and Health Impacts* | Intersection of Transportation Investments, Resource Habitats, and Communities: Transportation investments are mapped to illustrate which overlap with key community geographies and resource habitats to determine whether environmental quality degradation from transportation is overly represented in certain communities. | |
| 10. | Public Health – Environmental and Health Impacts** | Assessing Directional Change: Use public health literature findings to assess the transportation investments package and its role in directional change in health outcomes. Based on mapping of investments relative to key community geographies and the directional relationship, determine whether health outcome disparities would widen or narrow as a result. | These would be conducted in partnership with Multnomah County Public Health and others. |
| 11. | Public Health – Environmental and Health | Assessing the Magnitude of Transportation Impact to Public Health (Burden of Disease and Premature Death): Utilize the Integrated Transportation ad | |

| No. | Community Priority | System Evaluation Measure Description | Other Consideration |
|---|---|---|---|
| | Impacts** | Health Impacts Model (ITHIM) to look at the transportation investment effects to public health under the lens of disease burden and premature death in the context of air quality, physical activity, and traffic safety conditions. | |

**Indicates staff adjusted modification*
***Indicates the system evaluation measure is pending based on potential partnerships and resources.*

**Key Assumptions for Transportation Equity System Evaluation Measures**
To conduct the transportation equity analysis for the recommended evaluation measures, certain key assumptions must be made in order to carry out the work. Some of these assumptions apply specifically to a single measure, whereas others would apply to all measures. Several of these assumptions also remain as proposed, as they are undergoing review because of the implication it would have for the greater RTP. Of the assumptions known to date, they are identified and described in Table 3.

*Table 3. Key Assumptions for Transportation Equity System Evaluation Measures*

| Key Assumption Title | Application | Description of Assumption |
|---|---|---|
| System Evaluation Measures | All Measures | All transportation equity system evaluation measures have the ability to assess and compare future (near or long-term) transportation investments scenarios with a base year scenario. All system evaluation measures can also have the ability to tease out differences between the region and historically underrepresented communities as well as older adults and youth.<br><br>For several of these system evaluation measures, the assessment will utilize a combined modeled and off-model post-processing analysis. |
| Analysis Years | All Measures | The analysis years for the transportation equity system measures will include the following: Base Year - 2015; Interim Year - proposed 2025, but to be determined; Horizon Year - 2040. |
| Land Use Forecast | All Measures | The MetroScope land use, population, and employment forecast adopted at the end of 2016 will be used as the underlying future development conditions for the region. |
| Land Use for Analysis Years | All Measures | The 2016 adopted land use, population, and employment forecast will provide a base year and horizon year forecast and spatial distribution for population and employment. A method for interpolating the land use, population, and employment for the interim analysis will be developed. The interim analysis year will not undergo local review and adjustment process. |
| Considerations for Certain Communities | All Measures | Transportation equity system measures will project future population locations for income and age because these are metrics which can be derived from the MetroScope. Since |

| | | |
|---|---|---|
| | | race/ethnicity is not a metric from the MetroScope, the analysis for communities of color and people with limited English proficiency will focus on the base year and the interim year. The emphasis on the near-term analysis years are to: 1) recognize that over the long-term, it is unrealistic to assume a community will not have turn over and change; 2) emphasize the existing transportation needs and current disparities experienced by these communities. |
| Combined Housing and Transportation Expenditure | Combined Housing and Transportation Expenditure | The combined housing and transportation expenditure post processing model from MetroScope is proposed for use in this system evaluation measure. The MetroScope-based combined housing and transportation expenditure model is different from the Housing and Transportation cost model developed by the Center for Neighborhood Technology (CNT). The MetroScope model projects combined expenditures and accounts for proposed transportation investments for the future. The CNT-based model uses observed data and does not account for future transportation investments. Additionally, the MetroScope housing inputs include other expenditure items such as utilities and insurance, which are not included in the CNT-based model. |
| Access to Places | Access to Existing Essential Destinations OR Existing Daily Needs | An assumption that existing essential destinations and existing daily needs will remain in the same location in future years. This assumption recognizes that increased access to existing places will benefit historically underrepresented communities as well as older adults and young people. The future development conditions which bring new places for daily needs or essential destinations will increase access. |
| Access to Places | Transit Access Disadvantage | This measure is attempts to look at access gaps by transit relative to historically underrepresented communities as well as older adults and young people. Because this measure will define access gaps based on the ratio of transit access to places relative to automobile access to places, an assumption exists that most places in the region will likely show a low ratio of transit access to automobile access. Depending on how the threshold the transit access to automobile access (transit: automobile) is defined, this measure may only look at a subset of historically underrepresented communities or a subset of the community geographies of interest. |

In addition to the key assumptions, there are a myriad of methodology considerations still in need of resolution for each system evaluation measure. These methodology considerations need to be finalized by autumn 2016 to inform the development the 2018 RTP project solicitation and also inform partners, including local jurisdictions and other 2018 RTP work groups for coordination purposes. Of those methodological considerations known to date, they are identified in Table 4.

*Table 4. Methodology Considerations for Resolution Prior to Finalizing System Evaluation Measures*

| Recommended Transportation Equity | Area in Need of Resolution |
|---|---|

| Measure | |
|---|---|
| All System Evaluation Measures | A definition of which community geographies will be used for comparisons purposes. Unlike in previous equity analyses, the intent will be to look at areas where there is a convergence of multiple historically underrepresented communities. While community definitions have been determined, the identification of the community geographies of focus on has not been developed. |
| Combined Housing and Transportation Expenditure | A threshold of cost burden will need to be defined and agreed upon. |
| Access to Jobs | Family wage jobs will need to be defined and identified within the region. The commute time windows for each mode will need to be defined. A decision as to whether this measure would be applied for certain age groups (e.g. older adults and young people). |
| Access to Jobs & Access to Existing Destinations OR Existing Daily Needs | Determine how transit frequency and service is defined for system evaluation measures with a transit component or comparison. For example, would any form of transit service be considered or would only frequent service all-day or frequent service for a majority of the day acceptable to apply in these evaluation measure. Also this definition is intended to recognize that transit usage is not restricted by the certain times of the day for communities which tend to rely on transit. |
| Access to Existing Essential Destinations OR Existing Daily Needs | An agreed upon definition for existing essential destinations OR existing daily needs will need to be developed and/or refined. A decision as to whether to conduct this measure for existing essential destinations (which may be further away and more periodic places communities access) OR existing daily needs (which are more regularly attended places). Additionally, the commute time windows for each mode will need to be defined. |
| Transit Access Disadvantage | An agreed upon threshold for what ratio of transit access to essential destinations relative to automobile access to essential destinations would need to be defined. |
| Access to Jobs, Access to Existing Destinations OR Existing Daily Needs & Transit Access Disadvantage | The transit service changes for an interim analysis year will need to be defined. There will likely be assumptions in service levels since for transit, service changes are proposed on an annual basis and not completed in 4-6 year increments like capital improvement programs. |
| Intersection of Investments, Timing, and Communities | Decision as to whether this analysis should focus only on active transportation and transit investments. Consideration of other approaches in determining how to assign benefits from the transportation investments which reflect the transportation priorities of historically underrepresented communities. |
| Non-Interstate Vehicles Miles Traveled (VMT) Exposure | Determining if and how does speed get accounted for in the VMT exposure measure to correspond to safety? Additionally, determining how does this system measure get normalized for population growth. Additionally, determine whether to include bicycle miles traveled in community geographies and assess what bicycle miles traveled relative to VMT implies about transportation safety. |
| Assessing the Magnitude | Because vehicle miles traveled is an input and determinate for several |

| | |
|---|---|
| of Transportation Impacts on Population Health (Burden of Disease and Premature Death) and Directional Change vs. Vehicles Miles Traveled Exposure | of the measures, resolve whether there is redundancy between measures. |
| Transportation Effect to Public Health (Air Quality, Physical Activity and Traffic Safety) | Determine whether this system evaluation measure is appropriate for the transportation equity analysis, as the Integrated Transport and Health Impact Modeling (ITHIM) tool cannot report or address disparities between communities. However, this may be an assessment for recommendation and coordination to be completed as part of the broader 2018 RTP work program. |

In efforts to utilize the work group meetings effectively, Metro staff proposes to hold an informal work session to provide an opportunity for those work group members interested in shaping the technical details on these different methodology considerations. Through the technical work throughout the summer which will define the methodology for these measures and after a test run of the measures with the 2018-2021 MTIP, certain measures may be proposed for removal for the analysis of the 2018 RTP investment package because the technical process may show the evaluation measure as duplicative, not able provide meaningful information, or not effectively addressing the community priority. Metro staff will report back what is learned through the methodology development and the test run process. The work group will have an opportunity at future meetings to provide input on refinements or revisit whether to move forward with certain measures for the evaluation.

**2018 RTP Performance Targets**

In early June, work group members were provided a memorandum describing the existing RTP performance targets and system evaluation measures. As part of the 2018 RTP update, a performance measures work group will be reviewing and recommending modifications to the existing RTP performance targets, system evaluation measures, and monitoring measures. The performance measures work group asked for input and recommendations from the transportation equity work group on certain performance targets and system evaluation measures. (**See memorandum from June 1st correspondence.**) The performance targets and system evaluation measures requested for review are reflected in the recommended transportation equity system evaluation measures. At the September 12th work group meeting, Metro staff will bring back the recommended methodology as well as proposed refinement options for the 2018 RTP performance targets for work group discussion and agreement to forward to the performance measures work group.

**Discussion Questions**

Based on the research findings, Metro staff seeks input from the work group members on the following questions:

1. Do the staff recommended transportation equity system evaluation measures continue to reflect on the community identified priorities for the transportation system? Are the recommended measures evaluating the desired outcomes historically underrepresented communities, older adults, and young people seek from the transportation system?

2. Is there agreement around the staff recommendation for the transportation equity system evaluation measures? Are there concerns pertaining to particular transportation equity system evaluation measures?

3. Are there other methodological concerns for the system evaluation measures which need to be addressed that have not been identified or reflected?

4. If only a select number of transportation equity system performance measures could be evaluated in the 2018 RTP update, which system performance measures would be the priorities?

**Work Group Request**
Metro staff requests the work group support staff moving forward with the recommended transportation equity system evaluation measures and defining the methodology for each measure. The methodology definition work will take place over summer 2016 and the work group will be presented with the details of the recommended methodology at the September 12th work group meeting. The work group will have the opportunity at the September 12th meeting to provide input and recommend final refinements to the system evaluation measures. The work group will also have the opportunity to provide input to the recommended 2018 RTP performance targets refinements as well.

**Next Steps**
Prior to the September 15th work group meeting, Metro staff will undertake several activities to define the methodology for the measures to be used in the 2018 RTP transportation equity analysis. These activities include:

1. Finalize the targeted engagement activities to validate the priorities and themes with particular emphasis on the draft measures.

2. Hold informal work session(s) in summer 2016 to allow those work group members interested in shaping the details of the methodology for the transportation equity measures to dive in and advise staff on different considerations.

3. Brief the Transportation Policy Alternatives Committee (TPAC) and the Metro Technical Advisory Committee (MTAC) on the status of this work at their July 29th and August 3rd meetings, respectively.

4. Develop the recommended methodology for each measure for the work group to review at the September 15th meeting.

5. Continue to coordinate with the other 2018 RTP work groups to understand their approaches and recommendations on overlapping topics and developing a strategy to support analyses for both work groups. For example, work with the lead of the Transportation Safety work group to determine whether the proposed safety measures for the transportation equity work aligns with analysis work taking place as part of the update to the Transportation Safety Action Plan.

# Memorandum

**TO:** Transportation Equity Work Group and Interested Parties
**FROM:** Aaron Golub, Associate Professor, Portland State University
Katherine Selin, Masters of Urban Planning Masters Candidate, Portland State University
**DATE:** June 23rd, 2016
**SUBJECT:** Recommended equity measures for further review[1]

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## Introduction

This memorandum presents a set of equity measures recommended for further inquiry by Metro staff. These measures were selected by the PSU-NITC team to evaluate the 2018 regional transportation plan (RTP) along the themes and sub themes developed by Metro staff. Some background on equity measures is presented below, followed by a description of our selection process. Each measure is then presented, along with information about how it is calculated, the type of analysis it affords, specific data required, and any additional issues to consider when using the measure for equity analysis.

## Background

Before diving into issues of measurement and projections we should first review the core purpose of carrying out an equity analysis for the regional plan. Our evaluation of equity is a response to concern by policymakers and the public that there is desire to understand the equity implications of our transportation investments, as well as meeting certain federal obligations.[2]

We note that Metro has developed a definition of communities which the equity analyses will address. These are defined as historically underrepresented communities including people of color, households (HH) with lower incomes (under $50K annual regardless of HH size), and limited English proficiency populations, along with older adults (65+) and youth (17 and younger).

As part of the Transportation Equity work group charge, equity analysis measures must be able to compare the benefits from regional investments experienced by historically underrepresented communities to those experienced by other groups. Thus, measures should have the ability to evaluate the effects of the plan investments on communities located in specific subareas of the region. That is, it must be possible to calculate at the certain geographic scale. For this transportation equity evaluation work, the traffic analysis zone (TAZ) is the basic geographical unit employed in the regional travel model and generally coincides with census tract geography. Many measures will work by comparing data for TAZs from a focused sub-regional geography (i.e. the locations of historically underrepresented communities), with measures from the entire region.

[1] This is a product of a National Institute for Transportation and Communities (NITC) grant-funded partnership between Metro and Portland State University. This product will assist Metro staff in the social equity analysis of the 2018 RTP.
[2] As was presented in earlier memos to the work group, regulations from relevant transportation agencies addressing social equity in regional transportation planning rest on Title VI of the Civil Rights Act of 1964. Please refer to those memos for more specific guidelines regarding equity analyses.

Measures will work in two basic formats – "off-model" or modeled. Off-model measures do not rely on transportation metrics created from the regional travel model. They may, for example, utilize geographic information systems (GIS) to sum up the number of RTP investments within a sub-region, or calculate nearby destinations to a sub-region. These measures are made from lists and mapped locations of investments. Modeled information includes travel times, mode choices, levels of congestion and other detailed transportation metrics modeled for a future RTP investment year. This information allow us to calculate a level of mobility for residents of specific TAZs in a future year.

Measures should ideally rest on demographic, land-use, and transportation projections that can be reliably forecasted into the future. Where the forecasted data required is less reliable, we recommend the measures be used for shorter-term analyses, for example in an interim year or as an initial baseline (base-year) assessment. In the next section, we describe briefly how we produced our list of recommended measures.

## Methodology

Our list of recommended measures was culled from a larger list of existing measures from various sources including other regions, national advocacy groups, and academic literature. A list of these sources along with bibliographic information can be found in Appendix A. In all, we collected more than 120 measures which after reviewing and classifying, represented variations on approximately 30 different measures (e.g. many groups use the same or very similar measures). We then removed several of those because, in our assessment, they were essentially similar to others or too complicated to calculate or understand.

Next, we present our full list of recommended measures along with some information about the type of measure and the timeframe most suitable for the measure. Each measure is then presented in detail organized into the theme and sub theme that it addresses.

## Measures List

| | Affordability: Housing and transportation costs | Model or off-model | Factors difficult to project |
|---|---|---|---|
| 1 | Housing plus transportation costs | Modeled travel behavior | Housing costs |
| | Affordability: Transportation costs | | |
| 2 | Travel time savings | Modeled travel behavior | |
| 3 | Transportation costs (travel time plus out-of-pocket costs) | Modeled travel behavior | Out-of-pocket costs |
| | Accessibility – Access to places | | |
| 4 | Access to essential destinations and jobs | Modeled travel times | Location of destinations |
| 5 | Transit access disadvantage | Modeled travel times | Location of destinations |
| 6 | Affordable housing in locations of accessibility | Off-model mapping | Housing costs and destination locations |
| | Accessibility: Infrastructure | | |
| 7 | Intersection of investments with community geographies | Off-model mapping | |
| | Safety: Infrastructure / Disparities | | |
| 8 | Safety-related project investments | Off-model mapping | |
| 9 | Safety investments on the high-injury network | Off-model mapping | |
| 10 | Safe Routes to School (SRTS) investments | Off-model mapping | School demographics |
| | Safety: Exposure | | |
| 11 | Total VMT/square mile in residential and commercial areas | Modeled RTP-year VMT | |
| | Public Health: Environmental and health impacts | | |
| 12 | Proximity to roadways | Modeled RTP-year VMT | |
| 13 | Magnitude of Transportation Impact to Public Health | Modeled NMT travel plus post-processing models | |
| 14 | Measures of active travel | Modeled NMT travel | |
| | Transit: Transit Access | | |
| 15 | Measure of transit supply | Off-model transit assessment | |
| 16 | Gaps between transit need and supply | Off-model transit assessment | |
| 17 | Gaps between transit need and level of service (LOS) | Off-model transit assessment | |
| 18 | Transit service deficiencies in areas of high need | Off-model transit assessment | |
| | Monitoring | | |
| 19 | Displacement Risk | Off model data analysis | Housing costs |
| | Other | | |
| 20 | Timing of investments | Off model mapping | |

## Presentation of Measures

## Affordability: Housing and transportation costs

| Measure | Housing plus transportation costs |
|---|---|
| **How it is calculated** | The total housing and transportation costs can consume a substantial portion of a household budget. A regional plan can affect the availability and level of service for different transportation modes and thus affect the way people travel and therefore their costs of travel. Housing costs are projected using a different model based on projections of housing supply and demand in each neighborhood. This measure will estimate the total housing and transportation costs for households living in different neighborhoods. The measure can be made at the TAZ scale and so can be used to compare the cost burdens for different communities. The measure illustrates where investments help to reduce costs. The measure can be presented as an average cost per household, cost-saving compared to the base year, or a cost burden (share of household income). |
| **Why this is an equity measure** | The regional plan will affect how people travel and the costs of that travel to their household. Different neighborhoods then will experience different changes in their travel and housing costs. This measure will compare cost changes between communities. |
| **Key assumptions** | Housing and transportation costs are estimated based on location, and thus rely heavily on modeling assumptions about vehicle ownership, travel mode choice, and housing costs for different neighborhoods. |
| **Measurement type and timeframe** | This measure can be made for any sub-region and relies on modeled travel data. Because of uncertainties in the housing cost model it may be best suited over the short term. |
| **Special considerations** | This is a commonly used measure to understand equity. |

## Affordability: Transportation costs

| Measure | Travel time savings |
|---|---|
| **How it is calculated** | A regional plan can affect the availability and level of service for different transportation modes and thus affect the speed and travel time needed for residents to travel throughout the day. These speeds are modeled and can be translated into a time savings compared to the base year. So as transportation investments improve speed, travel times are reduced.<br>The measure is made at the TAZ scale and so can be used to compare the time savings for different communities. The measure can be presented as time-saved per household, compared to the base year. |
| **Why this is an equity measure** | This measure will tell us how time savings are distributed among different communities and allow us to compare communities. |
| **Key assumptions** | None. |
| **Measurement** | This measure can be made for any sub-region and is made for the future |

| | |
|---|---|
| **type and timeframe** | RTP investment year. This measure relies on modeled travel times in future years. |
| **Special considerations** | Time savings may be problematic because as people move from automobile to other modes their travel times may increase, even as other transportation costs decrease. Additionally, this measure prioritizes travel speed which may reward investments in roadways and traffic improvements which may not correspond with other regional goals. |

| **Measure** | **Transportation costs (travel time plus out-of-pocket costs)** |
|---|---|
| **How it is calculated** | This is similar to the previous measure, but here out-of-pocket costs are added. These include estimates of parking, tolls, transit fare, gasoline or other costs incurred for each trip. |
| **Why this is an equity measure** | The regional plan will make investments that save travelers time, but also may allow some travelers to switch to lower-cost modes. These time savings and changes in out-of-pocket costs will vary by neighborhood depending on the proximity of investments and the changes in travel choices. This measure will tell us how travel times and out-of-pocket costs are distributed among different communities and allow us to compare communities. |
| **Key assumptions** | This measure relies on modeled travel times in future years, along with assumptions about future transportation costs like fuel prices and transit fares. |
| **Measurement type and timeframe** | This measure can be made for any sub-region, and is made for the future RTP investment year. Since fuel prices and transit fares may be hard to predict in the long-term, this may be a measure best suited for near-term evaluations. |
| **Special considerations** | Time savings may be problematic because as people move from automobile to other modes their travel times may increase, even as other transportation costs decrease. Additionally, this measure prioritizes travel speed which may reward investments in roadways and traffic improvements which may not correspond with other regional goals. |

## Accessibility – Access to places

| Measure | Access to essential destinations and jobs[3] |
|---|---|
| **How it is calculated** | Accessibility here is defined as the ability to reach essential destinations and jobs. The transportation network affords users the ability to move about in space. Depending on how well the transportation system works, that person can reach more things within a given time window. Accessibility calculations sum the total number of destinations reachable within a given time window. This calculation depends on the mode chosen and so the measure would need to be presented separately as access by auto, transit, and bike (as these are modeled modes). Typically a time window of 30 or 45 minutes is used to represent a typical commute trip or reasonable amount of time to reach destinations. Metro research staff can offer some data from survey work to help determine an appropriate time window. |
| **Why this is an equity measure** | Access is the main goal of a land use and transportation system. Therefore improvements in access which result from the regional plan are an important component of the plan's success. Access is improved for each mode (auto, transit and bike) and thus this measure is calculated separately for each mode. Similarly, access is improved differently in different areas depending on the proximity of those areas to investments. This measure will tell us how improvements in access (for each mode) are distributed among different communities and allow us to compare communities. |
| **Key assumptions** | Destinations just beyond the travel time window or completely out of reach. (While this is an unrealistic assumption, the measure is easy to understand when a simple cut off time is used instead of a decaying function.) |
| **Measurement type and timeframe** | This measure can be made for any TAZ or sub-region, and is made for the future RTP investment year using modeled travel times. |
| **Special considerations** | This is a commonly used measure in other regions. While it is sometimes complicated to understand because each TAZ has a different number of reachable destinations, it may be worth the complexity. The measures results will be very sensitive to the length of the travel time window. |

[3] Academics have worked to improve this measure by varying the travel time window by demographic group according to how the group actually travels. Using survey data from residents the travel time window is estimated using the actual travel information from residents. This generally means that low income households, for example, travel less and are already less accessible to destinations even before investments in the regional plan are made. This would implicate a need for even more investment in low income communities to overcome the fact that they are already mobility challenged. Unfortunately the analysis needed to develop these travel time windows is quite complex and so we removed it from our recommended measures.

| Measure | Transit access disadvantage |
|---|---|
| **How it is calculated** | This measure builds on the previous measure **Access to essential destinations and jobs** by highlighting TAZs where access by transit is especially low compared to access by auto. This creates a map of areas where transit dependent populations are at a significant disadvantage compared to auto drivers. Access by transit and auto are calculated according to the previous measure. Then, the transit access is divided by the auto access for each TAZ. A low ratio is produced in areas where transit is relatively deficient. We can then map historically underrepresented communities within those transit deficient areas. This creates a sub-region of concern in which we look at RTP investments, or we can measure improvements in access due to the RTP investments in these areas. |
| **Why this is an equity measure** | Access to destinations by public transit is especially important for households dependent on transit. This measure highlights historically underrepresented communities living in areas where access to destinations by transit is low. These areas can be used as sub-regions for mapping investments or to measure improvements in access from the RTP investments. This measure will tell us whether transit improvements are increasing access to places for historically underrepresented communities. |
| **Key assumptions** | Assumptions here are similar to **Access to essential destinations and jobs** measure. Furthermore, we are assuming that transit is especially important to historically underrepresented communities. |
| **Measurement type and timeframe** | This measure can be made for any sub-region, and can be made for the base year or future RTP investment year. If used with the base year it can make a map of the sub-region of concern which can then be used to investigate the location of RTP projects or calculate improvements in access for the future RTP investment year. |
| **Special considerations** | This is an important measure as historical patterns illustrate low-income communities moving to outer areas with less transit access. |

| Measure | Affordable housing in locations of accessibility |
|---|---|
| **How it is calculated** | Measuring accessibility near affordable housing is similar to calculating the essential destination access measure presented above. Here, we would look at accessibility to essential destinations within a travel time window from TAZs with good housing affordability. In essence, housing affordability defines the sub-region. For local access to nearby services, we could develop a scoring system like bikescore, transitscore or walkscore. Alternatively, we can measure the amount of affordable housing in areas known to have good access, for example near high capacity transit or in job-rich areas (for all jobs or specific job types), or in areas with good local access (e.g. with high bikescore, transitscore or walkscore). |
| **Why is this an equity measure** | Similar to other access measures, but focuses on affordable housing instead of specific community characteristics as the comparison dimension. This |

| | |
|---|---|
| | measure can be calculated in two ways: measuring accessibility near affordable housing, or measuring affordable housing near accessibility. |
| **Key assumptions** | This measure uses similar assumptions to those used in the essential destination access measure above. It also assumes we know the location of affordable housing in the future, which is less reliable. It would also require an agreed upon definition for affordable housing (renter vs. owner) |
| **Measurement type and timeframe** | This measure can be made for any sub-region, and is made for the future RTP investment year. As a mapping exercise it is off-model. |
| **Special considerations** | |

## Accessibility – Infrastructure

| **Measure** | **Intersection of investments with community geographies** |
|---|---|
| **How it is calculated** | Projects in the RTP are mapped to show which investments overlap with our sub-geographies. From there, we could then sum investments as a total project number or total project value (investment dollars), and compare these as per capita, or per area. |
| **Why this is an equity measure** | This measure identifies and sums investments made in sub-geographies (containing historically underrepresented communities) and looks the level of investment in among these communities and the entire region. |
| **Key assumptions** | The key assumption here is that projects located in a place benefit directly the people living in that place. |
| **Measurement type and timeframe** | This measure can be made for any sub-region, and is made for the RTP investment. As a mapping exercise it is off–model. |
| **Special considerations** | This measure is a weak measure of equity because of the assumption that projects located in an area benefit people living in that area. Typically, project benefits accrue to those living "downstream" of a project and having an investment go through a community doesn't necessarily mean it benefits that community. |

## Safety: Infrastructure / Disparities

| Measure | Safety–related project locations |
|---|---|
| **How it is calculated** | Safety–related projects in the RTP are mapped to show which investments overlap with our sub-geographies. From there, we could then sum investments as a total project number or total project value (in terms of investment dollars), and compare these as per capita, or per area. |
| **Why this is an equity measure** | This measure would look at the distribution of safety–related investments among different communities. |
| **Key assumptions** | The key assumption here is that projects located in a place benefit directly the people living in that place. |
| **Measurement type and timeframe** | This measure can be made for any sub-region, and is made for the future RTP investment. As a mapping exercise it is off–model. |
| **Special considerations** | Safety–related projects probably do correspond with local benefits better than general transportation investments (an issue mentioned in an earlier mapping- based measure above). The question here however is, what is a fair distribution of safety improvements? Do communities which typically experience higher traffic danger burdens deserve more investment? These questions should be addressed alongside the choice between a per capita, or per area measure. |

| Measure | Safety investments on the high-injury network |
|---|---|
| **How it is calculated** | Safety–related projects in the RTP are mapped to show which investments overlap with the high-injury network. This would create some kind of proportional measure where higher proportions of projects in high-injury locations are better. |
| **Why this is an equity measure** | This measure would look at safety–related investments on the high injury network. The measure would compare this rate of investment with the rate of investment overall. Presumably the investment in the high–injury network would be higher than the average investment overall. Particular focus is on a high injury network investments which corresponds to locations of importance to historically underrepresented communities. |
| **Key assumptions** | We assume that historically underrepresented communities travel often in high injury parts of the network. |
| **Measurement type and timeframe** | This measure can be made for the RTP investment. As a mapping exercise it is off–model. |
| **Special considerations** | |

| Measure | Safe Routes to School (SRTS) investments |
|---|---|
| **How it is calculated** | This measure identifies and sums SRTS investments made in sub-regions or alternatively, schools with high representation of low income students (with high representation of students who qualify for meal assistance). We could then compare overall investment (per school or per pupil) between the schools and all schools. |
| **Why this is an equity measure** | The measure would compare this rate of investment in schools of concern with the rate of investment overall. |
| **Key assumptions** | This measure assumes we have an accurate inventory of S RTS investments into the future. |
| **Measurement type and timeframe** | This measure can be made for any sub-region or set of schools, and is made for the future RTP investment. As a mapping exercise it is off–model. |
| **Special considerations** | |

## Safety: Exposure

| Measure | Total Vehicle Miles Traveled (VMT)/square mile in residential and commercial areas |
|---|---|
| **How it is calculated** | All vehicle travel (measured as vehicle-miles traveled (VMT)) is modeled for the RTP and can be summed within any given TAZ. This VMT per square mile is calculated for the sub-region and compared with the measure for the rest of the region and for future RTP investment years. |
| **Why this is an equity measure** | This measure would look at vehicle miles traveled (VMT) exposure by particular communities and how that may change with future RTP investments. It would allow us to identify areas with a much higher exposure than others. |
| **Key assumptions** | VMT is a proxy for traffic danger and emissions exposure. |
| **Measurement type and timeframe** | This measure can be made for any sub-region, and is made for the future RTP investment year. This measure relies on modeled travel data. |
| **Special considerations** | |

## Public Health: Environmental and health impacts

| Measure | Proximity to roadways |
|---|---|
| **How it is calculated** | This measure calculates the share of housing within a certain distance buffer from high-volume roadways which is affordable. Using a mapping tool, affordable housing resources and all housing resources, within distance buffers (e.g. 500 feet) from high-volume roadways are summed. This is used to create a share of housing which is affordable within these buffers. |
| **Why this is an equity measure** | The share of housing which is affordable within this distance buffer should be similar to the share of other housing. In overrepresentation of affordable housing means that those households are over burdened with exposure to the impacts of roadways. |
| **Key assumptions** | Proximity to high-volume roadways is proxy for emissions exposure. |
| **Measurement type and timeframe** | This measure is made for the future RTP investment year and as a mapping exercise is off-model. |
| **Special considerations** | The buffer distance and the definition of "high-volume" will be important for this measure. The definition of affordable housing will also be important for this measure. |

| Measure | Magnitude of Transportation Impacts to Public Health |
|---|---|
| **How it is calculated** | The **Integrated Transport and Health Impacts Model (ITHIM)** model using modeled travel data and a special health impacts model to estimate three components of health impacts due to changes in non-motorized travel: 1. lives saved due to improvements in health; 2. lives lost due to increases in bike/walk (due to safety and emissions exposure); and 3. lives saved due to emissions reductions for the general population. |
| **Why this is an equity measure** | The ITHIM model could be used to estimate the health impacts of specific populations, such as historically underrepresented communities. These could be analyzed in isolation or compared with other communities or the total impacts for the region to insure that positive health impacts are shared by historically underrepresented communities. |
| **Key assumptions** | |
| **Measurement type and timeframe** | This measure is made for the future RTP investment year and relies on modeled travel data. |
| **Special considerations** | While non-motorized travel is held up as a benefit of progressive planning, many transportation disadvantaged communities bike and walk not out of choice but out of necessity. Therefore, this measure may overstate the benefits of increases in non-motorized travel in some communities. |

| Measure | Measures of active travel |
|---|---|
| **How it is calculated** | The regional model will predict non-motorized travel mode share, and this can be modeled for any sub-region and compared with the rest of the region. |
| **Why this is an equity measure** | The choice of non-motorized travel (walking or cycling) is assumed to be a benefit of RTP investments. Thus, increases in non-motorized travel should be shared equally between communities if the RTP is equitable. |
| **Key assumptions** | |
| **Measurement type and timeframe** | This measure can be made for any sub-region, and is made for the future RTP investment year. This measure relies on modeled travel data. |
| **Special considerations** | While non-motorized travel is held up as a benefit of progressive planning, many transportation disadvantaged communities bike and walk not out of choice but out of necessity. This measure may overstate the benefits of increases in non-motorized travel in some communities. |

## Transit: Transit Access

| Measure | Measures of transit supply |
|---|---|
| **How it is calculated** | There are various measures of transit supply, including total service-hours, or service-miles, or transit vehicle trips within a given timeframe such as a day, week, month, etc. For the RTP, transit service can be calculated within sub- geographies and then used to get a per-capita or per-area measure. |
| **Why this is an equity measure** | Transit supply distribution among different communities. For this measure, therefore, we would look for equal supply per-capita, or per-area, for different communities. |
| **Key assumptions** | |
| **Measurement type and timeframe** | This measure relies on projections of transit service for the RTP year. It can be made for any sub-region, and as a mapping exercise it is off-model. |
| **Special considerations** | |

| Measure | Gaps between transit need and supply |
|---|---|
| **How it is calculated** | See the **Measures of transit supply** measure for a description of calculation. For transit need, measures typically look at factors such as vehicle ownership and income to predict transit dependency. A combination of these factors could be used to create a need index, and this can be calculated based on existing travel survey data. One can then calculate the transit supply for high and low need areas. |
| **Why this is an equity measure** | This measures looks at transit supply distributed towards communities which need services more than others. For this measure, therefore, we would look for a match between transit supply and measures of transit need. |
| **Key assumptions** | Assumptions about need based on the demographic factors are important. |
| **Measurement type and timeframe** | This measure relies on projections of transit service and transit need for the future RTP investment year. It can be made for any sub-region, and as a mapping exercise it is off-model. |
| **Special considerations** | |

| Measure | Gaps between transit need and level of service (LOS) |
|---|---|
| **How it is calculated** | This measure is similar to the **Gaps between transit need and supply** measure, except that transit speed or travel times are used instead of basic measures of supply. Speed or travel times can be calculated from the transit trips taken from each TAZ for the RTP model. Higher-speed, or lower travel times, would indicate a better performing transit system for that TAZ. For transit need, measures typically look at factors such as vehicle ownership and income to predict transit dependency. A combination of these factors could be used to create a need index, and this can be calculated based on existing travel survey data. One can then calculate the transit LOS for high and low need areas. |
| **Why this is an equity measure** | This measures looks at transit LOS distribution with an emphasis on more heavily towards communities with higher needs. For this measure, therefore, we would look for a match between transit LOS and measures of transit need. |
| **Key assumptions** | Assumptions about need based on the demographic factors are important. |
| **Measurement type and timeframe** | This measure relies on projections of transit service and transit need for the future RTP investment year. It can be made for any sub-region, and uses modeled transit LOS. |
| **Special considerations** | Level of service measure (which reflect service speed) may be problematic because suburban services may operate at higher speeds but not offer additional accessibility to destinations. Likewise, core urban services may be slower but offer better connectivity. Additionally, this measure prioritizes travel speed which may reward investments in roadways and traffic improvements which may not correspond with other regional goals. |

| Measure | Transit service deficiencies in areas of high need |
|---|---|
| **How it is calculated** | Projections of transit service levels can reveal times of the day, or days of the week when service is minimal or nonexistent for certain TAZs (for example: hours per week with headways greater or equal to 30 minutes). This measure would tally those hours for each TAZ within sub-geographies. Transit need would be calculated similarly to the measures **Gaps between transit need and supply** and **Gaps between transit need and level of service (LOS)**. Absent or minimal transit service can then be calculated for high and low need TAZs to pinpoint where services are needed. |
| **Why this is an equity measure** | Variations, especially major absences, in transit services can be harmful to transit dependent populations. Investments to reduce the amount of time where transit services are minimal or absent will support populations who use transit. Thus, reductions in gaps and improvements in off-peak service will be important to measure. |
| **Key assumptions** | None. |
| **Measurement type and timeframe** | This measure relies on projections of transit service for the future RTP investment year. It can be made for any sub-region, and uses mapped service projections which are off-model. |
| **Special considerations** | |

## Monitoring

| Measure | Displacement risk |
|---|---|
| **How it is calculated** | There are various types of displacement risk estimations. Most measure compounding factors of housing cost burden, rapid increases in housing prices and rents, the percent of area residents who rent, among other things. The risk can be calculated for a specific TAZ and can be mapped. RTP projects can then be mapped for their correspondence with high displacement risk areas to signal the need for more attention in those areas. |
| **Why this is an equity measure** | Low income renting populations struggle to remain in areas of the region where rents and sale prices increase rapidly. Measuring displacement risk can inform which investments are in need of additional housing strategies in order to preempt situations where RTP investments could exacerbate existing displacement risks. |
| **Key assumptions** | The current geography of displacement risk remains relevant out to the future RTP investment year. |
| **Measurement type and timeframe** | This measure relies on projections of the factors which predict displacement risk. These may be less robust out to the future RTP investment year and better as a short-term monitoring measure. |
| **Special considerations** | |

## Other: Timing of Investments

| Measure | Displacement risk |
|---|---|
| **How it is calculated** | The RTP investments would be phased into several periods, and the distribution of these projects in each phase would be mapped. The projects in sub-geographies would then be summed and a share of the total would be calculated to confirm that all communities are receiving some projects during all phases of the RTP. |
| **Why this is an equity measure** | Look at the share of investment during the initial stages of the RTP in historically underrepresented communities. |
| **Key assumptions** | Timeframe of when an RTP investment plans for its completion. |
| **Measurement type and timeframe** | This is a mapping exercise and would not involve the model. The timeframe would depend on the phasing used in the measurement and what is indicated as the timeframe of when an individual project is completed. |
| **Special considerations** | |

# Appendix A – Source list and bibliographic information

## Resources consulted to generate our recommended measures list

| Organization | Source |
|---|---|
| **SCAG (Los Angeles)** | 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy (2012) |
| **NYMTC (New York)** | Plan 2040: NYMTC Regional Transportation Plan (2013) |
| **CMAP (Chicago)** | GO TO 2040: Comprehensive Regional Plan (2013) |
| **MTC (San Francisco Bay Area)** | 2035 Regional Transportation Plan Equity Analysis (2009) and Plan Bay Area (2013) and Plan Bay Area (2016) |
| **NJTPA (Newark and Northern New Jersey)** | PLAN 2035: Regional Transportation Plan for Northern New Jersey (2005)<br>PLAN 2040: Regional Transportation Plan for Northern New Jersey (2013)<br>Together North Jersey Fair Housing and Equity Report (2015) |
| **NCTCOG (Dallas - Fort Worth)** | Mobility 2035 Update (2013 Update) |
| **H-GAC (Houston)** | 2035 Regional Transportation Plan (2011 Update) |
| **DVRPC (Philadelphia)** | Connections 2040 Plan for Greater Philadelphia (2013) |
| **NCRTPB (Washington DC)** | 2010 Constrained Long-Range Transportation Plan (2010) |
| **ARC (Atlanta)** | Plan 2040 (2012) |
| **PSRC (Seattle)** | Transportation 2040 Update Report (2014) |
| **MAG (Phoenix)** | 2035 Regional Transportation Plan (2014) |
| **Hampton Roads Transportation Planning Organization** | EJ Methodology Tool (2014) |
| **PolicyLink (Transportation Equity Caucus)** | Comments on USDOT Proposed State and Metro Planning Guidance (2014) |
| **Transportation for America** | Measuring What We Value: Setting Priorities and Evaluating Success in Transportation (2015) |
| **Various academic research** | Currie (2010); El-Geneidy et al. (2015); Farber et al. (2014); Foth et al. (2013); Golub & Martens (2014); Karner & Niemeier (2013); Martens & Golub (2014). |

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Metro | *Memo*

Date: September 29, 2016

To: Transportation Equity Working Group and interested parties

From: Grace Cho, Associate Transportation Planner

Subject: Transportation Equity Recommended Methods for System Evaluation Measures

**Purpose**
Provide an overview of the staff recommended transportation equity system evaluation measures and related methodologies for assessing the 2018 Regional Transportation Plan (RTP) investment strategy and the 2018-2021 Metropolitan Transportation Improvement Program (MTIP).

**Action requested**
Metro staff requests work group support to move forward with the recommended methodologies for the transportation equity system evaluation measures.

**Introduction**
As the Portland region prepares to make its next set of investments in the transportation system, an equity analysis will help inform how transportation investments affect the communities where people have the fewest options for travel to meet everyday needs. Understanding these effects helps the region make more informed, equitable decisions about where transportation dollars go, especially as the region weighs many needs and competing priorities for investment in the transportation system.

The Transportation Equity Analysis (TEA) for the 2018 RTP and the 2018-2021 MTIP will provide a better understanding of how near and long-term transportation investments are effecting:

- communities of color;
- households with lower-income;
- communities with limited English proficiency;
- older communities; and
- youth

**Why system evaluation and not project evaluation?**

The work plan for the 2018 RTP calls for a system evaluation of investment packages. A number of questions have emerged regarding the why the Transportation Equity Analysis is focused on system evaluation. In response, Metro staff is exploring with the technical and policy committees on whether to pursue a supplemental project evaluation, and how such an evaluation would be conducted.

Regardless of the outcome of the discussion, the work group can recommend conducting project evaluation for the next scheduled RTP update.

**Transportation Equity System Evaluation Measures: Recap and Updates**

At the June 30th work group meeting, the Transportation Equity work group discussed the staff recommended transportation equity measures for the system evaluation of the 2018 RTP and the 2018-2021 MTIP. (See Table 1.) Metro staff reviewed the process used to recommend system evaluation measures to the work group. The work group discussed a number of areas still in need of further definition and refinement. After a robust discussion, the work group supported Metro staff moving forward to define a methodology for each recommended system evaluation measure.

*Table 1. Recommended Transportation Equity System Evaluation Measures for the 2018 RTP and 2018-2021 MTIP*

| No. | Community Priority | System Evaluation Measure and Methodology Description | Other Considerations |
|---|---|---|---|
| 1. | Affordability | Combined Housing and Transportation Expenditure: The sum of the housing and transportation expenditures in historically underrepresented communities. Determine a potential cost burden to assess which households are experiencing the greatest combined housing and transportation expenditure. Assess the change of the expenditures in the given geography and key communities with added transportation investments. Look at the change of combined housing and transportation expenditure. | Must be developed in coordination with other Metro Planning and Development Dept. efforts, including equitable housing and urban growth management process. |
| 2. | Accessibility – Access to Places* | Access to Jobs: The sum of the total number of family wage jobs which are accessible to historically underrepresented communities by automobile, transit, bicycle, and walking in a given commute time window. Assess the change in historically underrepresented communities with added transportation investments. | Must be developed in coordination with the Regional Transit Strategy & Work Group |
| 3. | Accessibility – Access to Places | Access to Existing Essential Destinations OR Existing Daily Needs: The sum of the total number of existing essential destinations or existing daily needs which are accessible to historically underrepresented communities by automobile, transit, and bicycle in a given travel time window. Depending on whether essential destinations or daily needs is selected, the travel times will change. Assess the change in historically underrepresented communities with added transportation investments. | |
| 4. | Accessibility – Access to Places | Transit Access Disadvantage: The sum of the total number of existing essential destinations or existing daily needs which are accessible to historically underrepresented communities by automobile and transit. For the historically underrepresented communities, look at the ratio of essential destinations accessible by transit compared to automobile. Attention is paid to lower | |

| No. | Community Priority | System Evaluation Measure and Methodology Description | Other Considerations |
|---|---|---|---|
| | | transit/automobile access ratio community geographies to determine how the ratio changes with added future transportation investments. | |
| 5. | Accessibility – Infrastructure | Intersection of Transportation Investments, Timing, and Communities: Transportation investments are mapped to illustrate which overlap with historically underrepresented communities. Transportation investments are also categorized by time frame to assess whether investments are being made evenly over time in certain communities and addressing near-term transportation needs. | Must be coordinated with the overall 2018 RTP system evaluation |
| 6. | Safety – Infrastructure Disparities | Safety Investments on the High Injury Network: Identified transportation safety investments are mapped to illustrate which overlap with the high injury network and in historically underrepresented communities. Assess whether investments are being made evenly in certain communities with evident transportation safety issues (as indicated by the categorization as a high injury corridor). | Must be coordinated in detail with the Regional Transportation Safety Action Plan & Safety Work Group |
| 7. | Safety – Exposure | Non-Interstate Vehicles Miles Traveled Exposure: The sum of all non-interstate vehicle miles traveled (VMT) would be totaled for historically underrepresented communities and based on the transportation investment program, look at how VMT changes in historically underrepresented communities and correlate traffic safety exposure. | |
| 8. | Public Health – Environmental and Health Impacts | Vehicles Miles Traveled Exposure: The sum of all vehicle miles traveled (VMT) would be totaled for historically underrepresented communities and based on the transportation investment program, look at how VMT changes in historically underrepresented communities and correlate air pollution emissions exposure. | These measures may or may not be part of the transportation equity analysis; pending the partnership with Multnomah County Public Health |
| 9. | Public Health – Environmental and Health Impacts* | Intersection of Transportation Investments, Resource Habitats, and Communities: Transportation investments are mapped to illustrate which overlap with historically underrepresented communities and resource habitats to determine whether environmental quality degradation from transportation is overly represented in certain communities. | |
| 10. | Public Health – Environmental and Health Impacts** | Assessing Directional Change: Use public health literature findings to assess the transportation investments package and its role in directional change in health outcomes. Based on mapping of investments relative to historically underrepresented communities and the directional | This analysis would be conducted in partnership with Multnomah County Public Health and others, pending |

| No. | Community Priority | System Evaluation Measure and Methodology Description | Other Considerations |
|---|---|---|---|
| | | relationship, determine whether health outcome disparities would widen or narrow as a result. | resources. |
| 11. | Public Health – Environmental and Health Impacts** | Assessing the Magnitude of Transportation Impact to Public Health (Burden of Disease and Premature Death): Utilize the Integrated Transportation ad Health Impacts Model (ITHIM) to look at the transportation investment effects to public health under the lens of disease burden and premature death in the context of air quality, physical activity, and traffic safety conditions. | |

**Indicates staff adjusted modification*
***Indicates the system evaluation measure is pending based on potential partnerships and resources.*

**Staff Recommendation for the 2018 RTP Transportation Equity System Evaluation Measures**
Since the June 30th meeting, Metro staff has consulted with Metro's Research Center, Metro's Diversity, Equity, and Inclusion staff, and the other 2018 RTP work groups to define a methodology for each system evaluation measure. Using the feedback provided by the work group as a starting place for developing the individual methods for each system evaluation measure, Metro staff has been working through definitions, key assumptions, and considering what outputs are available. From the internal work undertaken to-date, a set of summary descriptions for each of the following transportation equity system evaluation measures has been developed. (See attachments for summary descriptions.) These summary descriptions are still in and remain in draft form.

- Access to Jobs
- Access to Places
- Access Travel Options – System Completeness
- Transportation Safety Investments on High Injury Corridors
- Non-Freeway Vehicle Miles Traveled Exposure
- Resource Habitats and Transportation Investments
- Assessing Directional Change of Public Health Outcomes[1]

Three transportation equity system evaluation measures initially proposed and discussed at the June 30th work group meeting are recommended for significant adjustments as to how they will be approached as part of the transportation equity analysis. A description and rationale for the recommended adjustments are summarized below and found in Table 2.

- Transit Access Disadvantage – *recommended to be combined with another transportation equity measure.*
- Assessing Directional Change of Health Outcomes – *recommended to be applied to the results of the transportation equity system evaluation results as an environmental health lens.*
- Assessing the Magnitude of Transportation and Public Health – *recommended to be part of overall RTP system evaluation)*

[1] See Table 2 for further information.

*Table 2. Transportation Equity System Evaluation Measures recommended to be incorporated with other measures or to be addressed as part of the overall RTP system evaluation*

| System Evaluation Measure | Reasoning | Outcome |
|---|---|---|
| Transit Access Disadvantage | After further review, this measure appears as an additional step within one of the accessibility system evaluation measures. In efforts to reduce redundancy this measure is being proposed as part of the methodology for the Access to Jobs system evaluation measure. | Incorporated as part of Access to Jobs system measure. |
| Assessing Directional Change of Health Outcomes | After further discussions with Multnomah County Public Health partners, this measure would be more appropriately applied as a lens to the results of the transportation equity analysis measures to provide further context and understanding of the results, particularly as it pertains to the directional change of environmental health outcomes. | Applying this measure as a lens to the Transportation Equity Analysis results. |
| Assessing the Magnitude of Transportation and Public Health | Further exploration identified that this measure would not be able to identify the differences for historically underrepresented communities and the overall region and therefore would not be a reasonable transportation equity system measure. This measure is still considered an important system evaluation for the 2018 RTP and will be considered as a supplemental analysis, pending resources. | Being further explored as part of an evaluation for the 2018 RTP |

For the eight (8) transportation equity system evaluation measures in which a draft methodology has been developed, two (2) have fairly well defined method and are being recommended to the work group for support to move forward. These include the following:

- Transportation Safety Investments on High Injury Corridors
- Non-Freeway Vehicle Miles Traveled Exposure[2]

In the development of the methods of four (4) of the transportation equity system evaluation measures, questions have emerged in which Metro staff seeks input from work group members. The methodology related questions are identified for each individual system evaluation measure in Table 3.

*Table 3. Methodology Questions Remaining for Transportation Equity System Evaluation Measures*

| System Measure | Remaining Methodology Questions |
|---|---|
| Access to Travel Options – System Completeness | 1. Should this measure primarily focus on looking at system completeness for active transportation projects proposed in the 2018 RTP? Or should street connectivity (i.e. roadway projects) be included in this analysis?<br>2. How should active transportation investments be defined? Should only those transportation investments on the regional bikeway and |

[2] Metro staff is currently conducting statistical analysis to determine the strength of correlation between non-freeway vehicle miles traveled (VMT) and crashes to determine whether a VMT single factor can identify potential crash risk. Depending on the nature of the statistical analysis, Metro staff may recommend removal of this system measure from consideration. Therefore, the measure is considered tentative.

| | |
|---|---|
| | pedestrian pathway network considered or are all local active transportation investments acceptable? |
| Access to Jobs | 1. What should be the threshold for determining when an area is "transit access disadvantaged?" Meaning, at what level of transit access to jobs relative to automobile access to jobs is tolerable (recognizing generally the discrepancy in transit service relative to automobile service) and what is not tolerable? When should an area be considered transit disadvantaged? For example, should it be at when 50%, 60%, 70% jobs are not reachable by transit? |
| Access to Places | 1. Should the automobile travel time shed (places reached by automobile within 30 minutes) threshold be shortened? |
| Resource Habitats and Transportation Investments | 1. Should only certain types of transportation investments (e.g. roadway) be considered for this analysis and not others (active transportation)? Or should all transportation investments proposed be assessed under this system measure? |

Additionally, two (2) recommended measures still have major underlying methods undefined at this time. Table 4 outlines the different questions and issues which have emerged in which these measures do not have a defined methodology to date and the potential strategy for addressing these issues.

*Table 4. Transportation Equity System Measures Where Methods Remain to Be Defined*

| System Measure | Issue Preventing a Method to Date |
|---|---|
| Combined Housing and Transportation Expenditure and Cost Burden | Upon further coordination with Metro's Research Center, this post-processed measure would require additional model update activities not currently scoped in the RTP work plan. The system evaluation measure continues to remain as a recommended system evaluation measure for the Transportation Equity Analysis, but information regarding the methodology for the measure is currently unavailable as staff continues to scope the details of updating the Combined Housing and Transportation Expenditure model. |
| Vehicle Miles Traveled Exposure | Metro staff has recommended a set of refinements to the RTP system measure for clean air. The recommended refinements are in need of further technical consultation with air quality partners at DEQ as well as with public health partners. At this time, the initial method appears feasible and would complement the planned system-wide air quality analysis; , however, certain key details with technical staff are necessary to confirm. |

**Discussion Questions**

Based on the work to-date in defining the methods for each individual system measure for the Transportation Equity Analysis, Metro staff seeks input from the work group members on the following questions:

1. Are the recommended methods to the individual transportation equity system evaluation measures headed in the desired direction of the work group? Do work group members feel the community identified priorities continue to be reflected in the system evaluation measures?

2. Are there other methodological concerns for the system evaluation measures which need to be addressed that have not been identified or reflected?

3. Does the work group feel comfortable with staff recommending these system evaluation measures to the performance measure work group, other work groups, TPAC, and MTAC?

**Next Steps**
Prior to the November 17th work group meeting, Metro staff will continue to refine and finalize the methodology for the measures to be used in the transportation equity analysis conducted for the 2018 RTP and 2018-2021 MTIP. This work will include:

1. Refine the system evaluation measures based on feedback and input provided at the September work group meeting. Follow up with any staff commitments made at the meeting.

2. Briefing the performance measures work group and other works groups on the individual methods for the transportation equity analysis system measures. *(October 14th – Performance Measures Work Group; October – 20th Safety Work Group; October 5th – Regional Transit Strategy Work Group)*

3. Briefing the Transportation Policy Alternatives Committee (TPAC) and the Metro Technical Advisory Committee (MTAC) on the status of this work. *(October 28th – TPAC; November 17th – MTAC)*

4. Continuing to develop the Combined Housing and Transportation Expenditure and Cost Burden work scope and recommended method; an update will be sent to the work group via email.

5. Continuing to develop the vehicle miles traveled emissions exposure system measure and assessment method; an update will be sent to the work group via email.

6. For the applicable system measures to the overall performance management program, begin to document the proposed the refinements to the system evaluation measures.

7. Identify potential 2018 RTP performance target refinements and recommendations for the work group to review and discuss in 2017.

**Attachment A – Transportation Equity Analysis System Evaluation Measures – Methodology Profiles and Key Assumptions**

Definition of Historically Underrepresented Communities & Geography

| Community | Definition | Geography Threshold* | Date Source |
|---|---|---|---|
| People of Color | Persons who identify as non-white. | Census tracts above the regional rate (26.5%) for people of color. | 2010 Decennial Census |
| Low-Income | Households which have an income less than $50,000, regardless of household size. | Census tracts above the regional rate (42.8%) for Household with Lower-Income | American Community Survey, 2009-2013 |
| Limited English Proficiency | Persons who identify as unable "to speak English very well." | Census tracts above the regional rate (8.5%) for Limited English Proficiency | |
| Older Adults | Persons 65 years of age and older | Census tracts above the regional rate for Older Adults (11%) AND Young People (22.8%) | 2010 Decennial Census |
| Young People | Persons 17 years of age and younger | | |

*See attached map of historically underrepresented communities.

Analysis Years Assumptions and Inputs

| Analysis Year | Transportation Inputs | Land use Inputs |
|---|---|---|
| Base Year (2015) | All transportation projects completed by 2015 | Adopted growth distribution (2016) from MetroScope[1] |
| Interim Year (2027) | Proposed transportation projects to be completed by 2027 (financially constrained only) | |
| Future Year (2040) | All proposed transportation to be completed by 2040 (financially constrained and strategic project lists) | |

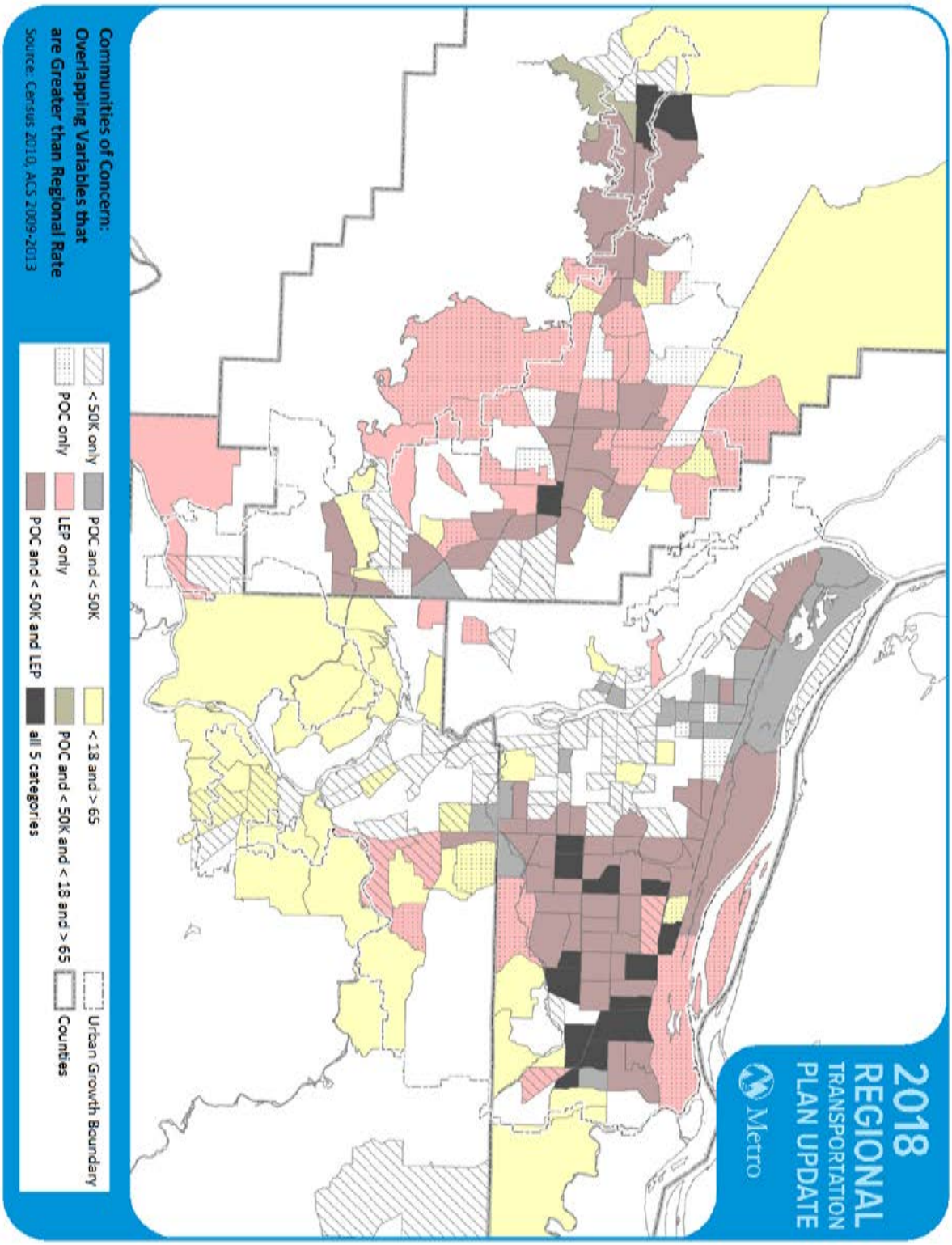
Forecasted Methods Approach for Historically Underrepresented Communities

| Community | Base Year | Interim Year | Horizon Year |
|---|---|---|---|
| People of Color | Identifying the correlating transportation analysis zones (TAZ) to census tracts which have greater than the regional rate of people of color. | | Will not produce results for the horizon year. |
| Low-Income | Identifying the correlating transportation analysis zones (TAZ) to census tracts which have greater than the regional rate for young people. | Forecasted spatial distribution of households with incomes under $50K. | |
| Limited English | Identifying the correlating transportation analysis | | Will not produce |

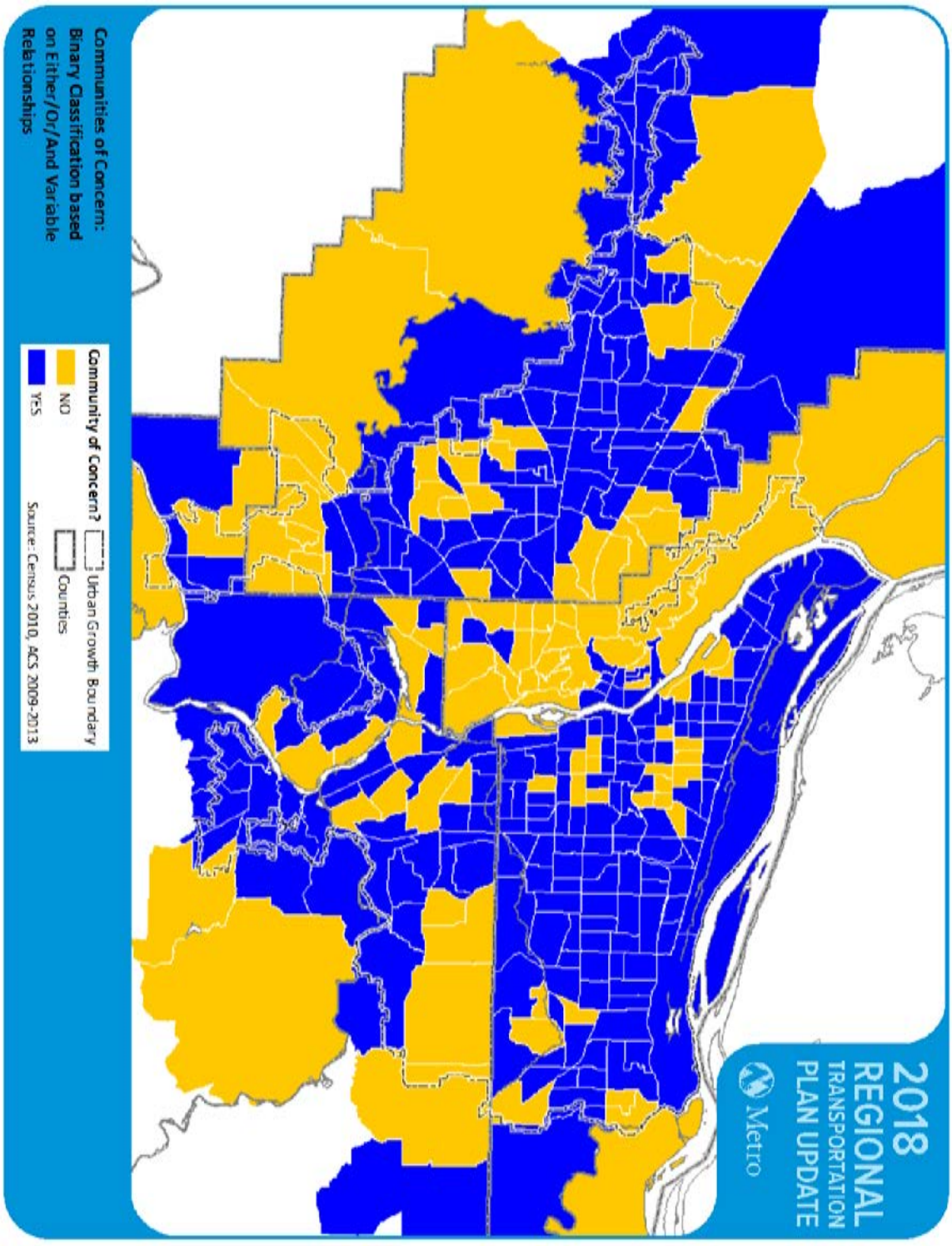
[1] Metro Ordinance No. 16-1371. More information regarding the 2016 land use forecast can be found at: oregonmetro.gov

| Community | Base Year | Interim Year | Horizon Year |
|---|---|---|---|
| Proficiency | zones (TAZ) to census tracts which have greater than the regional rate of limited English proficiency. | | results for the horizon year. |
| Older Adults | Identifying the correlating transportation analysis zones (TAZ) to census tracts which have greater than the regional rate for older adults. | Forecasted spatial distribution of households with older adults. | |
| Young People | Identifying the correlating transportation analysis zones (TAZ) to census tracts which have greater than the regional rate for young people. | Forecasted spatial distribution of households with older adults. | |

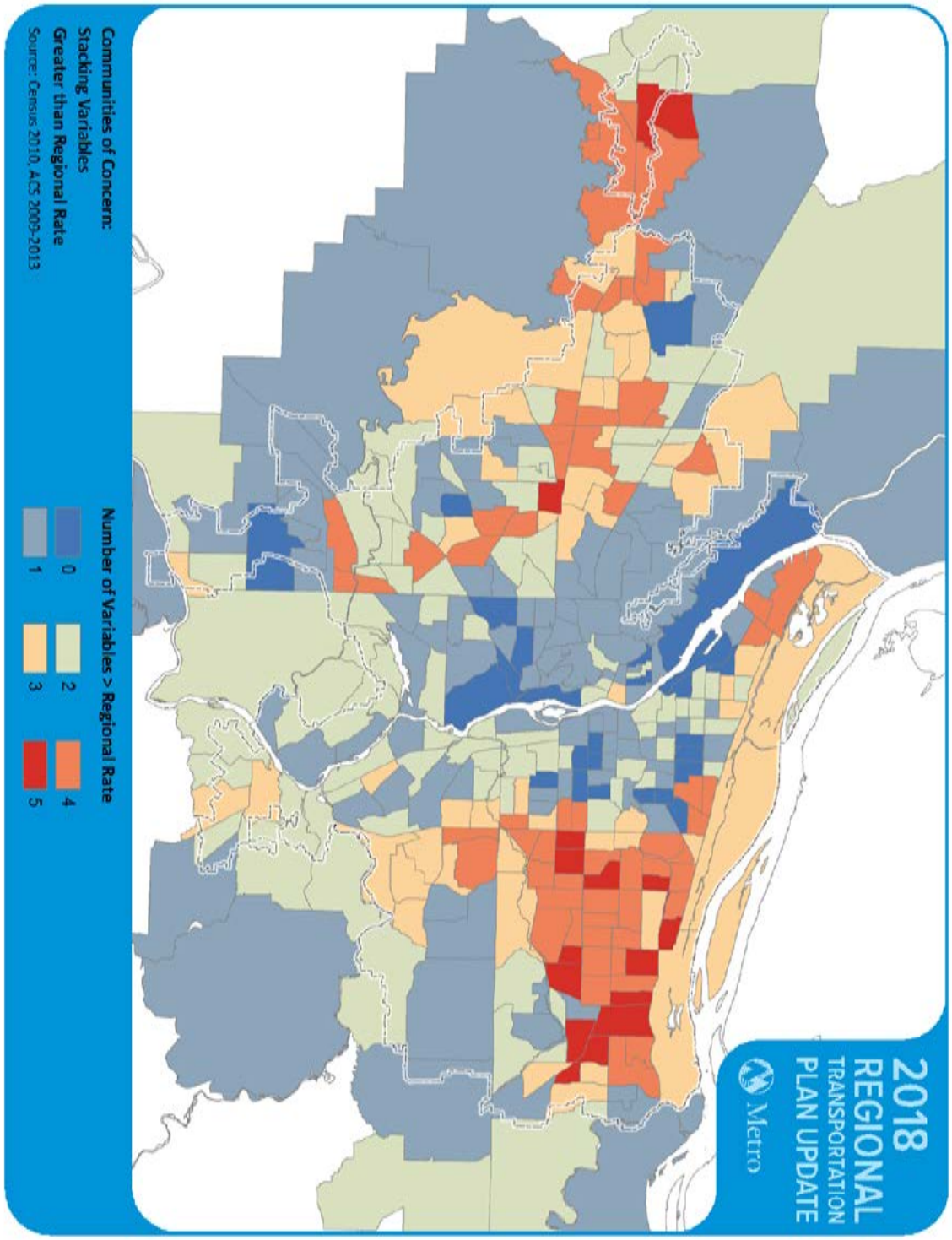
## Historically Underrepresented Communities – Census Tracts Above the Regional Rate



**Historically Underrepresented Communities – Proposed Census Geographies for Analysis Purpose**



**Historically Underrepresented Communities – Census Tracts with Greater than the Regional Rate for Any Community (and Stacking of Communities Above the Regional Rate)**



Evaluation Measure Title: **Transportation Safety – Vehicle Miles Traveled (VMT) Exposure**

Purpose: To identify whether the package of future transportation investments will increase transportation safety, by reducing per capita vehicle miles traveled exposure for the region's residents and look at the difference in exposure between historically underrepresented communities and the region.

**RTP Goals**

| | | | |
|---|---|---|---|
| | Foster vibrant communities and compact urban form | | Promote environmental stewardship |
| ● | Sustain economic competitiveness and prosperity | ● | Enhance human health |
| | Expand transportation choices | | Demonstrate leadership at reducing greenhouse gas emissions |
| | Effective and efficient management of system | ● | Ensure equity |
| ● | Enhance safety and security | | Ensure fiscal stewardship |
| ● | Deliver accountability | | |

**Function of Evaluation Measure**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ● | System Evaluation | | Project Evaluation | | System Monitoring | ● | Performance Target |

Associated RTP Performance Measures: By 2035 eliminate fatal and serious crashes for all users of the region's transportation system, with a 15% reduction by 2020 and 50%reduction by 2025.

Methodology Description:
The **Transportation Safety – Vehicle Miles Traveled Exposure** performance measure looks to assess the following questions for the region's transportation system:

1) What is the region's vehicle miles traveled (per capita) and how does it change with the proposed package of transportation investments?
2) What is the difference in exposure to vehicle miles traveled (per capita) for historically underrepresented communities? Has the proposed transportation investment program held steady or decreased the vehicle miles traveled exposure in historically underrepresented communities?

The **Transportation Safety – Vehicle Miles Traveled Exposure** performance measure is calculated by aggregating the non-freeway vehicle miles traveled within each transportation analysis zone (TAZ). The non-freeway vehicle miles traveled in each TAZ would be aggregated together to gather a non-freeway VMT for the entire region. To determine the exposure, the non-freeway VMT for the entire region is divided by the population of the entire region. Additionally, the non-freeway VMT in each TAZ is divided by the population of TAZ. The TAZs which overlap with historically underrepresented communities are flagged to determine the non-freeway VMT exposure per capita for historically underrepresented communities. Then the non-freeway VMT exposure per capita is looked and compared for historically underrepresented communities to the region, as well as for the base year to the future year.

Output Units: Vehicle miles traveled per capita (VMT/per person)

Potential Output of Assessment:

| | Base Year | Interim Year | Future Year – Financially Constrained | Future Year – Strategic |
|---|---|---|---|---|
| Region-wide | VMT/per person* | | | |
| Historically Underrepresented Communities | | | | |

Key Assumptions to Method:
Dataset Used:

| Dataset | Type of Data |
|---|---|
| Geospatial project information for proposed transportation projects | Observed |
| Vehicle miles traveled | Forecasted |

Tools Used for Analysis: Metro's travel demand model and ArcGIS

Vehicles Miles Traveled Considerations:
Non-freeway miles exposure were calculated for the **Transportation Safety – Vehicle Miles Traveled Exposure** performance measure to account for more human-scale interactions between vehicles, pedestrians, bicyclists, transit riders, and other users of the street and the potential exposure to crashes and serious injury by between vehicles and other users.

The vehicle miles traveled exposure was calculated by assessing the vehicle miles traveled seen within each transportation analysis zone (TAZ) and dividing the overall VMT by the number of people in the TAZ. The measure is not speaking to who is generating the VMT, rather looking at human-scale exposure.

Evaluation Measure Title: **Transportation Safety – Infrastructure Disparities**

Purpose: To identify whether the package of future transportation investments will increase transportation safety, through the development of transportation infrastructure with proven safety affects, for the region's residents and to look at the difference in access between historically underrepresented communities and the region.

**RTP Goals**

| | | | |
|---|---|---|---|
| | Foster vibrant communities and compact urban form | | Promote environmental stewardship |
| ● | Sustain economic competitiveness and prosperity | ● | Enhance human health |
| | Expand transportation choices | | Demonstrate leadership at reducing greenhouse gas emissions |
| | Effective and efficient management of system | ● | Ensure equity |
| ● | Enhance safety and security | | Ensure fiscal stewardship |
| | Deliver accountability | | |

**Function of Evaluation Measure**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ● | System Evaluation | | Project Evaluation | | System Monitoring | ● | Performance Target |

Associated RTP Performance Measures: By 2035 eliminate fatal and serious crashes for all users of the region's transportation system, with a 15% reduction by 2020 and 50%reduction by 2025.

Methodology Description:
The **Transportation Safety – Infrastructure Disparities** performance measure looks to assess the following questions for the region's transportation system:

1) What percentage of the region's proposed transportation investments are addressing known transportation safety issues?
2) What percentage of transportation safety investments are located in historically underrepresented communities? Is there a difference of transportation safety investment levels in areas with historically underrepresented communities?

The method for calculating the **Transportation Safety – Infrastructure Disparities** performance measure will entail a geospatial analysis the region's proposed transportation safety investments which intersect identified high injury corridors and historically underrepresented communities. The percentage of transportation safety projects which intersect high injury corridors will be looked at region-wide and also looked at for historically underrepresented communities.

Output Units: Percentage (%) of transportation safety projects on High Injury Corridors and/or Safe Routes to Schools projects

Potential Output of Assessment:

| | Base Year | Interim Year | Future Year – Financially Constrained | Future Year – Strategic |
|---|---|---|---|---|
| Region-wide | % Safety | | | |

| | | | | |
|---|---|---|---|---|
| | Projects | | | |
| Historically Underrepresented Communities | | | | |

Key Assumptions to Method:
Dataset Used:

| Dataset | Type of Data |
|---|---|
| Geospatial project information for proposed transportation projects | Observed |
| Regional High Injury Corridors | Observed |

Tools Used for Analysis: ArcGIS

Definition of a Safety Project:
Safety Investments are projects that are constructed on a Regional High-Injury Corridor, and allocate a majority of the project cost to a documented safety countermeasure(s)* to address a specific documented risk, and/or improve safety for vulnerable users, including people walking and bicycling, older adults and youth, and/or are Safe Routes to School projects (which do not need to be located on a High Injury Corridor).
**Example safety countermeasures include, but are not limited to, FHWA's nine proven safety countermeasures: road diets, medians and pedestrian crossing islands, pedestrian hybrid beacons, roundabouts, access management, retroreflective backplates, safety edge, enhanced curve delineation, and rumble strips.*



Definition of Safe Routes to Schools Project: TBD

Definition of High Injury Corridor:
Regional High Injury Corridors (HICs) provide a quantitative assessment of the crash performance of every roadway in the metropolitan region in order to identify the subset of roadways where the highest concentrations of severe crashes involving a motor vehicle occur. Regional HICs were identified to support planning and prioritization of corridor safety efforts, and represent 7% of the region's streets but 60% of its severe crashes. To identify the HICs, 2010-2014 crash data from the Oregon Department of Transportation was analyzed weighting crashes for each mode of travel by severity. Each corridor was divided into segments, which were given an aggregate crash score based on the frequency of severe crashes, normalized by the length of the segment. The corridors identified as HICs are the roadway segments with the highest number of severe crashes per mile in the region. The HICs do not replace state or locally identified high crash corridors.

Evaluation Measure Title: **Resource Habitats and Infrastructure**

Purpose: To identify whether the package of future transportation investments will have potential impacts to the region's resource habitats and to look at the difference in those potential between historically underrepresented communities and the region.

**RTP Goals**

| | | | |
|---|---|---|---|
| ● | Foster vibrant communities and compact urban form | ● | Promote environmental stewardship |
| | Sustain economic competitiveness and prosperity | ● | Enhance human health |
| | Expand transportation choices | | Demonstrate leadership at reducing greenhouse gas emissions |
| | Effective and efficient management of system | ● | Ensure equity |
| | Enhance safety and security | | Ensure fiscal stewardship |
| ● | Deliver accountability | | |

**Function of Evaluation Measure**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ● | System Evaluation | | Project Evaluation | | System Monitoring | | Performance Target |

Associated RTP Performance Measures: Percent of projects which intersect high value habitats

Methodology Description:
The **Resource Habitats and Infrastructure** performance measure looks to assess the following questions for the region's transportation system:

1) What percentage of the region's proposed transportation investments have a potential impact/conflict with the region's resource habitats and needs further assessment through project development?
2) What percentage of resource habitats overlap with historically underrepresented communities? Are these resource habitats in historically underrepresented communities seeing a greater percentage of proposed transportation investments which may have a potential impact/conflict with the region's resource habitats? Is the percentage greater than the region?

The method for calculating the **Resource Habitats and Infrastructure** performance measure will entail a geospatial analysis the region's proposed transportation investments which intersect the region's resource habitats and historically underrepresented communities. The percentage of projects which intersect resource habitats will be looked at region-wide and also looked at for historically underrepresented communities.

Output Units: Percentage (%) of transportation projects intersecting identified resource habitats.

Potential Output of Assessment:

| | **Base Year** | **Interim Year** | **Future Year – Financially Constrained** | **Future Year – Strategic** |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| Region-wide | | | | |
| Historically Underrepresented Communities | | | | |

Key Assumptions to Method:
Dataset Used:

| Dataset | Type of Data |
|---|---|
| Geospatial project information for proposed transportation projects | Observed |
| Geospatial resource conservation information from Metro identified resource and conservation habitat areas (Parks and Nature department) | Observed |

Tools Used for Analysis: ArcGIS

Definition of Resource Habitats: TBD – Metro staff is working with the Parks and Nature Department to gather the technical detail and information.

Evaluation Measure Title: **Access to Places**

Purpose: To identify whether the package of future transportation investments will increase the ability of region's residents to get to existing places that provide/serve daily or weekly needs and look at the differences in access to these existing places between historically underrepresented communities and the region.

**RTP Goals**

| | | | |
|---|---|---|---|
| ● | Foster vibrant communities and compact urban form | ● | Promote environmental stewardship |
| ● | Sustain economic competitiveness and prosperity | ● | Enhance human health |
| ● | Expand transportation choices | | Demonstrate leadership at reducing greenhouse gas emissions |
| | Effective and efficient management of system | ● | Ensure equity |
| | Enhance safety and security | | Ensure fiscal stewardship |
| ● | Deliver accountability | | |

**Function of Evaluation Measure**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ● | System Evaluation | | Project Evaluation | | System Monitoring | ● | Performance Target |

Associated RTP Performance Measure: RTP Target – By 2040, increase by 50% the number of essential destinations accessible within 30 minutes by bicycling & public transit for low-income, minority, senior and disabled populations compared to 2005



Methodology Description:
The **Access to Places** performance measure looks to assess the following questions for the region's transportation system:

1) What are the number of existing daily needs (i.e. places which provide services or items) that can be reached on the existing transportation system by travel mode (e.g. drive, transit, bike, and walk) in a given travel time?
2) How does accessibility, measured by the number of existing daily needs reached, change (across travel modes) with the proposed set of transportation investments?
3) What are the differences between the number of daily needs accessible by historically underrepresented communities and the entire region? Are there large differences seen between travel modes? Are there significant differences (or lack of differences) seen between historically underrepresented communities and the region once the proposed transportation investments are added?

The **Access to Places** performance measure is calculated by using existing data from the U.S. Bureau of Labor Statistics to identify the existing places which provide key services and/or daily needs (defined in assumptions). The analysis will first determine the number of places reached using existing transportation system and looking at the differences in places accessed by travel mode (automobile, transit, bicycle, and walking) in a given travel time window the entire region and for historically underrepresented communities to determine base year conditions. Conduct the same assessment, but use the proposed package of transportation investments in the long-range

regional transportation plan as the input to determine the future year accessibility to places by mode for the entire region and historically underrepresented communities. Look at the change in the accessibility to these existing places between the base year and future year, with an emphasis on the change in historically underrepresented communities with added transportation investments.

Output Units: Number of places accessed by mode (# - Auto; # - Transit; # - Bike; # - Walk)

Potential Output of Assessment:

| | **Base Year** | | | | **Interim Year** | | | | **Future Year – Financially Constrained** | | | | **Future Year – Strategic** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | T | B | W | A | T | B | W | A | T | B | W | A | T | B | W |
| Region-wide | | | | | | | | | | | | | | | | |
| Historically Underrepresented Communities | | | | | | | | | | | | | | | | |

A – Automobile; T – Transit; B – Bicycle; W - Walk



Key Assumptions to Method:
Dataset Used:

| **Dataset** | **Type of Data** |
|---|---|
| Geospatial project information for proposed transportation projects | Observed |
| U.S. Bureau of Labor Statistics – Quarterly Census of Employment and Wages (Year TBD – 2013, 2014, or 2015) | Observed |

Tools Used for Analysis: Metro Travel Demand Model and ArcGIS

Definitions of Places:
Select North American Industry Classification System (NAICS) codes. Codes include those used as part of TriMet's Transit Equity Index with select additions based on consultation with Metro Planning and Development Department and Diversity, Equity, and Inclusion staff.

| **Category** | **NAICS** | **Description** |
|---|---|---|
| Civic/Health | 491110 | Postal Service |
| | 519120 | Libraries and Archives |
| | 611110 | Elementary and Secondary Schools |
| | 611210 | Junior/Community Colleges |
| | 611310 | Colleges, Universities, and Professional Schools |
| | 624110 | Child and Youth Services |
| | 624120 | Services for the Elderly and Persons with Disabilities |
| | 624190 | Other Individual and Family Services |
| | 624210 | Community Food Services |
| | 624229 | Other Community Housing Services |
| | 624230 | Emergency and Other Relief Services |
| | 624310 | Vocational Rehabilitation Services |
| | 624410 | Child Day Care Services |
| | 624221 | Temporary Shelters |
| | 813110 | Religious Organizations |
| Essential Retail | 444130 | Hardware Stores |

| | | |
|---|---|---|
| | 446110 | Pharmacies and Drug Stores |
| | 452111 | Department Stores |
| | 452990 | All Other General Merchandise Stores |
| | 812111 | Barber Shops |
| | 812112 | Beauty Salons |
| | 812310 | Coin-Op Laundry |
| | 812320 | Dry Cleaning and Laundry Service |
| Financial/Retail | 522110 | Commercial Banking |
| | 522120 | Savings Institutions |
| | 522130 | Credit Unions |
| Food | 445110 | Supermarkets and Other Grocery (except convenience) Stores |

For the purpose of the analysis, the existing places which currently provide/serve daily needs are being used to determine access to places. This approach is being taken because Metro's land use forecast model, Metroscope, currently does not project the locations of these types of businesses (i.e. food, commercial, retail, civic, and health-related services). In assessing the access to existing places which provide/serve daily needs, the rational is that greater access to existing places will further increase as new places to provide daily need services open as a result of population and employment growth.



Travel Time Windows by Mode:

- Automobile – 30 minutes*
- Transit – 30 minutes*
- Bicycle – 15 minutes
- Walk – 20 minutes

*Includes access and egress times.

Travel Time Assumptions:
Travel time windows by mode were developed by gathering information from the Oregon Household Activity Survey (OHAS) and gathering research from around the country on travel time by different modes for different types of trips. Additionally, internal Metro staff consultation was conducted.

Transit Service Networks Used:[2]

- Peak – Transit service running from 6am – 9am & 3pm – 6pm
- Off-Peak – Transit service running at any other time

[2] Metro is currently transitioning how it will be developing its transit service networks in the demand model to better reflect transit service within the model. This transition is looking at service typology. If this method is used for the system evaluation, information will be updated in the assumptions and available to the work group.

Evaluation Measure Title: **Access to Jobs**

Purpose: To identify whether the package of future transportation investments will increase the ability of region's residents to get to low and middle-wage jobs and to look at the difference in job accessibility between historically underrepresented communities and the region.

**RTP Goals**

| | | | |
|---|---|---|---|
| ● | Foster vibrant communities and compact urban form | ● | Promote environmental stewardship |
| ● | Sustain economic competitiveness and prosperity | ● | Enhance human health |
| ● | Expand transportation choices | | Demonstrate leadership at reducing greenhouse gas emissions |
| | Effective and efficient management of system | ● | Ensure equity |
| | Enhance safety and security | | Ensure fiscal stewardship |
| ● | Deliver accountability | | |

**Function of Evaluation Measure**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ● | System Evaluation | | Project Evaluation | | System Monitoring | | Performance Target |

Associated RTP Performance Measure: None to date

Methodology Description:
The **Access to Jobs** performance measure looks to assess the following questions for the region's transportation system:

3) How many low and middle-wage jobs can be reached in a given time window by different travel modes?
4) What are differences in low and middle-wage job access for the region and specifically for historically underrepresented communities?
5) Is the difference in low and middle-wage job access between automobile and transit? Is there a difference which extends beyond a reasonable threshold and creating a "transit access disadvantage" to low and middle-wage jobs in certain areas? If so, do those "transit access disadvantage" areas overlap with historically underrepresented communities?

The **Access to Jobs** performance measure is calculated by using forecasted data from Metroscope to identify the low-wage and middle-wage jobs (defined in assumptions) throughout the region. The analysis will first determine the number of low and middle-wage jobs reached using existing transportation system and looking at the differences in low and middle-wage jobs accessed by travel mode (automobile, transit, bicycle, and walking) in a given travel time window the entire region and for historically underrepresented communities to determine base year conditions. The next step is to conduct the same assessment, but use the proposed package of transportation investments in the long-range regional transportation plan as the input to determine the future year accessibility to forecasted low and middle-wage jobs by mode for the entire region and historically underrepresented communities. Look at the change in the accessibility to these low and middle-wage jobs between the base year and future year, with an emphasis on the change in historically underrepresented communities with added transportation investments.

Furthermore, the number of low and middle-wage jobs accessible by transit and by automobile will be compared and will determine a ratio. A threshold will be applied to determine whether there is a transit access disadvantage to low and middle-wage jobs. (meaning there is significantly less access – from a proportional perspective – to jobs compared to automobile access)

Output Units: Number of low and middle-wage jobs accessed by mode (# - Auto; # - Transit; # - Bike; # - Walk)

Potential Output of Assessment:
Job Access – Low-Wage:

| | **Base Year** | | | | **Interim Year** | | | | **Future Year – Financially Constrained** | | | | **Future Year – Strategic** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | T | B | W | A | T | B | W | A | T | B | W | A | T | B | W |
| Region-wide | | | | | | | | | | | | | | | | |
| Historically Underrepresented Communities | | | | | | | | | | | | | | | | |

Job Access – Middle-Wage:

| | **Base Year** | | | | **Interim Year** | | | | **Future Year – Financially Constrained** | | | | **Future Year – Strategic** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | T | B | W | A | T | B | W | A | T | B | W | A | T | B | W |
| Region-wide | | | | | | | | | | | | | | | | |
| Historically Underrepresented Communities | | | | | | | | | | | | | | | | |

Job Access – Transit Access Disadvantage

| | **Base Year** | | **Interim Year** | | **Future Year – Financially Constrained** | | **Future Year – Strategic** | |
|---|---|---|---|---|---|---|---|---|
| | Jobs Inaccessible By Transit | | Jobs Inaccessible By Transit | | Jobs Inaccessible By Transit | | Jobs Inaccessible By Transit | |
| | LW | MW | LW | MW | LW | MW | LW | MW |
| Region-wide | | | | | | | | |
| Historically Underrepresented Communities | | | | | | | | |

<u>Key Assumptions to Method</u>:
Dataset Used:

| **Dataset** | **Type of Data** |
|---|---|
| Geospatial project information for proposed transportation projects | Observed |

| Employment/jobs outputs from Metroscope[3] | Forecasted |
|---|---|

Tools Used for Analysis: Metro's Travel Demand Model, Metro's Metroscope Model

Populations to Apply In this Measure:

- People of Color
- Persons with Limited English Proficiency
- Low-Income Households

Young people and older adults are not being proposed for assessment in this system evaluation as it considered that traveling to and from employment is less likely a priority.

Definition of Low-Wage Jobs:
Jobs which pay an annual salary between $0 - $39,999.[4]

Definitions of Middle-Wage Jobs:
Jobs which pay an annual salary between $40,000 – $65,000. [5]

Methods for Defining and Identifying Low and Middle-Wage Jobs:
The annual salary band was based on the average household size of three (3) and a combination of different income, program eligibility, and self-sufficiency definitions (HUD median income, UW self-sufficiency index, federal poverty level, and uniform relocation assistance and real property acquisition act) The definition of low and middle-wage jobs is not taking into consideration employer benefits provided as part of the identification of wages.



Distribution of Low and Middle-Wage Jobs Assumptions:
The distribution of low and middle-wage jobs is based on underlying U.S. Bureau of Labor Statistics data and assumptions regarding growth for the employment industries in MetroScope. (See MetroScope documentation regarding employment industry forecast assumptions.) The low and middle-wage band will not change according to inflation. Low and middle-wage jobs were determined by the wage profile of each MetroScope industry, looking at the percentage of jobs, which paid within the annual salary range. This range was applied to the employment forecast for the future year to determine the distribution.

Definition of Transit Access Disadvantage: TBD

Travel Time Windows by Mode:

- Automobile – 30 minutes*
- Transit – 45 minutes*
- Bicycle – 30 minutes
- Walk – 20 minutes

*Includes access and egress times.

[3] Forecasted estimates are based on MetroScope assumptions on employment industries and based off U.S. Bureau of Labor Statistics data. Documentation can be found at: http://www.oregonmetro.gov/forecasting-models-and-model-documentation

[4] Wages are set as static for the purposes of the analysis and are not indexed to inflation. Therefore, the wage bands for low-wage and middle wage will not adjust between the based-year and future year.

[5] See Footnote 4.

Travel Time Assumptions:
Travel time windows by mode were developed by gathering information from the Oregon Household Activity Survey (OHAS) and gathering research from around the country on travel time by different modes for different types of trips. Additionally, internal Metro staff consultation was conducted.

Transit Service Networks Used:[6]

- Peak – Transit service running from 6am – 9am & 3pm – 6pm
- Off-Peak – Transit service running at any other time



[6] Metro is currently transitioning how it will be developing its transit service networks in the demand model to better reflect transit service within the model. This transition is looking at service typology. If this method is used for the system evaluation, information will be updated in the assumptions and available to the work group.

Evaluation Measure Title: **Access to Places – System Completeness**[7]

Purpose: To identify whether the package of future transportation investments will increase accessibility, through the development of transportation infrastructure and system completeness of the active transportation network, for the region's residents and to look at the difference in access between historically underrepresented communities and the region.

**RTP Goals**

| | | | |
|---|---|---|---|
| ● | Foster vibrant communities and compact urban form | ● | Promote environmental stewardship |
| | Sustain economic competitiveness and prosperity | ● | Enhance human health |
| ● | Expand transportation choices | ● | Demonstrate leadership at reducing greenhouse gas emissions |
| | Effective and efficient management of system | ● | Ensure equity |
| | Enhance safety and security | | Ensure fiscal stewardship |
| ● | Deliver accountability | | |

**Function of Evaluation Measure**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ● | System Evaluation | | Project Evaluation | | System Monitoring | ● | Performance Target |

Associated RTP Performance Measure: RTP Performance Target – Basic Infrastructure: Increase by 50% the miles of sidewalk, bikeways, and trails compared to the regional network in 2010; RTP System Evaluation – Miles of sidewalk, bikeways, and trails

Methodology Description:
The **Access to Places – System Completeness** performance measure looks to assess the following questions for the region's transportation system:

1) How much more of active transportation network being proposed in the region? Is the system being further completed?
2) What are differences in the proposed package of active transportation investments for the region and for historically underrepresented communities? Is there a difference in system completeness of the active transportation network being proposed for these communities?
3) Are the proposed timing of these active transportation infrastructure investments being proposed in the early or later years of the plan? Is the proposed implementation schedule prioritizing investments in historically underrepresented communities earlier in the plan rather than later?

The method for calculating the **Access to Places – System Completeness** performance measure will entail a geospatial analysis the region's proposed active transportation investments. The proposed active transportation investments will be compared to the regional active transportation

[7] Currently this system evaluation measure is being written towards the existing RTP performance target and system evaluation measure which focuses on active transportation projects and would not include any form of roadway connectivity projects. The question as to whether to focus this measure on full system completeness is for consideration by the work group.

network. The percentage of active transportation investments proposed in historically underrepresented communities and compared to the percentage of active transportation projects proposed region-wide and compared to the regional networks established in 2014 Active Transportation Plan (ATP) to determine level of system completeness.

Furthermore, the **Access to Places – System Completeness** performance measure will look at the proposed timing of active transportation investments and calculate the percentage of active transportation investments proposed for the first ten-years of the RTP (from 2017-2027) for the region and within historically underrepresented communities. Then the measure will look at the percentage of proposed active transportation investments for the latter years (2028 – 2040) for the region and historically underrepresented communities. This will help to determine whether there is an imbalance in the timing and locations of the active transportation investments and getting to system completeness.

Output Units: Percentage (%) of active transportation miles completed (pedestrian, bikeways, and trails) region-wide and in historically underrepresented communities

Potential Output of Assessment:

| | **Base Year** | | | **Interim Year** | | | **Future Year – Financially Constrained** | | | **Future Year – Strategic** | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | B | P | T | B | P | T | B | P | T | B | P | T |
| Region-wide | | | | | | | | | | | | |
| Historically Underrepresented Communities | | | | | | | | | | | | |

B – Bikeways; P – Pedestrian Pathways; T – Off-Street Trails



Key Assumptions to Method:
Dataset Used:

| **Dataset** | **Type of Data** |
|---|---|
| Geospatial project information for proposed transportation projects | Observed |
| Inventory geospatial information available for pedestrian crossings and ADA features[8] | Observed |
| Regional bikeways and pedestrian pathways (network) | Observed |

Tools Used for Analysis: ArcGIS

Definition of an Active Transportation Project:
TBD (Definition to include stand alone active transportation projects AND (potentially) transportation projects which do not increase automobile capacity.

[8] To the degree that data is available for jurisdictions, crossings and physical ADA features (e.g. curb ramps) will be included as part of the analysis. Not all jurisdictions have this information and data available.

Evaluation Measure Title: **Vehicle Miles Traveled – Transportation Emissions Exposure**

**TBD – METHOD UNDER DEVELOPMENT**

Evaluation Measure Title: **Combined Housing and Transportation Expenditure and Cost Burden**

**TBD – METHOD UNDER DEVELOPMENT**

# 2018 RTP Health Equity Analysis Methods Overview

In cooperation with Metro and other health departments in the region, Multnomah County Health Department will conduct a health equity analysis focused on *directional changes* associated with the 2018 Regional Transportation Plan (RTP).

## What is a directional change analysis?

There is not a formal definition of a directional change analysis, but it describes our methodological approach to assessing health and equity impacts from the RTP. For specific causal pathways, County staff will evaluate the published evidence and make findings regarding the likely direction (increase/decrease) of a change in health outcomes resulting from the RTP. For example, if published research supports an association between asthma and traffic pollution, and emissions are expected to decrease as a result of the RTP investment strategy, the analysis could conclude that asthma is likely to decrease as well, all else held constant.

The analysis will specifically examine the distribution of changes across the population, paying special attention to vulnerable groups such as people of color, low income households, people with disabilities, youth, and older adults. Historically, we have observed disparities in exposures and health outcomes related to transportation. In part, this analysis will serve as a tool to scrutinize how equitable the benefits and burdens of the transportation system are distributed.

## What is not included?

A directional change analysis can be contrasted with a modeling study that might estimate the *magnitude* of change. Using the asthma example above, such a study might quantify the likely decrease in asthma in terms of the number of hospitalizations reduced. Although this analysis will rely on quantitative published literature, it is a qualitative assessment. What is currently being proposed for the 2018 RTP Transportation Equity Analysis does not include quantitative modeling.

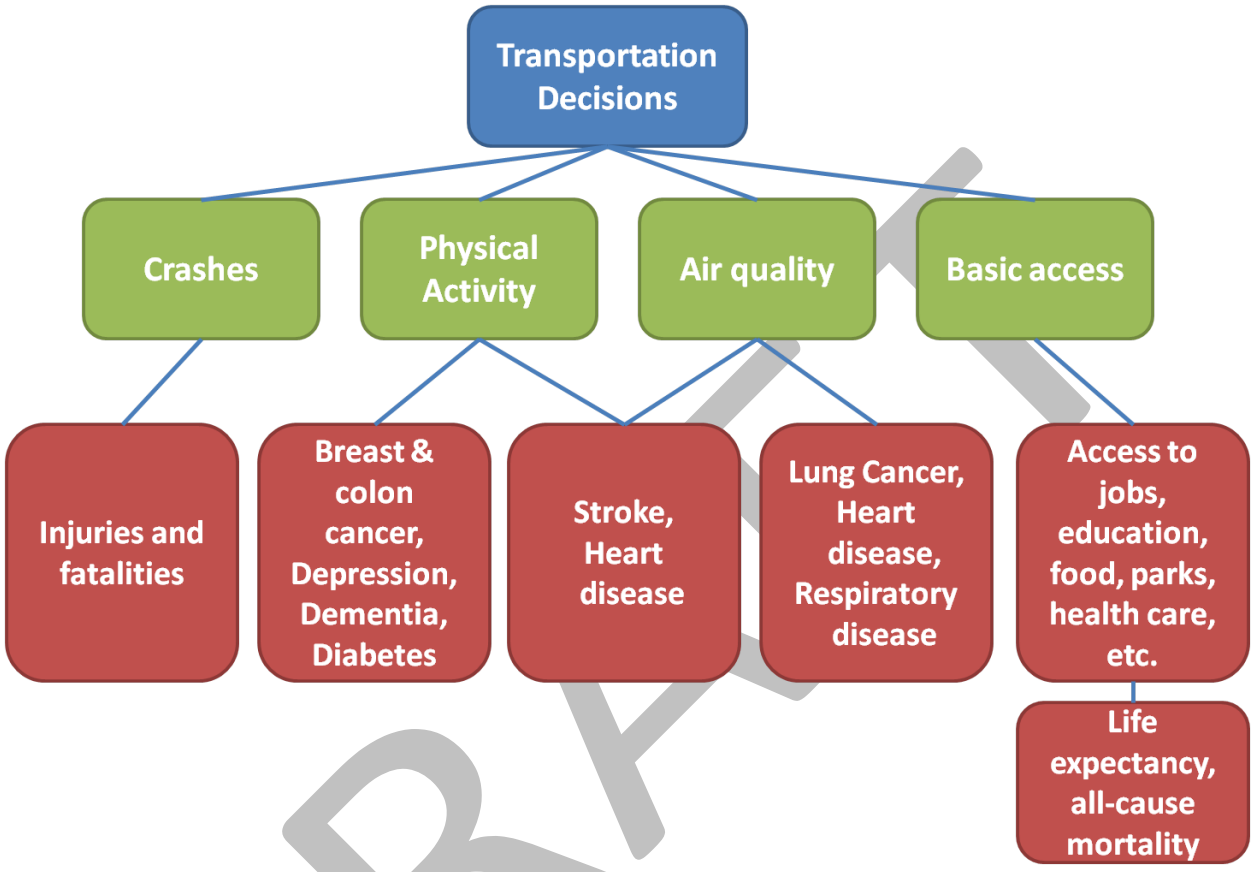
## Method

**Establish causal pathways**

The first step in this process is articulating the relevant causal pathways that translate a change proposed in the RTP (e.g. traffic pollutants) to a health outcome (e.g. asthma). County staff anticipate accomplishing this using expert opinion and published research literature. Pathways are likely to include air quality, injury, physical activity, and access to basic services. These pathways influence a number of

health outcomes, as illustrated in the figure below. For example, changes in physical activity affect rates of depression and diabetes, and changes in air quality influence respiratory disease.

Figure 1. Causal Pathways Diagram[1]




**Review evidence**

Once causal pathways are established, County staff will review evidence supporting the linkages and make a finding as to the strength of evidence and the strength of association. For example, County staff will review the research linking traffic pollutants to heart attacks. Where transportation projects are expected to impact pollutants, County staff will draw conclusions about the likely impact on heart attacks. Borrowing from Health Impact Assessment methods, County staff will characterize the strength of evidence through clear criteria, such as those described in table 1 below.

**Table 1. Strength of evidence framework**

| Strength of evidence | Study design | Sources |
|---|---|---|
| Emerging | Case studies, public health principles and theory | Citable expert opinions, case studies, gray literature, or conference |

[1] Note: not all of the measures identified in the causal pathways will be assessed through the 2018 RTP Transportation Equity Analysis. Those which are being assessed through the Transportation Equity Analysis or the over 2018 RTP system evaluation will help to inform the causal pathways analysis work to help provide a health outcomes perspective to the results of the work.

| | | |
|---|---|---|
| | | proceedings |
| Moderate | Some observational studies or few experimental studies, mostly consistent results or modest effect sizes | Five or more peer-reviewed studies with consistent findings |
| Strong | Many observational studies or some experimental studies, consistent results or large effect sizes | About five empirical studies or literature reviews |
| Very Strong | Many observational or experimental studies, consistent results and large effect sizes | About 10 empirical studies or meta-analyses of high-integrity experimental design |

The evidence review will conclude by stating the likelihood of an association between changes resulting from the RTP and changes to health determinants or outcomes. Table 2 provides a framework for understanding associations between

**Table 2. Example findings from a directional change analysis**

| Pathway | Directional change | Strength of association | Strength of evidence | Populations of concern |
|---|---|---|---|---|
| Traffic-air toxics-respiratory illness | Decrease | Strong | Very strong | Low income |
| Sidewalks-physical activity-cardiovascular disease | Increase | Moderate | Strong | Youth |

# Memo

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

Date: November 17, 2016

To: Transportation Equity Working Group and interested parties

From: Grace Cho, Associate Transportation Planner

Subject: Transportation Equity System Evaluation Measures – Refinements, Updates, and Beta Testing

**Purpose**
Provide an update on the development of the transportation equity system evaluation measures and related methodologies for assessing the 2018 Regional Transportation Plan (RTP) investment strategy and the 2018-2021 Metropolitan Transportation Improvement Program (MTIP).

**Action requested**
Metro staff requests work group support on the following:
1) concluding further formal work group discussions of the transportation equity system evaluation measures until Beta testing is complete;
2) support for staff to move forward with finalizing the updated transportation equity system evaluation measures; and
3) support for staff to begin beta testing through Spring 2017 and bring back lessons learned to the work group.

**2018 RTP project evaluation update**

Since summer 2016, Metro staff has been researching whether to pursue and how to conduct a supplemental project-level evaluation. A recommendation is anticipated in early 2017.

Regardless of the outcome of the discussion, the work group can recommend conducting project evaluation for the next scheduled RTP update.

**Background**
The Transportation Equity work group is one of eight (8) work groups providing input and technical feedback to Metro staff to help shape the 2018 RTP. Since the kickoff of the 2018 RTP update at the end of 2015, each work group has been providing staff recommendations and guidance on the update of the 2018 RTP system evaluation measures. The 2018 RTP system evaluation is intended to measure the performance of a proposed system of investments for the transportation system. The results of the system evaluation are to provide information to decision-makers and inform subsequent policies and actions.

For the Transportation Equity work group, the central charge has been to develop evaluation measures which: 1) reflect the desires of historically underrepresented communities for the transportation system; and 2) determine methods for evaluating near and long-term transportation

investments which address those desires and looks at differences among the region and historically underrepresented communities.

**Transportation Equity System Evaluation Measures: Recap and Updates**

At the September 29th work group meeting, the Transportation Equity work group recommended that Metro staff continue defining the evaluation measures for the system evaluation measures focused around the themes of Accessibility, Affordability, Transportation Safety, and Environmental Health. The work group provided recommendations on areas within certain system evaluation measures in which staff sought input. Additionally, the work group provided input on certain key assumption areas for the transportation equity analysis. **Attachment A** outlines how that feedback has been incorporated into the measures or updates.

**2018 RTP Transportation Equity System Evaluation Measures**

**Access**
- Access to Travel Options – System Completeness
- Access to Places
- Access to Jobs and Transit Access Disadvantage

**Affordability**
- Combined Housing and Transportation Expenditure and Cost Burden

**Transportation Safety**
- Transportation Safety Infrastructure Investments
- Non-Freeway Vehicle Miles Traveled Exposure

**Environmental Health**
- Vehicle Miles Traveled Emissions Exposure

Additionally, since the September 29th Transportation Equity work group meeting, the Performance Measures, Transportation Safety, and Regional Transit Strategy work groups have all discussed the system evaluation measures for the 2018 RTP. Feedback from the different work groups, in addition to the refinements from the Transportation Equity work group, led to several refinements and recommendations to certain 2018 RTP system evaluation measures. These were presented to the Transportation Policy Alternatives Committee (TPAC) and Metro Technical Advisory Committee (MTAC) at their October and November meetings. The feedback provided for the 2018 RTP system evaluation measures have been incorporated into **Attachment B**, which illustrates the combination of the different comments and refinements from the different work groups as well as TPAC and MTAC. To date, not all the comments and refinements have been addressed for the system evaluation measures as Metro staff continues to conduct research into the refinements.

For the system evaluations measures most applicable to the transportation equity analysis work, the relevant recommended refinements are identified in Table 1. The Transportation Equity work group members are being asked to provide input and/or general support to the relevant recommendation refinements. **Attachment C** is an updated compilation of transportation equity system evaluation methodology profiles for each system evaluation measure. The methodology profiles reflect several of the recommended refinements from the different work groups and prioritize the refinements from the Transportation Equity work group. Some refinements are not reflected as staff continues working to determine if the proposed refinement is possible.

*Table 1. Recommended Refinements to Transportation Equity System Evaluation Measures by Other Work Groups, TPAC, and MTAC*

| System Evaluation Measure | Recommended Refinement | Recommendation By: |
|---|---|---|
| **Access to Jobs and Transit Access Disadvantage** | Determine the threshold for "transit access disadvantage" after conducting a baseline analysis of low and middle-wage jobs accessible by transit versus automobile. | Performance Measures work group; Regional Transit Strategy; TPAC; Metro staff |
| | Include a secondary assessment of access to all jobs and/or include high wage jobs as part of this analysis to gather a more comprehensive perspective. | |
| **Access to Places** | Include medical facilities as part of the "daily needs" which will be part of the evaluation. | Performance Measures work group; Regional Transit Strategy; TPAC |
| | Align the work to other efforts done through the region to look at accessing different destinations. | |
| **Access Travel Options** | Refine the methodology for this measure to include and evaluate comprehensiveness of active transportation system completeness (for example, infill of gaps, but also marked crossings, curb ramps, sidewalk conditions) and system connectivity (for example, route directness). | Performance Measures work group; TPAC; Metro staff |
| | Broaden this measure to include local street connectivity. | |
| | Repackage all the accessibility measures into a suite looking at physical, operational, and temporal facets of accessibility. | |
| | Incorporate the Regional Transit Strategy's Access to Transit measure into this newly defined measure. Apply a transit lens of looking at active transportation system completeness and connectivity within a ½-mile walk and 1-mile bike shed of transit stops. | |
| **Transportation Safety Infrastructure Investments** | Removed high injury corridor and "safe routes to school" from the definition of a safety project. Therefore, all safety projects, regardless of which facility they may be on, are evaluated. | Transportation Safety work group; Performance measures work group; Metro staff. |
| | Evaluation measure will assess both the percent of number and cost of transportation safety projects in the 2018 RTP investment program. | |
| | Assess separately the projects on high injury corridors projects and safe routes to schools projects as an additional analysis of the investments. | |
| **Non-Freeway Vehicle Miles Traveled Exposure** | Rename the measure to more accurately reflect which parts of the roadway system are not included as part of this system evaluation. | Transportation Safety work group; Performance Measures work |

| System Evaluation Measure | Recommended Refinement | Recommendation By: |
|---|---|---|
| | Reconsider what may be the best "denominator" in normalizing and reporting the VMT exposure level. A per person measure may not be appropriate. | group; Metro staff. |
| | Recommend moving forward in using this system evaluation measure, but be clear this measure is an interim measure until a more comprehensive safety and crash predictive model is developed. Recognize the measure is not comprehensive in all the factors which affect crashes, but can help identify areas for future transportation safety considerations. | |
| **Resource Habitats** | Provide greater clarification on what areas were defined as resource habitats and the rationale provided for identifying areas within the region as resource habitats. | Performance Measures work group; TPAC; MTAC; Metro staff |
| | Use this measure to identify and note individual projects having potential environmental impact concerns. This is in recognition the project development, design and construction will be a greater indicator of the environmental impacts and the necessary mitigation. | |
| | Recognize in the documentation of this system measure that many transportation projects may implement mitigation strategies which improve habitat. | |
| | Recognize in the documentation of this system evaluation measure the transportation's impact on habitat is very complex and varies depending on many design decisions and factors. | |

**Follow Up on Transportation Equity System Evaluation Measures Under Development**
At the September 29th meeting, Metro staff identified two (2) recommended measures, which continue to have major underlying methods questions that still to be determined. Since the meeting, Metro staff has continued to working with partners to make progress on the development of these two system evaluation measures.

Table 2 provides the details of the measure, the original issue, and status updates.

*Table 2. Transportation Equity System Measures Where Methods Remain to Be Defined*

| System Measure | Issue Preventing a Method to Date | Status Updates |
|---|---|---|
| Combined Housing and Transportation Expenditure and Cost Burden | Upon further coordination with Metro's Research Center, this measure would require additional model update activities not currently scoped or resourced in the RTP work plan. The system evaluation measure continues to remain as a recommended system evaluation measure for the Transportation Equity Analysis, but information regarding the methodology for the measure is currently unavailable as staff continues to scope the details of updating the Combined Housing and Transportation Expenditure model. | Metro staff is having discussions with senior leadership in seeking out resources to update the Combined Housing and Transportation Expenditure model developed in 2009. A decision on resources is expected by the end of 2016.<br><br>An alternative for this measure has not been identified if resources are not available. Metro staff would recommend this measure be a monitoring measure for the 2018 RTP.<br><br>The work group may recommend for resources to be put forward to this measure in the future.<br><br>In parallel, Metro staff is working with modeling staff to scope the components of the model update, to be prepared if resources become available. |
| Vehicle Miles Traveled Emissions Exposure | Metro staff has recommended a set of refinements to the RTP system measure for clean air. The recommended refinements are in need of further technical consultation with air quality partners at DEQ as well as with public health partners. At this time, the initial method appears feasible and would complement the planned system-wide air quality analysis; however, certain key details with technical staff are necessary to confirm. | Metro staff is currently in discussions with DEQ staff for assistance in developing a simplified methodology for conducting a sub-regional vehicle emissions analysis based on vehicle miles traveled (VMT) and transportation analysis zones. An approach has been proposed, but further assistance is needed from DEQ to define the methodology. |

**Transportation Equity System Evaluation Measures Summary and Refinement Opportunities**
In summary, the updated 2018 RTP Transportation Equity system evaluation measures reflect the input and recommendations of multiple work groups to Metro staff as well as the consultation and expertise of different data analysis specialists from Metro and other partner agencies (e.g. Portland State University, TriMet , etc.). In developing and crafting the system evaluation measures, those identified as part of the transportation equity analysis were not refined in ways which would diverge from the original intent of reflecting the desires of historically underrepresented communities for the transportation system and a means of differentiating between different communities. (For example, the transportation equity measures were not refined to be more "all-

inclusive.") The transportation equity measures will look to report both a region-wide metrics and metric for historically underrepresented communities.

Work groups will have the opportunity to make further refinements to the system evaluation measures in Spring 2017, if necessary. Staff recommends concluding refinements to the system evaluation measures in early 2017 in order to begin preparing a baseline analysis and begin beta testing the system evaluation measures on a smaller set of projects prior to the opening of the 2018 RTP project solicitation and subsequent system analysis in Spring-summer 2017. This opportunity will provide insight as to what can be learned from these measures, particularly those which are new to the 2018 RTP. What may be learned is that some of these measures may not provide meaningful information or may need additional refinements. Staff will bring forward a set of recommendations after the baseline analysis and beta testing is completed.

**Timeline for Finalizing Transportation Equity System Evaluation Measures**
The 2018 RTP project solicitation process is expected to begin in late winter/early spring of 2017. (See Table 3 for a more detailed timeline.) Prior to then, all system evaluation measures for the 2018 RTP must be in a final draft stage by mid-January 2017. This is to allow Metro staff the ability to receive committee approval to move forward with the evaluation on the long-range transportation investment strategy that will be developed as part of the 2018 RTP call-for-projects. Having the system evaluation measure in final draft phase will provide the necessary information and signal the region's priority outcomes for the investment program. Local jurisdictions will be expected to respond by submitting projects for the 2018 RTP investment package which move the transportation system towards achieving the region's priority outcomes while also balancing local priorities.

*Table 3. Timeline: 2018 RTP System Evaluation Measures Development Completion*

| Activity | Timeframe |
|---|---|
| Work groups continue to refine the 2018 RTP system evaluation measures, particularly those measures with significant refinements | November 2016 – mid-January 2017 |
| 2018 RTP system evaluation measures are set in final draft form for TPAC and MTAC discussion<br>• System evaluation enters into beta testing phase (with 2018-2021 MTIP) and baseline results development | Mid-January 2017 |
| Presentation to TPAC and recommendation to JPACT on the approach for building the 2018 RTP Investment Strategy (aka call-for-projects) and subsequent system evaluation | March 2017 |
| Presentation to MTAC and recommendation to MPAC on the approach for building the 2018 RTP Investment Strategy (aka call-for-projects) and subsequent system evaluation | March 2017 |
| Presentation to MPAC and recommendation to the Metro Council on the approach for building the 2018 RTP Investment Strategy (aka call-for-projects) and subsequent system evaluation | April 2017 |
| Presentation to JPACT and recommendation to the Metro Council on the approach for building the 2018 RTP Investment Strategy (aka call-for-projects) and subsequent system evaluation | April 2017 |

**Discussion Questions**
Based on the work to-date in defining the methods for each individual system measure for the transportation equity analysis, Metro staff seeks input from the work group members on the following questions:

1. Are the recommended methods to the individual transportation equity system evaluation measures headed in the desired direction of the work group?

2. Do work group members feel the community identified priorities continue to be reflected in the system evaluation measures?

3. Are there additional methodological concerns for the system evaluation measures which need to be addressed that have not been identified or reflected? Does the work group have any proposed refinements?

4. Does the work group feel comfortable with staff recommending the closing the discussion of the transportation equity system evaluation measures at the November work group meeting so staff may move forward with methodology development and refinements?

   If so, Metro staff will present a combined defined set of system evaluation measures in January 2017 to TPAC and MTAC for discussion. TPAC and MTAC will be asked to make a recommendation at their respective March meetings as part of their recommendations on the approach for building the 2018 RTP Investment Strategy and subsequent system evaluation.

5. Does the work group feel comfortable with allowing staff to move forward into baseline analysis and beta testing, without having the full methodology for all the transportation equity system evaluation measures developed?

**Next Steps**
The 2018 RTP system evaluation measures must be set and defined by January 2017 to allow Metro staff to enter into a beta testing phase to determine whether the system evaluation measures, especially those which are newly recommended, will be able to work. Prior to the January 2017, Metro staff will continue to refine and finalize the methodology for the measures to be used in the transportation equity analysis conducted for the 2018 RTP and 2018-2021 MTIP. This work will include:

1. Determining the status and methodology for the Combined Housing and Transportation Expenditure and the Vehicle Miles Traveled Emissions Exposure system evaluation measure.

2. Resolving, defining, and documenting the methodology for each transportation equity system evaluation measure proposed as final draft for baseline analysis work and beta testing.

3. Continuing to communicate to the transportation equity work group status updates and the final draft system evaluation measures for the 2018 RTP and the transportation equity analysis.

4. Briefing TPAC and MTAC on the status of this work in January 2017.

5. Requesting a recommendation from TPAC and MTAC in March 2017 as part of their recommendation respective recommendations to JPACT and MPAC on building the RTP investment strategy.

**Attachment A – Transportation Equity System Evaluation Measures – Summary of Input from September 29th and Staff Responses**

*Summary of Metro Staff Responses to Input on the Overall Assumptions for Conducting the Transportation Equity System Evaluation*

| Transportation Equity System Evaluation Assumption | Summary of Feedback Provided for Measure Method | Refinements and Changes as a Result of Feedback |
|---|---|---|
| Definition and Geographic Threshold for Low-Income Community | The definition of low-income, not considering household size may have been capturing many households which represent more middle-class homes. Additionally there was interest in looking at different geographic thresholds or validating the geographic thresholds for low-income communities because the dataset the definition is based is census survey data, which has numerous issues | After further discussions with work group members most interested in revisiting the definition of low-income, Metro staff has proposed using 200% of the federal poverty level (2016), adjusted for size of household as the definition. While there is significant recognition of the drawbacks of using federal poverty level as an income metric, the dataset is accessible for both baseline and future year scenario assessments. |
| Secondary Screening Assessment | There was work group interest in exploring a more focused look at certain historically underrepresented communities in the transportation equity analysis. | A secondary assessment screening is being proposed to take a more focused look at how the 2018 RTP investment program will help achieve the priority outcomes identified by historically underrepresented communities in areas with high concentrations of these communities. |
| Geographic Thresholds for Historically Underrepresented Communities | General interest for looking at how population density may be able to inform the geographic thresholds for identifying the census tracts with concentrated populations of historically underrepresented communities. | Population density is being proposed as part of the geographic threshold in identifying the census tracts with concentrated populations of historically underrepresented communities for the secondary screening assessment. |

*Summary Table of Metro Staff Responses to Input on the 2018 RTP Transportation Equity System Evaluation Measures*

| Transportation Equity System Evaluation Measure | Summary of Feedback Provided for Measure Method | Refinements and Changes as a Result of Feedback |
|---|---|---|
| **Access to Places** | Adjust the automobile travel time shed to be more in line with the ratio/split between the automobile and transit travel | The automobile travel time shed has been adjusted and shortened to 20 minutes to align with the 2:3 ratio seen in the Access to Jobs measure. |

| | | |
|---|---|---|
| | times in the Access to Jobs measure. For the Access to Jobs measure, the ratio is 2:3, automobile to transit travel time. | |
| | Include medical facilities to the list of "daily needs." | Non-ambulatory medical facilities have been added as part of the list of "daily needs" to be counted as part of the evaluation. |
| **Access to Jobs** | Conduct some sensitivity testing to determine an appropriate threshold for determining areas which are "transit access disadvantaged" to low and middle-wage jobs. The<br><br>If testing does not result in a clear threshold break point, then consider 50% of low and middle-wage jobs which cannot be accessed by transit as the threshold for determining "transit access disadvantage." | Metro staff will use the baseline and beta testing period in early 2017 to look at potential "transit access disadvantage" thresholds to recommend a threshold for identifying areas which are "transit access disadvantaged" in getting to low and middle-wage jobs. This additional geographic lens will then look at the overlap with historically underrepresented communities. |
| **Access to Travel Options** | Consider this measure more broadly to include local street connectivity. | Metro staff is continuing to look into the potential of the Access to Travel Options to be expanded beyond the active transportation network. |
| | Include all active transportation projects proposed for the 2018 RTP, regardless of whether the project is on the regional active transportation network. | All active transportation projects proposed for the 2018 RTP investment program will be included in the analysis of this measure, regardless of whether the investment is located on the regional active transportation network. |
| **Resource Habitats** | Refine measure to focus in on roadway projects which may have significant impacts to identified resource habitats. | The measure will focus in on projects which the primary purpose is roadway capacity. |

**Attachment 1.** Summary of Recommended changes to RTP System Evaluation Measures. November 4, 2016 (*Reflects input from 10/28/16 TPAC and 11/2/16 MTAC discussions)*

| ID# | System Evaluation Measure | Staff Recommendation | Rationale / Notes | Work Group(s) Recommendation | TPAC & MTAC comments |
|---|---|---|---|---|---|
| **How much do people and goods travel in our region?** | | | | | |
| **1.** | **Multimodal Travel**<br>A) Vehicle Miles Traveled (VMT) *(total, per capita, and per employee)*<br>B) Bicycle miles traveled *(total and per capita)*<br>C) Freight miles traveled<br>D) Pedestrian miles traveled *(total and per capita)*<br>E) Person miles traveled per VMT | **Refine and rename**<br>~~Vehicle travel and Bicycle travel~~ Multimodal travel<br>Previously Metro reported vehicle miles traveled and bicycle miles traveled *(both total and per capita)*. Staff now recommends reporting auto, bike, pedestrian and freight, as well as auto vmt per employee and person miles traveled per VMT. | This measure provides information on the amount of travel in the region. VMT per employee may better factor in fluctuation in VMT due to economic swings. | Performance work group supports the staff recommendation and reporting by # of miles and % of overall miles traveled by sub-region (urban Washington Co, urban Clackamas County, Portland, East Multnomah County) to better show variations across the region. | TPAC - "Travel Characteristics" is too ambiguous of a theme name. Try phrasing themes as questions, e.g. initial staff response for this theme: *"How much and by what methods are we traveling?"* |
| **2.** | **Active transportation and transit mode share**<br>System-wide (total and share) for:<br>A) walking<br>B) bicycling<br>C) transit<br><br>Non-SOV travel (total and share) for:<br>A) Central City<br>B) Regional Centers<br>C) Mobility corridors<br>D) Sub-regions. | **Refine and rename:**<br>"Active transportation and transit mode share " | Narrow this measure to evaluate mode share for the Central City and Regional Centers (as well as region-wide and by mobility corridor) as done in past RTP updates. This formally acknowledges that Metro cannot accurately measure mode share at geographies as small as town centers, industrial and employment areas. Chapter 2 of the RTP (p.2-22) and table 2.5 will need to be updated to reflect this recommended change. These refinements are consistent with the state's Transportation Planning Rule (TPR) - the original impetus for creating these targets. Regional-level mode share targets will be addressed in 2017 as part of the broader RTP target-setting discussions. | Performance and transit work groups support the staff recommendation and requested the analysis be reported by sub-region (urban Washington Co, urban Clackamas County, Portland, East Multnomah County) to better show variations across the region. | |
| **How much do households spend on housing and transportation in our region?** | | | | | |
| **3.** | **Affordability***<br>Combined cost of housing and transportation | **Refine** methodology. | Staff will continue to develop a methodology. This measure is a major priority of the equity work group. The methodology will identify cost burdened households in the region. | The Equity work group supports the staff recommendation with the recognition that there are a number of methodological components that need further work in order to be useful.<br><br>Transit Work Group has expressed concerns that current tools and methods won't capture the transit cost component very well. | TPAC - A challenge with this measure is that current H+T tools are better at monitoring what's happening currently rather than projecting into the future (which is needed for a system evaluation measure). |
| **How safe is travel in our region?** | | | | | |
| n/a | **Fatal & severe crashes**<br>Fatal & severe crashes for pedestrian, bicyclists, motorists | **Move** to RTP monitoring measures. | This measure cannot be used as a system evaluation measure due to the inability of the regional travel model to directly predict crashes. | The Performance and Safety workgroups support the staff recommendation. | MTAC - Look for opportunity to take into account seismic resiliency in evaluation.<br>*Staff response: Yes.* |
| **4.** | **Share of Safety projects**<br>Percent of number and cost of | **Add** as new measure. | Safety is a key concern of the RTP and has not been part of past system evaluations. This measure will assess whether safety investments are being made disproportionately. Safety | The Safety, Equity and Performance work groups support the staff recommendation. | TPAC - Safety is a difficult issue for Washington County. Its arterials have access |

| ID# | System Evaluation Measure | Staff Recommendation | Rationale / Notes | Work Group(s) Recommendation | TPAC & MTAC comments |
|---|---|---|---|---|---|
| | safety projects in the RTP investment packages regionwide and in areas with historically underrepresented communities. | | projects are defined as: "Infrastructure projects with the primary intent to address a safety issue, and allocate a majority of the project cost to a documented safety countermeasure(s) to address a specific documented risk, or improve safety for vulnerable users, including people walking and bicycling, older adults and youth." In response to feedback from the performance and safety work groups, references to high-injury corridors and safe routes to school projects were removed from an earlier draft safety project definition. | | management, so they don't have as many high-injury crash locations as other parts of the region. |
| **5.** | **Exposure to crash risk*** 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. | **Add** as new measure. | Safety is a key concern of the RTP and has not been part of past system evaluations. This is an interim measure until a safety and crash predictive model is developed involving other factors. Measuring transportation safety is a priority topic area for historically underrepresented communities and there is some interest in looking at forecastable indicators to flag potential transportation safety issues. Staff has found a statistical correlation between VMT and crashes. Staff will further test the measure to determine if using per capita is the right approach and refine which limited-access facilities are excluded from the analysis. | The Safety, Equity and Performance work groups support the general approach of the staff recommendation. Additionally, the Performance work group provided general support to continue to explore this measure and use It for an initial assessment, and asked staff to use "non-throughway" or "non-freeway" instead of "non-interstate" to ensure that limited access facilities such as US 26 and OR 217 are accounted for. The safety work group recommends further testing the measure, including whether s per capita is the right approach. | TPAC – Crash risk is more of an output measure than an outcome measure. |
| **How easily, comfortably and directly can we access jobs and destinations in our region?** | | | | | |
| **6.** | **Access to Travel Options – system connectivity *** Sub measure: Access to transit *(percent of bike or pedestrian network gaps completed within ½-mile of transit)* | **Refine, continue to develop methodology and rename** - "~~Basic Infrastucture~~ Access to Travel Options – system connectivity." | A methodology to measure street connectivity will need to be developed to implement this recommendation. Developing this measure will have resource impacts for both Metro and local governments. This measure replaces the basic infrastructure measure that was composed of total mileage of (regional networks) of sidewalk, bikeways and trails. The access to transit submeasure supports the transit supportive elements part of the regional transit vision. | The Equity work group's preliminary recommendation is to expand this measure to add street connectivity to sidewalks, bikeways and trails with an emphasis on looking at the timing of basic infrastructure investments in historically underrepresented communities. The Performance work group recommends packaging all of the "access" measures as a suite, being sure to address completeness, route directness/connectivity, origins & destinations. | |
| **7.** | **Access to Jobs*** Number of jobs *(classified by wage groups – low, middle, and high) accessible within* *A) 30 minutes by auto* *B) 45 minutes by transit* *C) 30 minutes by bike* *D) 20 minutes by walking.* | **Add** as a new measure. | Access to jobs is a significant transportation priority identified by historically underrepresented communities. The Access to jobs and access to daily needs measures have been recognized by work groups and staff as extremely important. Metro Planning and Research Center staff will work to further develop these accessibility-related measures. | Equity, Transit and Performance work groups support the staff recommendation. | TPAC – Noted the importance of high wage jobs (accessed via US 26). Asked if the data set will capture the low wage jobs at Intel's Ronler Acres campus? *Staff response: Yes.* |
| **8.** | **Access to Community Places*** *1) Measure access by bicycling, walking, transit, driving* | **Refine and rename** - "~~Access to Daily Needs~~ Access to Community Places." | Metro staff recommends this measure replace the Access to Daily needs measure that was composed of**:** Number of essential destinations accessible within 30 minutes by bicycling & public transit for low-income, minority, senior and disabled populations. The Access to Jobs and Access to Daily Needs measures have been recognized by workgroups and staff as | Equity, Transit and Performance work groups support the staff recommendation. | |

| ID# | System Evaluation Measure | Staff Recommendation | Rationale / Notes | Work Group(s) Recommendation | TPAC & MTAC comments |
|---|---|---|---|---|---|
| | *2) Adjust the time sheds for each mode*<br>*3) Define existing "daily needs" consistent with other similar efforts, including the TriMet Equity Index.* | | extremely important. Metro Planning and Research Center staff will work to further develop these accessibility-related measures. | | |
| **9.** | **Access to Bicycle and Pedestrian Parkways**<br>Number and percent of households within ½ mile of a bicycle or pedestrian parkway. | **Refine and rename –**<br>"Access to ~~Trails~~ Bicycle and Pedestrian Parkways | This change would better reflect access to the major regional off-street and on-street bicycling and walking routes throughout the region. | The Performance work group supports the staff recommendation. | |
| **10.** | **Access to Transit**<br>Number and share of households, low-income households and employment within ¼- mile of high capacity transit or frequent service transit | **Add** as a new measure. | This measure was recommended through the Climate Smart Strategy and by the Transit Work Group. This measure provides information on how much of the region's households and jobs are served by transit. | The Transit work group supports the staff recommendation. The Performance work group noted that this measure will eventually be replaced by the access measures. | |
| **11.** | **Access to Industry and Freight Intermodal Facilities** | **Under development.** | ***Under development by RTP Freight workgroup.*** The performance work group noted that the freight travel time measure within #12 "Multimodal travel times" may address this, making this measure unnecessary. | **TBD** | |
| **How efficient is travel in our region?** | | | | | |
| **12.** | **Multi-modal Travel Times**<br>Between key origin-destinations for mid-day and 2-hr PM peak | **Refine and rename – "Multimodal travel times"** | Metro staff recommends renaming and refining this measure to evaluate bicycling and freight travel times in addition to auto and transit for each regional mobility corridor. *Note: the regional travel model is not currently able to forecast walking travel times.* Metro staff will bring back a list/map of proposed origins/destination that match up with each mobility corridor. It is possible that some important Origin/Destination pairs for biking, freight or transit don't match up within the mobility corridors. | The Performance and Transit work groups support the staff recommendation. | |
| **13.** | **Congestion**<br>A) Vehicle hours of delay per person<br>B) Interim Regional Mobility Policy - Locations of throughways, arterials, and regional freight network facilities that that exceed LOS threshold<br>C) Freight Truck delay<br>D) Total cost of delay on freight network | **Under development.** | Metro staff will develop options for discussion by TPAC and the performance work group this winter. Discussions are underway with ODOT regarding updates to regional and state congestion measures and the Interim Regional Mobility Policy. Developing a recommendation for this measure is especially challenging since the new federal regulations relating to congestion measurement are not yet finalized.<br><br>The Freight work group recommends evaluating delay per truck trip exclusively on regional freight network rather than entire roadway system. Also, the measure should be called "Freight truck delay" rather than the current misnomer, "freight reliability", since it does not measure reliability. A freight reliability measure for current conditions will be developed as part of RTP Monitoring Measures discussions in 2017. | **TBD** | TPAC – Continuing to measure delay *per capita* is very important to factor all people into the measure, including those that walk, bike, drive, take transit or telecommute. |

| ID# | System Evaluation Measure | Staff Recommendation | Rationale / Notes | Work Group(s) Recommendation | TPAC & MTAC comments |
|---|---|---|---|---|---|
| **14.** | **Transit efficiency**<br>A) Boarding rides per revenue hour for HCT & bus<br>B) Revenue hours by transit mode<br>C) Transit ridership system-wide by each transit service type | **No change to measure but rename** Transit Efficiency ~~Productivity~~. | The measure provides information on the productivity and efficiency of transit service provided. Revenue hours was recommended through Climate Smart Strategy and by the Transit Work Group and provides information on the amount of transit service provided. | The Transit work group supports collapsing transit productivity and revenue hours into one measure as recommended by staff. | |
| **How will transportation impact our air quality and the environment?** | | | | | |
| **15.** | **Climate Change**<br>Tons of transportation-related greenhouse gas emissions (total and per capita) | **No change.** | The region is required to measure greenhouse gas emissions to help demonstrate whether the RTP is meeting state-required per capita greenhouse gas emissions reductions. During 2017 target setting discussion, ensure that the new target is consistent with statewide target and Climate Smart Strategy. | The Performance work group supports the staff recommendation. | |
| **16.** | **Clean air**<br>Tons of transportation related air pollutants (e.g. CO, ozone, PM-10) | **Refine** air pollutants reported. | Metro staff recommends this measure be refined. This is an important measure for evaluating transportation impact on air quality and human health. Pollutants reported may change pending further consultation with DEQ. | The Performance work group supports the staff recommendation. The work group member requested staff to provide mapping at the sub-regional level if possible since the Tualatin Valley has unique air quality compared to the east side of the region. | |
| **17.** | **Habitat impact***<br>Number and percent of projects that intersect high value habitat | **Refine methodology.** | The Equity work group recommends assessing whether there are disparities between historically underrepresented communities and transportation projects that may impact habitat conservation/ preservation, primarily focusing the assessment on roadway projects. | The Equity and Performance work groups support the staff recommendation. The Performance work group recommends adding contextual language to describe the purpose of this measure, better define high value habitat, and note that it is tied to federal requirements to consult with resource agencies as part of an RTP update. The Performance work group also supports continuing to use this measure to identify projects in the RTP for informational purposes for the public and project sponsors. | TPAC – Remember that many transportation projects improve habitat.<br><br>MTAC – transportation project impact on habitat is very complex and varies depending on many factors – width of asphalt, retaining walls, wildlife crossing treatments, volume of auto traffic, etc. |

** 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.*

**Attachment C – Transportation Equity Analysis System Evaluation Measures – Methodology Profiles and Key Assumptions – Updated – 11.10.16**

2018 RTP System Evaluation – Analysis Geographies

| Geography | Definition |
|---|---|
| Regionwide | Metropolitan Planning Area (MPA)* – the federally recognized boundary in which The boundary the metropolitan transportation planning (i.e. RTP) process must be carried out. |
| Subregional Geographies | Commonly referred to as the coordinating committees, organized by geography and decision-making:<br>• Clackamas County<br>• City of Portland<br>• East Multnomah County<br>• Washington County – Urban<br>• Washington County – Rural |
| Mobility Corridors | Travel corridors which generally align with a major roadway or transit facility and are anchored by regional destinations, and/or identified growth centers. |
| Growth Centers | A population and employment typology which identifies ten different urban design types which are intended to accommodate a certain mix of population, employment, and densities. The descriptions of the types are described in the 2040 growth concept. |
| Transportation Analysis Zones (TAZ) | An analysis geography used within Metro's travel demand model. The TAZ is roughly the same size geography as census block group, but not exactly the same as the TAZs look to include roadway networks inside the geography instead of using roadways as a boundary. |

**Unless otherwise noted in the system evaluation.*

**Definition of Historically Underrepresented Communities & Geography**

| Community | Definition | Geography Threshold* | Date Source |
|---|---|---|---|
| People of Color | Persons who identify as non-white. | Census tracts above the regional rate (26.5%) for people of color. | 2010 Decennial Census |
| Low-Income | Households with incomes equal to or less than 200% of the Federal Poverty Level (2016); adjusted for household size | Census tracts above the regional rate (31.8%) for Household with Lower-Income | American Community Survey, 2009-2013 |
| Limited English Proficiency | Persons who identify as unable "to speak English very well." | Census tracts above the regional rate (8.5%) for Limited English Proficiency AND those census tracts which were identified as | |

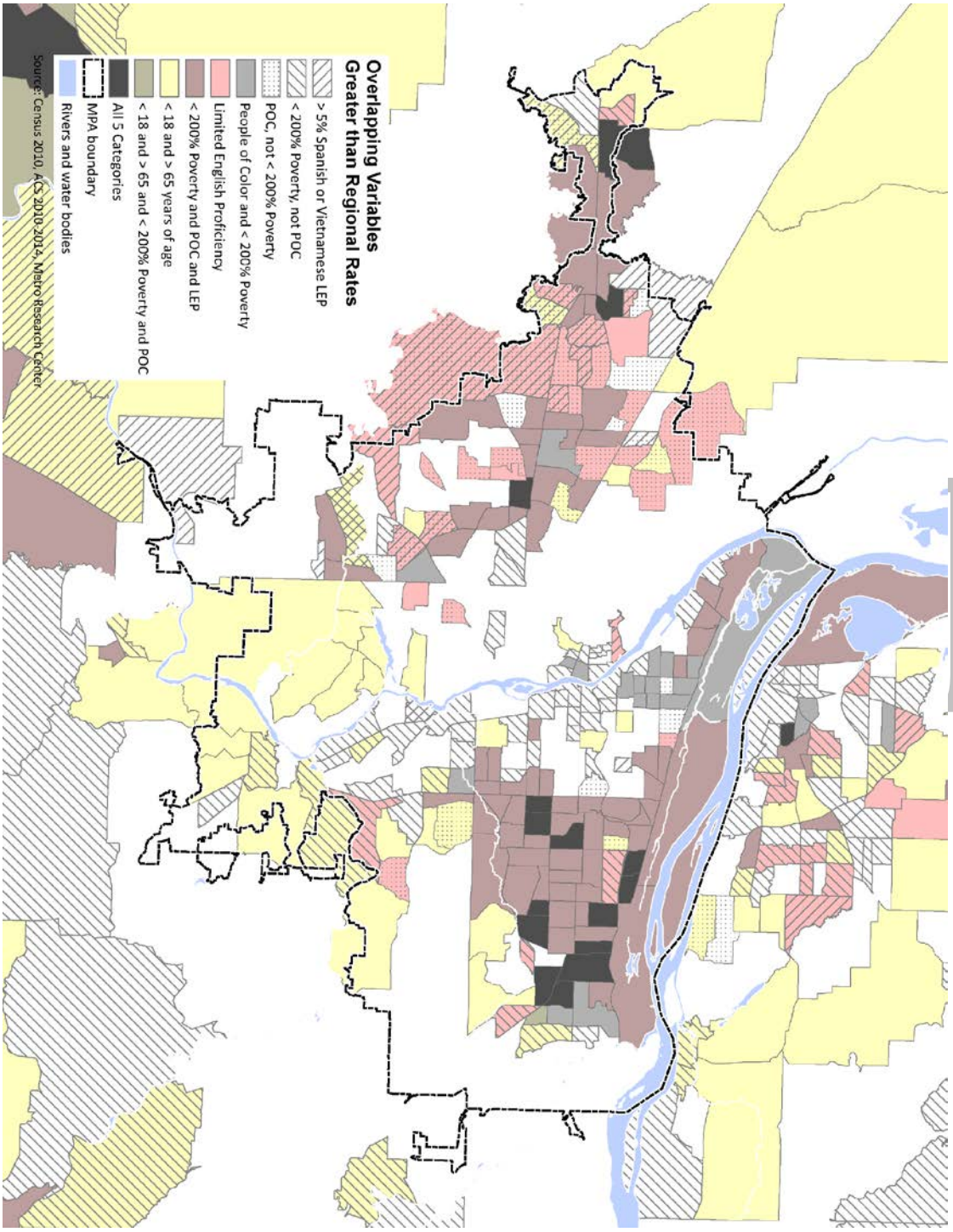
| | | | |
|---|---|---|---|
| | | "safe harbor" tracts for individual language isolation.[1] | |
| Older Adults | Persons 65 years of age and older | Census tracts above the regional rate for Older Adults (11%) AND Young People (22.8%) | 2010 Decennial Census |
| Young People | Persons 17 years of age and younger | | |

*See attached map of historically underrepresented communities.

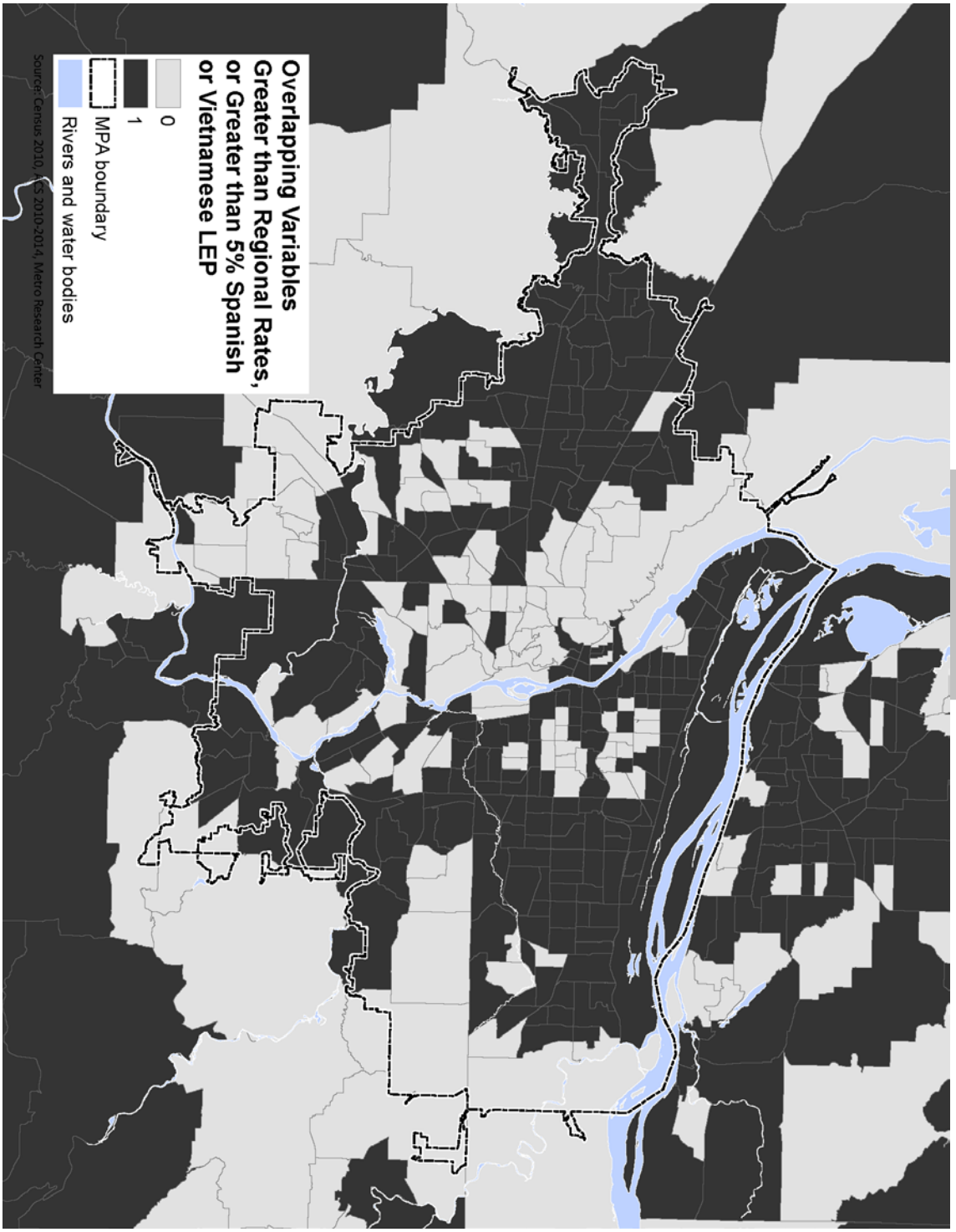


[1] Safe Harbor is a provision within Title VI of the Civil Rights Act of 1964 which addresses for when and how agencies are to provide language assistance to limited English proficiency persons to ensure access to all public resources. The safe harbor provision mainly addresses translation of documents and language assistance, however for analysis purposes, it may help to identify areas where additional attention is warranted because of a concentration of language isolation. Safe harbor applies when a language isolated group constitutes 5% or 1,000 persons of the total population.

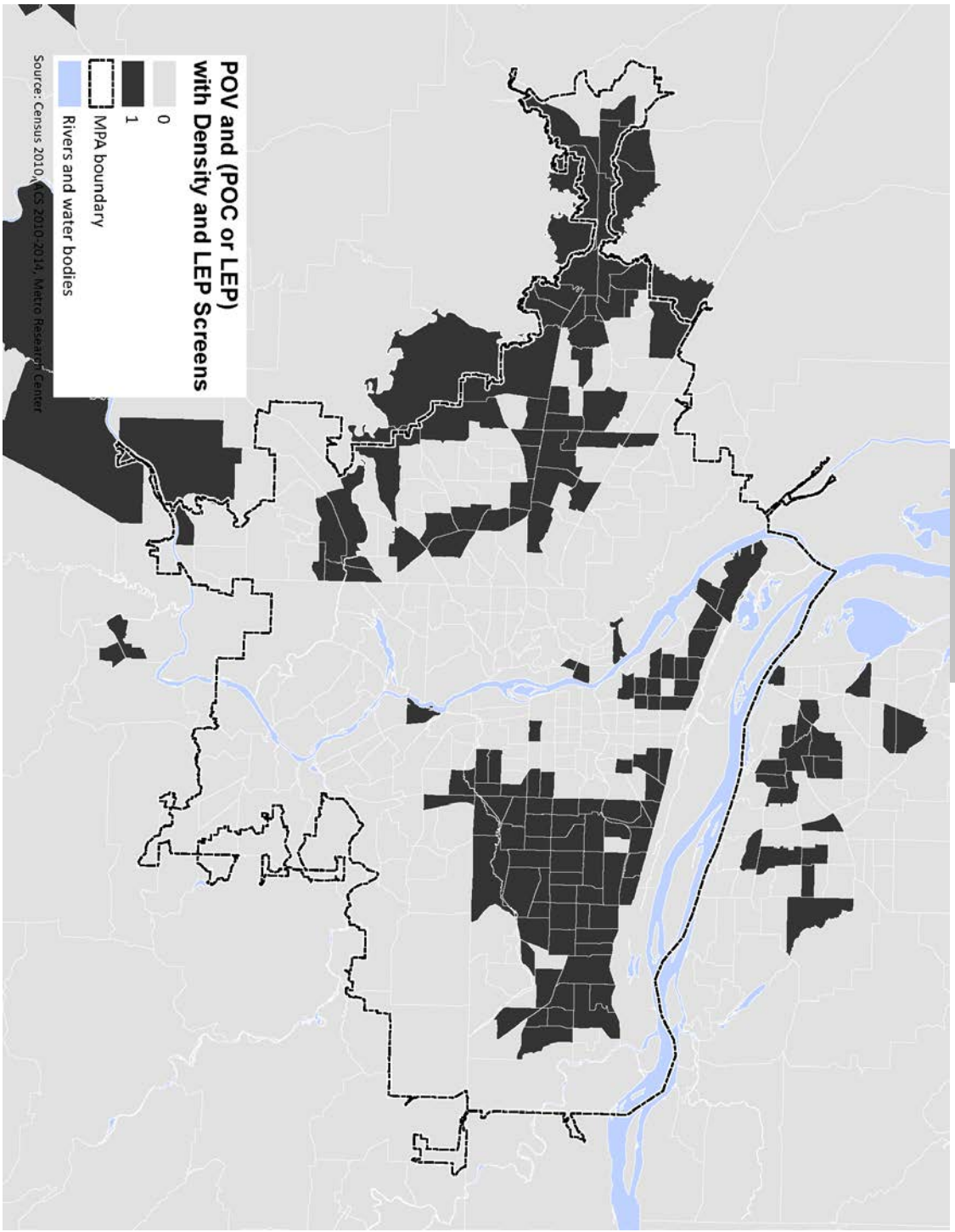
**Historically Underrepresented Communities – Census Tracts Above the Regional Rate and Limited English Proficiency Safe Harbor Tracts**



**Historically Underrepresented Communities – Binary Map (YES/NO) for Transportation Equity Analysis Purpose**



**Focused Historically Underrepresented Communities – Binary Map (YES/NO) – People of Color, Limited English Proficiency Populations, and People with Lower-Incomes with Population Density**



**Analysis Years Assumptions and Inputs**

| Analysis Year | Transportation Inputs | Land use Inputs |
|---|---|---|
| Base Year (2015) | All transportation projects completed by 2015 | Adopted growth distribution (2016) from MetroScope[2][3] |
| Interim Year (2027) | Proposed transportation projects to be completed by 2027 (financially constrained only) | |
| Future Year (2040) | All proposed transportation to be completed by 2040 (financially constrained and strategic project lists) | |

**Forecasted Methods Approach for Historically Underrepresented Communities**

| Community | Base Year | Interim Year | Horizon Year |
|---|---|---|---|
| People of Color | Identifying the correlating transportation analysis zones (TAZ) to census tracts which have greater than the regional rate of people of color. | | Will not produce results for the horizon year. |
| Low-Income | Identifying the correlating transportation analysis zones (TAZ) to census tracts which have greater than the regional rate for lower-income households. | Forecasted spatial distribution of households with incomes under 200% of the Federal Poverty Level (2016). | |
| Limited English Proficiency | Identifying the correlating transportation analysis zones (TAZ) to census tracts which have greater than the regional rate of limited English proficiency. | | Will not produce results for the horizon year. |
| Older Adults | Identifying the correlating transportation analysis zones (TAZ) to census tracts which have greater than the regional rate for older adults. | Forecasted spatial distribution of households with older adults. | |
| Young People | Identifying the correlating transportation analysis zones (TAZ) to census tracts which have greater than the regional rate for young people. | Forecasted spatial distribution of households with older adults. | |

**Secondary/Focused Screening Analysis**

[2] Metro Ordinance No. 16-1371. More information regarding the 2016 land use forecast can be found at: oregonmetro.gov

[3] Metroscope geographically allocates population and employment projections in five year increments. Therefore, the nearest land use forecast input to be used for the interim analysis year analysis will be 2025. This is out of respect for the decision that certain historically underrepresented communities are not being forecasted and spatially distributed and therefore assumed static for the interim analysis.

By request of the work group, the transportation equity analysis will conduct a secondary assessment of the full suite of measures, but primarily focus on a subset of historically underrepresented communities. The subset is defined as:

*Secondary/Focused Assessment – Subset of Historically Underrepresented Communities for Focus*

| Historically Underrepresented Community | Geographic Threshold |
|---|---|
| People of Color | The census tracts which are above the regional rate for people of color AND the census tract has twice (2x) the population density of the regional average (.48 person per acre). |
| Low-Income | The census tracts which are above the regional rate for low-income households AND the census tract has twice (2x) the population density of the regional average (.58 person per acre). |
| Limited English Proficiency | The census tracts which are above the regional rate for low-income households AND those census tracts which have been identified as "safe harbor" tracts for language isolation AND the census tract has twice (2x) the population density of the regional average (.15 person per acre). |



This secondary assessment is to help take a more focused look at the transportation investments being made in areas in which there are highly concentrated populations of the communities required for evaluation by federal law. Ultimately, the secondary assessment will be able to address how well the 2018 RTP investments are performing and moving towards the priority outcomes identified by historically underrepresented communities in areas with the greatest concentration.

Evaluation Measure Title: **Access to Places**

**Purpose and Goals**

Overall Purpose: To identify whether the package of future transportation investments will increase the ability of region's residents to get to existing places that provide/serve daily or weekly needs.

Transportation Equity Purpose: Furthermore, to look at how the region's future transportation investments increase access to existing places that provide/serve daily or weekly needs, but with a particular emphasis in areas where there are high concentrations of historically underrepresented communities and the region.

Questions to Be Addressed:

The **Access to Places** performance measure looks to assess the following questions for the region's transportation system:

1) What are the number of existing daily needs (i.e. places which provide services or items) that can be reached on the existing transportation system by travel mode (e.g. drive, transit, bike, and walk) in a given travel time?
2) How does accessibility, measured by the number of existing daily needs reached, change (across travel modes) with the proposed set of transportation investments?



More specifically from a transportation equity perspective, the **Access to Places** performance measures looks to further assess the additional question:

1) What are the differences between the number of daily needs accessible by historically underrepresented communities and the entire region? Are there large differences seen between travel modes?
2) Are there significant differences (or lack of differences) seen between historically underrepresented communities and the region once the proposed transportation investments are added?

**2014 RTP Goals**

| | | | |
|---|---|---|---|
| ● | Foster vibrant communities and compact urban form | ● | Promote environmental stewardship |
| ● | Sustain economic competitiveness and prosperity | ● | Enhance human health |
| ● | Expand transportation choices | | Demonstrate leadership at reducing greenhouse gas emissions |
| | Effective and efficient management of system | ● | Ensure equity |
| | Enhance safety and security | | Ensure fiscal stewardship |
| ● | Deliver accountability | | |

**Function of Evaluation Measure**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ● | System Evaluation | | Project Evaluation | | System Monitoring | ● | Performance Target |

Associated 2014 RTP Performance Measure: RTP Target – By 2040, increase by 50% the number of essential destinations accessible within 30 minutes by bicycling & public transit for low-income, minority, senior and disabled populations compared to 2005

Methodology Description:
The **Access to Daily Needs** performance measure is calculated by using existing data from the U.S. Bureau of Labor Statistics to identify the existing places which provide key services and/or daily needs (defined in assumptions) for people in the region. The analysis will determine the number of places reached using existing transportation system and looking at the differences in places accessed by travel mode (automobile, transit, bicycle, and walking) in a given travel time window for the entire region and for areas with a high concentration of historically underrepresented communities to determine base year conditions. The same assessment will be conducted, but use the proposed package of transportation investments in the long-range regional transportation plan as the input to determine the future year accessibility to places by mode for the entire region and in areas with high concentrations of historically underrepresented communities. Lastly, the measure will look at the change in the accessibility to these existing places between the base year and future year with added transportation investments, with an emphasis in looking at the change in historically underrepresented communities.

Output Units: Number of places accessed by mode (# - Auto; # - Transit; # - Bike; # - Walk)

Potential Output of Assessment:

| | **Base Year** | | | | **Interim Year** | | | | **Future Year – Financially Constrained** | | | | **Future Year – Strategic** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | T | B | W | A | T | B | W | A | T | B | W | A | T | B | W |
| Region-wide | | | | | | | | | | | | | | | | |
| Historically Underrepresented Communities | | | | | | | | | | | | | | | | |
| Focused Historically Underrepresented Communities | | | | | | | | | | | | | | | | |

A – Automobile; T – Transit; B – Bicycle; W - Walk

Key Assumptions to Method:
Dataset Used:

| **Dataset** | **Type of Data** |
|---|---|
| Geospatial project information for proposed transportation projects | Observed |
| U.S. Bureau of Labor Statistics – Quarterly Census of Employment and Wages (TBD – 2013, 2014, or 2015, dependent on data availability and data cleanup effort) | Observed |

Tools Used for Analysis: Metro Travel Demand Model and ArcGIS

Definitions of Places:

Select North American Industry Classification System (NAICS) codes. Codes include those used as part of TriMet's Transit Equity Index with select additions based on consultation with 2018 RTP work groups, TPAC, and Metro Planning and Development Department and Diversity, Equity, and Inclusion staff.

| Category | NAICS | Description |
|---|---|---|
| Civic/Health | 491110 | Postal Service |
| | 519120 | Libraries and Archives |
| | 611110 | Elementary and Secondary Schools |
| | 611210 | Junior/Community Colleges |
| | 611310 | Colleges, Universities, and Professional Schools |
| | 624110 | Child and Youth Services |
| | 624120 | Services for the Elderly and Persons with Disabilities |
| | 624190 | Other Individual and Family Services |
| | 624210 | Community Food Services |
| | 624229 | Other Community Housing Services |
| | 624230 | Emergency and Other Relief Services |
| | 624310 | Vocational Rehabilitation Services |
| | 624410 | Child Day Care Services |
| | 624221 | Temporary Shelters |
| | 813110 | Religious Organizations |
| Essential Retail | 444130 | Hardware Stores |
| | 446110 | Pharmacies and Drug Stores |
| | 452111 | Department Stores |
| | 452990 | All Other General Merchandise Stores |
| | 812111 | Barber Shops |
| | 812112 | Beauty Salons |
| | 812310 | Coin-Op Laundry |
| | 812320 | Dry Cleaning and Laundry Service |
| Financial/Retail | 522110 | Commercial Banking |
| | 522120 | Savings Institutions |
| | 522130 | Credit Unions |
| Food | 445110 | Supermarkets and Other Grocery (except convenience) Stores |
| Medical | 621111 | Offices of Physicians (except Mental Health Specialists) |
| | 621112 | Office of Physicians, Mental Health Specialists |
| | 621210 | Offices of Dentists |
| | 621310 | Offices of Chiropractors |
| | 621320 | Offices of Optometrists |
| | 621330 | Offices of Mental Health Practitioners (except Physicians) |
| | 621340 | Offices of Physical, Occupational, and Speech Therapists and Audiologists |
| | 621391 | Offices of Podiatrists |
| | 621399 | Offices of All Other Miscellaneous Health Practitioners |
| | 621410 | Family Planning Centers |
| | 621420 | Outpatient Mental Health and Substance Abuse Centers |
| | 621491 | HMO Medical Centers |
| | 621492 | Kidney Dialysis Centers |
| | 621498 | All Other Outpatient Care Centers |
| | 621512 | Diagnostic Imaging Centers |
| | 622110 | General Medical and Surgical Hospitals |
| | 622210 | Psychiatric and Substance Abuse Hospitals |
| | 622310 | Specialty (except Psychiatric and Substance Abuse) Hospitals |

For the purpose of the analysis, the existing places which currently provide/serve daily needs are being used to determine access to places in both the base year conditions and the future year. This approach is being taken because Metro's land use forecast model, Metroscope, currently does not project the locations of these types of businesses (i.e. food, commercial, retail, civic, and health-related services). In assessing the access to existing places which provide/serve daily needs, the rational is that greater access to existing places will further increase as new places to provide services open as a result of population and employment growth.

Travel Time Windows by Mode[4]:

- Automobile – 20 minutes*
- Transit – 30 minutes*
- Bicycle – 15 minutes
- Walk – 20 minutes

*Includes access and egress times.

Travel Time Assumptions:
Travel time windows by mode were developed with information from the Oregon Household Activity Survey (OHAS) and research from around the country on travel time by different modes for different types of trips. Additionally, work groups provided input and suggested manual adjustments to travel time windows as reflected in the final.



Transit Service Networks Used:[5]

- Peak – Transit service running from 6am – 9am & 3pm – 6pm
- Off-Peak – Transit service running at any other time

[4] The travel time windows represents the average number of places which can be reached within a +/- 5 minutes of the stated travel time window. For example, for automobile, the number of daily needs accessed will be an average of places reached between 15 minutes – 25 minutes. This is to address in the travel demand model the potential for a "cliff effect" when a hard cut off time is used and a destination may not be reached because the travel time to reach the destination in the travel model is one (1) second beyond the cut off time.

[5] Metro is currently transitioning how it will be developing its transit service networks in the travel demand model to better reflect transit service within the model. This transition is looking at a transit service typology. If this method is used for the system evaluation, information will be updated in the assumptions and available to the work group.

Evaluation Measure Title: **Access to Jobs**

**Purpose and Goals**

Overall Purpose: To identify whether the package of future transportation investments will increase the ability of region's residents to get to jobs in the region.

Transportation Equity Purpose: Furthermore, to look at how the region's future transportation investments increase access jobs, but more specifically to low and middle-wage jobs, particularly for those areas where there are high concentrations of historically underrepresented communities and the region.

The **Access to Jobs** performance measure looks to assess the following questions for the region's transportation system:

1) How many jobs can be reached in a given time window by different travel modes?
2) How many more jobs can be reached with the future package of transportation investments? Is the increase in jobs accessible in proportion or providing greater access to jobs in light of anticipated future employment and population growth?
3) Are different transportation modes outpacing its ability to get the region's residents to jobs?

More specifically, from the transportation equity perspective, the **Access to Jobs** performance measure looks to assess the following questions:

1) How many low and middle-wage jobs can be reached in a given time window by different travel modes?
2) What are differences in low and middle-wage job access for the region and specifically for historically underrepresented communities?
3) Is the difference in low and middle-wage job access between automobile and transit? Is there a difference which extends beyond a reasonable threshold and creating a "transit access disadvantage" to low and middle-wage jobs in certain areas? If so, do those "transit access disadvantage" areas overlap with historically underrepresented communities?
4) Is the access to low and middle-wage jobs also in proportion or providing greater access to jobs in light of anticipated future population and employment growth?



**2014 RTP Goals**

| | | | |
|---|---|---|---|
| ● | Foster vibrant communities and compact urban form | ● | Promote environmental stewardship |
| ● | Sustain economic competitiveness and prosperity | ● | Enhance human health |
| ● | Expand transportation choices | | Demonstrate leadership at reducing greenhouse gas emissions |
| | Effective and efficient management of system | ● | Ensure equity |
| | Enhance safety and security | | Ensure fiscal stewardship |
| ● | Deliver accountability | | |

**Function of Evaluation Measure**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ● | System Evaluation | | Project Evaluation | | System Monitoring | | Performance Target |

Associated 2014 RTP Performance Measure: None to date

Methodology Description:

The **Access to Jobs** performance measure is calculated by using forecasted data from Metroscope to identify and geographically distribute jobs throughout the region, including categorized low-wage and middle-wage jobs (defined in assumptions). The analysis will determine the number of jobs, and additionally the low and middle-wage jobs, reached using the existing transportation system. The analysis will look at the differences in jobs, including low and middle-wage jobs, accessed by travel mode (automobile, transit, bicycle, and walking) in a given travel time window for the entire region and in areas with high concentrations of historically underrepresented communities to determine base year conditions. The next step is to conduct the same assessment, but use the proposed package of transportation investments in the long-range regional transportation plan as the input to determine the future year accessibility to forecasted jobs, including more focused look at low and middle-wage jobs, by mode for the entire region and in areas with high concentrations of historically underrepresented communities. Lastly, the measure will look at the change in the accessibility to jobs between the base year and future year with the added transportation investments, but with a particularly emphasis on the change in access to low and middle-wage jobs in areas with high concentrations of historically underrepresented communities. In considering transportation equity further, the **Access to Jobs** measure will also look at the number of low and middle-wage jobs accessible by transit and by automobile and compared the access. A threshold will be applied to determine whether there is a "transit access disadvantage" to low and middle-wage jobs. (Meaning there is significantly less access to low and middle-wage jobs by transit compared to automobile access.) These areas which are identified as "transit access disadvantaged" will be compared to areas where there are higher concentrations of historically underrepresented communities.



Output Units: Number of jobs, including low and middle-wage jobs accessed by mode (# - Auto; # - Transit; # - Bike; # - Walk)

Potential Output of Assessment: Number of jobs reached within different travel time sheds by different modes.

Job Access – All Jobs:

| | **Base Year** | | | | **Interim Year** | | | | **Future Year – Financially Constrained** | | | | **Future Year – Strategic** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | T | B | W | A | T | B | W | A | T | B | W | A | T | B | W |
| Region-wide | | | | | | | | | | | | | | | | |
| Historically Underrepresented Communities | | | | | | | | | | | | | | | | |

A – Automobile; T – Transit; B – Bicycle; W - Walk

Job Access – Low-Wage Jobs:

| | **Base Year** | **Interim Year** | **Future Year – Financially** | **Future Year – Strategic** |
|---|---|---|---|---|

| | | | | | | | | | Constrained | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | T | B | W | A | T | B | W | A | T | B | W | A | T | B | W |
| Region-wide | | | | | | | | | | | | | | | | |
| Historically Underrepresented Communities | | | | | | | | | | | | | | | | |
| Focused Historically Underrepresented Communities | | | | | | | | | | | | | | | | |

A – Automobile; T – Transit; B – Bicycle; W - Walk

Job Access – Middle-Wage Jobs:

| | **Base Year** | | | | **Interim Year** | | | | **Future Year – Financially Constrained** | | | | **Future Year – Strategic** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | T | B | W | A | T | B | W | A | T | B | W | A | T | B | W |
| Region-wide | | | | | | | | | | | | | | | | |
| Historically Underrepresented Communities | | | | | | | | | | | | | | | | |
| Focused Historically Underrepresented Communities | | | | | | | | | | | | | | | | |

A – Automobile; T – Transit; B – Bicycle; W - Walk



Job Access – Transit Access Disadvantage

| | **Base Year** | | **Interim Year** | | **Future Year – Financially Constrained** | | **Future Year – Strategic** | |
|---|---|---|---|---|---|---|---|---|
| | Jobs Inaccessible By Transit | | Jobs Inaccessible By Transit | | Jobs Inaccessible By Transit | | Jobs Inaccessible By Transit | |
| | LW | MW | LW | MW | LW | MW | LW | MW |
| Region-wide | | | | | | | | |
| Historically Underrepresented Communities | | | | | | | | |
| Focused Historically Underrepresented Communities | | | | | | | | |

LW – Lower-wage; MW – Middle-wage

Key Assumptions to Method:
Dataset Used:

| Dataset | Type of Data |
|---|---|
| Geospatial project information for proposed transportation projects | Observed |
| Employment/jobs outputs from Metroscope[6] | Forecasted |

Tools Used for Analysis: Metro's Travel Demand Model, Metro's Metroscope Model

Specifically for the transportation equity assessment, populations to apply in this measure include:

- People of Color
- Persons with Limited English Proficiency
- Low-Income Households

Young people and older adults are not being proposed for assessment in this system evaluation as it considered that traveling to and from employment is less likely a priority.

Definition of Low-Wage Jobs:
Jobs which pay an annual salary between $0 - $39,999.[7]

Definitions of Middle-Wage Jobs:
Jobs which pay an annual salary between $40,000 – $65,000. [8]

Methods for Defining and Identifying All Jobs:
The projections (total jobs) and geographic distribution of employment is based on underlying U.S. Bureau of Labor Statistics data and assumptions regarding growth for the employment industries in MetroScope. (See MetroScope documentation regarding employment forecast.)

Methods for Defining and Identifying Low and Middle-Wage Jobs:
The annual salary band was based on the average household size of three (3) and a combination of different income, program eligibility, and self-sufficiency definitions (HUD median income, UW self-sufficiency index, federal poverty level, and uniform relocation assistance and real property acquisition act) The definition of low and middle-wage jobs is not taking into consideration employer benefits provided as part of the identification of wages.

Distribution of Low and Middle-Wage Jobs Assumptions:
The distribution of low and middle-wage jobs is based on underlying U.S. Bureau of Labor Statistics data and assumptions regarding growth for the employment industries in MetroScope. (See MetroScope documentation regarding employment industry forecast assumptions.) The low and middle-wage band will not change according to inflation. Low and middle-wage jobs were determined by the wage profile of each MetroScope industry, looking at the percentage of jobs, which paid within the annual salary range. This range was applied to the employment forecast for the future year to determine the distribution.

[6] Forecasted estimates are based on MetroScope assumptions on employment industries and based off U.S. Bureau of Labor Statistics data. Documentation can be found at: http://www.oregonmetro.gov/forecasting-models-and-model-documentation

[7] Wages are set as static for the purposes of the analysis and are not indexed to inflation. Therefore, the wage bands for low-wage and middle wage will not adjust between the based-year and future year.

[8] See Footnote 4.

Definition of Transit Access Disadvantage: TBD through initial baseline and beta testing work to take place prior to the conducting the transportation equity system evaluation.

Travel Time Windows by Mode[9]:

- Automobile – 30 minutes*
- Transit – 45 minutes*
- Bicycle – 30 minutes
- Walk – 20 minutes

*Includes access and egress times.

Travel Time Assumptions:
Travel time windows by mode were developed with information from the Oregon Household Activity Survey (OHAS) and research from around the country on travel time by different modes for different types of trips. Additionally, internal Metro staff consultation was conducted and work groups were provided the opportunity to give input.

Transit Service Networks Used:[10]

- Peak – Transit service running from 6am – 9am & 3pm – 6pm
- Off-Peak – Transit service running at any other time



[9] The travel time windows represents the average number of places which can be reached within a +/- 5 minutes of the stated travel time window. For example, for automobile, the number of jobs accessed will be an average of places reached between 25 minutes – 35 minutes. This is to address in the travel demand model the potential for a "cliff effect" when a hard cut off time is used and a number of jobs may not be reached because the travel time to reach the jobs in the travel model is one (1) second beyond the cut off time.
[10] Metro is currently transitioning how it will be developing its transit service networks in the demand model to better reflect transit service within the model. This transition is looking at service typology. If this method is used for the system evaluation, information will be updated in the assumptions and available to the work group.

Evaluation Measure Title: **Access to Travel Options – System Connectivity and Completeness**
(Replacing the 2014RTP System Evaluation measure– Miles of sidewalk, bikeways, and trails)

**Purpose and Goals**
Overall Purpose: To identify how the package of future transportation investments will increase access to walking, bicycling and transit, through the development of sidewalks, bikeways, trails and new street connections.

Transportation Equity Purpose: To identify how the package of future transportation investments will increase access to walking, bicycling and transit through the development of sidewalks, bikeways, trails and new street connections in areas where there are high concentrations of historically underrepresented communities.

Questions to Be Addressed:
The **Access to Travel Options – System Completeness and Connectivity** performance measure will assess the following questions for the region's transportation system, region-wide and in areas with historically underrepresented communities:

1) How many more miles of the active transportation network are completed? How many miles are left to complete?
2) What percentage of bicycle and pedestrian gaps within ½ mile of transit stops and stations are completed?
3) Has connectivity of the walking, bicycling and roadway networks increased?
4) What time-frame are the infrastructure investments being proposed for, compared to other investments in the RTP?



More specifically, from the transportation equity perspective, the **Access to Travel Options – System Connectivity and Completeness** performance measure looks to assess the following questions:

1) How many more miles of the active transportation network are completed in areas with high concentrations of historically underrepresented communities? How many miles are left to complete?
2) What percentage of bicycle and pedestrian gaps within ½ mile of transit stops and stations are completed in areas with high concentrations of historically underrepresented communities?
3) Has connectivity of the walking, bicycling and roadway networks increased in areas with high concentrations of historically underrepresented communities?
4) What time-frame are the infrastructure investments being proposed for, compared to other investments in the RTP? Are active transportation and connectivity investments being prioritized in the near-term in areas where there are high concentrations of historically underrepresented communities?

**2014 RTP Goals**

| | | | |
|---|---|---|---|
| ● | Foster vibrant communities and compact urban form | ● | Promote environmental stewardship |
| | Sustain economic competitiveness and prosperity | ● | Enhance human health |

| | | | |
|---|---|---|---|
| ● | Expand transportation choices | ● | Demonstrate leadership at reducing greenhouse gas emissions |
| | Effective and efficient management of system | ● | Ensure equity |
| | Enhance safety and security | | Ensure fiscal stewardship |
| ● | Deliver accountability | | |

**Function of Evaluation Measure**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ● | System Evaluation | | Project Evaluation | | System Monitoring | ● | Performance Target |

Associated 2014 RTP Performance Target: Basic Infrastructure: Increase by 50% the miles of sidewalk, bikeways, and trails compared to the regional network in 2010 (This target may be updated in the 2018 RTP).

Methodology Description:

1) Sidewalk, bikeway, trail and street completeness: Using a geospatial analysis, calculate the miles of proposed sidewalk, bikeway, trails and new street connections. Calculate percent sidewalk, bikeway, trail and new street connections complete compared to the planned regional pedestrian, bicycle and roadway networks.

   Calculate the linear miles and percentage of sidewalks and bikeways completed within ½ mile of transit stops and stations.

   The percentage of the investments proposed in areas where there are high concentrations of historically underrepresented communities will be compared to the percentage of these investments proposed region-wide, normalized by number of people; system completeness will be measured by comparing the percent of new connections completed compared to the to the planned regional pedestrian, bicycle and roadway networks.

2) Network connectivity: Street connectivity is measured using a geospatial analysis to calculate the ratio of three-way or more intersections for the base year and future year investment packages, region-wide and in historically underrepresented communities. A higher number would indicate more intersections, and presumably, higher connectivity.

   Sidewalk connectivity is measured using a geospatial analysis to calculate the linear feet of sidewalks per TAZ (for density) and the number of three-way or more intersections with sidewalks per area of TAZ (in sq. feet)(for connectivity), for the base year and future year investment packages, region-wide and in historically underrepresented communities. In addition to street connectivity network, use geospatial analysis to calculate the number and percentage of pedestrian enhanced crossings (if data is available region-wide).

   Bikeway connectivity is measured using a geospatial analysis to calculate the linear feet of bikeways per TAZ (for density) and the number of three-way or more bikeway intersections per area of TAZ (in sq. feet)(for connectivity), for the base year and future year investment packages, region-wide and in historically underrepresented communities.

3) Timing of investments: Calculate the percentage of sidewalk, bikeway, trail and new street connections proposed for the first ten-years of the RTP (from 2017-2027) for the region and in areas with higher concentrations of historically underrepresented communities. Then the measure will look at the percentage of proposed active transportation investments for the latter years (2028 – 2040) for the region and in areas with higher concentrations of historically underrepresented communities. This will help to determine whether there is an imbalance in the timing and locations of these types of investments.

Output Units: Percentage (%) of bikeways, sidewalks, trails and new street connections region-wide and in areas with high concentrations of historically underrepresented communities

Potential Output of Assessment:

| | **Base Year** | | | | **Interim Year** | | | | **Future Year – Financially Constrained** | | | | **Future Year – Strategic** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type of investment | B | P | T | NS | B | P | T | NS | B | P | T | NS | B | P | T | NS |
| Region-wide | | | | | | | | | | | | | | | | |
| Number of people region-wide | | | | | | | | | | | | | | | | |
| % per person region-wide | | | | | | | | | | | | | | | | |
| Historically Underrepresented Communities | | | | | | | | | | | | | | | | |
| Number of people | | | | | | | | | | | | | | | | |
| % per person | | | | | | | | | | | | | | | | |
| Focused Historically Underrepresented Communities | | | | | | | | | | | | | | | | |
| Number of people | | | | | | | | | | | | | | | | |
| % per person | | | | | | | | | | | | | | | | |



B – Bikeways; P – Pedestrian Sidewalks; T – Off-Street Trails; NS – New Street Connection

**Key Assumptions to Method**

**Dataset Used:**

| Dataset | Type of Data |
|---|---|
| Geospatial project information for sidewalks, bikeways, trails and new street connections | Observed |
| Inventory geospatial information available pedestrian crossings | Observed |
| Regional bicycle, pedestrian and roadway planned networks | Observed |

**Tools Used for Analysis:** ArcGIS

**Definitions**

*Connectivity* is defined as the directness of links and the density of connections in path or road network. A well connected road or path network has many short links, numerous intersections, and minimal dead-ends (cul-de-sacs). As connectivity increases, travel distances decrease and route options increase, allowing more direct travel between destinations, creating a more accessible and resilient system.[11]

*Completeness* is defined as the percentage of miles of the planned pedestrian, bicycle or roadway network that has been completed.

*New Street Connection Project* TBD

*Active Transportation Project* defined as projects that allocate a majority of the project cost to increasing bicycling and/or walking access on the regional active transportation network.

*Bikeway Project* TBD

*Sidewalk Project* TBD



[11] Victoria Transport Policy Institute

Evaluation Measure Title: **Transportation Safety – Vehicle Miles Traveled Exposure**

**Purpose and Goals**

Overall Purpose: To approximate risk of exposure to crashes by identifying whether the package of future transportation investments increases or decreases vehicle miles traveled (VMT) per capita within each transportation area zone (TAZ), in the region.

Transportation Equity Purpose: Furthermore, to look at the approximate risk of exposure to crashes by identifying whether the package of future transportation investments increases or decreases VMT per capita in areas with high concentrations of historically underrepresented communities

Questions to Be Addressed:

The **Transportation Safety – Vehicle Miles Traveled Exposure** performance measure will assess the following questions for the region's transportation system:

1) What is the region's vehicle miles traveled per capita in each TAZ?
2) How does it change with the proposed package of transportation investments?

More specifically, from the transportation equity perspective, the **Transportation Safety – Vehicle Miles Exposure** performance measure looks to assess the following questions:

1) What is the difference in exposure to vehicle miles traveled per capita for historically underrepresented communities?
2) Has the proposed transportation investment program held steady or decreased the vehicle miles traveled exposure in historically underrepresented communities?



**2014 RTP Goals**

| | | | |
|---|---|---|---|
| | Foster vibrant communities and compact urban form | | Promote environmental stewardship |
| ● | Sustain economic competitiveness and prosperity | ● | Enhance human health |
| | Expand transportation choices | | Demonstrate leadership at reducing greenhouse gas emissions |
| | Effective and efficient management of system | ● | Ensure equity |
| ● | Enhance safety and security | | Ensure fiscal stewardship |
| ● | Deliver accountability | | |

**Function of Evaluation Measure**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ● | System Evaluation | | Project Evaluation | | System Monitoring | ● | Performance Target |

Associated 2014 RTP Performance Target: By 2035 eliminate fatal and serious crashes for all users of the region's transportation system, with a 15% reduction by 2020 and 50%reduction by 2025. (Target proposed to be updated in 2018 to: By 2035 eliminate transportation related fatalities and serious injuries for all users of the region's transportation system, with a 16% reduction by 2020 (as compared to the 2015 five year rolling average), and a 50% reduction by 2025.)

Methodology Description:

This analysis uses vehicle miles traveled per capita as a proxy for crash exposure risk. The **Transportation Safety – Vehicle Miles Traveled Exposure** system evaluation performance measure is calculated by:

1. Aggregating non-freeway vehicle miles traveled (VMT) within each transportation analysis zone (TAZ).
2. To determine increased or decreased exposure to VMT, the total non-freeway, average weekday VMT for each TAZ is divided by the total number of jobs and households in the TAZ and the area of the TAZ.
3. Calculate the total area of TAZs within the Metropolitan Planning Area boundary and the area of TAZs comprising historically underrepresented communities and focused historically underrepresented communities; divide the average weekday VMT by the area of TAZs with above average historically underrepresented communities populations and the remainder of the region to control for the differing geographical extents of historically underrepresented communities (around 28% of the region's land area) and the remainder of the region (around X%).
4. TAZs which overlap with historically underrepresented communities are flagged to determine the non-freeway VMT exposure per capita for historically underrepresented communities. Then the non-freeway VMT exposure per capita is looked in those flagged TAZs with high concentrations of historically underrepresented communities and compared to the region. The per capita exposure is also looked at for the base year to the future year.



Output Units: Vehicle miles traveled per capita (VMT/per person) by TAZ

Potential Output of Assessment:

| | Base Year | Interim Year | Future Year – Financially Constrained | Future Year – Strategic |
|---|---|---|---|---|
| Region-wide | VMT/per person | | | |
| Historically Underrepresented Communities | VMT/per person | | | |
| Focused Historically Underrepresented Communities | VMT/per person | | | |

Key Assumptions to Method

Dataset Used:

| Dataset | Type of Data |
|---|---|
| Geospatial project information for proposed transportation projects | Observed |
| Vehicle miles traveled by TAZ | Forecasted |

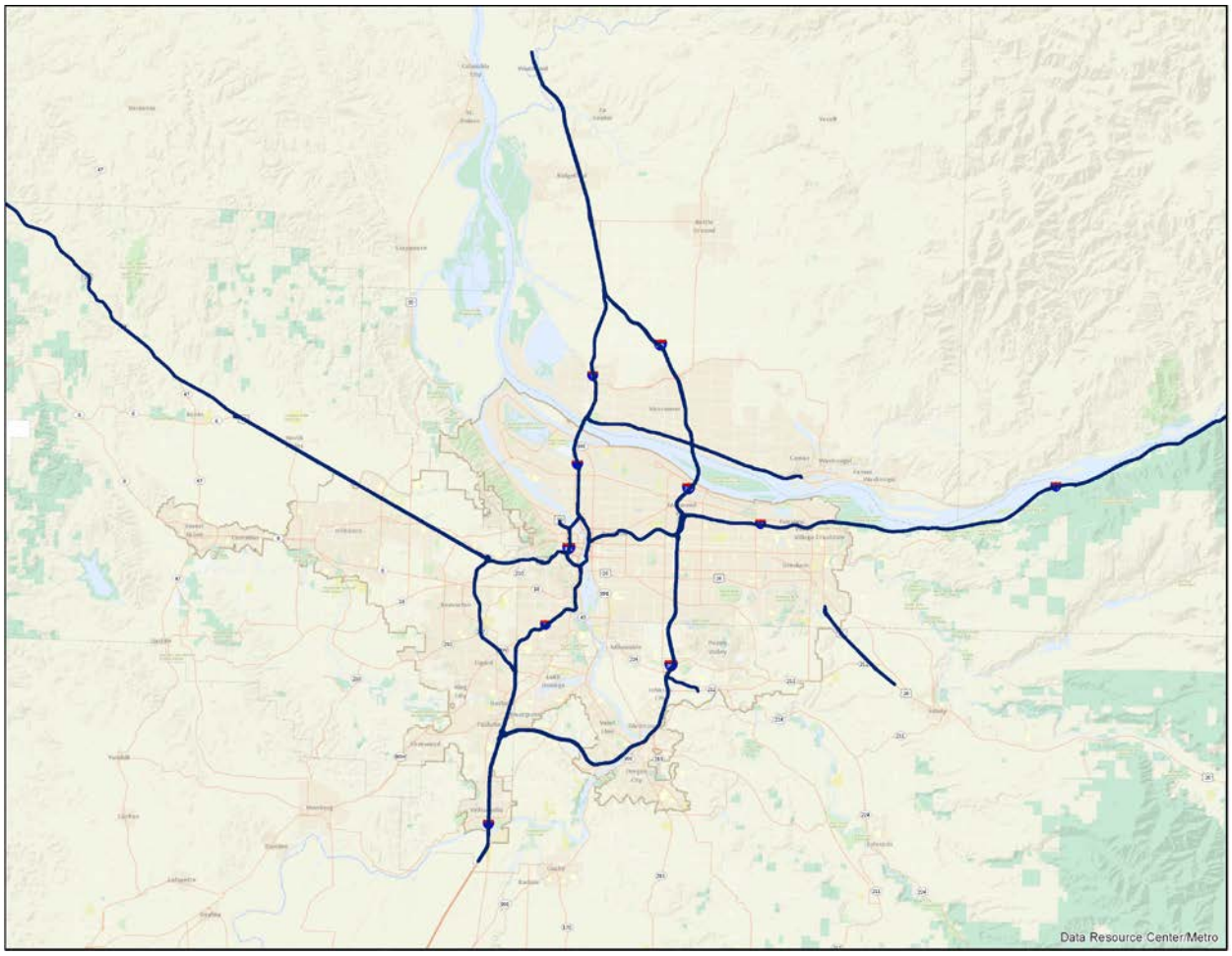
Tools Used for Analysis: Metro's travel demand model and ArcGIS

Considerations:

Analysis conducted showed correlation between VMT and crashes in the region; the R2 was just over 0.25, so ¼ of the crash relationship can be explained by exposed VMT at the TAZ level.

Facilities excluded from VMT exposure analysis are (see map):

- Hwy 26 W
- Hwy 217
- Hwy 224 the sunrise corridor
- Hwy 26 E from Burnside intersection in Gresham
- I-5
- I-205
- I-84
- I-405



Evaluation Measure Title: **Transportation Safety – Infrastructure Investments**

**Purpose and Goals**
Overall Purpose: To identify where and at what level of investment the package of future transportation projects addresses transportation safety through the development of transportation infrastructure with proven safety countermeasures, region-wide.

Transportation Equity Purpose: Furthermore, to look at what level of investment the package of future transportation projects addresses safety, through the development of transportation infrastructure with proven safety countermeasures, in areas with high concentrations of historically underrepresented communities.

Questions to Be Addressed:
The **Transportation Safety – Infrastructure Investments** performance measure looks to assess the following questions for the region's transportation system:

1) What percentage of the region's proposed transportation projects are identified as safety projects?
2) What percentage of the total transportation investment package (cost) is attributed to safety projects?



More specifically from a transportation equity perspective….

1) What percentage of the total number of transportation safety investments are located in historically underrepresented communities?
2) Is there a difference of transportation safety investment levels (cost) in areas with historically underrepresented communities?
3) What is the per-person expenditure of transportation safety investments region-wide and for historically underrepresented communities?

**2014 RTP Goals**

| | | | |
|---|---|---|---|
| | Foster vibrant communities and compact urban form | | Promote environmental stewardship |
| ● | Sustain economic competitiveness and prosperity | ● | Enhance human health |
| | Expand transportation choices | | Demonstrate leadership at reducing greenhouse gas emissions |
| | Effective and efficient management of system | ● | Ensure equity |
| ● | Enhance safety and security | | Ensure fiscal stewardship |
| | Deliver accountability | | |

**Function of Evaluation Measure**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ● | System Evaluation | | Project Evaluation | | System Monitoring | ● | Performance Target |

Associated 2014 RTP Performance Target: By 2035 eliminate fatal and serious crashes for all users of the region's transportation system, with a 15% reduction by 2020 and 50%reduction by 2025.

(Target proposed to be updated in 2018 to: By 2035 eliminate transportation related fatalities and serious injuries for all users of the region's transportation system, with a 16% reduction by 2020 (as compared to the 2015 five year rolling average), and a 50% reduction by 2025.)

**Methodology Description:**

The method for calculating the **Transportation Safety – Infrastructure Investments** performance measure will entail:

1. Calculating the number of safety projects in the regional transportation investment packages region-wide, in historically underrepresented communities and in focused historically underrepresented communities;
2. Calculating the cost of safety projects in the regional transportation investment packages region-wide, in historically underrepresented communities and in focused historically underrepresented communities;
3. Geospatial analysis of safety projects in the regional transportation investment packages region-wide, in historically underrepresented communities and in focused historically underrepresented communities.
4. Calculating the per-person expenditure of transportation safety projects for the number of people region-wide and for the number of people identified within in historically underrepresented communities and focused historically underrepresented communities.



Output Units: Percentage (%) of transportation safety projects and percentage of cost for transportation safety projects region-wide, in historically underrepresented communities, and in focused historically underrepresented communities.

Potential Output of Assessment:

| | Base Year | Interim Year | Future Year – Financially Constrained | Future Year – Strategic |
|---|---|---|---|---|
| Region-wide | % Safety Projects, % cost allocated to Safety Projects | | | |
| Number of people region-wide | % Per person | | | |
| Historically Underrepresented Communities | % Safety Projects, % cost allocated to Safety Projects | | | |
| Number of people – Historically Underrepresented Communities | % Per person | | | |
| Focused Historically Underrepresented Communities | % Safety Projects, % cost allocated to Safety Projects | | | |
| Number of people Focused Historically Underrepresented | % Per person | | | |

| | | | | |
|---|---|---|---|---|
| Communities | | | | |

Key Assumptions to Method:
Dataset Used:

| Dataset | Type of Data |
|---|---|
| Geospatial and cost information for proposed transportation safety projects | Observed |

Tools Used for Analysis: ArcGIS

Definition of a Safety Project: Safety Projects -Infrastructure projects with the primary intent to address a safety issue, and allocate a majority of the project cost to a documented safety countermeasure(s)* to address a specific documented risk, or improve safety for vulnerable users, including people walking and bicycling, older adults and youth. **Example safety countermeasures include, but are not limited to, FHWA's nine proven safety countermeasures: road diets, medians and pedestrian crossing islands, pedestrian hybrid beacons, roundabouts, access management, retroreflective backplates, safety edge, enhanced curve delineation, and rumble strips.*

Evaluation Measure Title: **Resource Habitats and Infrastructure**

**Purpose and Goals**

Overall Purpose: To identify and flag those proposed future transportation investments within the 2018 RTP investment package which intersect with the region's identified high value habitat areas and note additional environmental consideration to mitigation may be needed in implementing the investment.

Transportation Equity Purpose: Furthermore, to look at those proposed future transportation investments within the 2018 RTP investment package which overlap with high value habitat and in areas of high concentrations with historically underrepresented communities and the region. These projects would be flagged and noted that in addition to further environmental, but also environmental justice considerations mitigation and/or strategies may be needed in implementing the investment.

Questions to Be Addressed:

The **Resource Habitats and Infrastructure** performance measure looks to assess the following questions for the region's transportation system:

1) What percentage of the region's proposed roadway transportation investments intersect and have may have a potential conflict with the region's resource habitats and needs further assessment of environmental considerations through project development?
2) What is the per-person expenditure of roadway transportation investment for the number of people region-wide which intersect the region's resource habitats?



More specifically, from the transportation equity perspective, the **Resource Habitats and Infrastructure** performance measure looks to assess the following questions:

1) What percentage of resource habitats overlap with historically underrepresented communities? Are these resource habitats in historically underrepresented communities seeing a greater percentage of proposed roadway transportation investments which may have a potential conflict with the region's resource habitats? Is the percentage in historically underrepresented communities greater than the region?
2) What is the per-person expenditure of roadway transportation investment for the number of people identified within in historically underrepresented communities which interest the region's resource habitat?

**2014 RTP Goals**

| | | | |
|---|---|---|---|
| ● | Foster vibrant communities and compact urban form | ● | Promote environmental stewardship |
| | Sustain economic competitiveness and prosperity | ● | Enhance human health |
| | Expand transportation choices | | Demonstrate leadership at reducing greenhouse gas emissions |
| | Effective and efficient management of system | ● | Ensure equity |
| | Enhance safety and security | | Ensure fiscal stewardship |
| ● | Deliver accountability | | |

**Function of Evaluation Measure**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ● | System Evaluation | | Project Evaluation | | System Monitoring | | Performance Target |

Associated 2014 RTP Performance Measure: Percent of projects which intersect high value habitats

Methodology Description:

The method for calculating the **Resource Habitats and Infrastructure** performance measure will entail a geospatial analysis the region's proposed transportation investments which intersect the region's resource habitats. The percentage of projects which intersect resource habitats will be looked at region-wide and in areas where there is a concentration of historically underrepresented communities. Additionally, the per person expenditure of transportation investments will be calculated to determine whether the per capita roadway transportation investments which intersect/overlap with the region's high value habitats and areas where there are concentrations of historically underrepresented communities is greater.

Output Units: Percentage (%) of transportation projects intersecting identified resource habitats and per capita expenditure

Potential Output of Assessment:

| | Base Year | Interim Year | Future Year – Financially Constrained | Future Year – Strategic |
|---|---|---|---|---|
| Region-wide | | | | |
| Historically Underrepresented Communities | | | | |
| Focused Historically Underrepresented Communities | | | | |



Key Assumptions to Method:
Dataset Used:

| Dataset | Type of Data |
|---|---|
| Geospatial project information for proposed transportation projects | Observed |
| Geospatial resource conservation information from Metro identified resource and conservation habitat areas | Observed |

Tools Used for Analysis: ArcGIS

Definition of Resource Habitats:
Resource habitats are those areas with the top 25% modeled score of high value habitat or riparian quality. Habitat quality took into account factors such as habitat interior, influence of roads, total patch area, relative patch area, habitat friction, wetlands, and hydric soils. The riparian areas took into account criteria of floodplains, distance from streams, and distance from wetlands. The analysis and modeled scoring was conducted for the entire Portland-Vancouver region and conducted through a collaborative effort with partners across the region and topic area experts

through the development in the Resource Conservation Strategy process. More detail about the high value habitats can be found at www.regionalconservationstrategy.org.

Evaluation Measure Title: **Vehicle Miles Traveled – Transportation Emissions Exposure**

Methodology TBD

Evaluation Measure Title: **Combined Housing and Transportation Expenditure and Cost Burden**

Methodology TBD

Date: April 6, 2017

To: Transportation Equity Work Group and Interested Parties

From: Grace Cho, Associate Transportation Planner

Subject: Transportation Equity Assessment – 2018-2021 MTIP Draft Results

**Introduction**

As part of the 2018-2021 MTIP, a Transportation Equity Assessment is conducted to look at how well the region's planned federal transportation investments will perform relative to equity goals and demonstrate compliance with regional responsibilities toward federal civil rights laws as they relate to transportation planning. The assessment takes a programmatic look at the region's short-term (fiscal years 2018 – 2021) planned investments, to determine whether: 1) progress is being made towards desired equity outcomes expressed by historically marginalized communities; 2) to determine whether the short-term package, in totality, is disproportionately impacting historically marginalized communities and if mitigation measures are necessary; and 3) learn from the assessment to propose technical refinements prior to utilizing the assessment methods for the 2018 RTP investment strategy.

In a literature review across the nation, equity assessments at a program scale are few and far between. Nonetheless, advocacy and think-tank organizations have put forward best practices to guide and formulate the methods for conducting a transportation equity assessment. The 2018-2021 MTIP Transportation Equity Assessment does its best to incorporate and reflect the best practices in the field in measuring equity within the context of the transportation system. Additionally, the 2018-2021 MTIP is also serving as a learning tool to help refine the assessment for the upcoming development of the 2018 Regional Transportation Plan (RTP).

The following memorandum discusses the draft results, findings, lessons learned and recommendations from the 2018-2021 MTIP Transportation Equity Assessment.

**Transportation Equity Assessment Methods**

The 2018-2021 MTIP Transportation Equity Assessment is an equity-focused scenario planning analysis looking at base-year conditions and comparing the base-year conditions to the anticipated conditions to be seen once a future package of transportation investments are put into place and open for service. In performing a scenario analysis, the core methodological components to the 2018-2021 MTIP Transportation Equity Assessment are:

1. Community definitions
2. System evaluation metrics
3. Evaluation tools identification
4. Evaluation inputs

The following section discusses the definitions, data, and assumptions for each of the core components of the 2018-2021 MTIP Transportation Equity Assessment.

<u>Community Definitions</u>

Communities included as part of the 2018-2021 MTIP Transportation Equity Assessment include:

- People of Color
- People with Lower-Incomes
- People with Limited English Proficiency
- Older Adults
- Young Persons

The identification of the five communities came from stakeholders desire to see communities which have historically experienced challenges with the transportation system. Additionally, certain communities were identified as demographic groups to address in transportation planning as part of federal civil rights and environmental justice regulations. Demographic data is supplied by the U.S. Census Bureau to help identify communities and general spatial distribution. The regional rate for the individual historically marginalized community (with the exception for age) as the threshold for determining the locations of historically marginalized communities. For older adults and younger people, the regional rate must be realized for both communities as the spatial distribution, just based on regional rate, would illustrate patterns where every area in the region would be considered a historically marginalized community

*Historically Marginalized Communities*

| Community | Definition | Geography Threshold | Date Source |
|---|---|---|---|
| People of Color | Persons who identify as non-white. | Census tracts above the regional rate (26.5%) for people of color. | 2010 Decennial Census |
| Low-Income | Households with incomes equal to or less than 200% of the Federal Poverty Level (2016); adjusted for household size | Census tracts above the regional rate (31.1%) for Household with Lower-Income | American Community Survey, 2011-2015 |
| Limited English Proficiency | Persons who identify as unable "to speak English very well." | Census tracts above the regional rate (8.5%) for Limited English Proficiency (all languages combined). | Oregon Education Department School Enrollment Data (LEP only) |
| Older Adults | Persons 65 years of age and older | Census tracts above the regional rate for Older Adults (11%) AND Young People (22.8%) | 2010 Decennial Census |
| Young People | Persons 17 years of age and younger | | |

By request of stakeholders, a more focused look at the transportation investments being made in areas in which there are high concentrations of historically marginalized communities, namely those communities identified through civil rights and environmental justice legislation. As a result a population density threshold was applied to define geographic areas with high concentrations of People of Color, Low-Income, and Limited English Proficiency. This request recognizes the wish of stakeholders that with limited amounts of investment, in what areas can the greatest concentration of historically marginalized communities be reached. Additionally, there were request to assess small pockets of concentrated language isolation. Therefore, identified areas of safe harbor communities were also included as part of the focused look.

*Focused Historically Marginalized Communities*

| Community | Geographic Threshold |
|---|---|
| People of Color | The census tracts which are above the regional rate for people of color AND the census tract has twice (2x) the population density of the regional average (regional average is .48 person per acre). |
| Low-Income | The census tracts which are above the regional rate for low-income households AND the census tract has twice (2x) the population density of the regional average (regional average is .58 person per acre). |
| Limited English Proficiency | The census tracts which are above the regional rate for low-income households AND the census tract has twice (2x) the population density of the regional average (regional average is .15 person per acre) OR those census tracts which have been identified as "safe harbor" tracts for language isolation.[1] |

The transportation equity analysis will run the assessment using two tiers to address the desire to capture where there are higher rates of historically marginalized communities and where there is a concentration and/or pockets of historically marginalized communities. The tiers are described below.

*Tier I Analysis – Historically Marginalized Communities*
The transportation equity analysis will use the regional rate as the first assessment to look at how well the 2018-2021 MTIP investments are performing on priority outcomes identified by historically marginalized communities.

*Tier II Focused Analysis - Focused Historically Marginalized Communities*
The transportation equity analysis will conduct a secondary assessment using a subset of historically marginalized communities, namely people of color, people with lower-incomes, and people with limited English proficiency, and look at how well the 2018-2021 MTIP investments are performing on priority outcomes identified by historically marginalized communities in areas with the greatest concentration.

Transportation Equity System Evaluation Measures
In following a best practice to have historically marginalized communities lead the assessment, the system evaluation measures for the Transportation Equity Assessment reflect the priorities historically marginalized communities identified as desires to see from the region's transportation system. The common themes identified by historically marginalized communities include: increased access, affordability, safety, and public health.[2] These themes translated into the following system evaluation measures:

[1] Safe Harbor is a provision within Title VI of the Civil Rights Act of 1964 which addresses for when and how agencies are to provide language assistance to limited English proficiency persons to ensure access to all public resources. The safe harbor provision mainly addresses translation of documents and language assistance, however for analysis purposes; it may help to identify areas where additional attention is warranted because of a concentration of language isolation. Safe harbor applies when a language isolated group constitutes 5% or 1,000 persons of the total population in the given area.
[2] More information about the process undertaken to gather input from historically marginalized communities to identify the system evaluation measures can be found at: http://www.oregonmetro.gov/public-projects/2018-regional-transportation-plan/equity

- Affordability[3]
- Exposure to crash risk
- Access to travel options – system connectivity & completeness
- Access to jobs
- Access to community places
- Habitat impact
- Share of safety projects

These were identified as the priority transportation issues by historically marginalized communities.[4] As a result, the system evaluation will take a closer look to see how well these transportation investments perform relative to these priority transportation issues in areas where there is a residential presence of historically marginalized communities. The results will be compared to the region and to the base-year conditions to see if there are disproportionate results. Individual methodology sheets, which outline criteria and other factors for each system evaluation measure can be found as Appendix 2.1.

Summary of Tools

Scenario planning requires the use of tools which are able to anticipate what behaviors or effects may occur with investments or policy decisions in the future. As part of Metro's metropolitan planning organization (MPO) function, the Data and Research department has developed a suite of tools which will be used as part of the 2018-2021 MTIP Transportation Equity Assessment to analyze future conditions once a certain suite of transportation investments are put into place. The following are brief descriptions of the scenario planning tools.

*Metroscope*

Metroscope is a set of decision support tools used to model changes in measures of economic, demographic, land use and transportation activity within the Portland metropolitan area.

- The economic model predicts employment by type of industry and the number of households by demographic category.
- The residential real estate location model predicts the locations of households.
- The non-residential real estate location model predicts the locations of employment. Both real estate models measure the amount of land consumed by development, the amount of built space produced and prices of land and built space by zone in each time period.

The Metroscope tool is being used to look at changes in access to employment areas and
In 2016, an updated land use, population, and employment forecast was adopted for the region. The 2016 adopted forecast will be used as an input into the economic and real estate (residential and non-residential) models to inform the 2018-2021 MTIP Transportation Equity Assessment.

*Travel Demand Model*

The travel model predicts travel activity levels by mode (bus, rail, car, walk or bike) and road segment, and it estimates travel times between transportation analysis zones (TAZ) by time of day. The travel demand model also produces a measure of the cost perceived by travelers in getting from any one TAZ to any other. For the 2018-2021 MTIP Transportation Equity Analysis, the

[3] The affordability measure, which is looking at combined housing and transportation expenditure, is under development. A method is anticipated to be developed and ready for deployment for the 2018 RTP call for projects.

[4] Reflects the priority issues within the limits the 2018 RTP system evaluation can analyze. Other transportation priorities were raised which included displacement and racial profiling in enforcement, which cannot be addressed through the system evaluation, but acknowledged in the assessment findings.

transportation investments outlined for federal fiscal years 2018 – 2021 will be included in the travel demand model (on top of 2015 base-year conditions) to assess future conditions.[5]

*Geographic Information Systems (GIS)*

Geographic Information Systems (GIS) uses spatial data to determine relationships between different data elements and map data. For the 2018-2021 MTIP Transportation Equity Analysis, the transportation investments are mapped to assess the spatial relationships between historically marginalized communities. In particular, access to a connected transportation system and safety considerations are being assessed through GIS.

Transportation Equity Assessment Inputs

The Transportation Equity Assessment includes those projects/investments slated for federal fund programming in the 2018-2021 MTIP. The projects/investments are those which were identified as of January 2017 in order to complete the assessment and publish as part of the public comment draft of the 2018-2021 MTIP. Some of the transportation project investments may have changed between January 2017 and the transportation investment programming illustrated in the public comment draft of the 2018-2021 MTIP. The list of 2018-2021 MTIP investments assessed in the Transportation Equity Assessment can be found as Appendix 1.1 and Appendix 1.2.

As part of the assessment, each project/investment was reviewed to determine which transportation equity system evaluation measure would be applicable. For example, with the share of safety projects evaluation measure, each 2018-2021 MTIP investment looks at whether the project meets the criteria of a safety project to determine whether it'll be evaluated as part of this particular measure. The list of 2018-2021 MTIP investments, found in Appendix 1.1, illustrates which investments were applied to the system evaluation measures.

Lastly, there were a suite of transportation investments identified within the 2018-2021 MTIP which were unable to be assessed as part of the Transportation Equity Assessment. For many of these projects, the programmatic nature prevented being able to capture the investment the travel demand model, which is more suited for capital transportation investments rather than maintenance investments, or not enough spatial detail was available. For example, listed within the 2018-2021 MTIP are bus purchase and replacement programs as well as region-wide raised pavement markings. These "maintenance-like" projects are not represented in the travel demand model and spatial detail is unavailable since the deployment of buses travel all over the transit system and pavement markings occur throughout the roadway network. Additionally, the travel demand model does not capture a number of tools used for system management and operations, including variable message signs, rapid flashing beacons, or communications architecture.

**Results**

The 2018-2021 MTIP Transportation Equity Assessment illustrates how the near-term transportation investments are likely to affect outcomes which historically marginalized communities identified as priority issues to address in the transportation system.

[5] Due to the nature of how the travel demand model operates, certain types of transportation investments cannot be reflected in the travel demand model tool. Some examples include roadway maintenance investments (e.g. repaving) and operations and system management (e.g. variable message signs, variable speed control, signal timing). Transportation investments which have macro-level effects to travel behavior (i.e. widening a roadway, adding a separated or protected bicycling facility, or increasing transit service) are those which the travel demand model can assess. Other "off-model" methods, namely geographic information systems (GIS), are used to assess the transportation investments which are unable to be captured as part of the model assessment.

*Table 1. Contextual Population Information for the 2018-2021 MTIP Transportation Equity Assessment*

| Geography | Population (within the Geography)[6] |
|---|---|
| Region-wide (Metropolitan Planning Area)[7] | 1,559,517 |
| Historically Marginalized Communities | 1,058,220 |
| Focused Historically Marginalized Communities | 630,388 |

*Table2. Summary of Transportation Equity System Evaluation Measures Results*

| Evaluation Measure | Region-wide | HMC | FHMC |
|---|---|---|---|
| Access to Community Places | Region-wide access to community places is high. | With the 2018-2021 MTIP investments, access relative to the region is projected to hold steady for auto, bicycling, and walking, and access increases for transit. | With the 2018-2021 MTIP investments access holds steady for auto, bicycling, and walking and access increases for transit. In general, access in base year conditions for focused historically marginalized communities is lower than the region. |
| Access to Jobs | Region-wide access to low and middle wage jobs can range from 0% by walking to 38% by auto with the 2018-2021 MTIP investments. | With the 2018-2021 MTIP investments, access to low and middle wage jobs from historically marginalized communities is increasing slightly. | With the 2018-2021 MTIP investments, access to low and middle wage jobs from focused historically marginalized communities is increasing slightly. |
| Access to Travel Options | Full results of performance measure still to-be-determined. Completeness and density of the active transportation network appears to be increasing region-wide. Minimal change is observed with the street network. | Full results of performance measure still to-be-determined. Completeness of the active transportation network appears to be increasing in historically marginalized communities at a level greater than the region. Density of the active transportation network increases. Minimal change is observed with the street network. | Full results of performance measure still to-be-determined. Completeness of the active transportation network appears to be increasing in focused historically marginalized communities at a level greater than the region. Density of the active transportation network increases. Minimal change is observed with the street network. |

[6] Represents 2010 decennial census population counts in order for the analysis and the geographies to remain consistent and use consistent datasets. Population numbers represent total population within the census tracts.

[7] Region-wide is defined as the metropolitan planning area (MPA) boundary. An interactive map gallery which includes the MPA can be found at: http://drcmetro.maps.arcgis.com/apps/webappviewer/index.html?id=d83c2455ea10433bb2d6901dd1f4f564

| Evaluation Measure | Region-wide | HMC | FHMC |
|---|---|---|---|
| Share of Safety Projects | About 13%, represented by 60 projects, 2018-2021 MTIP investments are transportation safety projects. Per capita spending is approximately $98. | The proportional number of transportation safety projects and per capita spending is higher than the region in areas with historically marginalized communities. | Half of the transportation safety projects are in areas with focused historically marginalized communities. Per capita spending is higher. |
| Exposure to VMT | Slight increase in VMT projected with 2018-2021 MTIP investments. | Slight decrease in VMT exposure projected with 2018-2021 MITP investments. | Slight decrease in VMT exposure projected with 2018-2021 MITP investments. |
| Habitat Impact | With 2018-2021 MTIP investments, about 31% of investments potentially impact high value habitat. | Of the 36% of the 2018-2021 MTIP investments with a potential high value habitat impact, 75% are in historically marginalized communities | Of the 36% of the 2018-2021 MTIP investments with a potential high value habitat impact, 55% are in focused historically marginalized communities |
| Housing + Transportation Expenditure | System evaluation measure still under development | | |

Access to Community Places

Overall, the 2018-2021 MTIP investments appears to hold steady the access to community places relative to the base year with the exception for transit, where an increase in access is seen in both historically marginalized communities and focused historically marginalized communities (i.e. areas with concentrated density of people of color, people with lower-income, and people with limited English proficiency). The increase in access to community places by transit is projected in both the peak and off-peak travel period and the increases seen range from 1% to 6%. The higher percentage (5 or 6%) increases by transit tend to be observed in focused historically marginalized communities. While the results show the 2018-2021 MTIP investments are generally holding access to community places fairly steady or increasing access, there is a significant observed difference between historically marginalized communities and focused historically marginalized communities and their base conditions access to community places. What is seen is that historically marginalized communities tend to have better access to community places than the region, but focused historically marginalized communities tend to start off with less access, relative to the region, by automobile, bicycling, or walking. The reason for the difference in base conditions is because certain areas of where there are concentrated density of certain communities (i.e. language isolated communities) are on the edges of the region where there is currently less development and residential in nature. Nonetheless, when looking at the base year conditions and the projected change with the 2018-2021 MTIP investments, access to community places in focused historically marginalized communities tend to hold steady.

The one exception is with access to food, where base conditions tend to show better access in either historically marginalized communities or focused historically marginalized communities, regardless of method of travel and time of travel. This may be because of the distributive pattern of grocery stores.

The projected increase in access to community places by transit with the 2018-2021 MTIP may be a reflection of the Division bus rapid transit project opening in 2021 and the projected transit service increases between now and 2021 being reflected.

*Table 3. Access to Community Places – Peak Travel Period*

| Access to Community Places -- All Community Places (+/- % relative to MPA) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Base Year (2015) Conditions | | | | 2018-2021 MTIP Investments | | | |
| | Auto | Transit | Bike | Walk | Auto | Transit | Bike | Walk |
| All MPA[8] | -- | -- | -- | -- | -- | -- | -- | -- |
| HMC | 1% | 21% | 9% | 17% | 1% | 22% | 9% | 17% |
| FHMC | -4% | 10% | -9% | -11% | -4% | 15% | -9% | -11% |
| | | | | | | | | |
| **Access to Community Places -- Food (+/- % relative to MPA)** | | | | | | | | |
| | Base Year (2015) Conditions | | | | 2018-2021 MTIP Investments | | | |
| | Auto | Transit | Bike | Walk | Auto | Transit | Bike | Walk |
| All MPA | -- | -- | -- | -- | -- | -- | -- | -- |
| HMC | 4% | 25% | 13% | 19% | 4% | 25% | 12% | 19% |
| FHMC | 2% | 27% | 4% | 3% | 2% | 32% | 4% | 3% |
| | | | | | | | | |
| **Access to Community Places -- Medical (+/- % relative to MPA)** | | | | | | | | |
| | Base Year (2015) Conditions | | | | 2018-2021 MTIP Investments | | | |
| | Auto | Transit | Bike | Walk | Auto | Transit | Bike | Walk |
| All MPA | -- | -- | -- | -- | -- | -- | -- | -- |
| HMC | -1% | 21% | 7% | 14% | -1% | 22% | 7% | 14% |
| FHMC | -8% | 6% | -17% | -23% | -8% | 11% | -17% | -23% |
| | | | | | | | | |
| **Access to Community Places -- All Others (+/- % relative to MPA)** | | | | | | | | |
| | Base Year (2015) Conditions | | | | 2018-2021 MTIP Investments | | | |
| | Auto | Transit | Bike | Walk | Auto | Transit | Bike | Walk |
| All MPA | -- | -- | -- | -- | -- | -- | -- | -- |
| HMC | 2% | 21% | 10% | 19% | 2% | 22% | 10% | 19% |
| FHMC | -2% | 11% | -5% | -4% | -2% | 16% | -5% | -4% |

*Table 4. Access to Community Places – Off-Peak Travel Period*

| Access to Community Places -- All Community Places (+/- % relative to MPA) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Base Year (2015) Conditions | | | | 2018-2021 MTIP Investments | | | |
| | Auto | Transit | Bike | Walk | Auto | Transit | Bike | Walk |
| All MPA | -- | -- | -- | -- | -- | -- | -- | -- |
| HMC | 1% | 24% | 9% | 17% | 1% | 24% | 9% | 17% |
| FHMC | -4% | 8% | -9% | -11% | -4% | 13% | -9% | -11% |
| | | | | | | | | |

[8] The nature of how access to community places is calculated in the travel demand model results in the weighted average for the region being 100% access to community places regardless of mode. Therefore the MPA, or region-wide, access is not reported and for the two different focused look, the level of change relative to the MPA, or region, is reported.

| Access to Community Places -- Food (+/- % relative to MPA) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Base Year (2015) Conditions | | | | 2018-2021 MTIP Investments | | | |
| | Auto | Transit | Bike | Walk | Auto | Transit | Bike | Walk |
| All MPA | -- | -- | -- | -- | -- | -- | -- | -- |
| HMC | 3% | 27% | 13% | 19% | 3% | 27% | 12% | 19% |
| FHMC | 1% | 25% | 4% | 3% | 1% | 30% | 4% | 3% |
| | | | | | | | | |
| Access to Community Places -- Medical (+/- % relative to MPA) | | | | | | | | |
| | Base Year (2015) Conditions | | | | 2018-2021 MTIP Investments | | | |
| | Auto | Transit | Bike | Walk | Auto | Transit | Bike | Walk |
| All MPA | -- | -- | -- | -- | -- | -- | -- | -- |
| HMC | 0% | 25% | 7% | 14% | 0% | 24% | 7% | 14% |
| FHMC | -7% | 5% | -17% | -23% | -7% | 8% | -17% | -23% |
| | | | | | | | | |
| Access to Community Places -- All Others (+/- % relative to MPA) | | | | | | | | |
| | Base Year (2015) Conditions | | | | 2018-2021 MTIP Investments | | | |
| | Auto | Transit | Bike | Walk | Auto | Transit | Bike | Walk |
| All MPA | -- | -- | -- | -- | -- | -- | -- | -- |
| HMC | 1% | 23% | 10% | 19% | 1% | 24% | 10% | 19% |
| FHMC | -2% | 9% | -5% | -4% | -2% | 15% | -5% | -4% |

Access to Jobs

Overall, the 2018-2021 MTIP investments appear to be keeping steady or increasing access to low and middle-wage jobs in historically marginalized communities. The increases are being realized in transit access, albeit the increase tends to be small, around one percent. Additionally, what is projected with the 2018-2021 MTIP investments, access in historically marginalized communities and focused historically marginalized communities (i.e. areas with concentrated density of people of color, people with lower-income, and people with limited English proficiency) tends to be better than the region as well as in the areas below the regional rate of historically marginalized communities (i.e. Non- HMC), and in areas where there is not a high concentration of people of color, people with lower-income, and people with limited English proficiency. The steady or increases in jobs access is being realized across all travel modes, but particularly in focused historically marginalized communities. Additionally, in both the peak and off-peak travel period, transit is seeing the slight increase with the 2018-2021 MTIP investments, particularly in focused marginalized communities. The reason for the slight increase projected with the transit mode may be a result of the Division bus rapid transit project opening for service in 2021 and the subsequent incremental transit service increases expected between now and 2021.

*Table 5. Access to Low and Middle Wage Jobs – Peak Travel Period*

| Job Access -- % of All Jobs in MPA | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Base Year (2015) Conditions | | | | MTIP Network | | | |
| | Auto | Transit | Bike | Walk | Auto | Transit | Bike | Walk |
| All MPA | 18% | 2% | 3% | 0% | 19% | 2% | 3% | 0% |
| Non-HMC | 16% | 1% | 2% | 0% | 16% | 1% | 2% | 0% |
| Non-FHMC | 16% | 1% | 2% | 0% | 16% | 2% | 2% | 0% |
| HMC | 19% | 3% | 3% | 0% | 20% | 3% | 3% | 0% |
| FHMC | 21% | 3% | 3% | 0% | 21% | 3% | 3% | 0% |
| | | | | | | | | |

| Job Access -- % of Low-Wage Jobs in MPA | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Base Year (2015) Conditions | | | | MTIP Network | | | |
| | Auto | Transit | Bike | Walk | Auto | Transit | Bike | Walk |
| All MPA | 33% | 4% | 5% | 1% | 34% | 5% | 5% | 1% |
| Non-HMC | 29% | 2% | 4% | 1% | 29% | 2% | 4% | 1% |
| Non-FHMC | 29% | 3% | 4% | 1% | 30% | 3% | 4% | 1% |
| HMC | 35% | 5% | 6% | 1% | 35% | 6% | 6% | 1% |
| FHMC | 38% | 5% | 6% | 1% | 38% | 6% | 6% | 1% |
| | | | | | | | | |
| Job Access -- % of Medium-Wage Jobs in MPA | | | | | | | | |
| | Base Year (2015) Conditions | | | | MTIP Network | | | |
| | A | T | B | W | A | T | B | W |
| All MPA | 20% | 2% | 3% | 0% | 20% | 3% | 3% | 0% |
| Non-HMC | 18% | 1% | 2% | 0% | 18% | 1% | 2% | 0% |
| Non-FHMC | 18% | 2% | 3% | 0% | 18% | 2% | 3% | 0% |
| HMC | 21% | 3% | 3% | 1% | 21% | 3% | 3% | 1% |
| FHMC | 23% | 3% | 4% | 1% | 23% | 4% | 4% | 1% |

*Table 6. Access to Low and Middle Wage Jobs – Non-Peak Travel Period*

| Job Access -- % of All Jobs in MPA | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Base Year (2015) Conditions | | | | MTIP Network | | | |
| | A | T | B | W | A | T | B | W |
| All MPA | 21% | 2% | 3% | 0% | 21% | 2% | 3% | 0% |
| Non-HMC | 19% | 1% | 2% | 0% | 19% | 1% | 2% | 0% |
| Non-FHMC | 19% | 1% | 2% | 0% | 19% | 1% | 2% | 0% |
| HMC | 22% | 2% | 3% | 0% | 22% | 2% | 3% | 0% |
| FHMC | 23% | 2% | 3% | 0% | 23% | 3% | 3% | 0% |
| | | | | | | | | |
| Job Access -- % of Low-Wage Jobs in MPA | | | | | | | | |
| | Base Year (2015) Conditions | | | | MTIP Network | | | |
| | A | T | B | W | A | T | B | W |
| All MPA | 38% | 3% | 5% | 1% | 38% | 3% | 5% | 1% |
| Non-HMC | 35% | 1% | 4% | 1% | 35% | 2% | 4% | 1% |
| Non-FHMC | 35% | 2% | 4% | 1% | 35% | 2% | 4% | 1% |
| HMC | 39% | 4% | 6% | 1% | 39% | 4% | 6% | 1% |
| FHMC | 42% | 4% | 6% | 1% | 42% | 5% | 6% | 1% |
| | | | | | | | | |
| Job Access -- % of Medium-Wage Jobs in MPA | | | | | | | | |
| | Base Year (2015) Conditions | | | | MTIP Network | | | |
| | A | T | B | W | A | T | B | W |
| All MPA | 23% | 2% | 3% | 0% | 23% | 2% | 3% | 0% |
| Non-HMC | 21% | 1% | 2% | 0% | 21% | 1% | 2% | 0% |
| Non-FHMC | 21% | 1% | 3% | 0% | 21% | 1% | 3% | 0% |
| HMC | 24% | 2% | 3% | 1% | 24% | 3% | 3% | 1% |
| FHMC | 25% | 2% | 4% | 1% | 25% | 3% | 4% | 1% |

Additionally, the Access to Jobs system evaluation measure assessed the ratio of jobs which are accessible by transit relative to automobile (i.e. driving). The assessment illustrates for the region, transit access to low and middle wage jobs does not rise above 13% during peak travel period and 9% during off-peak travel. This means about 13% or 9% of these wage jobs are accessible by transit relative to driving. However, in historically marginalized communities and focused historically marginalized communities (i.e. areas of concentration), the ratio of low and middle wage jobs accessible by transit is slightly higher at 16% during peak travel and 11% during off-peak travel. What this demonstrates is that transit investments are being directed in areas with historically marginalized communities and focused historically marginalized communities and providing slight jobs access benefit by transit.

*Table 7. Access to Low and Middle Wage Jobs – Transit Access Relative to Automobile Access*

| **Job Access -- Jobs Inaccessible By Transit (Transit Accessible Jobs / Auto Accessible Jobs)** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **Base Network** | | **MTIP Network** | | **Base Network** | | **MTIP Network** | |
| | **Peak Travel Period** | | | | **Off-Peak Travel Period** | | | |
| | **Low Wage** | **Mid Wage** | **Low Wage** | **Mid Wage** | **Low Wage** | **Mid Wage** | **Low Wage** | **Mid Wage** |
| **All MPA** | 12% | 12% | 13% | 13% | 8% | 8% | 9% | 9% |
| **Non-HMC** | 7% | 7% | 7% | 7% | 4% | 4% | 5% | 5% |
| **Non-FHMC** | 9% | 9% | 9% | 9% | 6% | 6% | 6% | 6% |
| **HMC** | 14% | 14% | 16% | 16% | 10% | 9% | 11% | 11% |
| **FHMC** | 14% | 14% | 16% | 16% | 9% | 9% | 11% | 11% |

Access to Travel Options – System Connectivity and Completeness

The Access to Travel Options system performance measure is looking at four different elements of the transportation system: 1) completeness of the identified regional active transportation network; 2) completeness of sidewalks and bikeways to access transit stops; 3) the change in miles and density of streets, sidewalks, bikeways, and trails; and 4) the timing of the investments. For the assessment of the 2018-2021 MTIP, the assessment of the timing of investments is not an applicable analysis because the transportation investments are scheduled to occur (and have secured transportation funding) within federal fiscal years 2018-2021. At the time of mailing of this memorandum, only the change in miles and density component had been completed as part of the analysis. Therefore the results illustrated below are primarily looking at the miles of system completeness and the density streets and the active transportation system.

The 2018-2021 MTIP investments appear to be increasing the miles of completeness and density of the active transportation and street network region-wide as well as in areas with historically marginalized and focused historically marginalized communities. For the historically marginalized and focused historically marginalized communities, the increase in additional miles and density appears to be at a higher rate than the region. The minor exception to this may be the street network density, where not change was seen. This may be in part due to a continuation of Metro's regional flexible fund allocation and to emphasize travel options and social equity as criteria for transportation investments.[9] Additionally, in the previous ODOT Region 1 Enhance cycle, the limited amount of funding available for the Enhance program statewide, shifted the emphasis to non-highway and active transportation investments. The result of the increased miles of sidewalks, bikeways, and trails demonstrates progress in completing the active transportation network in areas with historically marginalized and focused historically marginalized communities and higher

[9] The 2019-2021 Regional Flexible Fund and the 2019-2021 Region 1 Enhance Non-Highway allocations incorporated criteria pertaining to travel options, transportation safety, and equity.

use. The increase in density illustrates more sidewalks, bikeways, and trails available, furthering the completeness, in the areas with historically marginalized and focused historically marginalized communities. However, the increased miles and density does not speak to connectivity of the active transportation network.

*Table 8. 2018-2021 MTIP Investments – Additional Miles and Density of System*

| **Streets – Additional Miles and Density of the System** | | | | | | | |
|---|---|---|---|---|---|---|---|
| | **# of projects** | **Existing miles** | **Additional miles** | **% difference** | **Existing density** | **Density difference** | **% density difference** |
| Total Projects | 3 | 46342 | 2.8 | 0.0% | 34.45 | 0.00 | 0.0% |
| HMC | 2 | 30027 | 2.3 | 0.0% | 43.13 | 0.00 | 0.0% |
| FHMC | 2 | 15985 | 0.5 | 0.0% | 53.44 | 0.00 | 0.0% |
| **Sidewalks – Additional Miles and Density of the System** | | | | | | | |
| | **# of projects** | **Existing miles** | **Additional miles** | **% difference** | **Existing density** | **Density difference** | **% density difference** |
| Total Projects | 24 | 2878 | 37.5 | 1.3% | 2.14 | 0.03 | 1.3% |
| HMC | 23 | 1967 | 29.2 | 1.5% | 2.83 | 0.04 | 1.5% |
| FHMC | 16 | 1070 | 19.8 | 1.8% | 3.58 | 0.07 | 1.8% |
| **Bikeways – Additional Miles and Density of the System** | | | | | | | |
| | **# of projects** | **Existing miles** | **Additional miles** | **% difference** | **Existing density** | **Density difference** | **% density difference** |
| Total Projects | 28 | 1700 | 44.5 | 2.6% | 1.26 | 0.03 | 2.6% |
| HMC | 25 | 1144 | 36.7 | 3.2% | 1.64 | 0.05 | 3.2% |
| FHMC | 18 | 640 | 24.7 | 3.9% | 2.14 | 0.08 | 3.9% |
| **Trails – Additional Miles and Density of the Syste,** | | | | | | | |
| | **# of projects** | **Existing miles** | **Additional miles** | **% difference** | **Existing density** | **Density difference** | **% density difference** |
| Total Projects | 11 | 937 | 15.1 | 1.6% | 0.70 | 0.01 | 1.6% |
| HMC | 8 | 464 | 11.3 | 2.4% | 0.67 | 0.02 | 2.4% |
| FHMC | 7 | 244 | 8.0 | 3.3% | 0.82 | 0.03 | 3.3% |

Share of Transportation Safety Projects and Per Capita Spending in Transportation Safety

Within the 2018-2021 MTIP, approximately 39% of the transportation projects and 13% of the investment program are identified as transportation safety-related.[10] The number of projects in transportation safety in the 2018-2021 MTIP is not a surprising recognizing for many years safety has been a U.S. DOT priority and there is federal highway administration funding program dedicated towards implementing transportation safety measures. Additionally, transportation safety has also been criteria for the MPO regional flexible funds. However, the investment level is transportation safety only makes up a small component of the overall 2018-2021 MTIP.

[10] Note, the total number of 2018-2021 MTIP projects are from January 2017. The total number of projects are subject to change based on project implementation delay and carrying over from the 2015-2018 MTIP to the 2018-2021 MTIP. Additionally, at the time of request project cost information had not been finalized for all projects therefore cost information was unavailable for four identified transportation safety projects.

*Table 9. 2018-2021 MTIP – Summary of Identified Transportation Safety Projects*

| | Total | Estimated 2018-2021 MTIP cost | Safety projects | Estimated 2018-2021 MTIP safety cost | % Projects | % Investment |
|---|---|---|---|---|---|---|
| Total 2018-2021 MTIP projects[11] | 163 | -- | 64 | -- | 39% | -- |
| Total 2018-2021 MTIP cost | 157 | $ 1,174,264,122 | 60 | $ 152,407,484 | 38% | 13% |

While only 13% of the 2018-2021 MTIP represent transportation safety investments, when looking more closely at where the transportation safety investments are being made is between half (50%) to two-thirds (66%) of safety investments are being made in historically marginalized communities and focused historically marginalized communities.[12] Furthermore, the transportation safety investments being made in historically marginalized communities and focused historically marginalized communities represent a total of 76% and 60% of the transportation safety investments respectively. At a per capita basis, region-wide, transportation safety level is at $98 per person, where investment level within historically marginalized and focused historically marginalized communities is at $177 and $156 per person respectively. These results appear to indicate a level of transportation safety investment is being targeted in historically marginalized communities at a per capita level greater than the region. The results show transportation safety investments levels moving in the direction desired by historically marginalized communities and the assumed outcome would be of these investments would be safer streets for all users.

*Table 10. Transportation Safety Investment Levels in Communities and Per Capita Expenditure*

| | Total projects | % of project total | Estimated 2018-2021 MTIP safety cost | % of investment total | Population | Cost per person |
|---|---|---|---|---|---|---|
| Total 2018-2021 MTIP Projects | 157 (163) | 100% | $ 1,174,264,122 | 100% | 1,559,517 | $ 753 |
| Total 2018-2021 MTIP transportation safety projects | 60 (64) | 38% | $ 152,407,484 | 13% | 1,559,517 | $ 98 |
| Within HMC (transportation safety only) | 40 | 66% (of 38%) | $ 115,072,066 | 76% (of 13%) | 650,849 | $ 177 |
| Within FHMC (transportation safety only) | 30 | 50% (of 38%) | $ 91,000,398 | 60% (of 13%) | 583,087 | $ 156 |



Exposure to Vehicle Miles Traveled (VMT) and Crash Risk

Overall, the 2018-2021 MTIP investments appear to be slightly increasing vehicle miles traveled (VMT) region-wide, but a minor reduction of VMT is projected in historically marginalized

[11] See footnote 10.

[12] At the time of the 2018-2021 MTIP data request, some transportation safety projects were unable to provide exact locations of where the investments would be made. These investments provided programmatic areas (e.g. City of Gresham or City of Portland), but due to the lack of defined spatial information, they were therefore excluded from the geographic assessment looking at transportation safety investments in historically marginalized and focused historically marginalized communities. The number of projects affected in this way includes 16 projects representing approximately $32 million of investments. These 16 projects were included as part of the region-wide per capita spending on transportation safety investments.

communities and focused historically marginalized communities.[13] Table 11. illustrates the change in VMT with the 2018-2021 MITP investments.

*Table 11. Aggregate Vehicle Miles Traveled (VMT)*

| Base Year Regionwide VMT (2015) | 2018-2021 MTIP Regionwide VMT | Difference in VMT (MTIP – Base Year) | Percent Difference |
|---|---|---|---|
| 17,607,229 | 17,617,629 | 10,401 | 0.1% |
| **Base Year HMC VMT (2015)** | **2018-2021 MTIP HMC VMT** | **Difference in VMT (MTIP – HMC Base Year)** | **Percent Difference** |
| 9,697,260 | 9,667,200 | -30,060 | -0.3% |
| **Base Year FHMC VMT (2015)** | **2018-2021 MTIP FHMC VMT** | **Difference in VMT (MTIP –FHMC Base Year)** | **Percent Difference** |
| 7,072,110 | 7,062,050 | -10,059 | -0.1% |

Because VMT is correlated with and one of many factors contributing to crashes on the transportation system, the slight increase in VMT projected means the region must be diligent in implementing countermeasures and the other principles of transportation safety (the six E's – engineering, education, encouragement, enforcement, equity, and evaluation), to reduce the overall exposure and risk of crashes.

However, a positive result seen from the assessment is a minor decrease in VMT is projected in area with historically marginalized communities and focused historically marginalized communities. The decrease is minor at .3% and .1% respectively. Nonetheless, the projected results illustrate the 2018-2021 MTIP investments are performing in the desired direction in that exposure to VMT in these communities is going down, even if it is slightly increasing overall. The decrease in VMT in these communities may be a result of recent funding allocation programs to emphasize travel options, transportation safety considerations, and social equity as criteria for transportation investments.[14] Additionally, ODOT's reorganization of the Highway Safety Improvement Program (HSIP) which was limited to certain facilities, to the All Roads Transportation Safety (ARTS) may have also influenced the minor VMT changed projected. However, the assessment should note, absolute exposure to VMT (i.e. # of VMT) experienced in different parts of the region, including in areas with historically marginalized and focused historically marginalized communities, can vary.

Overall, the 2018-2021 MTIP investments projected only minor changes in VMT for the region and in areas with historically marginalized communities and focused historically marginalized communities. While the projected VMT in historically marginalized communities and focused historically marginalized communities saw a projected decrease, the exposure to VMT will likely be experienced as incremental or unchanged by these communities.

Habitat Impact

Overall, the 2018-2021 MTIP investments potentially have a disproportionate impact on high value habitats in areas where there are historically marginalized and focused historically marginalized communities. The habitat analysis illustrates that more than half of the transportation investments identified within the 2018-2021 MTIP which may have a potential environmental impact in historically marginalized and focused historically marginalized communities.

[13] See footnote 7.

[14] The 2019-2021 Regional Flexible Fund and the 2019-2021 Region 1 Enhance Non-Highway allocations incorporated criteria pertaining to travel options, transportation safety, and equity.

*Table 12. 2018-2021 MTIP Investments Intersecting High Value Habitats and Historically Marginalized Communities & Focused Historically Marginalized Communities*

| | Projects | Percentage |
|---|---|---|
| Total Projects 2018-2021 MTIP | 163* | -- |
| Total Projects with Potential Impact to High Value Habitat | 51* | 31% |
| Projects with Potential Impact to High Value Habitat and Intersect with Historically Marginalized Communities | 38 | 75% |
| Projects with Potential Impact to High Value Habitat and Intersect with Focused Historically Marginalized Communities | 28 | 55% |

** Indicates 2018-2021 MTIP which detailed spatial information was provided.*

As indicated by TPAC and MTAC, there are a number of assessments a transportation project must undergo during project development. This includes an analysis of the environmental impacts and proposed mitigation. Additionally, as some transportation practitioners indicated, during project developed, the mitigation strategies carried out as part of the requirements of the project have the potential to improve the environmental conditions.

Nonetheless, the disproportional percentage of 2018-2021 MTIP transportation investments with a potential impact to high value habitat in areas with historically marginalized and focused historically marginalized communities indicates the information of the potential impact be brought forward so appropriate consideration be incorporated. The following course of actions are recommended to address the potential disproportionate impact:

- Metro staff will further look through the list of projects which overlap high value habitats and historically marginalized and focused historically marginalized communities to better understand the scope and scales of the individual projects and group them into tiers. The tiers will help to prioritize which projects which are more likely higher risk for environmental impacts.
- The tier information and the identified list of transportation investments which have a potential environmental impacts in historically marginalized and focused historically marginalized communities will be provided to sponsoring jurisdictions and the ODOT local liaison program to monitor and track outcomes of the environmental assessment, mitigation strategies, and how historically marginalized communities were part of the development of the environmental considerations.
- Follow up will be requested by Metro to the sponsoring jurisdictions on the higher risk projects to report as part of the next MTIP cycle.

**Findings and Recommendations**

The results of the 2018-2021 MTIP Transportation Equity Assessment demonstrates the region's transportation investments slated for federal fiscal years 2018-2021 tend to perform in the desired direction on the identified transportation evaluation measures historically marginalized communities expressed as priorities. With the exception of habitat impact, accessibility as represented to getting to jobs, places, and connecting the system, and transportation safety, as represented by exposure to VMT and safety project investments, tend to be making progress and moving in a positive direction in areas where there are historically marginalized communities with the upcoming planned transportation investments. The 2018-2021 MTIP, while only an incremental level of investment in the transportation system seeks to achieve multiple outcomes, including having benefits be realized in and for historically marginalized communities, albeit gradually which may not satisfy communities.

Key findings from the 2018-2021 MTIP Transportation Equity Assessment

Overall Findings

- The 2018-2021 transportation investments being made to the transportation system by MTIP partners (Metro, ODOT, SMART, and TriMet), at an aggregate scale, tend to perform in the desired direction on transportation metrics in which historically marginalized communities have identified as priorities. This rings true for the access and safety measures, and yet to be determined for the affordability measure. As a result, the general positive direction will have realized benefits for historically marginalized communities, albeit the benefits may be incremental or hard to notice in a day-by-day interaction.
- A potential disproportionate impact of high value habitats in historically marginalized and focused historically marginalized communities may be present. In recognizing this potential disproportionate impact, a set of recommendations to monitor the potential habitat impacts are being recommended as the 2018-2021 MTIP investments move forward from project development to construction.
- Further discussion and direction is needed from historically marginalized communities as to whether to evaluate transportation maintenance and operations programs (e.g. paving, signage, illumination, traffic signals, bus replacements and track work) differently and in a more simplified manner compared to capital projects (e.g. new bicycle lanes, high capacity transit lines, auxiliary lanes on freeways).
- There is significant recognition the aggregate scale of the analysis is not illustrating the differences in different parts of the region around safety, accessibility and impact to habitat by historically marginalized communities. Additionally, there is recognition that the aggregate scale analysis is not capturing experienced differences.

Technical Lessons Learned

- The 2018-2021 MTIP investments demonstrated there continues to be a need to test the transportation equity system evaluation measures to work through the different unexpected technical challenges and also better understanding the results.
- Collecting the transportation data, even for projects being programmed in the upcoming four years remains challenging, especially because a number of transportation investments are grouped into programs and spatial data was not available at the time of conducting the analysis.
    - This was experienced for a number of transportation maintenance programs, including updating illumination on roadways, pavement markings, and bus replacements.
- The nature of the transportation equity assessment is better designed for evaluating capital transportation investments which comprises of a much more limited portion of the 2018-2021 MTIP investments.
- Using the travel demand model for transportation equity assessments are limited by the types of projects and investments which can get modeled and when the project is expected to be open for service. For example, certain large-scale capital projects were not assessed in the model because they are currently in project development (e.g. Southwest Corridor);
    - As a result, using the travel demand model on a four-year investment program proved only a limited number of projects are able to be assessed and a limited set of changes projected.
- Base-year conditions for each transportation equity system evaluation measure are not enough context to help ground the results of each measure aside from a high-level directional finding.
- The investment scenarios for the 2018 RTP may prove to provide more information about how well the transportation investments perform relative to transportation priorities

identified by historically marginalized communities. The broader issue for the 2018 RTP will be defining ways to ensure the long-range outlook of investments gets realized.

- The programmatic nature of the transportation equity system evaluation can only really speak to the general direction of how transportation investments perform at an aggregate scale.
    - Therefore the results as they pertain to historically marginalized communities lack any granularity and cannot show extremes of differences experienced by communities.

Based on the results of the 2018-2021 MTIP Transportation Equity Assessment, Metro staff has developed a suite of recommendations and refinements to help improve and calibrate the assessment for the 2018 RTP.

*Table 13. Recommendations and Refinements*

| *Recommendations and Refinements Directed Towards the Assessment (for current and future cycles)* |
|---|
| Request all system evaluations provide details for the non-historically marginalized communities (non-HMC) and non-focused historically marginalized communities (non-FHMC) to help provide other comparisons and context for the assessment results. |
| Despite the number of limitations of the transportation equity assessment, continue to conduct the analysis to gather a general sense of how a package of investments perform relative to priorities identified by historically marginalized communities. Additionally, take further time to look into the results and see if there are opportunities for looking at differences for historically marginalized communities in different parts of the region. |
| Base-year conditions for each transportation equity system evaluation measure are not enough context to help ground the results of each measure aside from a high-level directional finding. Additional existing analysis (for example, the population of each of the historical marginalized communities) are needed to help contextualize the results. |
| Potentially develop a streamlined and simplified analysis method for transportation maintenance and operations programs which allow the current method of the transportation equity assessment better focus and assess transportation capital investments. |
| Finalize and test an affordability system evaluation measure to capture how the package of transportation investments performs. |
| Visualization of the data and results should be included for the next run the transportation equity assessment, which will take place as part of the 2018 RTP. |
| *Recommendations and Refinements Directed Towards the 2018-2021 MTIP Assessment Results* |
| Continue to monitor the 2018-2021 MTIP investments to ensure the positive progress being made in transportation safety, accessibility, and environment become realized. |
| Follow through with the course of actions regarding the potential disproportionate impact of high value habitats in historically marginalized communities. |
| Incorporate visualizations (maps, charts, graphs) of the data, if time allows, for the public comment draft of the 2018-2021 MTIP, which the transportation equity assessment will be one component. |

**Discussion Questions**

Based on the analysis of the 2018-2021 MTIP investments and the results of the transportation equity system evaluation measures, the following discussion questions are being asked for discussion with the work group:

1. What are your thoughts on the results and findings from the 2018-2021 MTIP transportation equity assessment? Do the analysis results show any surprises?
2. Are there other actions which should be recommended as part of the further investigation and monitoring of the potential disproportionate impact to high value habitat in historically marginalized communities?
3. Does the work group agree with the technical refinements and recommendations for Metro staff to continue to work through in order to prepare for the 2018 RTP? Are there other technical refinements for suggestion?

**Next Steps**
Metro staff will look to incorporate comments from the work group into the documentation of the 2018-2021 MTIP transportation equity assessment. Additionally, Metro staff will work to finalize the draft results, findings, and recommendations for the 2018-2021 MTIP transportation equity assessment. In anticipation and preparation of the 2018 RTP call-for-projects, Metro staff will continue to work through the individual system evaluation measures to gather more insight as to the results and making targeted refinements to the evaluation measures in preparation of the 2018 RTP call-for-projects.

A 30-day public comment period for the 2018-2021 MTIP will begin on April 24th, 2017. The public comment period provides the opportunity for work group members and other stakeholders the opportunity to provide formal comment to the 2018-2021 MTIP Transportation Equity Assessment.

The transportation equity work group will next meet in autumn 2017 to discuss the results of the 2018 RTP transportation equity assessment.

| ID No. | PROJECT NAME | COUNTY | CITY | PROJECT DESCRIPTION | SOURCE | Access to Jobs | Access to Places | Exposure to VMT | Transportation Safety Investments | Access to Travel Options | Resource Habitats | Estimated Project Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | CLACKAMAS COUNTY REGIONAL FREIGHT ITS PROJECT | Clackamas | --- | System enhancements to reduce freight delays in congested areas. This project will implement projects identified in the County Freight ITS Plan. Components will be selected from or consistent with the Portland Metro ITS/Transportation System Management and Operations (TSMO) Plan. | STIP | N | N | N | N | N | Y | $ 880,419 |
| 2 | SE 129TH AVENUE - BIKE LANE AND SIDEWALK PROJECT | Clackamas | Happy Valley | Sidewalk and add bike lanes | STIP | Y | Y | Y | Y | Y | N | $ 3,105,644 |
| 3 | Kronberg Park Multi-Use Trail | Clackamas | Milwaukie | This project would construct the Multi-Use trail element of the Robert Kronberg Nature Park Master Plan and would connect downtown Milwaukie and the new Main Street Max station with the regional Trolley Trail. This is the final portion of the trail and would connect the crossing at River Road across Highway 99E to improvements already constructed at the new bridge across Kellogg Lake | Connect Oregon | Y | Y | Y | Y | Y | N | $ 1,185,735 |
| 4 | Molalla Avenue Walking and Biking Improvements | Clackamas | Oregon City | Connect downtown Oregon City to Clackamas Community College by constructing bike lanes, street trees and lighting, wide sidewalks, better bus stops and safer street crossings. | RFFA | Y | Y | Y | Y | Y | N | $ 3,985,379 |
| 5 | OR43 Multimodal Transportation Project | Clackamas | West Linn | Design and right-of way to be funded by enhance program in support of constructing cycle track and sidewalk along OR-43 from Arbor Dr to Hidden Springs Rd and construct about 7,500 sq ft. of new road extending Hidden Springs Rd to Old River Rd. | STIP | Y | Y | Y | Y | Y | N | $ 1,281,000 |
| 6 | Highway 43 Walking and Biking Improvements | Clackamas | West Linn | Along Highway 43 construct sidewalks, separated bike lanes, marked crosswalks, improved transit stops and lighting. | RFFA | Y | Y | Y | Y | Y | N | $ 3,400,000 |
| 7 | I-5 Walking and Biking Bridge | Clackamas | Wilsonville | Construct a walking and biking bridge over Southeast Boones Ferry Road and Southwest Town Center Loop West. | RFFA | | | | N | Y | N | $ 2,976,423 |
| 8 | Seventies Neighborhood Greenway | Multnomah | Portland | Project includes: traffic calming and way-finding elements on local streets, some paving, crossing improvements, and multi-use path through Rose City Golf Course to address a gap in north-south bicycle and pedestrian facilities near 82nd avenue. | STIP | Y | Y | Y | N | Y | N | $ 5,010,706 |
| 9 | ST JOHNS TRUCK STRATEGY PHASE II | Multnomah | Portland | Freight mobility, bicycle and pedestrian safety improvements to N Lombard, N Fessenden/St Louis and N Portland Rd/Columbia corridors. | STIP | N | N | N | Y | Y | Y | $ 3,345,990 |
| 10 | Flanders Crossing Active Transportation Bridge | Multnomah | Portland | The project will construct a new pedestrian/bicycle overcrossing of I-405 at NW Flanders St. NW Flanders is a neighborhood greenway bicycle and pedestrian route that connects NW Portland with the Pearl District, Old Town and Downtown Portland. This project will reconnect Flanders for bicycles and pedestrians with a 24' wide bridge that will also serve as a seismic lifeline route. | Connect Oregon | Y | Y | Y | N | Y | N | $ 2,877,000 |
| 11 | NE COLUMBIA BLVD: CULLY BLVD & ALDERWOOD RD | Multnomah | Portland | Install or replace a signal and construct a taper on Columbia Blvd's east leg at Alderwood for future side-by-side left-turn lanes between Cully and Alderwood. Construct sidewalks at the Columbia/Alderwood intersection and on N side to Cully. | STIP | Y | Y | Y | N | Y | Y | $ 5,058,349 |
| 12 | Stark Street Multimodal Connections | Multnomah | Gresham / Troutdale | Project will close an existing east-west gap in bicycle and pedestrian travel by constructing sidewalks and bike lanes on the north side and part of the south side of SE Stark Street between SW 257th Ave and S Troutdale Rd. | STIP | Y | Y | Y | Y | Y | N | $ 4,114,377 |
| 13 | 40 MILE LOOP: BLUE LAKE PARK - SUNDIAL RD | Multnomah | Fairview / Troutdale | Reconstruct 1.7 miles of mixed use trail | STIP | N | N | N | N | Y | N | $ 3,424,073 |
| 14 | SANDY BLVD: NE 181ST AVE - EAST GRESHAM CITY LIMIT | Multnomah | Gresham | Widen the lane configuation from three to five lanes. Add second left turn lane from Sandy Boulevvard from 181st Avenue for southbound traffic. Rewire existing signal, rewire pedestrian pole, add new westbound turn-head and realign heads on other approaches. Construct 3000 foot extension of multiuse path on north side of Sandy between 185th and 201st Avenues. Construct 1,350 foot of new multiuse path on south side of Sandy boulevard between 181st Avenue and Boeing entrance. | STIP | Y | Y | Y | N | TBD | Y | $ 3,993,202 |
| 15 | SE 242ND/HOGAN: NE BURNSIDE - E POWELL (GRESHAM) | Multnomah | Gresham | Widen SE Hogan Road to provide increased access for economic development and freight mobility. The project includes signals, bicycle and pedestrian improvements to provide safer and improved access for all road users. | STIP | Y | Y | Y | N | Y | Y | $ 3,500,002 |
| 16 | CEDAR CREEK/TONQUIN TRAIL: OR99W - MURDOCK RD | Washington | --- | Construct a trail to better accommodate pedestrian access. | STIP | N | N | N | N | Y | N | $ 5,230,092 |
| 17 | Herman Road Walking and Biking Improvements | Washington | Tualatin | Complete project engineering to create separated bike lanes, sidewalks and transit stops along Herman Road. | RFFA | N | N | N | N | Y | N | $ 4,848,952 |
| 18 | MAIN ST PH 2: RAIL CORRIDOR - SCOFFINS (TIGARD) | Washington | Tigard | Green Street retrofit, pedestrian amenities and street lights. | STIP | N | N | N | N | Y | N | $ 2,225,000 |
| 19 | Beaverton Creek Trail | Washington | THPRD | Construct 1.5 miles of the Beaverton Creek Trail and provide an off-street link from Hocken Avenue to the Westside Trail. | RFFA | Y | Y | Y | N | Y | N | $ 5,758,078 |
| 20 | TRANSIT ORIENTED DEVELOPMENT PROGRAM | Various | --- | Work directly with developers and local jurisdictions to create vibrant downtowns main streets and station areas by helping to change land use patterns near transit. | RFFA | N | N | N | N | N | N | $ 10,999,666 |
| 21 | I-5 & I-205 SHARED USE PATHS | Multnomah | Maywood Park | Repave sections, install ADA ramps, drainage and address tree roots with structure. Repave transition to existing structure near I-84WB to I-205 to correct settlement. | STIP | N | N | N | N | N | N | $ 745,001 |
| 22 | PORTLAND TO MILWAUKIE LIGHT RAIL | Various | TriMet | This project extends light rail from PSU in downtown Portland to Milwaukie and north Clackamas County. It includes a multi-modal bridge carrying light rail, streetcar, buses, bicycles and pedestrians. | Transit | Y | Y | Y | N | Y | N | $ 68,006,708 |
| 23 | Division Bus Rapid Transit project | Multnomah | TriMet | Hight capacity transit on Division from Portland CBD to Gresham TC. | Transit | Y | Y | Y | N | N | N | $ 164,022,842 |
| 24 | REGIONAL TRAVEL OPTIONS PROGRAM | Various | --- | The Regional Travel Options (RTO) program implements strategies to help diversify trip choices reduce pollution and improve mobility. The RTO program includes the local grant program, marketing and outreach campaigns, the TriMet and SMART employter programs, program evaluation, and newly added Safe Routes to School. | RFFA | N | N | N | N | N | N | $ 10,353,282 |
| 25 | REGIONAL PLANNING | Various | --- | The MPO Planning program contributes to a broad range of activities within Metro that are linked to regional policy making and local planning support | RFFA | N | N | N | N | N | N | $ 4,413,240 |

| ID No. | PROJECT NAME | COUNTY | CITY | PROJECT DESCRIPTION | SOURCE | Access to Jobs | Access to Places | Exposure to VMT | Transportation Safety Investments | Access to Travel Options | Resource Habitats | Estimated Project Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 26 | TRANS SYSTEM MGMT & OPERATIONS PROGRAM | Various | --- | The Transportation System Management & Operations (TSMO) program coordinates both the planning and implementation of the regions system management and operations strategies to enhance multi-modal mobility for people and goods. | RFFA | N | N | N | N | N | N | $ 5,839,741 |
| 27 | Brentwood-Darlington Safe Routes to School | Multnomah | Portland | Construct sidewalks to fill critical gaps in the walking network in the Brentwood-Darlington neighborhood. | RFFA | Y | Y | Y | N | Y | N | $ 5,350,000 |
| 28 | I-205 Undercrossing (Sullivan's Gulch) | Multnomah | Portland | Project will provide safe access across I-205 for bicyclists and pedestrians by improving local street corridors on the west side of I-205 and constructing an east-west bicycle and pedestrian undercrossing. | STIP | N | N | N | Y | Y | N | $ 3,377,000 |
| 29 | Waterhouse Trail Segment 4 | Washington | Tualatin Hills Park & Recreation District | Construct approximately 700 feet and replace 275 feet of boardwalk of the Waterhouse Trail, completing the final gap in the 5.5-mile long off-street multi-use trail. The result will provide improved access and connection to transit, commercial and employment centers, residential neighborhoods, regional and community trails, schools, civic places, parks and recreation facilities, and natural areas | Connect Oregon | N | N | N | N | Y | Y | $ 400,000 |
| 30 | Portland Passenger-Freight Rail Speed Improvement Project | Multnomah | Union Pacific Corporation & Subsidiaries | Complete track, signal, and elevation improvements at a critical BNSF/UP junction in the Portland rail network. An existing 10mph speed restriction will be eliminated resulting in reduced train delay for the 35 daily Amtrak, UPRR, and BNSF trains using the junction. | Connect Oregon | N | N | N | N | N | Y | $ 8,294,124 |
| 31 | NE 238TH DR: NE HALSEY ST - NE GLISAN ST | Multnomah | Wood Village / Troutdale | Widen travel lanes and add bicycle and pedestrian facilities. | STIP | Y | Y | Y | N | Y | Y | $ 8,421,943 |
| 32 | OR8: SW HOCKEN AVE - SW SHORT ST | Washington | Beaverton | Design and construct streetscape, safety, and operational improvements on Canyon Rd in Beaverton between SW Hocken Ave and SW Short St. Upgrade or replace signals, improve access for pedestrians, and provide streetscape enhancements. | STIP | N | N | N | Y | Y | Y | $ 964,500 |
| 33 | OR8 Corridor Safety & Access to Transit II | Washington | Beaverton / Hillsboro | Project will improve safety and access to transit for pedestrians and cyclists along OR-8. Work includes: bike lane from SW 182nd Ave to SW 153rd Dr., pedestrian crossings, and separated walkway and bike lane across Rock Creek Bridge. | STIP | N | N | N | Y | Y | N | $ 1,614,000 |
| 34 | Basalt Creek Parkway Extension | Washington | Washington County | Connect SW Grahams Ferry Road and SW Boones Ferry Road by extending SW Basalt Creek Parkway. The new road will be a 5 lane facility, 2 east bound lanes, 2 west bound lanes, center turn lanes at the signals, 6-foot standard bicycle lanes, sidewalks and illumination. The signal at Grahams Ferry Rd will be adjusted and a new signal at Boones Ferry Rd will be installed. | RFFA | Y | Y | Y | N | Y | Y | $ 35,174,017 |
| 35 | JENNINGS AVE: OR99E TO OATFIELD RD | Clackamas | --- | Bike and pedestrian improvements along Jennings Ave from OR 99E (McLoughlin Blvd) to Oatfield Rd. The improvements include constructing a curb tight sidewalk on the north side of the road and constructing bike lanes on both sides of the road. | STIP | Y | Y | Y | Y | Y | N | $ 3,806,673 |
| 36 | Cully Walking and Biking Parkway | Multnomah | Portland | Create a high-quality walking and biking parkway along Northeast 72nd Avenue through the heart of the Cully neighborhood. Includes lighting and street trees. | RFFA | Y | Y | Y | N | Y | N | $ 5,996,306 |
| 37 | PORTLAND CENTRAL CITY SAFETY PROJECT - PHASE 2 | Multnomah | Portland | Develop a strategy that identifies multimodal safety projects and prioritizes investments | STIP | N | N | N | Y | N | N | $ 6,686,727 |
| 38 | OR99W: SW 26TH WAY-SW 19TH AVE (PORTLAND) | Multnomah | Portland | This project will build missing gaps in the sidewalks and bike lanes and make enhancements to existing intersections | STIP | Y | Y | Y | Y | Y | N | $ 2,111,445 |
| 39 | EAST PORTLAND ACCESS TO EMPLOYMENT AND EDUCATION | Multnomah | Portland | Sidewalks crossings bus stops bike facilities and other safety facilities | STIP | N | N | N | Y | Y | N | $ 9,213,195 |
| 40 | CONNECTED CULLY | Multnomah | Portland | Construct sidewalks and bike connections in the Cully Neighborhood | STIP | N | N | N | N | Y | N | $ 3,337,372 |
| 41 | WILLAMETTE GREENWAY TRAIL: COLUMBIA BLVD BRIDGE | Multnomah | Portland | Construct a bicycle and pedestrian bridge over Columbia Boulevard and an extension of the Willamette Greenway Trail from the existing termini in Chimney Park to the south end of the landfill bridge over the south Columbia Slough | STIP | Y | Y | Y | Y | Y | N | $ 2,612,381 |
| 42 | CORRIDOR & SYSTEMS PLANNING | Various | --- | Corridors and Systems Planning Program for the integration of land use and transportation. Determines regional system needs, functions, desired outcomes, performance measures and investment strategies. | RFFA | N | N | N | N | N | N | $ 1,849,994 |
| 43 | OR99W: SW BEEF BEND RD - SW DURHAM RD (KING CITY) | Washington | King City | Install sidewalk on the west side of OR99W | STIP | N | N | N | Y | Y | N | $ 1,036,427 |
| 44 | Terminal 6 Auto Staging Facility | Multnomah | Port of Portland | The project will construct a 19-acre auto staging facility across the street from the Terminal 6 entrance in the Port of Portland's Rivergate Industrial District. The new staging facility will improve logistical efficiency and increase the capacity to export vehicles from the Port's Berth 601 auto import/export facility. The Port expects to lease the facility to Auto Warehousing Co. (AWC) | Connect Oregon | N | N | N | N | N | Y | $ 2,628,700 |
| 45 | I-205: Division St - Killingsworth St | Multnomah | Portland / Maywood Park | Construct a NB Auxiliary lane on I-205 from the I-84 EB to I-205 NB off ramp at Killingsworth St and a SB Auxiliary lane on I-205 from I-84 EB to I-205 SB on ramp to the existing Auxiliary lane at Division / Powell St | STIP | Y | Y | Y | N | N | Y | $ 15,000,000 |
| 46 | OR8: CORRIDOR SAFETY & ACCESS TO TRANSIT | Washington | Beaverton | Sidewalk infill and improvements, Signal priority, bus stop relocations, bus pads, ADA improvements and enhanced pedestrian crossing. | STIP | N | N | N | Y | Y | N | $ 3,743,000 |
| 47 | Halsey Street Safety and Access to Transit | Multnomah | Portland | Provide improvements on Halsey Street around the 82nd Avenue MAX station. Includes intersection redesigns, better bus stops and crosswalks, bike lanes and a biking and walking path. | RFFA | Y | Y | Y | Y | Y | N | $ 2,992,800 |
| 48 | OR99W: CORRIDOR SAFETY & ACCESS TO TRANSIT | Multnomah / Washington | Portland / Tigard / King City | Sidewalk infill, enhanced pedestrian crossings, bus shelters and pads, bike and pedestrian facilities, retaining walls and drainage improvements, transit priority signals | STIP | N | N | N | Y | Y | N | $ 3,605,000 |
| 49 | I-5: INTERSTATE BRIDGE - HASSALO ST | Multnomah | Portland | Pavement rehabilitation 2 - 4 inch grind/inlay, guardrail & sign installation/replacement. Reinforced concrete pavement repair as necessary. Replace asphaltic plug joints on the Eliot School Viaduct. ADA ramps, inlet and manhole adjustments. Traffic loops | STIP | N | N | N | N | N | Y | $ 17,827,000 |

| ID No. | PROJECT NAME | COUNTY | CITY | PROJECT DESCRIPTION | SOURCE | Access to Jobs | Access to Places | Exposure to VMT | Transportation Safety Investments | Access to Travel Options | Resource Habitats | Estimated Project Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50 | REGIONAL ITS COMMUNICATIONS INFRASTRUCTURE (ODOT) | Various | --- | Complete gaps and deficiencies identified in the Regional ITS Communications Plan | STIP | N | N | N | N | N | N | $ 590,661 |
| 51 | US26: SE 282ND AVE (BORING RD) OXING | Clackamas | --- | Increase the clearance on US26 under the SE 282nd Ave (Boring Rd) Structure (Bridge no. 09381) and perform joint and deck work on the structure. | STIP | N | N | N | N | N | Y | $ 6,351,000 |
| 52 | OR99E RAILROAD TUNNEL ILLUMINATION AND ITS | Clackamas | Oregon City | Upgrade the illumination systems of the roadway and pedestrian tunnels that pass under the railroad. Install a Variable Message Sign (VMS) south of the tunnel. | STIP | N | N | N | Y | N | Y | $ 1,940,000 |
| 53 | I-5: N DENVER AVE NB TUNNEL ILLUMINATION | Multnomah | Portland | Upgrade the illumination system by replacing the electrical system including the replacement of the existing obsolete fixtures to current standard. | STIP | N | N | N | N | N | Y | $ 329,907 |
| 54 | OR99E: ROCKFALL MITIGATION MP12.62 - MP14.06 | Clackamas | Oregon City | Inspect and repair mesh. Scale slope behind mesh removing loose rock and vegetation. Rock bolting as needed and clear catchment area / roadside ditch | STIP | N | N | N | N | N | Y | $ 1,889,000 |
| 55 | OR8 AT OR219 AND SE 44TH – SE 45TH AVE (HILLSBORO) | Washington | Hillsboro | Signal replacement at OR219, add a striped island and candlesticks to the south leg of the intersection. Replace pedestrian flashing beacon with RRFB or pedestrian hybrid beacon at 44th - 45th Ave. Add illumination, signing and ADA ramps. | STIP | N | N | N | Y | N | N | $ 504,000 |
| 56 | OR8: SW10TH - SW 110TH | Washington | Beaverton / Hillsboro / Cornelius | Safety upgrades to install larger signal heads, reflective backboards, pedestrian countdown signals and left turn phasing where feasible | STIP | N | N | N | Y | N | N | $ 1,875,000 |
| 57 | US26 (POWELL BLVD): SE 20TH - SE 34TH | Multnomah | Portland | Signal upgrades with left turn phasing, countdown pedestrian signals. Remove trees to improve sight distance. Improve signing and illumination. Install rapid flash beacons and median pedestrian refuges. Improve existing islands and improve ADA access. | STIP | N | N | N | Y | N | N | $ 3,407,655 |
| 58 | DOWNTOWN I-405 PED SAFETY & OPERATIONAL IMPROVEMTS | Multnomah | Portland | BIKE, PEDESTRIAN AND OPERATIONAL IMPROVEMENTS | STIP | N | N | N | Y | N | N | $ 2,240,000 |
| 59 | OR141(SW HALL BLVD): SCHOLLS FERRY RD - HEMLOCK ST | Washington | Beaverton / Tigard | Construct ADA ramps | STIP | N | N | N | N | N | N | $ 586,707 |
| 60 | SMART ASSOCIATED IMPROVEMENTS & PREVENTATIVE MAINT | Clackamas | SMART | 5307 Funds for Preventative Maintenance, Associated Improvements and Bus Fleet Replacement FY18 | Transit | N | N | N | N | N | N | $ 1,344,414 |
| 62 | 5310 - SENIOR & DISABLED | Clackamas | SMART | Services & Facility Improvements for Elderly & Disabled Customers | Transit | | | | N | N | N | $ 153,750 |
| 63 | BUS AND BUS FACILITIES (CAPITAL) | Clackamas | SMART | Bus and Bus Facility Upgrades (FY18) | Transit | N | N | N | N | N | N | $ 288,700 |
| 64 | BUS PURCHASE | Various | TriMet | Bus Purchase | Transit | N | N | N | N | N | N | $ 13,118,147 |
| 65 | BUS & RAIL PREVENTIVE MAINT (5307) | Various | TriMet | Capital Maintenance For Bus And Rail, such as track and switch rehabilitation and replacement, Blue Line Station redesign and rehabilitation, vahicle and facility matainance. | Transit | N | N | N | N | N | N | $ 147,090,216 |
| 66 | BUS & RAIL PREVENTIVE MAINT (STP) | Various | TriMet | Capital Maintenance For Bus and Rail | Transit | N | N | N | N | N | N | |
| 67 | STATE OF GOOD REPAIR PROGRAM | Various | TriMet | Capital Maintenance For Bus and Rail | Transit | N | N | N | N | N | N | $ 95,569,886 |
| 68 | TRIMET ENHANCE MOBILITY PROGRAM | Various | TriMet | Paratransit services provided by TriMet LIFT, Wilsonville SMART, and small city transit agencies. Ride Connection-operated services, including door-to-door rides, community and senior center shuttles, and travel training. | Transit | N | N | N | N | N | N | $ 7,341,608 |
| 69 | HIGH CAPACITY TRANSIT BOND | Various | --- | Funding for development and construction of the region's high capacity transit system. | RFFA | N | N | N | N | N | N | $ 15,430,000 |
| 70 | SUNRISE SYSTEM: INDUSTRIAL AREA FREIGHT ACCESS | Clackamas | Happy Valley | Funding for a new two-lane state highway to provide freight access to the Clackamas Industrial Area and a multiuse path connecting to the I-205 multiuse path | STIP | N | N | N | N | Y | Y | $ 9,213,195 |
| 71 | OR212: Rock Creek - Richey Rd | Clackamas | Milwaukie / Happy Valley/ Johnson City | Repave roadway and upgrade ADA to current standards. Project adds necessary funds to design and construction of existing design-only project in 2015-2018 STIP. | STIP | N | N | N | N | N | Y | $ 500,000 |
| 72 | OR212: UPRR Structure - Rock Creek | Clackamas | Happy Valley | Repave roadway (1R) and upgrade ADA to current standards. Three inch inlay between fog lines (six inches beyond). Project adds necessary funds to design and construction. | STIP | N | N | N | N | N | Y | $ 750,000 |
| 73 | I-84/I-5: BANFIELD INTERCHANGE | Multnomah | Portland | Concrete deck overlay & bridge rail retrofit; bridges #08588A & 08588C | STIP | N | N | N | N | N | Y | $ 6,570,000 |
| 74 | I-405: FREMONT BRIDGE | Multnomah | Portland | Replace modular joints; bridges 09268B,09268N,09268S,08958B,08958D,08958I | STIP | N | N | N | N | N | Y | $ 5,750,000 |
| 75 | I-5: INTERSTATE BR (NB) TRUNNION SHAFT REPLACEMENT | Multnomah | Portland | Replace trunnion shaft; bridge #01377A. ODOT is lead on project with WSDOT paying 50% of total. | STIP | N | N | N | N | N | Y | $ 1,368,000 |
| 76 | I-5: MARQUAM BR ELECTRIC & LIGHTING SYSTEM REPLACE | Multnomah | Portland | Replace electrical & lighting system; bridge #08328 | STIP | N | N | N | N | N | Y | $ 1,848,076 |
| 77 | US26 (POWELL BLVD): SE 122ND AVE - SE 136TH AVE | Multnomah | Portland | Construct sidewalks, storm water facility, buffered or separated bike lane, center turn lane/median and 2x11-foot travel lanes. Mid-block pedestrian crossings and lighting improvements are included. | STIP | N | N | N | Y | Y | Y | $ 20,000,000 |
| 78 | NORTH HILLSBORO JOB CONNECTOR SHUTTLE | Washington | TriMet | Implement a new job connector shuttle service north and south of Hwy 26 supporting low and middle wage workers transit needs within the North Hillsboro Industrial District | Transit | Y | Y | Y | N | N | N | $ 6,971,798 |
| 79 | I-84: GRAHAM ROAD BRIDGE REPLACEMENTS | Multnomah | Troutdale | Replace bridges #07046 & 07046A at existing capacity | STIP | N | N | N | N | N | Y | $ 15,394,714 |
| 80 | NE KANE DRIVE AT KELLY CREEK CULVERT | Multnomah | Gresham | Remove existing temporary culvert. Install new culvert storm water system and repair roadway. Work includes upstream restoration and downstream pond mitigation. | STIP | N | N | N | N | N | Y | $ 5,775,001 |
| 81 | SE 122ND AVE: JOHNSON CREEK BRIDGE REPLACEMENT | Multnomah | Portland | Emergency replacement of bridge #51C20 at existing capacity | STIP | N | N | N | N | N | Y | $ 2,800,000 |

| ID No. | PROJECT NAME | COUNTY | CITY | PROJECT DESCRIPTION | SOURCE | Access to Jobs | Access to Places | Exposure to VMT | Transportation Safety Investments | Access to Travel Options | Resource Habitats | Estimated Project Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 82 | OR217/OR224: BRIDGE RAIL RETROFIT | Washington / Clackamas | Beaverton / Milwaukie | Bridge rail retrofit bridges 16134, 16143, 09623 | STIP | N | N | N | N | N | Y | $ 1,952,001 |
| 83 | OR212: N DEEP CREEK CULVERT | Clackamas | --- | Culvert replacement | STIP | N | N | N | N | N | Y | |
| 84 | US30: Kittridge - St. Johns | Multnomah | Portland | Repave roadway, upgrade ADA ramps to current standards, improve access management, and address drainage as needed. Pave Bridge Avenue. | STIP | N | N | N | N | N | Y | $ 8,449,000 |
| 85 | Region 1 Misc Hardware and Software | Various | VAR | Miscellaneous hardware and software improvements region-wide. This project will provide minor upgrades to ITS software and add minor hardware. Example projects are upgrades to Ramp Meter and ATM software, add CCTV cameras indentified by TMOC, and connect signalized intersections to existing fiber communication backbone. | STIP | N | N | N | N | N | N | $ 497,545 |
| 86 | Interstate Operations Improvements | Various | VAR | Bucket for regionwide Interstate Operations improvements | STIP | N | N | N | N | N | Y | $ 1,990,000 |
| 87 | Region 1 LEDs | Various | VAR | Bucket for region-wide Light Emitting Diodes (LEDs) upgrades | STIP | N | N | N | N | N | N | $ 99,509 |
| 88 | Region 1 Raised Pavement Markings | Various | VAR | Bucket for regionwide Raised Pavement Markings | STIP | N | N | N | Y | N | N | $ 99,509 |
| 89 | I-84: Fairview - Marine Dr & Tooth Rock Tunnel | Multnomah | Wood Village / Unincorporated | This project repaves a section of I-84 between Fairview and Marine Dr, repaves the Tooth Rock tunnel and installs a full signal upgrade (including ADA) at NE 238th Ave. | STIP | N | N | N | N | N | Y | $ 4,275,000 |
| 90 | US26: Sylvan - OR217 | Washington | Beaverton / Portland | Repave mainline (1R). | STIP | N | N | N | N | N | Y | $ 3,162,000 |
| 91 | US26: OR217 - Cornell Rd | Washington | Beaverton | Repave mainline (1R). | STIP | N | N | N | N | N | Y | $ 5,070,000 |
| 92 | US26 Ramp Improvements | Washington | Beaverton / Portland | Leverage 2018-2021 STIP projects on US-26, including paving and ADA upgrades. | STIP | N | N | N | N | N | Y | $ 1,000,000 |
| 93 | City of Gresham Safety Project | Multnomah | Gresham | Projects to be delivered by the City of Gresham to improve safety. Work may include illumination, intersection improvements, bike and pedestrian improvements, upgrade to ADA, utility relocation, signal work, medians, traffic separators, striping, signing, and warnings. | STIP | N | N | N | Y | N | Y | $ 1,846,200 |
| 94 | City of Portland Safety Project | Multnomah | Portland | Projects to be delivered by the City of Portland to improve safety. Work may include intersection improvements, utility relocation, signal work (including coordination or adaptive signal timing), medians, traffic separators, striping, signing, and warnings. Install new signal at Burnside/NW 20th | STIP | N | N | N | Y | N | Y | $ 2,599,400 |
| 95 | Systemic Signal and Illumination (Portland) | Multnomah | Portland | Projects at various locations in the City of Portland. Work may include illumination, intersection work, bike and pedestrian improvements, ADA upgrades, signal work, signs, warnings, striping, medians, and utility relocation. | STIP | N | N | N | Y | N | Y | $ 2,840,454 |
| 96 | Central Systemic Signal and Illumination (ODOT) | Multnomah | Portland | Projects at various locations in the City of Portland. Work may include illumination, intersection work, bike and pedestrian improvements, ADA upgrades, signal work, signs, warnings, striping, medians, and utility relocation. | STIP | N | N | N | Y | N | Y | $ 3,440,800 |
| 97 | East Systemic Signals & Illumination (Clackamas) | Clackamas | VAR | Safety projects at various locations in Clackamas Co. Work may include illumination, intersection work, bike and pedestrian improvements, ADA upgrades, signal work, signs, warnings, striping, medians, and utility relocation. | STIP | N | N | N | Y | N | Y | $ 1,098,900 |
| 98 | East Systemic Signals and Illumination (Multnomah) | Multnomah / Washington | Portland | Install illumination, advance intersection warning signs with street names, transverse rumble strips on approaches, and increase triangle sight distances at the intersections of OR-213 at Toliver and OR-211 at Ona Way. | STIP | N | N | N | Y | N | Y | $ 336,000 |
| 99 | East Systemic Signals and Illumination (ODOT) | Clackamas | VAR | Projects at locations in east jurisdictions of Portland. Work may include illumination, intersection work, bike/pedestrian improvements, ADA upgrades, signal work, signs, warnings, striping, medians, and utility relocation. | STIP | N | N | N | Y | N | Y | $ 3,176,000 |
| 100 | Rumble Strips and Conflict Markings (COP/WASH CO) | Multnomah / Washington | VAR | Install centerline rumble strips, green conflict markings and/or profile edge line pavement markings at various locations in Portland. | STIP | N | N | N | Y | N | Y | $ 694,600 |
| 101 | Rumble Strips (ODOT) | Clackamas / Hood / Multnomah / Washington | VAR | Install centerline rumble strips and install shoulder rumble strips on I-5, I-84, OR-43, US-26, OR-8, I-205, I-405, OR-99E, US-30, US-30BY, OR-217, OR-213, OR-211, OR-224, HWY-173 (Timberline), OR-212, OR-281, and OR-282. | STIP | N | N | N | Y | N | Y | $ 1,101,454 |
| 102 | US26: Middle Fork Salmon River Culvert | Clackamas | NA | Culvert replacement. This project will fund additional design and construction. | STIP | N | N | N | N | N | Y | $ 300,000 |
| 104 | Systemic Signals and Illumination (Beaverton) | Washington | Beaverton | Safety projects at various locations in Beaverton. Work may include illumination, intersection work, bike and pedestrian improvements, ADA upgrades, signal work, signs, warnings, striping, medians, and utility relocation. | STIP | N | N | N | Y | N | Y | $ 2,071,600 |
| 105 | West Systemic Signals & Illumination (Washington) | Washington | Beaverton / Hillsboro | Safety projects at various locations. Work includes illumination, intersection work, bike/pedestrian improvements, ADA upgrades, signal work, signs, warnings, striping, medians, and utility relocation. | STIP | N | N | N | Y | N | Y | $ 631,500 |
| 106 | West Systemic Signals and Illumination (ODOT) | Washington | VAR | Safety projects at various locations throughout Region 1. Work includes illumination, intersection work, bike/pedestrian improvements, ADA upgrades, signal work, signs, warnings, striping, medians, and utility relocation. | STIP | N | N | N | Y | N | Y | $ 3,643,200 |
| 107 | MORRISON STREET: WILLAMETTE RIVER (MORRISON) BR | Multnomah | Portland | Remove existing lead-based paint and apply new protective paint. Remove current debris from bridge bearings, paint. Add a maintenance access catwalk for the fixed river spans. | STIP | N | N | N | N | N | Y | |
| 108 | LATOURELL ROAD: LATOURELL CREEK BRIDGE | Multnomah | --- | Replace existing timber bridge at existing capacity | STIP | N | N | N | N | N | Y | |
| 109 | NW THURMAN ST OVER MACLEAY PARK | Multnomah | Portland | Design shelf ready plans to paint the bridge trusses and bents | STIP | N | N | N | N | N | Y | |
| 110 | SW Farmington Rd at 170th Ave | Washington | Aloha | Full signal rebuild with reflective backplates and illumination. Other work includes dilemma zone protection for east-west approaches, raised corner islands in NE and SW corners, channelized right turn lanes, ADA upgrades, and restripe crosswalks. | STIP | N | N | N | Y | N | N | $ 1,527,500 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 111 | Full Signal Upgrade (Portland) | Multnomah | Portland | Signals rebuild and upgrades at various locations in Portland. Work includes rebuild and installation of signals, warning systems, striping, lane adjustments, ADA upgrades, traffic separators, and other safety improvements as needed. | STIP | N | N | N | Y | N | N | $ 3,768,500 |
| 112 | US30 at NW Nicolai St | Multnomah | Portland | Full signal rebuild. Work includes queue warning system, dilemma zone protection, and additional through head on northbound approach; new signal heads; reflective back plates; and replace existing southbound signs with 45 degree right signs | STIP | N | N | N | Y | N | N | $ 926,500 |
| 113 | Rural Intersection and Curve Warning (Clackamas) | Clackamas | VAR | Install and or update advance warning signs, intersection signs, and other street signs and safety treatments at various rural intersections, roadway departures and curves throughout Clackamas County. | STIP | N | N | N | Y | N | N | $ 1,770,169 |
| 114 | Rural Intersection & Curve Warning (Washington) | Washington | VAR | Install and or update advance warning signs, intersection signs, and other street signs and safety treatments at various rural intersections, roadway departures and curves throughout Washington County. | STIP | N | N | N | Y | N | N | $ 156,647 |
| 115 | Rural Intersection and Curve Warning (ODOT) | Clackamas / Multnomah / Washington | Various | Install and or update advance warning signs, intersection signs, and other street signs and safety treatments at various rural intersections, roadway departures and curves throughout Region 1. | STIP | N | N | N | Y | N | N | $ 634,885 |
| 116 | I-84: East Portland Fwy - NE 181st Ave | Multnomah | Gresham / Portland / Maywood Park | Remove and replace asphalt surface to repair rutted pavement. | STIP | N | N | N | N | N | Y | $ 500,000 |
| 117 | I-5: I-205 Interchange - Willamette River | Various | Tualatin / Wilsonville | Remove and replace asphalt surface to repair rutted pavement. | STIP | N | N | N | N | N | Y | $ 7,193,000 |
| 118 | Lombard Safety Extension | Multnomah | Portland | Road diet between MP 3.50 and N Wilbur. Signal upgrades at Fiske, Woolsey, Chautauqua, Wabash, Peninsular, and Greeley. Remove half signal at Drummond. Install RRFB with pedestrian island near Drummond. Address ADA improvements and access management as needed. | STIP | Y | Y | Y | Y | N | Y | $ 2,000,000 |
| 119 | Road Safety Audit Implementation | Clackamas / Hood / Multnomah / Washington | VAR | Project to provide additional support to ARTS projects for further investigation (will not result in physical modifications) and evaluation of safety improvements as needed. | STIP | N | N | N | Y | N | Y | $ 596,100 |
| 120 | US30BY (Lombard) at Fenwick | Multnomah | Portland | Full signal upgrade, ADA improvements, and triggered access management. | STIP | N | N | N | Y | N | N | $ 1,217,896 |
| 121 | I-5: MP 303.27 - MP 308.63 | Multnomah | Portland | Install variable speed advisory signs on I-5 northbound and southbound from the Fremont Bridge to Marine Drive | STIP | N | N | N | Y | N | N | $ 7,799,500 |
| 122 | NE Halsey St at NE 47th Ave | Multnomah | Portland | Design partial signal rebuild to add left turn phasing, lenses, signal heads, reflectorized backplates, and ADA ramp upgrades | STIP | N | N | N | Y | N | N | $ 117,000 |
| 123 | OR99W (Pacific Hwy West) at SW 72nd | Washington | Tigard | Design partial signal rebuild, channelize 72nd right turn lane, illumination, ADA, and new crosswalk on SW leg of intersection | STIP | N | N | N | Y | N | N | $ 136,500 |
| 124 | SE Washington St at 10th AVE (Hillsboro) | Washington | Hillsboro | Design partial signal rebuild, striping, signing, ADA, and pedestrian improvements | STIP | N | N | N | Y | N | N | $ 97,500 |
| 125 | OR99W: I-5 - McDonald St | Multnomah / Washington | Portland / Tigard | Repave roadway, upgrade ADA ramps to current standards, improve access management, and address drainage as needed. Includes full signal upgrade at Johnson/Main. | STIP | N | N | N | N | N | Y | $ 9,419,000 |
| 126 | OR99W at Durham Rd | Washington | King City / Tigard | Signal Upgrade with ADA improvements | STIP | N | N | N | N | N | N | $ 968,750 |
| 127 | OR99W: I-5 - McDonald Bike Ped Infill | Multnomah / Washington | Portland / Tigard | Fill in sidewalk and bike lane gaps along OR99W in conjunction with the pavement preservation project planned in the area. | STIP | N | N | N | Y | Y | N | $ 986,000 |
| 128 | OR99W (Barbur Blvd) at SW Capitol Hwy | Multnomah | Portland | Prohibit NB left turns from OR99W onto I-5 ramp and redirect traffic flow through jug handle; Install EB right turn lane and new signal at Taylors Ferry; Address median gaps and striping; Add/improve signage; Install reflectorized backplates | STIP | Y | Y | Y | Y | N | Y | $ 2,975,700 |
| 129 | OR99W (Barbur Blvd): MP 8.01 to MP 11.50 | Washington | Tigard / King City | Install Illumination at 72nd Ave, Main & Johnson, McKenzie, School, Walnut, Frewing, Garrett, Park, Royalty Parkway, and Durham Rd. | STIP | N | N | N | Y | N | N | $ 1,177,000 |
| 130 | OR99W (Barbur Blvd): MP 7.58 to MP 15.00 | Multnomah / Washington | Portland / Sherwood / Tigard / Tualatin | Install illumination, reflectorized backplates, and supplemental signal heads at specific locations within the project limits and replace urban permissive or protected/permissive left turns to protected left only at 68th and 69th Avenues | STIP | N | N | N | Y | N | N | $ 1,450,000 |
| 131 | OR99W (Barbur Blvd): MP 4.08 to MP 7.55 | Multnomah | Portland | Install illumination at 60th Ave, 64th Ave, and I-5 southbound ramp; Install reflectorized backplates and supplemental signal head at Terwilliger Blvd, Bertha Blvd, Capitol Hill Rd, 19th Ave, 24th Ave, I-5 southbound ramp, 60th Ave, and 64th Ave | STIP | N | N | N | Y | N | N | $ 429,400 |
| 132 | I-5 at I-205 Interchange | Washington | Tualatin | Upgrade illumination towers up to amount of available budget and coordinate work with pavement preservation project in area. | STIP | N | N | N | N | N | N | $ 500,000 |
| 133 | OR8 at River Road | Washington | Hillsboro | Full signal upgrade with illumination and ADA improvements. | STIP | N | N | N | Y | N | N | $ 1,182,642 |
| 134 | OR224 at Lake/Harmony | Clackamas | Unincorporated | Replace overhead flasher with ground mounted advance flashers. | STIP | N | N | N | N | N | N | $ 109,078 |
| 135 | I-5: Barbur Blvd NB Connection Bridge | Washington | Portland | Paint structure; remove pack rust. Replace rivets and bolts. | STIP | N | N | N | N | N | Y | $ 1,662,000 |
| 136 | OR99W: Tualatin River Bridge | Washington | Tualatin | Design shelf ready plans to replace the current structural overlay | STIP | N | N | N | N | N | N | $ 188,500 |
| 137 | OR99E: Clackamas River (McLoughlin) Bridge | Clackamas | Gladstone | Design shelf ready plans to paint the structure | STIP | N | N | N | N | N | Y | $ 249,000 |
| 138 | OR210 over OR217 | Washington | Beaverton | Deck overlay; replace joints; patch column spalls | STIP | N | N | N | N | N | Y | $ 1,884,000 |
| 139 | Regionwide ITS Improvements and Upgrades | Clackamas / Multnomah / Washington | VAR | Project provides for new or upgraded variable message signs (VMS), travel-time signs, network/communication technology, and other intelligent transportation system (ITS) functionality at various locations in Region 1 | STIP | N | N | N | N | N | N | $ 1,746,000 |
| 140 | I-205 at OR43 | Clackamas | West Linn | Full Illumination Rebuild | STIP | N | N | N | N | N | N | $ 143,044 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 141 | Clackamas and Portland Traffic Separators | Multnomah / Clackamas | Portland / Unincorporated | Install traffic separators in various locations in Portland with associated striping, illumination, and signal coordination work | STIP | N | N | N | Y | N | N | $ 869,500 |
| 142 | OR217 (Beaverton-Tigard Hwy) at Kruse Way | Washington | Tigard | Advance actuated beacons, partial signal rebuild to add needed additional heads at 217 off ramp and I-5 SB on ramp, ped island improvements | STIP | N | N | N | Y | N | N | $ 136,500 |
| 143 | Region 1 Bike Ped Crossings | Clackamas / Multnomah / Washington | Portland | Bike and pedestrian crossing improvements at 82nd Ave (OR-213) at Mitchell, McLoughlin (OR-99E) at Boardman, and on Powell (US-26) at 125th. Includes RRFBs, medians, illumination, crosswalks, tree trimming/removal, and ADA upgrades. | STIP | N | N | N | Y | N | Y | $ 1,149,000 |
| 144 | I-205 Exit Ramp at SE Division St | Multnomah | Portland | Safety improvements on NB and SB I-205 exit ramps at SE Division street. Work includes lane adjustments, ramp widening, safety islands, signal work, illumination, signing, and ADA improvements as necessary. | STIP | Y | Y | Y | Y | N | Y | $ 3,305,000 |
| 145 | I-405: Willamette River (Fremont) Bridge | Multnomah | Portland | Paint bridge approaches; other section as funding allows | STIP | N | N | N | N | N | Y | $ 34,657,000 |
| 146 | I-405 NB to US26 WB over I-405 Connection Bridge | Multnomah | Portland | Deck overlay to seal the cracks and provide additional cover for the reinforcement. Rail retrofit. Address leaking joints. | STIP | N | N | N | N | N | Y | $ 1,540,000 |
| 147 | SW Multnomah Blvd over I-5 | Multnomah | Portland | Place a structural overlay on the deck, replace or repair the leaking joints, and retrofit the bridge rails to meet safety standards | STIP | N | N | N | N | N | Y | $ 1,563,000 |
| 148 | I-5 over 26th Avenue Bridge | Multnomah | Portland | Replace bridge | STIP | N | N | N | N | N | Y | $ 34,183,000 |
| 149 | OR99E over UPRR at Baldwin Strreet Bridge | Multnomah | Portland | Address the structural and safety issues. Replace rail and expansion joints, patch and seal spalls and cracks, and other measures for seismic retrofitting | STIP | N | N | N | N | N | Y | $ 3,383,000 |
| 150 | NORTH DAKOTA STREET: FANNO CREEK BRIDGE | Washington | Tigard | Construct a new single span bridge on the same alignment. Raise the vertical grade line to improve site distance approaching the railroad crossing. | STIP | N | N | N | N | Y | Y | |
| 151 | I-5: Tigard Interchange - I-205 Interchange | Multnomah / Washington | Tigard / Tualatin / Lake Oswego / Portland | Remove and replace asphalt surface to repair rutted pavement. | STIP | N | N | N | N | N | Y | $ 8,000,000 |
| 152 | OR213 (82nd Ave) at Madison High School | Multnomah | Portland | Replace signal, rebuild and restripe existing crosswalk, add crosswalks and close a driveway. | STIP | N | N | N | Y | N | N | $ 1,120,500 |
| 153 | I-205: Abernathy Bridge - SE 82nd Dr | Clackamas | Gladstone / Oregon City | Remove and replace asphalt surface to repair rutted pavement. | STIP | N | N | N | N | N | Y | $ 5,698,000 |
| 154 | OR99E: Park Ave to Clackamas River Bridge | Clackamas | Gladstone | Enhance pedestrian crossing at OR-99E at Hull. Other work includes grinding and striping of buffered bike lanes north of Roethe Rd and filling sidewalk gaps along the corridor as feasible | STIP | N | N | N | Y | Y | N | $ 1,000,000 |
| 155 | Cornelius Rapid Flashing Beacon (RRFB) Project | Washington | Cornelius | This project will investigate two possible locations for one RRFB intersecting 12th Ave at either Adair or Baseline Streets in Cornelius. Work includes an engineering study and funds toward the construction of the RRFB at the determined location. | STIP | N | N | N | Y | N | N | $ 150,000 |
| 156 | US30 at Bridge Ave Ramps | Multnomah | Portland | Remove hazard trees, install pinned mesh. | STIP | N | N | N | N | N | Y | $ 660,000 |
| 157 | Jade and Montavilla Connected Centers | Multnomah | Portland | Construct improvements for biking and walking. Includes street and sidewalk lighting, new sidewalks, bike lanes and paths, and crosswalks. | RFFA | Y | Y | Y | N | Y | N | $ 7,883,000 |
| 158 | Complete Cleveland Street | Multnomah | Gresham | Reconstruct Cleveland Avenue between Stark and Burnside by adding sidewalks, curbs and bike lanes. | RFFA | N | N | N | N | Y | N | $ 4,188,181 |
| 159 | Hunziker Road Industrial Area | Washington | Tigard | Add a road connection for freight and commercial vehicles to avoid congestion near Hwy 217 and I-5 interchange. Improves access to undeveloped industrial and commercial property in the Hunziker Industrial Core. | RFFA | Y | Y | Y | N | Y | Y | $ 2,324,909 |
| 160 | Central Eastside Access & Circulation Improvements | Multnomah | Portland | Reconstruct freight access and movement through key intersections around the Central Eastside Industrial District. The project: 1) adds four new traffic signals along the MLK/Grand corridor and at the NE 16th Avenue and Irving Street intersection, 2) modifies three existing traffic signals to include protected left turns at SE Stark, Clay and Mill Streets, and 3) improves two key east-west bike routes by adding new signals | RFFA | N | N | N | N | Y | Y | $ 5,402,433 |
| 161 | Regional Freight Studies | N/A | Metro | Conduct planning studies to identify transportation investments to support greater freight movement | RFFA | N | N | N | N | N | N | $ 621,004 |
| 162 | Tigard Street Trail: A Path to Employment | Washington | Tigard | The project completes work begun in 2015 to convert an unused rail spur into a multi-use path directly connected to regional bus and fixed route transit | Connect Oregon | N | N | N | N | Y | N | $ 700,000 |
| 163 | Clackamas Community College Transit Center | Washington | Clackamas Community College | The updated Clackamas Community College Transit Center will increase transit access to high school and college education; career and veterans counseling; and to future employment opportunities at adjacent industrial lands. Additionally, a shared use path will provide a "last mile" connection to the Oregon City High School and future industrial properties on Beavercreek and Meyers Roads | Connect Oregon | N | N | N | N | Y | N | $ 1,762,950 |
| 167 | Low - No Zero Emission Bus Project | Various | TriMet | Fund procurement and deployment of 5 battery electric buses and asociated charging infrastructure to be deployed from Merlo garage on a Westside route to be determined. | Transit | N | N | N | N | N | N | $ 4,624,152 |
| 168 | Max Redline Extension & Gateway Double Track Project | Multnomah / Washington | TriMet | Constructing pocket track at Fair Complex MAX station to enable extended Red Line service to Fair Complex and turnaround, combined with new track work and a new station at Gateway and new track work at PDX to imporve system operations. | Transit | N | N | N | N | N | N | $ 91,841,570 |
| | | | | | | | | | | | TOTAL | $ 1,174,264,122 |

| ID No. | PROJECT NAME | COUNTY | CITY | PROJECT DESCRIPTION | SOURCE | Access to Jobs | Access to Places | Exposure to VMT | Transportation Safety Investments | Access to Travel Options | Resource Habitats | Estimated Project Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | TRANSIT ORIENTED DEVELOPMENT PROGRAM | Various | --- | Work directly with developers and local jurisdictions to create vibrant downtowns main streets and station areas by helping to change land use patterns near transit. | RFFA | N | N | N | N | N | N | $ 10,999,666 |
| 21 | I-5 & I-205 SHARED USE PATHS | Multnomah | Maywood Park | Repave sections, install ADA ramps, drainage and address tree roots with structure. Repave transition to existing structure near I-84WB to I-205 to correct settlement. | STIP | N | N | N | N | N | N | $ 745,001 |
| 24 | REGIONAL TRAVEL OPTIONS PROGRAM | Various | --- | The Regional Travel Options (RTO) program implements strategies to help diversify trip choices reduce pollution and improve mobility. The RTO program includes the local grant program, marketing and outreach campaigns, the TriMet and SMART employter programs, program evaluation, and newly added Safe Routes to School. | RFFA | N | N | N | N | N | N | $ 10,353,282 |
| 25 | REGIONAL PLANNING | Various | --- | The MPO Planning program contributes to a broad range of activities within Metro that are linked to regional policy making and local planning support | RFFA | N | N | N | N | N | N | $ 4,413,240 |
| 26 | TRANS SYSTEM MGMT & OPERATIONS PROGRAM | Various | --- | The Transportation System Management & Operations (TSMO) program coordinates both the planning and implementation of the regions system management and operations strategies to enhance multi-modal mobility for people and goods. | RFFA | N | N | N | N | N | N | $ 5,839,741 |
| 42 | CORRIDOR & SYSTEMS PLANNING | Various | --- | Corridors and Systems Planning Program for the integration of land use and transportation. Determines regional system needs, functions, desired outcomes, performance measures and investment strategies. | RFFA | N | N | N | N | N | N | $ 1,849,994 |
| 50 | REGIONAL ITS COMMUNICATIONS INFRASTRUCTURE (ODOT) | Various | --- | Complete gaps and deficiencies identified in the Regional ITS Communications Plan | STIP | N | N | N | N | N | N | $ 590,661 |
| 59 | OR141(SW HALL BLVD): SCHOLLS FERRY RD - HEMLOCK ST | Washington | Beaverton / Tigard | Construct ADA ramps | STIP | N | N | N | N | N | N | $ 586,707 |
| 60 | SMART ASSOCIATED IMPROVEMENTS & PREVENTATIVE MAINT | Clackamas | SMART | 5307 Funds for Preventative Maintenance, Associated Improvements and Bus Fleet Replacement FY18 | Transit | N | N | N | N | N | N | $ 1,344,414 |
| 62 | 5310 - SENIOR & DISABLED | Clackamas | SMART | Services & Facility Improvements for Elderly & Disabled Customers | Transit | N | N | N | N | N | N | $ 153,750 |
| 63 | BUS AND BUS FACILITIES (CAPITAL) | Clackamas | SMART | Bus and Bus Facility Upgrades (FY18) | Transit | N | N | N | N | N | N | $ 288,700 |
| 64 | BUS PURCHASE | Various | TriMet | Bus Purchase | Transit | N | N | N | N | N | N | $ 13,118,147 |
| 65 | BUS & RAIL PREVENTIVE MAINT (5307) | Various | TriMet | Capital Maintenance For Bus And Rail, such as track and switch rehabilitation and replacement, Blue Line Station redesign and rehabilitation, vahicle and facility matainance. | Transit | N | N | N | N | N | N | $ 147,090,216 |
| 66 | BUS & RAIL PREVENTIVE MAINT (STP) | Various | TriMet | Capital Maintenance For Bus and Rail | Transit | N | N | N | N | N | N | |
| 67 | STATE OF GOOD REPAIR PROGRAM | Various | TriMet | Capital Maintenance For Bus and Rail | Transit | N | N | N | N | N | N | $ 95,569,886 |
| 68 | TRIMET ENHANCE MOBILITY PROGRAM | Various | TriMet | Paratransit services provided by TriMet LIFT, Wilsonville SMART, and small city transit agencies. Ride Connection-operated services, including door-to-door rides, community and senior center shuttles, and travel training. | Transit | N | N | N | N | N | N | $ 7,341,608 |
| 69 | HIGH CAPACITY TRANSIT BOND | Various | --- | Funding for development and construction of the region's high capacity transit system. | RFFA | N | N | N | N | N | N | $ 15,430,000 |
| 85 | Region 1 Misc Hardware and Software | Various | VAR | Miscellaneous hardware and software improvements region-wide. This project will provide minor upgrades to ITS software and add minor hardware. Example projects are upgrades to Ramp Meter and ATM software, add CCTV cameras indentified by TMOC, and connect signalized intersections to existing fiber communication backbone. | STIP | N | N | N | N | N | N | $ 497,545 |
| 87 | Region 1 LEDs | Various | VAR | Bucket for region-wide Light Emitting Diodes (LEDs) upgrades | STIP | N | N | N | N | N | N | $ 99,509 |
| 126 | OR99W at Durham Rd | Washington | King City / Tigard | Signal Upgrade with ADA improvements | STIP | N | N | N | N | N | N | $ 968,750 |
| 132 | I-5 at I-205 Interchange | Washington | Tualatin | Upgrade illumination towers up to amount of available budget and coordinate work with pavement preservation project in area. | STIP | N | N | N | N | N | N | $ 500,000 |
| 134 | OR224 at Lake/Harmony | Clackamas | Unincorporated | Replace overhead flasher with ground mounted advance flashers. | STIP | N | N | N | N | N | N | $ 109,078 |
| 136 | OR99W: Tualatin River Bridge | Washington | Tualatin | Design shelf ready plans to replace the current structural overlay | STIP | N | N | N | N | N | N | $ 188,500 |
| 139 | Regionwide ITS Improvements and Upgrades | Clackamas / Multnomah / Washington | VAR | Project provides for new or upgraded variable message signs (VMS), travel-time signs, network/communication technology, and other intelligent transportation system (ITS) functionality at various locations in Region 1 | STIP | N | N | N | N | N | N | $ 1,746,000 |
| 140 | I-205 at OR43 | Clackamas | West Linn | Full Illumination Rebuild | STIP | N | N | N | N | N | N | $ 143,044 |
| 161 | Regional Freight Studies | N/A | Metro | Conduct planning studies to identify transportation investments to support greater freight movement | RFFA | N | N | N | N | N | N | $ 621,004 |
| 167 | Low - No Zero Emission Bus Project | Various | TriMet | Fund procurement and deployment of 5 battery electric buses and asociated charging infrastructure to be deployed from Merlo garage on a Westside route to be determined. | Transit | N | N | N | N | N | N | $ 4,624,152 |
| 168 | Max Redline Extension & Gateway Double Track Project | Multnomah / Washington | TriMet | Constructing pocket track at Fair Complex MAX station to enable extended Red Line service to Fair Complex and turnaround, combined with new track work and a new station at Gateway and new track work at PDX to imporve system operations. | Transit | N | N | N | N | N | N | $ 91,841,570 |
| | | | | | | | | | | | TOTAL | $ 417,054,165 |

# Memo

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

Date: Thursday, November 30, 2017
To: Transportation Equity Work Group and Interested Parties
From: Grace Cho, Associate Transportation Planner
Subject: 2018 RTP Transportation Equity Evaluation – Results and Preliminary Findings

**Introduction**
As part of the 2018 RTP, a Transportation Equity Assessment is conducted to look at how well the region's planned long-range transportation investments will perform relative to equity goals and demonstrate compliance with regional responsibilities toward federal civil rights laws as they relate to transportation planning. The assessment takes a programmatic look at the region's long-term investment strategy, to determine whether: 1) progress is being made towards desired equity outcomes expressed by historically marginalized communities; 2) to determine whether the financially constrained long-range transportation investment strategy, in totality, is disproportionately impacting historically marginalized communities and if mitigation measures are necessary; and 3) continue to learn from the assessment to propose technical refinements for future transportation equity evaluations.

In a literature review across the nation, equity assessments at a program scale are few and far between. Nonetheless, advocacy and think-tank organizations have put forward best practices to guide and formulate the methods for conducting a transportation equity assessment. The 2018 RTP Transportation Equity Assessment does its best to incorporate and reflect the best practices in the field in measuring equity within the context of the transportation system. The following memorandum discusses the draft results and initial staff findings for the 2018 RTP investment strategy. Metro staff seeks gathering feedback on the draft results and initial staff findings to help shape the narrative to take forward to technical and policy committees in December 2017 and January 2018. Additional background documentation on the 2018 RTP transportation equity system evaluation are attached to this memorandum as Attachments X – X.

**Context for the 2018 RTP Transportation Equity System Evaluation**
The 2018 RTP transportation equity evaluation looks at how the region's proposed long-term transportation investment strategies are likely to affect outcomes which historically marginalized communities identified as priority issues to address in the transportation system, which were accessibility, affordability, safety, and environment.[1] For the evaluation of each 2018 RTP investment strategy, the entire package of investments was evaluated in combination to look at how these investments interacted to advance outcomes historically marginalized communities identified.[2]

**Transportation Equity Analysis Primer**
The analysis purpose is to see whether the RTP investment scenarios advance accessibility, safety, and environmental outcomes for historically marginalized communities at a greater rate than the overall region.

To provide context for viewing the results of the 2018 RTP transportation equity analysis, the following tables provide

[1] As recommended as part of the September meeting of the Transportation Equity work group, the affordability analysis of the 2018 RTP investment strategies is being deferred to the 2023 RTP in order to build out the evaluation tool and in the interim, results from the Center for Neighborhood Technology will be reported out as part of the monitoring metrics.
[2] Individual projects were not evaluated as part of 2018 RTP transportation equity system evaluation.

information about the 2018 RTP investment scenarios and the population and employment growth assumptions.

*Table 1. Contextual Population Information for the 2018 RTP Transportation Equity Assessment*

| Geography | 2015 | 2027 Projected | 2040 Projected |
|---|---|---|---|
| Region-wide (Metropolitan Planning Area)[3] | 1,605,672[4] | 1,904,815 | 2,178,848 |
| Households | 636,467 | 776,202 | 896,451 |
| Employment | 895,094 | 1,071,017 | 1,240,653 |
| Historically Marginalized Communities | 1,058,220 | 1,319,254 | 1,510,591 |
| Focused Historically Marginalized Communities | 630,388 | 746,662 | 852,112 |
| People of Color | 697,457 | 789,225 | 869,587 |

The 2018 RTP system evaluation assessed three investment strategies: 1) a RTP 10-year investment strategy; 2) a 2040 RTP financially constrained investment strategy; and 3) a 2040 RTP strategic investment strategy. Each investment strategy builds on the previous. For example, the 2040 RTP financially constrained strategy includes the RTP 10-year investment strategy. The RTP 10-year investment strategy and the 2040 RTP financially constrained represents those transportation priorities which are expected to be completed by 2027 and 2040 respectively under reasonable expected revenues. The 2040 RTP strategic represents those investments to address all the region's transportation gaps and deficiencies whether or not reasonably expected revenue is available. A summary of the investment level and type of investment are shown in Table 2.

In addition to the three investment strategies which were evaluated, two additional scenarios were developed for the purposes of comparisons. These include: 1) the 2015 base year scenario; and 2) a 2040 no-build scenario. The 2015 base year scenario represents transportation projects completed and open for service as of 2015. The no-build scenario represents a future condition where no further investment is made into the region's transportation system aside from those which are fully funded as of 2017.

*Table 2. Summary of 2018 RTP Investments in Each of the Scenarios Under Evaluation*

| | 10-Year Strategy (2018-2027) | Financially Constrained RTP (2018-2040) | Strategic RTP (2018-2040) |
|---|---|---|---|
| Amount of Investment[5] | $6.2 billion | $14.7 billion | $21.3 billion |
| Percentage of Total 2018 RTP Investment* | 29.4% | 69.2%/100% | 100%/N/A |
| Number of Projects | 374 | 762 | 1057 |

[3] Region-wide is defined as the metropolitan planning area (MPA) boundary. An interactive map gallery which includes the MPA can be found at: http://drcmetro.maps.arcgis.com/apps/webappviewer/index.html?id=d83c2455ea10433bb2d6901dd1f4f564

[4] For consistency purposes, this represents the population estimates in the 2016 adopted landuse forecast. This number differs slightly from the decennial census population counts which as of 2010 the region was just over 1.5 million people.

[5] Reflects 2016 dollars.

| | *Level of Investment, Number of Projects, & Percentage by Investment Category* | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | **$** | **#** | **%** | **$** | **#** | **%** | **$** | **#** | **%** |
| Active Transportation | $642 M | 133 | 10% | $1.5 B | 293 | 10% | $2.5 B | 393 | 12% |
| Freight | $132 M | 20 | 2% | $213 M | 36 | 1% | $462 M | 48 | 2% |
| Other | $5 M | 1 | <1% | $15 M | 3 | <1% | $53 M | 5 | <1% |
| Roads and Bridges | $1.2 B | 149 | 20% | $2.7 B | 309 | 19% | $4.6 B | 432 | 22% |
| Throughways | $650 M | 14 | 10% | $4.6 B | 24 | 31% | $6.1 B | 38 | 29% |
| Transit | $3.3 B | 29 | 54% | $5.2 B | 46 | 36% | $6.3 B | 71 | 30% |
| TSMO/TDM/TOD | $179 M | 28 | 3% | $361 M | 51 | 2% | $754 M | 70 | 4% |

**Reflects the total cost of the 2018 RTP as the federally required financially constrained RTP.*

**Results of the 2018 RTP Transportation Equity System Evaluation**

Table 3. illustrates a summary of how the 2018 RTP transportation equity system evaluation performs across the outcomes identified for historically marginalized communities.

*Table 3. Summary of Transportation Equity System Evaluation Measures Results – At a Glance*

| **Primary RTP Goal** | **Measure** | **10-Year** | | | **2040 FC** | | | **2040 Strategic** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | **H** | **F** | **P** | **H** | **F** | **P** | **H** | **F** | **P** |
| Economy | Access to Jobs | TBD* | | | | | | | | |
| Expand Transportation Choices | Access to Community Places | TBD* | | | | | | | | |
| Expand Transportation Choices | Access to Travel Options – Connectivity and Completeness | TBD* | | | | | | | | |
| Enhance Safety and Security | Share of Safety Projects | | | | | | | | | |
| Enhance Safety and Security | Exposure to Non-Freeway Vehicle Miles Traveled | TBD * | | | | | | | | |
| Promote Environmental Stewardship | Habitat Impact | | | | | | | | | |
| Public Health | Clean Air[6] | | | | | | | | | |
| Economy | Affordability | -- | | | -- | | | -- | | |

***Green = Target achieved.*** ***Yellow = performance moving in desired direction*** ***Red = Performance moving in wrong direction from desired outcome***

**To be discussed with the work group before making an overall finding.*

[6] Due to the limitation of the emissions modeling tool, emissions and air pollution is unable to be reported at a geographic scale smaller than region wide. Therefore results reported are not specific to the locations of historically marginalized communities. As recommended at the September work group meeting, the technical improvements are recommended for the clean air measure to be implemented by the 2023 RTP. Results for clean air will be brought forward with broader 2018 RTP system evaluation results.

**2018 RTP Transportation Equity System Evaluation Results – Discussion and Findings**

A key focus of the 2018 RTP transportation equity analysis is to look whether there are gains in advancing the accessibility, safety, and environmental outcomes and whether those gains are outpacing the region in historically marginalized communities. Data has shown there are disparities experienced by marginalized communities as it relates to the transportation system and gains alone or being on pace with the region may not be enough to make progress towards addressing the disparities gap. Therefore, in the discussion of the results of several of the 2018 RTP transportation equity system evaluation measures, findings are being framed around the investment strategy performance in historically marginalized communities relative to the region. The desire is to see the 2018 RTP investment strategies advancing outcomes in these communities at a greater rate than as the region overall, even if the region and the historically marginalized communities are seeing positive results.

Access to Community Places

**Evaluation Measure Summary**

To look at how many existing community places (e.g. schools, libraries, grocery stores, pharmacies, medical facilities, general stores, etc.) can be reached within a certain travel time window for transit (30 minutes), bicycling (15 minutes), and walking (20 minutes) region wide and in historically marginalized communities (in aggregate) and understand if the 2018 RTP investment strategies are further increasing access to community places for historically marginalized communities.

*Preliminary Findings*

- The 2018 RTP 10-year investment strategy tends to perform at a greater rate for historically marginalized and communities of color compared to the region in increasing the number of community places which can be reached by transit, biking, and walking.
    - But in the 2018 RTP 10-year investment strategy access to community places increases or decreases based on the type of community place trying to be reached (i.e. medical services or a grocery store or a library) and community. For example, focused historically marginalized communities see decreases in access to medical services by transit (off-peak), biking, and walking, but see an increase in access to food.
- The 2018 RTP financially constrained and 2018 RTP strategic investment strategies tends keep the rate of access steady access to community places in biking, and walking.
    - The exception is in the 2018 RTP strategic investment strategy where historically marginalized communities see slight decrease in access relative to the region to food by a 20 minute walk.
- The 2018 RTP financially constrained investment strategy increases access to community places at a greater rate for focused historically marginalized communities and communities of color compared to the region during the off-peak transit.
    - The increase ranges from 1% - 4% in access to community places within 30 minutes by transit during the off-peak and gets better in reaching medical facilities.
- In the 2018 RTP strategic investment strategy, the areas with greater density of people of color, people in poverty, and language isolation (a.k.a. focused historically marginalized

communities) and communities of color tend to see increased rate of access to community places by transit and increases tend to be different between the peak and off-peak period.
    - In particular access to community places overall (includes food, medical, civic, and general stores) increases by 3% - 7% by transit, depending on peak or off-peak period travel.
- Historically marginalized communities tend to see decreased rate of access to community places relative to the region in the 2018 RTP financially constrained and strategic investment strategies.
    - But in general access to community places is increasing overall.
- The mixed results observed in access to community places make it difficult to make a determination as to whether there is a disproportionate impact on historically marginalized communities.
- The travel demand model may not be the strongest analytical tool for understanding accessibility for bicycling and walking for time-based travel sheds because investments may increase more active travel.

*Table 4. Access to Community Places*

| ***All Community Places*** | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **RTP 10-Year (2018-2027)** | | | | **RTP Financial Constrained (2018-2040)** | | | | **RTP Strategic (2018-2040)** | | | |
| | **T-P** | **T-OP** | **Bike** | **Walk** | **T-P** | **T-OP** | **Bike** | **Walk** | **T-P** | **T-OP** | **Bike** | **Walk** |
| Region | *25%* | *43%* | *1%* | *2%* | *26%* | *27%* | *0%* | *1%* | *43%* | *51%* | *0%* | *1%* |
| HMC | *29%* | *44%* | *5%* | *5%* | *25%* | *24%* | *0%* | *1%* | *41%* | *47%* | *0%* | *1%* |
| FHMC | *26%* | *42%* | *0%* | *0%* | *29%* | *30%* | *0%* | *1%* | *46%* | *57%* | *0%* | *1%* |
| POC | *31%* | *48%* | *2%* | *3%* | *28%* | *30%* | *0%* | *1%* | *46%* | *58%* | *0%* | *1%* |
| ***Access to Food*** | | | | | | | | | | | | |
| | **RTP 10-Year (2018-2027)** | | | | **RTP Financial Constrained (2018-2040)** | | | | **RTP Strategic (2018-2040)** | | | |
| | **T-P** | **T-OP** | **Bike** | **Walk** | **T-P** | **T-OP** | **Bike** | **Walk** | **T-P** | **T-OP** | **Bike** | **Walk** |
| Region | *26%* | *45%* | *0%* | *0%* | *26%* | *29%* | *0%* | *1%* | *44%* | *55%* | *0%* | *2%* |
| HMC | *30%* | *47%* | *3%* | *4%* | *24%* | *27%* | *0%* | *1%* | *41%* | *52%* | *0%* | *1%* |
| FHMC | *25%* | *49%* | *1%* | *2%* | *26%* | *30%* | *0%* | *1%* | *43%* | *56%* | *0%* | *2%* |
| POC | *31%* | *44%* | *-1%* | *-1%* | *25%* | *30%* | *0%* | *1%* | *43%* | *58%* | *0%* | *2%* |
| ***Access to Medical Services*** | | | | | | | | | | | | |
| | **RTP 10-Year (2018-2027)** | | | | **RTP Financial Constrained (2018-2040)** | | | | **RTP Strategic (2018-2040)** | | | |
| | **T-P** | **T-OP** | **Bike** | **Walk** | **T-P** | **T-OP** | **Bike** | **Walk** | **T-P** | **T-OP** | **Bike** | **Walk** |
| Region | *25%* | *43%* | *2%* | *3%* | *26%* | *25%* | *0%* | *1%* | *44%* | *50%* | *0%* | *1%* |
| HMC | *28%* | *44%* | *6%* | *6%* | *24%* | *22%* | *0%* | *1%* | *41%* | *45%* | *-1%* | *1%* |
| FHMC | *24%* | *38%* | *0%* | *1%* | *28%* | *28%* | *0%* | *1%* | *46%* | *57%* | *0%* | *1%* |
| POC | *29%* | *49%* | *3%* | *4%* | *27%* | *29%* | *0%* | *1%* | *47%* | *57%* | *0%* | *1%* |

*T-P = Transit Peak Period; T-OP = Transit Off-Peak Period*
*Green = Performance greater than the region*

*Discussion*
*2018 RTP 10-Year Investment Strategy (2018-2027)*

In the 2018 RTP 10-year investment strategy, access to community places overall tends to perform well in increasing the number of community places historically marginalized communities and communities of color can reach by transit, bicycling, and walking during the peak and off-peak period compared to the overall region. While the region saw increased access to community places (combined) of 43% more places by transit, 1% more by bicycling, and 2% more by walking, historically marginalized communities and communities of color saw increases of 44% and 48% by transit, 5% and 2% by bicycle, and 5% and 3% by walking, respectively. However, in focused historically marginalized communities, which represent those communities with a higher density of people of color, people in poverty, and language isolation, there is a slight decrease in the number of community places which can be reached by transit (42%), bicycling (0%) and walking (0%). The decrease in access to community places varies a bit by category. For example, access to the number of grocery stores and medical facilities which can be reached within a certain timeframe (30 minutes for transit, 15 minutes for bicycling, and 20 minutes for walking) during peak and off-peak period across transit, bicycling, and walking decreased for those areas with a higher density of people of color, people in poverty, and language isolation, but access to places like pharmacies, hardware stores, schools, libraries, banks or general stores like Fred Meyer increased specifically by transit regardless of peak or off-peak period.

*2018 RTP Financially Constrained Investment Strategy (2018-2040)*
In the 2018 RTP financially constrained strategy, areas with a greater density of people of color, people in poverty, and language isolation and communities of color tend to see greater access to community places by transit in the peak and off-peak period, with the exception of accessing grocery stores during the peak period. Additionally, some under performance in transit access to community places is observed in historically marginalized communities in aggregate in both the peak and off-peak periods. During the peak period, performance in accessing grocery stores by transit is less than the overall growth of the region in areas where there is a greater rate of historically marginalized communities, focused historically marginalized communities, and communities of color.

In terms of the access to community places by walking with the 2018 RTP financially constrained plan, what is observed is that access by walking for historically marginalized communities, communities of color, and places where there is a greater density of these communities and language isolated communities tend to see the same rate of access to these places like libraries, pharmacies, schools, medical services and grocery stores. Access to community places by bicycling with the 2018 RTP financially constrained strategy also see the same rate of access for historically marginalized communities, focused historically marginalized communities, and communities of color relative to the region.

*2018 RTP Strategic Investment Strategy (2018-2040)*
In the 2018 RTP strategic investment strategy, access to community places grows quite significantly for transit. Within a 30 minute transit trip, the region has gone from seeing 26% (peak) or 27% (off-peak) of the community places reached to 43% (peak) and 51% (off-peak) with the strategic investments. While the 2018 RTP strategic investment strategy significantly increases access by transit, mainly those areas with a greater density of people of color, people in poverty, and language isolation and communities of color tend to see a greater rate of access to community places by transit in the peak and off-peak period than the region. Some of the accessibility by transit does underperform relative to the region specifically during the transit peak period when trying to get to grocery stores for focused historically marginalized communities and communities of color. What is

also interesting that in general, historically marginalized communities see not as much access to community places compared to the region regardless when looking across different community place subsets (i.e. specifically looking at access to grocery stores or medical services) or all community places. Lastly, similarly to the 2018 RTP financially constrained investment strategy, access by bicycling tends to is unchanged from the region with the exception of slightly less access in historically marginalized communities compared to the region to medical facilities. A similar pattern is observed with access to community places by walking where access remains unchanged from the region with the exception of access to food in historically marginalized communities.

*Key Thoughts and Observations*
A key assumption to highlight in the access to community places system evaluation is that the land use forecast does not spatially allocate for community places (e.g. libraries, grocery stores, medical facilities, etc) to a small enough geography to measure increased access as a result new capital improvements to the regional transportation system. Therefore, unlike with the compendium evaluation measure – access to middle and low-wage jobs – the investments are not being realized against the likely growth in the number of these community places emerging because of population and household growth. Essentially, the access to community places was measured based on the existing locations of community places. The benefit in conducting the evaluation using existing community places helped to isolate the performance of the investment strategy in terms of access, but it is also not a full picture of the access because the future investment strategy were unable to recognize the likelihood of growth of these community places as a result of population growth and demand, especially in existing less developed areas expected to grow. There is an underlying assumption that access will be further realized with the anticipation of new community places opening for service.

Another element to consider is access to community places is how to interpret the results for walking and bicycling. Because the accessibility measure is time-based, improvements to the active transportation system which encourages further or longer travel to get to a separated or protected facility makes it appear there is under performance of the investment program because more time is spent in active travel. Recognizing this unique challenge of the travel demand model, increases or decreases in access to community places or jobs can be viewed in a positive manner and that the investment program is making some impact.

Overall, the three 2018 RTP investment strategies do provide an increase in access to community places in an absolute sense, but again the purposes of the transportation equity analysis is to look at the performance in historically marginalized communities, focused historically marginalized communities, and communities of color relative to the region to assess a sense of “fairness” for historically marginalized communities.

In general, each of the 2018 RTP investment strategies see some underperformance in access to community places relative to the region in different profile types of historically marginalized communities (i.e. in areas where there is a greater density or higher than the regional rate of communities of color). There could be some very reasonable rational to the underperformance relative to the region. For example, in the decrease in transit access to community places in 2040 is likely attributed to traffic congestion, especially during the peak period where it is harder to get to as many places in a 30 minute travel window. But what is interesting in the 2018 RTP financially constrained scenario is that for transit, focused historically marginalized communities and communities of color saw a greater rate of access to medical services or civic places, like schools,

libraries, etc. Some of the rationale may relate to the population density of the focused marginalized communities, but nonetheless, the projected population and employment growth in the region by 2040 means there will be more trips taken and congestion will be a challenge to the entire transportation system.

Access to Jobs

**Evaluation Measure Summary**
To look at how many jobs, particularly low and middle-wage jobs can be reached within a certain travel time window for transit (45 minutes), bicycling (30 minutes), and walking (20 minutes) region wide and in historically marginalized communities (in aggregate) and understand if the 2018 RTP investment strategies are further increasing access to jobs for historically marginalized communities.

*Preliminary Findings*

- All three of the 2018 RTP investment strategies show variable results in access to middle and low-wage jobs by transit, bicycling, and walking for historically marginalized communities, focused historically marginalized communities, and communities of color.
    - In general job access increases overall because of the region's land use strategy and local land use plans assumes an increase in population and employment growth by 2040. However, the rate of increased job access varies among the RTP investment strategies where in certain circumstances (e.g. historically marginalized communities access to middle-wage jobs by transit during the peak travel period) underperform relative to the region rate of access.
- The 2018 RTP 10-year investment strategy sees the greatest variability of increases and decreases in access relative to the region to low and middle-wage jobs by transit, bicycling, and walking.
    - Historically marginalized communities tend to see consistently a greater rate of access to low and middle-wage jobs relative to the region, where areas with greater density of people of color, people in poverty, and language isolation (a.k.a. focused historically marginalized communities) see underperformance relative to the region in accessing low and middle-wage jobs by transit, bicycling, and walking within a given travel time.
- The 2018 RTP financially constrained and 2018 RTP strategic investment strategies tends keep the rate of access to low and middle-wage jobs for all marginalized communities by biking, and walking steady.
    - The exception is in the 2018 RTP strategic investment strategy where focused historically marginalized communities see slight increase relative to the region in access to low-wage jobs by a 20 minute walk.
- Access to low and middle-wage jobs by transit in the 2018 RTP financially constrained and 2018 RTP strategic investment strategies in historically marginalized communities, focused historically marginalized communities, and communities of color varies in terms of increasing at a greater rate relative to the region or the rate of access decreasing relative to the region.
    - Focused historically marginalized communities tend to see more consistent increases in access to low and middle-wage jobs by transit relative to the region in the long-term investment strategies.
- The travel demand model may not be the strongest analytical tool for understanding accessibility for bicycling and walking for time-based travel sheds because investments may increase more active travel.

*Table 5. Access to Low, Middle Wage and All Jobs*

| ***All Jobs*** | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **RTP 10-Year (2018-2027)*** | | | | **RTP Financial Constrained (2018-2040)** | | | | **RTP Strategic (2018-2040)** | | | |
| | **T-P** | **T-OP** | **Bike** | **Walk** | **T-P** | **T-OP** | **Bike** | **Walk** | **T-P** | **T-OP** | **Bike** | **Walk** |
| Region | *57%* | *78%* | *22%* | *23%* | *28%* | *31%* | *0%* | *1%* | *47%* | *57%* | *0%* | *2%* |
| HMC | *61%* | *79%* | *24%* | *26%* | *27%* | *28%* | *0%* | *1%* | *45%* | *54%* | *-1%* | *1%* |
| FHMC | *58%* | *77%* | *24%* | *24%* | *29%* | *32%* | *0%* | *1%* | *47%* | *61%* | *-1%* | *1%* |
| POC | *64%* | *83%* | *21%* | *21%* | *27%* | *31%* | *-1%* | *1%* | *46%* | *61%* | *-1%* | *2%* |
| ***Middle-Wage Jobs*** | | | | | | | | | | | | |
| | **RTP 10-Year (2018-2027)*** | | | | **RTP Financial Constrained (2018-2040)** | | | | **RTP Strategic (2018-2040)** | | | |
| | **T-P** | **T-OP** | **Bike** | **Walk** | **T-P** | **T-OP** | **Bike** | **Walk** | **T-P** | **T-OP** | **Bike** | **Walk** |
| Region | *58%* | *80%* | *24%* | *24%* | *28%* | *31%* | *0%* | *1%* | *47%* | *57%* | *0%* | *2%* |
| HMC | *62%* | *80%* | *26%* | *27%* | *27%* | *28%* | *0%* | *1%* | *45%* | *54%* | *0%* | *1%* |
| FHMC | *58%* | *78%* | *22%* | *21%* | *29%* | *32%* | *0%* | *1%* | *47%* | *62%* | *-1%* | *2%* |
| POC | *64%* | *83%* | *25%* | *25%* | *28%* | *31%* | *-1%* | *1%* | *46%* | *61%* | *-1%* | *1%* |
| ***Low-Wage Jobs*** | | | | | | | | | | | | |
| | **RTP 10-Year (2018-2027)*** | | | | **RTP Financial Constrained (2018-2040)** | | | | **RTP Strategic (2018-2040)** | | | |
| | **T-P** | **T-OP** | **Bike** | **Walk** | **T-P** | **T-OP** | **Bike** | **Walk** | **T-P** | **T-OP** | **Bike** | **Walk** |
| Region | *55%* | *75%* | *20%* | *21%* | *28%* | *31%* | *0%* | *1%* | *47%* | *57%* | *0%* | *1%* |
| HMC | *59%* | *76%* | *22%* | *24%* | *26%* | *28%* | *0%* | *1%* | *44%* | *54%* | *-1%* | *1%* |
| FHMC | *56%* | *74%* | *19%* | *19%* | *28%* | *32%* | *0%* | *1%* | *46%* | *61%* | *-1%* | *2%* |
| POC | *62%* | *80%* | *22%* | *23%* | *27%* | *31%* | *-1%* | *1%* | *46%* | *61%* | *-1%* | *1%* |

*T-P = Transit Peak Period; -OP = Transit Off-Peak Period*

** 2018 RTP 10-year investment strategy has not been controlled for land use changes, whereas the RTP investment strategies looking at 2040 have controlled for land use changes.*

*Green = Performance greater than the region*

*Discussion*

*2018 RTP 10-Year Investment Strategy (2018-2027)*

In the 2018 RTP 10-year strategy, transit access to jobs in the peak period performs better than the overall region across all wage profiles (e.g. low, medium, high wage) in terms of the number and percentage jobs within a 45 minute travel window for historically marginalized communities, as well as communities of color. Focused historically marginalized communities, which are those communities with a greater density of people of color, people in poverty, and language isolation see slightly less access to middle-wage jobs relative to the region. The result is nearly identical for the off-peak period as well with the exception for focused historically marginalized communities and in one case where access to middle-wage jobs underperforms relative to the region in historically marginalized communities.

For walking access to jobs within a 20 minute travel window, the performance of the 2018 RTP 10-year investment strategy generally saw a greater rate of low and middle wage job access than the overall region by walking in historically marginalized communities and in one case in communities of color to access low-wage jobs. Bicycle access middle-wage jobs is at a greater rate than the region in historically marginalized communities. Otherwise, bicycling and walking access to middle and

low-wage jobs tend to underperform relative to the region in areas where there is a greater density of people of color, people in poverty, and language isolation..

*2018 RTP Financially Constrained Investment Strategy (2018-2040)*
When observing the impact of the 2018 RTP financially constrained package of investments, access to middle and low-wage jobs by transit tends to underperform relative to the region for historically marginalized communities and communities of color during the peak and off-peak period. Access to middle and low-wage jobs tends to outpace the region when in those areas with the higher density historically marginalized communities in the off-peak period.

For bicycling, access to middle and low wage jobs tend to stay steady with the overall region for historically marginalized communities and in areas where there is a greater density of historically marginalized communities. Slight underperformance is observed with bicycle access to middle and low-wage jobs for communities of color. Access to middle and low wage jobs by walking all perform at the same rate as the overall region in all historically marginalized communities, focused historically marginalized communities and in communities of color.

*2018 RTP Strategic Investment Strategy (2018-2040)*
With the 2018 RTP strategic investment strategy, focused historically marginalized communities and communities of color see a greater rate of access by transit to middle and low-wage jobs relative to the region. The result is limited to the off-peak travel period. When looking across all jobs, focused historically marginalized communities and communities of color see a greater rate of job access compared to the overall region during the peak and off-peak period. Access to low and middle-wage jobs tend to stay at pace with the overall region or decreases for historically marginalized communities, focused historically marginalized communities, and communities of color when it comes to bicycling and walking. Only in one instance in focused historically marginalized communities, access to low-wage jobs outpaces the region.

*Key Observations and Thoughts*
The simple rationale for the underperformance in transit access to low and middle wages jobs is likely due to the future projected congestion. With an estimated 573,000 people, 260,000 households, and 345,000 jobs in the region by 2040, there are more travelers sharing the same roads and buses are still stuck with passenger vehicles and trucks. As a result, less jobs are reached within that 45 minute travel time window by transit for the historically marginalized communities. The pattern only further gets exacerbated during the off-peak period where the frequency becomes reduced and combination of the traffic congestion being observed in the off rush hours impact the number of middle and low wage jobs historically marginalized communities can reach within the 45 minute transit travel window. What the 2018 RTP investment strategies show that building out of congestion is not possible and more transit investment combined with intensive street treatments are needed to move buses.

Additionally, there are some potential different reasons for slight underperformance of transit in accessing low and middle-wage jobs in focused historically marginalized communities. Namely focused historically marginalized communities include a lot of undeveloped areas around the western edge of the region, the far northern side (aka the Columbia corridor) and the eastern side of the region. During the off-peak, these less developed areas generally may not see as much transit service because development has not been fully realized in these areas by 2027 and less mixed activity (i.e. day and night land uses etc.). Additionally, some of the transit solutions slated for these

areas, like the Columbia corridor and in western Hillsboro, are community connecter solutions, which are not currently represented in the travel demand model. Nonetheless, the result is to be mindful of in the 2018 RTP investment strategies because of a number of communities being pushed farther away from the core of the region.

Generally gains or underperformance in low and middle wage jobs by bicycling or walking fell within a range of 1 to 2%, which demonstrate the results for bicycling or walking may be somewhat inconclusive as to whether there access to jobs were increased or decreased for these communities. This is partially due to the travel demand and behavioral model because of capital improvements made to the regional transportation system may increasing travel time for walking and bicycling. For example, when a new facility is added (e.g. a new protected bicycle lane or sidewalk) the attractiveness of the new facility will divert a number of trips. Specifically for bicycling, the new facilities which make it more comfortable to ride, because of protection or lower automobile vehicle volumes, generates travel behaviors where a person may travel a little bit farther or slightly out-of-direction and therefore travel longer. Since the access to jobs system evaluation measure looked at the number of jobs accessible within a certain time window (i.e. 30 minutes by bicycle), the results for this system measures for biking and walking does not fully capture or illustrate the positive gains or impacts in middle and/or low-wage accessibility unless there is a significant swing in the numbers.

Lastly, the current results do not reflect the new low-income fare structure as a result of the state legislature passing a major new revenue package for transportation. The new funding to support transit operations and the commitment by the region's largest transit agency to implement a low-income fare program will likely result in some gains in transit access to jobs for marginalized communities and communities of color because the reduced fare may induce different travel behavior for certain trips.

Access to Travel Options – System Connectivity and Completeness

**Evaluation Measure Summary**
To look at how more miles (and ultimately the amount of gaps) and connectivity of the region's active transportation infrastructure (sidewalks, bicycle routes) is getting completed region wide, around transit, and in historically marginalized communities (in aggregate), and understand if the 2018 RTP investment strategies are further increasing the completeness and connectivity of the regional active transportation network for historically marginalized communities. Additionally further look at the timing of the active transportation investments in the 2018 RTP investment strategies.

*Findings*

- In general, the three 2018 RTP investments are increasing or keeping pace in completing the regional active transportation network in historically marginalized communities, areas where there is a greater density of people of color, people in poverty, language isolation, and in communities of color compared to the overall region.
    - There is only two instances in the 2018 RTP strategic investment strategy where sidewalks are not increasing at a lesser rate in historically marginalized communities and communities of color than the region overall.
- In instances where the 2018 RTP investment strategies are outpacing the region, such as sidewalks in communities of color in the 2018 RTP financially constrained strategy, the increment of outpacing is usually within 1% – 2%.
- Nonetheless, all three 2018 RTP investment strategies are making progress in completing the active transportation network region wide.
- All three 2018 RTP investment strategies are also making progress in furthering connectivity of the bicycle network.
- While investment is increasing overall, the rate of active transportation investment in the 2018 RTP is slightly higher in the outer years of the plan compared to the 10-year investment strategy.

*Discussion*

*System Completeness*
In general, all three 2018 RTP investment strategies increase the miles of sidewalks, trails, and on and off-street bikeways. The additional miles of system completeness for active transportation ranges from 1% - 2% for trails and off-street bikeways to 12% - 17% for sidewalks. These increases demonstrate the 2018 RTP investment strategies are making capital investments into the active transportation network, which is the least complete of the different modal networks (e.g. roads, transit, etc.) Some of the larger increases of additional active transportation network miles are observed in areas where there is a greater density of people of color, people in poverty, and language isolation. The result of the increased miles of sidewalks, bikeways, and trails demonstrates progress in completing the active transportation network in areas with historically marginalized communities.

There are two instances where the 2018 RTP investment strategy does not perform at the same rate as the region in historically marginalized communities. In the 2018 RTP strategic investment

strategy, the region's increase in sidewalk miles is 15% greater than the base year. In historically marginalized communities and communities of color, the sidewalk miles increase is 14%.

*Table 6. 2018 RTP Investment Strategies – Additional Miles and Completeness of the Active Transportation Network*

| | | Base Year (2015) | | 2018 RTP 10-Year (2018-2027) | | | 2018 RTP Financially Constrained | | | 2018 RTP Strategic | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Mi. | % complete | Mi. | % complete | % Change | Mi. | % complete | % Change | Mi. | % complete | % Change |
| **Sidewalks** | Region | 478 | 60% | 532 | 67% | 7% | 570 | 72% | 12% | 598 | 75% | 15% |
| | HMC | 360 | 64% | 400 | 71% | 7% | 426 | 76% | 12% | 440 | 78% | 14% |
| | FHMC | 209 | 66% | 238 | 75% | 9% | 253 | 80% | 14% | 261 | 83% | 17% |
| | POC | 242 | 66% | 274 | 75% | 9% | 292 | 80% | 14% | 295 | 81% | 14% |
| | | | | | | | | | | | | |
| **On-street bike** | Region | 545 | 55% | 598 | 60% | 5% | 628 | 63% | 8% | 664 | 67% | 12% |
| | HMC | 398 | 58% | 434 | 63% | 5% | 453 | 66% | 8% | 472 | 68% | 11% |
| | FHMC | 225 | 61% | 250 | 68% | 7% | 259 | 70% | 9% | 268 | 73% | 12% |
| | POC | 253 | 62% | 278 | 68% | 6% | 290 | 71% | 9% | 300 | 73% | 12% |
| | | | | | | | | | | | | |
| **Trails** | MPA | 183 | 36% | 189 | 38% | 1% | 196 | 39% | 3% | 197 | 39% | 3% |
| | HMC | 126 | 38% | 131 | 39% | 1% | 136 | 41% | 3% | 136 | 41% | 3% |
| | FHMC | 67 | 39% | 71 | 41% | 2% | 74 | 43% | 4% | 74 | 43% | 4% |
| | POC | 84 | 43% | 88 | 45% | 2% | 92 | 47% | 4% | 92 | 47% | 4% |

*Connectivity*

Additionally, all three 2018 RTP investment strategies are increasing the connectivity of the regional bicycling network.[7] In looking at the intersection density of the region's planned bikeways, a greater rate of 3-way ore more intersections completeness with bicycling facilities are observed in historically marginalized communities, areas with a higher density of people of color, people in poverty, and language isolation, and communities of color. The greater rate indicates increased connectivity of the bikeway system.

*Table 7. 2018 RTP Investment Strategies – Additional 3-Way or More Bicycle Intersections*

| **Percentage of 3-Way Intersection Completeness** | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Base Year (2015) | 2018 RTP 10-Year (2018-2027) | | 2018 RTP Financially Constrained | | 2018 RTP Strategic | |

[77] Due to a lack of information about the regional roadway network, the intersection density assessment looking at the roadway network and ultimately of the sidewalk network was unable to be completed.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Region | 69% | 76% | 7% | 81% | 12% | 87% | 18% |
| HMC | 72% | 79% | 8% | 84% | 12% | 90% | 18% |
| FHMC | 78% | 89% | 10% | 94% | 16% | 99% | 21% |
| POC | 73% | 83% | 10% | 88% | 15% | 94% | 21% |

*Access to Transit*

The results of the Access to Transit measure are still underway. The results will be brought forward to the Transportation Equity work group meeting on November 30th or at the RTP work groups, TPAC and MTAC workshop on December 4th.

*Timing of Active Transportation Investments*

Finally, an issue identified by work group members is the necessity to look at the timing of the active transportation investments to ensure a balance or even a greater level of investment in active transportation, particularly in historically marginalized communities, throughout the 2018 RTP. Recognizing the 2018 RTP represents the investment strategy for the regional transportation system for the next 20 years, the issue identified by the work group is the ensure active transportation investments are not getting slated for the outer years of the plan. In looking at the investment summary of the three 2018 RTP investment strategies, there is a slight increase in the annual amount of investment of the 2018 RTP financially constrained investment strategy (approximately $68.2 million per year) compared to the 2018 RTP 10-year investment strategy (approximately $64.2 million per year). While the increased amount of investment in the 2018 RTP financially constrained investment strategy is a positive sign, the result indicates slightly more active transportation investment is slated for the outer years of the plan. In addition, when looking at the 2018 RPT strategic investment strategy, the amount of active transportation investment increases by nearly $1 billion, which is also an indicator of active transportation investment being more conservative in the 2018 RTP 10-year and financially constrained investment strategies.

*Table 8. Summary of 2018 RTP Active Transportation Investment**

| | **10-Year Strategy (2018-2027)** | | | **Financially Constrained RTP (2018-2040)** | | | **Strategic RTP (2018-2040)** | | |
|---|---|---|---|---|---|---|---|---|---|
| | **$** | **#** | **%** | **$** | **#** | **%** | **$** | **#** | **%** |
| RTP Investment Strategy | $6.2 B | 374 | 29% | $14.7 B | 762 | 69% | $21.3 B | 1057 | 100% |
| Active Transportation | $642 M | 133 | 10% | $1.5 B | 293 | 10% | $2.5 B | 393 | 12% |
| Average Annual Active Transportation Investment | $64.2M | | | $68.2 M | | | $113.6 M | | |
| Expected Rate** | -- | | | $1.48 B | | | -- | | |

**Includes all identified active transportation investments in the 2018 RTP.*

***If the 2018 RTP 10-Year investment strategy annual rate of active transportation investment is carried forward.*

*Key Thoughts and Observations*

In conducting the analysis of system completion and connectivity based on the investments identified for the 2018 RTP, there were two key issues which emerged which may have a significant

implication to the results. One key issue is that a number of active transportation investments identified in the 2018 RTP either: 1) provided geospatial data which was not in alignment with the regional active transportation network; or 2) the active transportation investment is not on the regional active transportation network. As a result, these investments were not evaluated in the analysis, leaving nearly 414 miles not analyzed. For the number of active transportation investments which provided geospatial data slightly out of alignment, the alignment issue is a technical error which will look to get resolved during the refinement period. In likelihood, the out-of-alignment active transportation investments will increase the overall system connectivity and completeness of the system which may also address the decrease in 1% less sidewalk mileage in historically marginalized communities and communities of color in the 2018 RTP strategic investment strategy. Nonetheless, the result is worthy of monitoring because of the existing disparities in active transportation infrastructure in historically marginalized communities.

The second key issue to emerge from the system completeness and connectivity evaluation is addressing the completeness and connectivity of the roadway network. The analysis of the regional roadway network was unable to be completed, and therefore not discussed in the results. The significant issue encountered with the roadway system completeness and connectivity was defining the planned regional roadway network to get a better understanding of the gaps, deficiencies, and the existing level of completeness for the roadway network. Otherwise the roadway completeness and connectivity is viewed as additions to an already complete system. The impact of not having the planned regional roadway network is being able to speak to the sidewalk and ultimately pedestrian system connectivity in the connectivity analysis. As a result, the connectivity analysis only is able to speak to the intersection density of the bicycle network.

Share of Transportation Safety Projects and Per Capita Spending in Transportation Safety

**Evaluation Measure Summary**
To look at the number of projects and the per capita investment level focused on reducing fatal and serious injury crashes region wide and in historically marginalized communities (in aggregate), and understand if the 2018 RTP investment strategies are further increasing safety outcomes for historically marginalized communities.

*Finding*

- All three 2018 RTP investment strategies illustrate the share of safety projects and investments levels are at a greater rate in historically marginalized communities compared to the region.
- The majority of safety investments proposed are located in all permeations of historically marginalized communities and on high injury corridors located in historically marginalized communities.
- The 2018 RTP 10-year investment strategy has the largest proportion of projects and investment level in safety compared to the financially constrained and strategic investment strategies.
- Nonetheless, for the region to achieve its Vision Zero goal, then greater investment in safety may be necessary as the level of safety investment proposed across all three 2018 RTP investment strategies makes up a range of 3% – 8%.
- There are a number of transportation investments (327) within the 2018 RTP investment strategy which identified reducing fatalities or serious injuries or reducing crashes as a secondary purpose of the project. Recognizing transportation projects aim to achieve multiple objectives, there may be a greater level of safety investment in the 2018 RTP investment strategies than represented in the analysis.
    - Metro staff will work with the individual sponsoring jurisdictions which identified safety as a secondary purpose during the refinement period to resolve the number of safety projects and the investment level prior to the release of the 2018 RTP public comment draft in June 2018.
- As a result, there is not a disproportionate impact in the level of safety investments in historically marginalized communities, focused historically marginalized communities, and communities of color.

*Discussion*

*Table 9. 2018 RTP – Summary of Identified Transportation Safety Projects*

| | Total Projects | Estimated 2018 RTP cost | Safety projects | Estimated 2018 RTP safety cost | % Projects | % Investment |
|---|---|---|---|---|---|---|
| 2018 RTP – 10 Year Investment Strategy | 374 | $6.3 B | 30 | $484 M* | 8% | 8% |
| 2018 RTP Financially Constrained | 762 | $14.7 B | 45 | $598 M* | 6% | 4% |

| | | | | | | |
|---|---|---|---|---|---|---|
| 2018 RTP Strategic[8] | 1057 | $21.2 B | 53 | $664 M* | 5% | 3% |

*Includes the Rose Quarter project at $325 million.

Within the entire 2018 RTP, a total of 53 of the 1057 transportation projects submitted (approximately 5% in total) have been identified as safety projects.[9] While only 5% of transportation projects are identified as safety projects, approximately 3% of the overall 2018 RTP investment strategy comprises of safety investment.[10] The portion of the RTP investment strategy focused on transportation safety is stark result knowing that the entire RTP represents all the transportation investments needed to address the needs and deficiencies due to population and employment growth in a financially unconstrained environment. When looking closer at the financially constrained 2018 RTP, which represents the amount of funding to be reasonably expected to be available, the overall proportion does improve relative to the entire 2018 RTP investment strategy. In the 2018 RTP financially constrained strategy, 6% of projects representing 4% of the financially constrained investment strategy is towards safety.

Nonetheless, what monitoring data has shown is a trending increase in crashes, particularly those which resulted in serious injuries or fatalities in the Portland metropolitan region. Knowing that transportation safety needs to be addressed in the nearer term, looking more in depth at what is planned for the first 10-years of the RTP helps illustrate what is expected to come next. The 2018 RTP 10-year investment strategy (2018-2027) shows brighter promise when it comes to safety investment. Nearly 8% of the projects and the investment level in the 10-year investment strategy focus on safety. The 30 safety projects slated for completion in between 2018-2027 represents over half (56%) of all the safety projects identified in the entire 2018 RTP.

Transportation safety was a key identified concern by historically marginalized communities and a clearly stated desired outcome historically marginalized communities wish to see from the region's transportation system are facilities which reduce crashes that result in fatal and serious injuries. In looking at the 53 safety projects identified in the 2018 RTP, a breakdown of these projects are viewed from where these projects are located relative to historically marginalized communities and the per capita investment in safety.

*Table 10. Transportation Safety Investment Levels in Historically Marginalized Communities, Focused Communities, and Communities of Color and Per Capita Expenditure by Investment Scenario*

| **10-Year Investment Strategy (2018-2027)** | | | | | |
|---|---|---|---|---|---|
| | **Total projects** | **% of project total** | **safety cost** | **% of investment total** | **Cost per person** |
| Total 2018 RTP Safety Projects (10-year strategy only) | 30 (of 374) | 8% | $484 M | 8% | $254 |

[8] See footnote 10.

[9] In guidance provided to RTP project submissions, safety projects are those which meet the region's definition of a safety project. The region defines a safety project as: a project with the primary purpose of addressing a documented safety problem at a documented high injury or high risk location with one or more proven safety countermeasure(s).

[10] Note, the total number of 2018 RTP projects are from the RTP call-for-projects which was held from June 1 – July 21, 2017. The total number of projects are subject to change during the refinement period and prior to the release of the 2018 RTP public comment draft in June 2018.

| | | | | | |
|---|---|---|---|---|---|
| Within HMC (transportation safety only) | 29 | 97% (of 8%) | $475 M | 7.6%/(95% of 8%) | $360 |
| Within FHMC (transportation safety only) | 24 | 80% (of 8%) | $479 M | 7.7%/(96% of 8%) | $642 |
| Within Communities of Color (transportation safety only) | 24 | 80% (of 8%) | $468 M | 7.5%/(94% of 8%) | $593 |
| **Financially Constrained RTP (2018-2040)** | | | | | |
| | **Total projects** | **% of project total** | **safety cost** | **% of investment total** | **Cost per person** |
| Total 2018 RTP Safety Projects (2018-2040 constrained) | 45 (of 762) | 6% | $598 M | 4% | $274 |
| Within HMC (transportation safety only) | 43 | 96% (of 6%) | $552 M | 3.7%/(93% of 4%) | $366 |
| Within FHMC (transportation safety only) | 34 | 76% (of 6%) | $517 M | 3.5%/(88% of 4%) | $607 |
| Within Communities of Color (transportation safety only) | 37 | 82% (of 6%) | $525 M | 3.6%/(90% of 4%) | $612 |
| **Financially Constrained RTP (2018-2040)** | | | | | |
| | **Total projects** | **% of project total** | **safety cost** | **% of investment total** | **Cost per person** |
| Total 2018 RTP Safety Projects | 53 (of 1057) | 8% | $664 M | 3% | $304 |
| Within HMC (transportation safety only) | 47 | 87% (of 8%) | $617 M | 2.9%/(97% of 3%) | $409 |
| Within FHMC (transportation safety only) | 37 | 70% (of 8%) | $526 M | 2.5%/(83% of 3%) | $617 |
| Within Communities of Color (transportation safety only | 40 | 75% (of 8%) | $545 M | 2.6%/(87% of 3%) | $627 |

A more focused look shows that the majority of safety investments are being made in areas where there is a greater presence of people of color, people in poverty, people uncomfortable speaking English, older adults, and young people. Represented in the 10-year investment strategy, the financially constrained long-range investment strategy, and the additional long-range strategic investments are 70% – 90% of safety projects and 83% - 97% are being made in historically marginalized communities, focused historically marginalized communities, and communities of color.[11] Additionally the per capita rate of spending in these communities is outpacing the region

[11] At the time of the 2018-2021 MTIP data request, some transportation safety projects were unable to provide exact locations of where the investments would be made. These investments provided programmatic areas (e.g. City of Gresham or City of Portland), but due to the lack of defined spatial information, they were therefore excluded from the geographic assessment looking at transportation safety investments in historically marginalized and focused historically marginalized communities. The number of projects affected in this way includes 16 projects representing approximately $32 million of investments. These 16 projects were included as part of the region-wide per capita spending on transportation safety investments.

wide per capita rate significantly. The safety projects are also addressing safety issues on the high injury corridors in historically marginalized communities. (See table X) This positive trend shows that while safety projects and investments make up a small part of the long-range transportation investment strategy, the safety investments proposed are slated to address and reduce crashes occurring in these communities. These results appear to indicate a level of transportation safety investment is being targeted in historically marginalized communities at a per capita level greater than the region. The results show transportation safety investments levels moving in the direction desired by historically marginalized communities and the assumed outcome would be of these investments would be safer streets for all users.

*Table 11. Transportation Safety Projects Located on the High Injury Corridors and within Historically Marginalized Communities, Focused Historically Marginalized Communities, and Communities of Color*

| Investment Strategy | HMC | FHMC | Communities of Color |
|---|---|---|---|
| **2018-2027** | 24 of 30/80% | 21 of 30/70% | 21 of 30/70% |
| **2028-2040 (FC)** | 31 of 45/69% | 28 of 45/62% | 28 of 45/62% |
| **2028-2040 (S)** | 33 of 53/62% | 30 of 53/57% | 30 of 53/57% |

*Key Thoughts and Observations*

There are some different reasons for the overall number and investment level of safety projects in the 2018 RTP is a small proportion of the investment strategy, regardless whether it is the 10-year strategy, the 2018 RTP financially constrained, or the 2040 RTP strategic investment strategy. In general, transportation safety-oriented capital improvements, such as countermeasures, are not as costly as other transportation investments, such as building an additional lane of a freeway, rehabilitating a bridge, or adding a new rail line to the transit system. Additionally, in a review of the projects proposed for the 2018 RTP investment program, local jurisdictions provided an inconsistent response asking whether a project is a "safety project," but then selecting and identifying a non-safety-related primary purpose. There was also a number of projects in the 2018 RTP investment strategy which identified reducing crashes as a secondary purpose. Recognizing the region's definition of a safety project is driven by what the sponsoring jurisdiction views as the primary purpose of the project, these were not included in the analysis. However, in initial review, Metro staff suspects there are more safety projects than what has been represented in the assessment. As a result, Metro staff plans to work through the refinement period to work with the individual sponsoring jurisdictions to resolve these "miss-matched" responses projects and further look at projects which identified safety as a secondary purpose. A rerun of the evaluation for the investment strategy will be conducted prior to the release of the 2018 RTP public comment draft in June 2018.

Exposure to Vehicle Miles Traveled (VMT) and Crash Risk

**Evaluation Measure Summary**
To look at the amount of non-freeway vehicle miles traveled (VMT) exposure region wide and in historically marginalized communities (in aggregate), and understand if the 2018 RTP investment strategies are further reducing vehicle miles traveled exposure, which is correlated to crashes, for historically marginalized communities.

*Findings*

- In the 2018 RTP 10-year investment strategy, VMT is increasing in focused historically marginalized communities and communities of color faster than the region overall. However, the 2018 RTP 10-year investment strategy has not been controlled for population growth and employment.
- The 2018 RTP financially constrained and 2040 strategic investment strategies see a decrease in VMT in historically marginalized communities, focused historically marginalized communities and communities of color.
    - In general, the overall VMT is expected to increase due to the growth of population and employment, therefore decreases in VMT observed are based on the performance of the constrained and full investment strategy having an impact to travel behavior and ultimately the exposed VMT.
- But because VMT is correlated with and one of many factors contributing to crashes on the transportation system, the increase in overall projected and rate of VMT growth means the region must be diligent in implementing countermeasures and the other principles of transportation safety (the six E's – engineering, education, encouragement, enforcement, equity, and evaluation), to reduce the overall exposure and risk of crashes.
- Some form of mitigation may be necessary to address the greater increase in VMT growth in historically marginalized communities, particularly in the first 10-years.

*Discussion*

The region has a goal to reduce vehicle miles traveled (VMT) per capita as a means to address multiple desired outcomes and goals for the transportation system. However, similarly to traffic congestion, VMT is an indicator of numerous other factors such as economic activity and risk of crashes. In general, VMT is expected to grow as the region anticipates seeing an additional estimated 573,000 people (35.6% increase), 260,000 households (40.8% increase), and 345,000 jobs (38.6% increase) in the region by 2040.

*2018 RTP 10-Year Investment Strategy*

*Table 12. Aggregate Vehicle Miles Traveled (VMT) – Base Year (2015) compared with 10-Year RTP Investment Strategy*

| Base Year (2015) Region wide VMT | RTP Region wide VMT (2018-2027) | Difference in VMT (RTP – Base Year) | Percent Difference |
|---|---|---|---|
| 21,441,274 | 25,579,276 | 4,138,002 | 19.3% |
| **Base Year (2015) HMC VMT** | **RTP HMC VMT (2018-2027)** | **Difference in VMT (RTP – HMC Base Year)** | **Percent Difference** |

| | | | |
|---|---|---|---|
| 14,260,189 | 16,968,580 | 2,708,391 | 19.0% |
| **Base Year (2015) FHMC VMT** | **RTP FHMC VMT (2018-2027)** | **Difference in VMT (RTP – FHMC Base Year)** | **Percent Difference** |
| 8,317,834 | 9,965,249 | 1,647,415 | 19.8% |
| **Base Year (2015) POC VMT** | **RTP POC VMT (2018-2027)** | **Difference in VMT (RTP – POC Base Year)** | **Percent Difference** |
| 8,814,291 | 10,580,265 | 1,765,974 | 20.0% |

What is observed with the 10-year RTP investment strategy is that VMT is expected to grow region wide by 19.3%. There are several reasons for this anticipated growth in VMT. By 2027, the region is expected to grow an additional estimated 300,000 people (18.6% increase), 140,000 households (21.9% increase), and 175,000 jobs (19.6% increase). This growth would anticipate that overall that travel across all different modes (e.g. walking, bicycling, transit, and driving) would increase. A 19.3% increase in overall VMT relative to 18.6% increase in population and 19.6% increase in jobs seems to indicate the growing rate of vehicle-based trips for getting to work and other trip purposes are increasing, whether in length or in frequency. Despite this rate of vehicle growth, there is a somewhat positive trend; the anticipated growth in VMT is slightly lower in historically marginalized communities than the anticipated region wide growth of 19% and 19.3% respectively. What this result indicates is the mix in transportation investments across different modes in historically marginalized communities is providing other transportation choices which is influencing the rate of growth in VMT. For the purposes of transportation safety, the less exposure to VMT is a way to address the potential for crashes since VMT is correlated with and one of many factors contributing to crashes on the transportation system.

Nonetheless, it is concerning that in areas with greater than the regional average of people of color and where there is a greater density of people of color, people in poverty, and in language isolation, the rate of VMT growth is outpacing the VMT growth of the region. While the difference in VMT relative to the region may be less than 1%, the anticipated increase in VMT exposure in these communities is concerning since marginalized communities in general experience a disproportionate number of crashes in their communities and a significant amount of the region's identified high injury corridors travel through these communities.

*2018 RTP Financially Constrained and Strategic Investment Strategies*
*Table 13. Aggregate Vehicle Miles Traveled (VMT) – 2040 No-Build compared with 2040 RTP Financially Constrained*

| **2040 No Build Region wide VMT** | **Constrained RTP Region wide VMT (2018-2040)** | **Difference in VMT (RTP – No Build)** | **Percent Difference** |
|---|---|---|---|
| 29,963,906 | 29,198,802 | -765,104 | -2.6% |
| **2040 No Build HMC VMT** | **Constrained RTP HMC VMT (2018-2040)** | **Difference in VMT (RTP – HMC No** | **Percent Difference** |

| | | Build) | |
|---|---|---|---|
| 19,869,637 | 19,316,297 | -553,340 | -2.8% |
| **2040 No Build FHMC VMT** | **Constrained RTP FHMC VMT (2018-2040)** | **Difference in VMT (RTP – FHMC No Build)** | **Percent Difference** |
| 11,661,297 | 11,356,738 | -304,558 | -2.6% |
| **2040 No Build POC VMT** | **Constrained RTP POC VMT (2018-2040)** | **Difference in VMT (RTP – POC No Build)** | **Percent Difference** |
| 12,387,947 | 12,047,468 | -340,479 | -2.7% |

*Table 14. Aggregate Vehicle Miles Traveled (VMT) – 2040 No-Build compared with 2040 RTP Financially Constrained*

| **2040 No Build Region wide VMT** | **2040 Strategic RTP Region wide VMT** | **Difference in VMT (RTP – No Build)** | **Percent Difference** |
|---|---|---|---|
| 29,963,906 | 28,949,905 | -1,014,001 | -3.4% |
| **2040 No Build HMC VMT** | **2040 Strategic RTP HMC VMT** | **Difference in VMT (RTP – HMC No Build)** | **Percent Difference** |
| 19,869,637 | 19,145,298 | -724,339 | -3.6% |
| **2040 No Build FHMC VMT** | **2040 Strategic RTP FHMC VMT** | **Difference in VMT (RTP – FHMC No Build)** | **Percent Difference** |
| 11,661,297 | 11,232,549 | -428,747 | -3.7% |
| **2040 No Build POC VMT** | **2040 Strategic RTP POC VMT** | **Difference in VMT (RTP – POC No Build)** | **Percent Difference** |
| 12,387,947 | 11,912,851 | -475,095 | -3.8% |

While the 2018 RTP 10-year investment strategy anticipates seeing an overall increase in VMT region wide and in certain historically marginalized communities, what the 2018 RTP financially constrained and 2018 RTP strategic investment strategies show that overall VMT is anticipated to decrease with the implementation of a full set of transportation investments. Additionally, historically marginalized communities, communities of color, and areas where there is a greater density of historically marginalized communities see the same rate or greater VMT reduction. Albeit the reduction of VMT in historically marginalized communities relative to the region tends to stay

within 1%, this result shows the trend and direction for getting to the transportation safety outcomes historically marginalized communities desire to see. But the exposure to VMT will likely be experienced as incremental or unchanged by these communities.

The VMT results also indicate the 2018 RTP financially constrained and 2040 strategic investment strategies are having an overall impact to reducing vehicle miles traveled despite population and job growth. By looking at the performance of the 2018 RTP financially constrained and 2040 strategic investment strategies relative to the No-Build, the results show when growth have been controlled for, anticipated VMT decreases with further investment and contributing to travel behavior changes.[12] The 2018 RTP financially constrained and 2018 RTP strategic investment strategies do represent a greater investment in transit and active transportation, which by providing other viable transportation options for different types of travel trips, VMT is being reduced. For the purposes of transportation safety, this means the 2018 RTP investment strategy is reducing one of the correlated factors contributing to crashes and therefore working to increase safety outcomes. More specifically for historically marginalized communities, the greater reduction in VMT from the region, once controlled for population growth, suggests safety outcomes to be further realized in these historically marginalized communities.

*Key Observations and Thoughts*
There is recognition exposure to absolute VMT (i.e. # of VMT) will increase regardless of investment in the transportation system due to projections in economic activity and population growth. The increase in absolute VMT means that all communities will experience a higher exposure to VMT and ultimately have some increased risk of exposure to crashes. There is also recognition the growth in VMT experienced will differ throughout the region, including between different historically marginalized communities. For example, some of the region's focused historically marginalized communities have been identified because of the presence of significant language isolation. These areas tend to be on the underdeveloped edges of the region. The absolute VMT in these underdeveloped areas compared to historically marginalized communities closer in to central Portland may look significantly different due to travel options once controlling for size and growth.

Many different factors may help explain the increase in VMT in focused historically marginalized communities and communities of color the 2018 RTP 10-year investment strategy. A significant portion of the funding in the 2018 RTP 10-year investment strategy is committed toward four major megaprojects, which limits the amount of local investment into the region's transportation system to address travel demands and needs.

Additionally, because the 2018 RTP 10-year investment strategy results are uncontrolled for the impacts of population and employment growth, being able to speak towards the impact of the 10-year strategy is limited since there is not a 10-year no-build scenario which would show the anticipated growth in VMT solely based on population growth. Nonetheless, the rate of growth in areas where there is a greater density of marginalized communities, language isolated communities, and communities of color is outpacing the region, meaning there is increased exposure and risk of crashes for these communities. Additional attention and monitoring may be warranted because marginalized communities in general experience a disproportionate number of

[12] The No-Build represents a future scenario if there were no further capital investment in the region's transportation system beyond those transportation projects which are fully funded.

crashes in their communities and a significant amount of the region's identified high injury corridors travel through these communities.

Habitat Impact

**Evaluation Measure Summary**
To look at the number of roadway projects which overlap with high value habitat areas region wide and in historically marginalized communities (in aggregate), and understand if the 2018 RTP investment strategies are potentially impacting high value habitats at a greater rate in historically marginalized communities.

*Finding*

- All three 2018 RTP investment strategies increase the number of roadway investments which overlap or intersect high value habitats at a greater rate in historically marginalized communities, focused historically marginalized communities, and communities of color at a greater rate than the region.
- This means there is a greater rate of high value habitat with a risk of a potential impact in historically marginalized communities.
- Because the environmental impacts are determined during the project development and design of the project, the known impact and potential options to avoid, minimize, and mitigate are not yet determined.
- As a result, there is a potential disproportionate impact which will require monitoring the implementation of the transportation investments overlapping high value habitats in historically marginalized communities.

*Table 15. 2018 RTP Investments Intersecting High Value Habitats and Historically Marginalized Communities & Focused Historically Marginalized Communities*[13]

| | High Value Habitat (HVH) Units | | 10-Year Strategy Intersect (2018-2027) | | 2018 RTP Constrained Intersect (2018-2040) | | 2018 RTP Strategic (2018-2040) | |
|---|---|---|---|---|---|---|---|---|
| | **Total** | **%** | **Total** | **%** | **Total** | **%** | **Total** | **%** |
| **Region wide** | 14452 | 100% | 1278 | 9% | 2016 | 14% | 2844 | 20% |
| **Historically Marginalized Communities (HMC)** | 8882 | 61% | 955 | 11% | 1433 | 16% | 2021 | 23% |
| **Focused HMCs** | 4241 | 29% | 564 | 13% | 829 | 20% | 1108 | 26% |
| **People of Color** | 2480 | 17% | 349 | 14% | 578 | 23% | 773 | 31% |

*Discussion*

Overall, the 2018 RTP investments strategies intersect with high value habitats in areas where there are historically marginalized, focused historically marginalized communities, and communities of color at a greater rate than the region. The habitat analysis results illustrate typically historically marginalized communities, focused historically marginalized communities, and communities of color see a higher potential of nearby high value habitat areas impacted by the region's proposed transportation investments.

[13] Indicates 2018 RTP which detailed spatial information was provided.

*Key Thoughts and Observations*
The results of the habitat analysis are not surprising. Because the region wide rate of high value habitats potentially impacted by the region's transportation investment strategy includes a number of the high value habitats in protected areas and/or natural areas (e.g. Forest Park, Cooper Mountain) where transportation-related development is limited or prohibited, the number of overall high value habitat units potentially impacted is unlikely to rise at a greater rate when looking at potential impact to high value habitats within historically marginalized communities generally. This is because the general pattern of historically marginalized communities being in urban areas and more transportation infrastructure proposed in the urban area for the investment strategy.

Nonetheless, high value habitats in urban areas, particularly in historically marginalized communities, remain critically important to monitor and work to ensure these areas remain as intact as possible because of the functions high value habitats serve. Additionally, for historically marginalized communities, the role of impacts to natural and environmental features is particularly acute because of the historical pattern of transportation infrastructure and public investments destroying historically marginalized communities and surrounding resources.

While the potential impact to the high value habitat is greater in these communities, many of the projects have not underwent project planning, design, and the environmental analysis process to determine what those impacts to the high value habitats may be and determine the best course of action for the project (i.e. develop a design which avoids the impact or implement mitigation strategies in tandem). Jurisdictional partners will be required to undergo this process if they seek federal funding or need any form of federal approval to implement the project. Recognizing this step in transportation project development, Metro recommends undertaking a monitoring strategy for these projects, notifying the jurisdictions to be aware of this potential disproportionate impact, and also conducting further programmatic assessment to help identify those projects with the greater potential for high value habitat impact.

**2018 RTP Transportation Equity Evaluation – Preliminary Findings and Discussion Questions**
The results of the 2018 RTP transportation equity evaluation demonstrate the region's long-range transportation investment strategies tend to perform in mixed way in advancing accessibility, safety, and environmental outcomes expressed by historically marginalized communities. The transportation equity results also raise the significant interconnectivity of broad transportation issues such as traffic congestion and increases in vehicle miles traveled, will pose on the region and impact in different ways. In addition, undertaking the analysis with different investment strategies uncovered new methodology issues which were not observed during the beta testing period with the 2018-2021 MTIP. Metro staff has developed the following preliminary findings, but seeks work group feedback in shaping the findings.

*Preliminary 2018 RTP Transportation Equity Analysis Findings*
- There is not a disproportionate impact in the share of safety projects and per capita level of investment in safety in historically marginalized communities compared to the region.
- There is a potential disproportionate impact to high value habitats in historically marginalized communities which need further monitoring.
- Population and employment growth will lead to further congestion which will impact accessibility by transit for historically marginalized communities.

- Increased vehicle miles traveled will pose safety-related risk which need to be monitored.
- More of the region's active transportation network is getting completed and becoming more connected, but the 2018 RTP 10-year investment strategy is conservative in active transportation investment relative to the 2018 RTP financially constrained strategy.

*Technical Findings and Discovery*

- A no-build scenario for the interim analysis year (2027) may be needed to better look at the 2018 RTP 10-year investment strategy and understand the implications of the investments slated in the first ten years of the 2018 RTP.
- Time-based accessibility measures for bicycling and walking may not be the most appropriate active transportation accessibility measure based on the existing tools available. Within the existing tool, a refined measure may look at the additional trips being made on higher quality activity transportation facilities from historically marginalized communities.
- The evaluation measures are limited by the data and information provided by partners in the RTP call-for-projects. As a result, certain transportation equity evaluation measures are not fully representative of the performance of the investment strategy.

Based on the analysis of the 2018 RTP investments and the results of the transportation equity system evaluation measures, the following discussion questions are being asked for discussion with the work group:

1. Based on results of transportation equity analysis, what are your reactions to the preliminary staff findings?
2. The transportation equity analysis represents what outcomes we'd anticipate seeing if the entire investment program identified for each scenario gets implemented. Knowing this, do the results seem to ring true to your experiences? Are there concerns which are not being reflected in the results?
3. What are key messages that should be expressed as part of the findings from the transportation equity system evaluation?
4. When the historically marginalized communities are seeing results which are at pace with the region, is there still a disproportionate impact?
    - Is the same rate as the region fair in advancing accessibility, safety, and environmental outcomes for historically marginalized communities?
5. When historically marginalized communities are seeing results with slight, but increased gains, is there still a disproportionate impact?
    - Is a slightly greater rate compared to the region fair in advancing accessibility, safety, and environmental outcomes for historically marginalized communities?
6. What recommendations do you have for the transportation equity system evaluation? More specifically, what would you like to see different with the investment strategies to better advance the four outcomes identified by historically marginalized communities?

**Next Steps**

Metro staff will look to incorporate feedback from the work group in shaping the discussion and findings of the 2018 RTP transportation equity evaluation. Metro staff will present the results and revised findings to the technical work groups in December for discussion. The work group will meet in January 2018 to finalize the draft results, findings, and recommendations for the 2018 RTP transportation equity evaluation. Work group recommendations and findings directed towards refinements of the investment scenarios will be discussed with partners in the early part of 2018.

Negotiated refinements are expected to be reflected in the RTP investment strategy and a second round of a system performance assessment which will be included public comment draft. The public comment draft is expected to be released in summer 2018.

Memo

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**Appendix I – 2018 RTP Transportation Equity Evaluation – Evaluation Methods Background, Tools, and Assumptions**

**2018 RTP Transportation Equity Evaluation Methods**

The 2018 RTP transportation equity evaluation is an equity-focused scenario planning analysis looking at base-year conditions and comparing to future-year conditions, which are based on a proposed package of transportation investments. In performing a scenario analysis, the core methodological components to the 2018 RTP transportation equity evaluation are:

1. Community definitions
2. System evaluation metrics
3. Evaluation tools
4. Evaluation inputs and scenarios

The following section discusses the definitions, data, and assumptions for each of the core components of the 2018 RTP transportation equity evaluation.

Community Definitions

Communities included as part of the 2018 RTP transportation equity evaluation include:

- People of Color
- People with Lower-Incomes
- People with Limited English Proficiency
- Older Adults
- Young Persons

The identification of the five communities came from stakeholders desire to see communities which have historically experienced challenges with the transportation system. Additionally, certain communities were identified as demographic groups to address in transportation planning as part of federal civil rights and environmental justice regulations. Demographic data is supplied by the U.S. Census Bureau to help identify communities and general spatial distribution. The regional rate for the individual historically marginalized community (with the exception for age) serves as the threshold for determining the locations of historically marginalized communities. For older adults and younger people, the regional rate must be realized for both communities as the spatial distribution. If just based on the regional rate, younger people and older adults would illustrate patterns where every area in the region would be considered a historically marginalized community.

*Historically Marginalized Communities*

| Community | Definition | Geography Threshold | Date Source |
|---|---|---|---|
| People of Color | Persons who identify as non-white. | Census tracts above the regional rate (26.5%) for people of color. | 2010 Decennial Census |
| Low-Income | Households with incomes equal to or less than 200% of the Federal Poverty Level (2016); adjusted for household size | Census tracts above the regional rate (31.1%) for Household with Lower-Income | American Community Survey, 2011-2015 |
| Limited English Proficiency | Persons who identify as unable "to speak English very well." | Census tracts above the regional rate (8.5%) for Limited English Proficiency (all languages combined). | Oregon Education Department School |

| | | | |
|---|---|---|---|
| | | | Enrollment Data (LEP only) |
| Older Adults | Persons 65 years of age and older | Census tracts above the regional rate for Older Adults (11%) AND Young People (22.8%) | 2010 Decennial Census |
| Young People | Persons 17 years of age and younger | | |

By request of stakeholders and recently adopted Metro agency-wide direction to advance racial equity, a more focused look at the transportation investments is being made in areas in which there are high concentrations of historically marginalized communities, namely those communities identified through civil rights and environmental justice legislation. As a result a population density threshold was applied to define geographic areas with high concentrations of People of Color, Low-Income, and Limited English Proficiency. This request recognizes the wish of stakeholders that with limited amounts of investment, in what areas can the greatest concentration of historically marginalized communities be reached. There was also a request to assess small pockets of concentrated language isolation. Therefore, identified areas of safe harbor communities were also included as part of the focused look.

Additionally, through agency-wide direction a focused look of the analysis will look solely at areas with greater than the regional rate of communities of color. This is to help inform and understand how the outcomes of a programmatic package of transportation investments serve communities of color.

*Focused Historically Marginalized Communities*

| Community | Geographic Threshold |
|---|---|
| People of Color | The census tracts which are above the regional rate for people of color AND the census tract has twice (2x) the population density of the regional average (regional average is .48 person per acre). |
| Low-Income | The census tracts which are above the regional rate for low-income households AND the census tract has twice (2x) the population density of the regional average (regional average is .58 person per acre). |
| Limited English Proficiency | The census tracts which are above the regional rate for low-income households AND the census tract has twice (2x) the population density of the regional average (regional average is .15 person per acre) OR those census tracts which have been identified as "safe harbor" tracts for language isolation.[1] |

[1] Safe Harbor is a provision within Title VI of the Civil Rights Act of 1964 which addresses for when and how agencies are to provide language assistance to limited English proficiency persons to ensure access to all public resources. The safe harbor provision mainly addresses translation of documents and language assistance, however for analysis purposes; it may help to identify areas where additional attention is warranted because of a concentration of language isolation. Safe harbor applies when a language isolated group constitutes 5% or 1,000 persons of the total population in the given area.

The transportation equity analysis will run the assessment using three tiers to address the desire to capture where there are higher rates of historically marginalized communities and where there is a concentration and/or pockets of historically marginalized communities.[2] The tiers are described below.

*Tier I Analysis – Historically Marginalized Communities*
The transportation equity evaluation used the regional rate as the first assessment to look at how well the 2018 RTP investments perform on priority outcomes identified by historically marginalized communities.

*Tier II Analysis – Focused Historically Marginalized Communities*
The transportation equity evaluation conducted a secondary assessment using a subset of historically marginalized communities, namely people of color, people with lower-incomes, and people with limited English proficiency, and look at how well the 2018 RTP investments perform on priority outcomes identified by historically marginalized communities in areas with the greatest concentration.

*Tier III Analysis – Communities of Color*
In recognition of Metro's recently adopted agency-wide direction to advance racial equity, the transportation equity evaluation conducted tertiary assessment using the regional rate for people of color and looking at how well the 2018 RTP investments perform on priority outcomes for communities of color.

See attached maps to visualize historically marginalized communities, focused historically marginalized communities, and communities of color.

<u>Transportation Equity System Evaluation Measures</u>
In following a best practice to have historically marginalized communities lead the assessment, the system evaluation measures for the transportation equity evaluation reflect the priorities historically marginalized communities identified to see from the region's transportation system. The common themes identified by historically marginalized communities include: increased access, affordability, safety, and public health.[3] These themes translated into the following system evaluation measures (in no particular order):

- Access to travel options – system connectivity & completeness
- Access to jobs
- Access to community places
- Habitat impact
- Share of safety projects
- Exposure to crash risk

[2] A third assessment tier has been added to the transportation equity assessment which focuses on race and ethnicity as a means of looking at how the RTP investment packages perform for communities of color. The third assessment tier has been added by advisement from the transportation equity work group and through direction from Metro's *Strategic Plan to Advance Racial Equity, Diversity, and Inclusion*.
[3] More information about the process undertaken to gather input from historically marginalized communities to identify the system evaluation measures can be found at: http://www.oregonmetro.gov/public-projects/2018-regional-transportation-plan/equity

- Affordability[4]
- Clean air[5]

These were identified as the priority transportation issues by historically marginalized communities.[6] As a result, the system evaluation took a closer look to see how well these transportation investments perform relative to these priority transportation issues in areas where there is a residential presence of historically marginalized communities. The results compare the base-year conditions to the future-year conditions for the region and for historically marginalized communities to see if there are disproportionate results. Individual methodology sheets, which outline criteria and other factors for each system evaluation measure can be found as part of the appendix.

Transportation Equity Assessment Inputs and Scenarios

The transportation equity evaluation includes those projects/investments which effect the regional transportation system and may seek federal or state funding in the future. The projects/investments are those which were identified through the 2018 RTP call-for-projects which took place from June 1 – July 21, 2017. Local jurisdictions as well as TriMet, ODOT, Port of Portland, and other regional and state partners submitted transportation investment priorities to comprise of the investment strategy. Each nominated transportation investment priority had to identify key pieces of information, such as costs, when the project planned to be open for service, whether the project wants to be considered for the financially constrained project list, a detailed project description, and other details. The information provided helped to shape the different scenarios for evaluation. There were three scenarios which were evaluated: 1) a RTP 10-year investment strategy; 2) a 2040 RTP financially constrained investment strategy; and 3) a 2040 RTP strategic investment strategy. The list of 2018 RTP investments assessed in the transportation equity evaluation and in each scenario can be found online with the 2018 RTP interactive project list tool. www.oregonmetro.gov/2018projects

As part of the assessment, information provided by the nominating agency helped in identifying which transportation equity system evaluation measure would be applicable for each/individual investment priority. For example, in nominating investment priorities, local jurisdictions had to identify whether the priority met the criteria and definition of a safety project to be applicable for the share of safety projects evaluation measure. In addition each project/investment was reviewed to confirm and determine which transportation equity system evaluation measure would be applicable. The list of 2018 RTP investments, found in Appendix II illustrates which investments were applied to the different transportation equity system evaluation measures.[7]

[4] The methodology for the affordability measure is being deferred to be built by the 2022 RTP. Some initial prototyping of this measure is currently under way.
[5] The methodology for the clean air measure is being deferred to be built by the 2022 RTP. At this time, the emissions model will report out region-wide results, but will not be able to report out localized air quality results.
[6] Reflects the priority issues within the limits the 2018 RTP system evaluation can analyze. Other transportation priorities were raised which included displacement and racial profiling in enforcement, which cannot be addressed through the system evaluation, but acknowledged in the assessment findings.
[7] Appendix II forthcoming.

As anticipated with the 2018 RTP system evaluation, there are a suite of transportation investments identified within the 2018 RTP which were unable to be assessed as part of the transportation equity evaluation. For many of these projects, the programmatic nature prevented being able to capture the investment the travel demand model or not enough spatial detail was available. For example, listed within the 2018 RTP are bus purchase and replacement programs and demand management programs. These programs are not represented in the travel demand model and spatial detail is unavailable since the deployment of buses travel all over the transit system and demand management programs are untaken throughout the network. Additionally, the travel demand model does not capture a number of tools used for system management and operations, including variable message signs, rapid flashing beacons, or communications architecture. These projects are also identified in Appendix II.[8]

Summary of Tools

Scenario planning requires the use of tools which are able to anticipate what behaviors or effects may occur with investments or policy decisions in the future. As part of Metro's metropolitan planning organization (MPO) function, the Data and Research department has developed a suite of tools to perform the 2018 RTP transportation equity evaluation to analyze future conditions once a certain suite of transportation investments are put into place. The following are brief descriptions of the scenario planning tools.

*Metroscope*

Metroscope is a suite of decision support tools used to model changes in measures of economic, demographic, land use and transportation activity within the Portland metropolitan area. Three of the tools relevant to the 2018 RTP transportation equity evaluation are:

- The economic model predicts employment by type of industry and the number of households by demographic category.
- The residential real estate location model predicts the locations of households.
- The non-residential real estate location model predicts the locations of employment. Both real estate models measure the amount of land consumed by development, the amount of built space produced and prices of land and built space by zone in each time period.

The Metroscope tool is being used to look at changes in access to employment areas and
In 2016, the region adopted a new land use, population, and employment forecast. The 2016 adopted forecast serves as an input into the economic and real estate (residential and non-residential) models to inform the 2018 RTP transportation equity evaluation.

*Travel Demand Model*

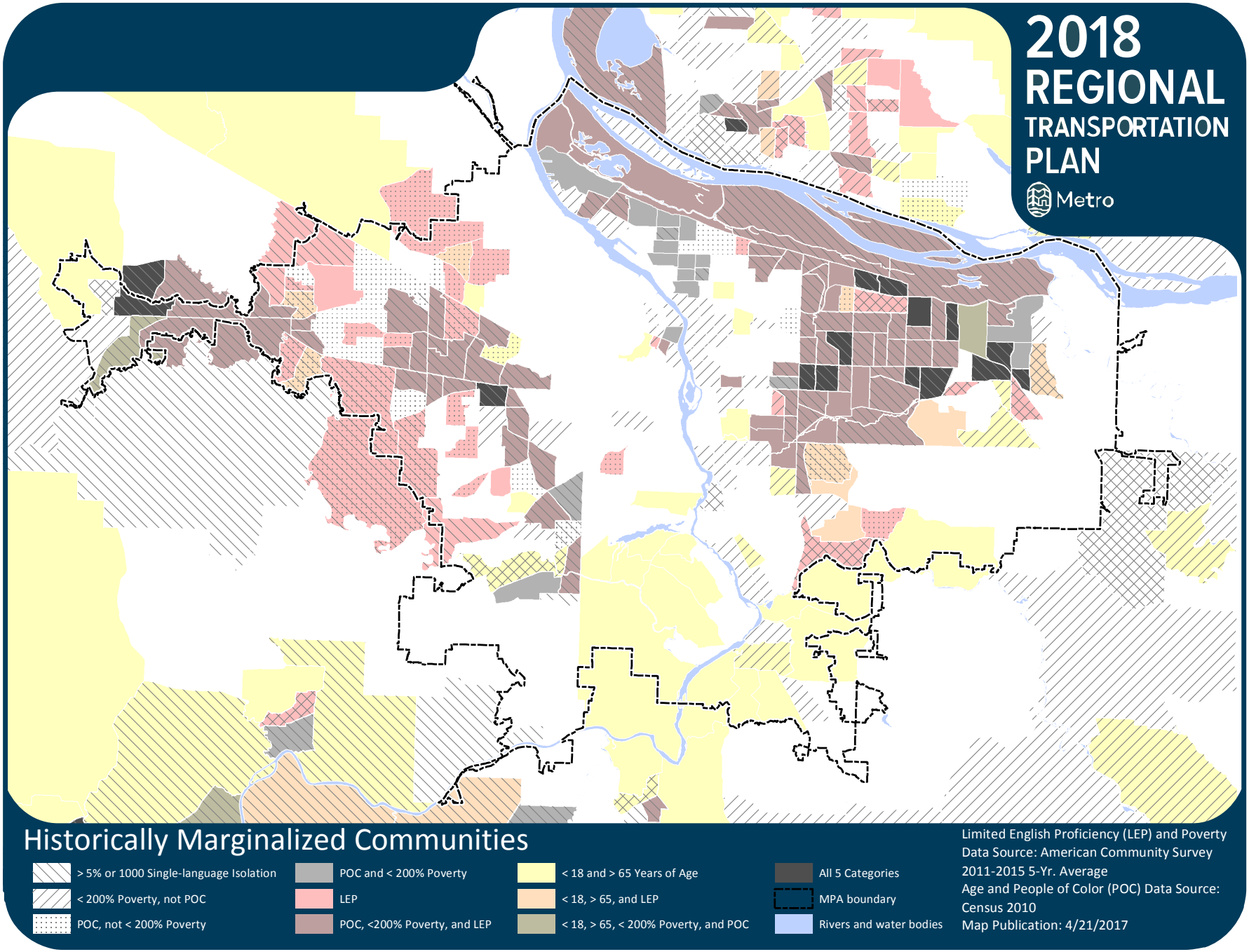
The travel model predicts travel activity levels by mode (bus, rail, car, walk or bike) and road segment, and it estimates travel times between transportation analysis zones (TAZ) by time of day. The travel demand model also produces a measure of the cost perceived by travelers in getting from any one TAZ to any other. For the 2018 RTP transportation equity evaluation, the transportation investments were organized into four different travel modeled networks, which essentially continued to build on each other. These include: 1) the 2015 base-year, which includes those project which have been built and open for service as of 2015; 2) the 10-year investment strategy, which includes those projects which are anticipated to be built and open for service between 2017 – 2027; 3) the financially constrained plan, which includes those projects to be built

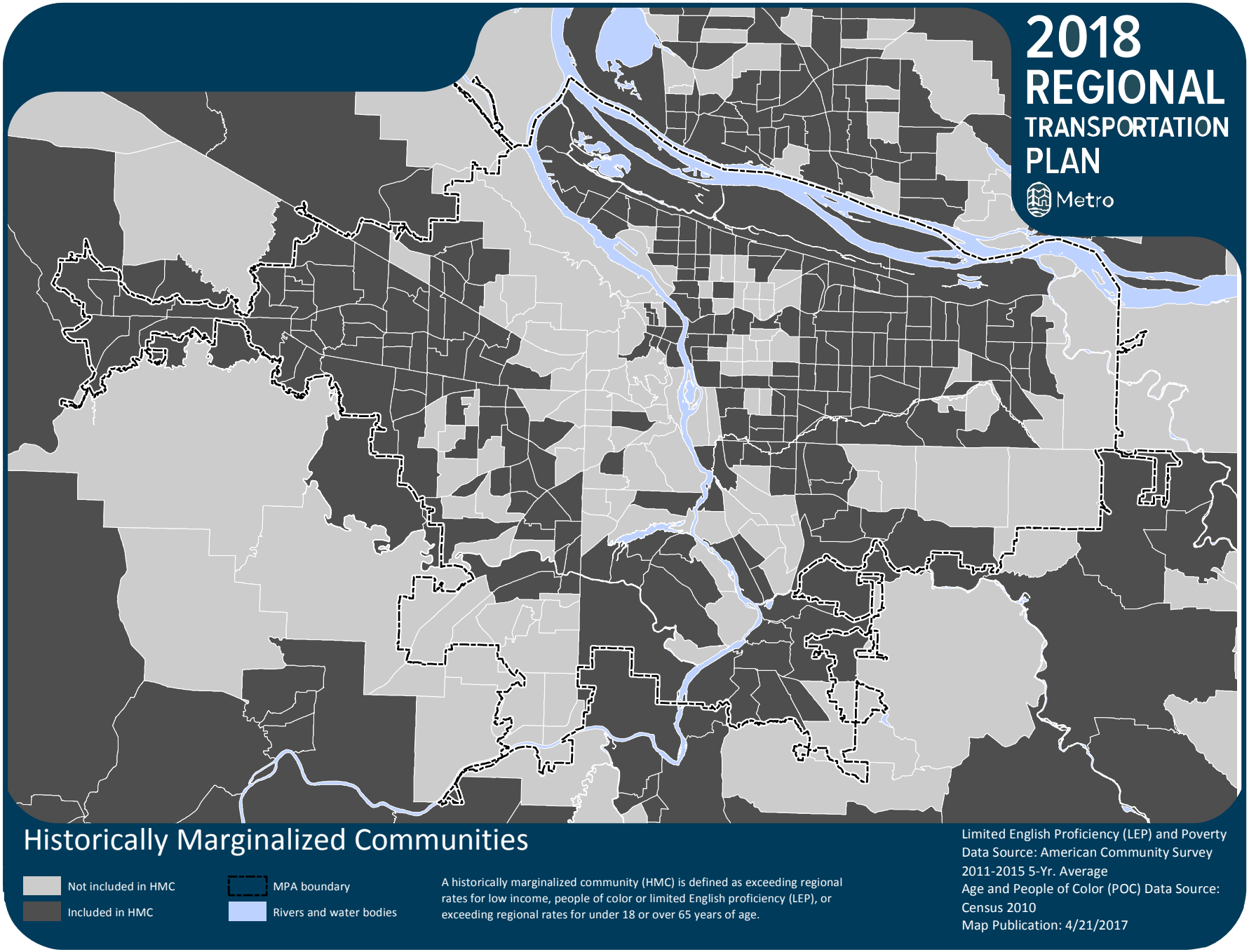
[8] See footnote 20.

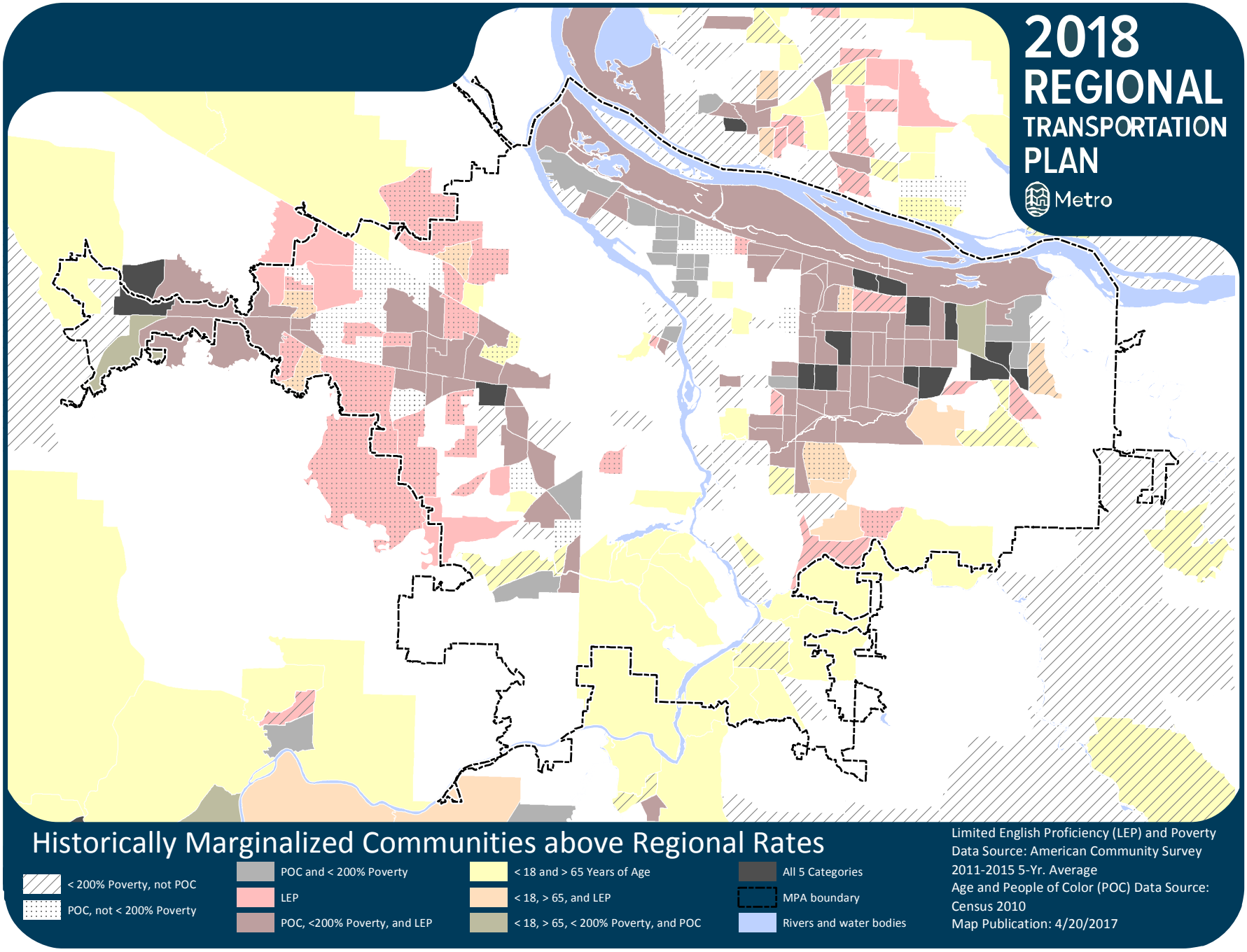
and open for service by 2040; and 4) the strategic, which includes those projects that were not included in the financially constrained RTP, but are projects which address all transportation deficiencies and needs regardless of potential revenue to fund the capital improvement. The four identified travel model networks were assessed to represent future conditions.[9]

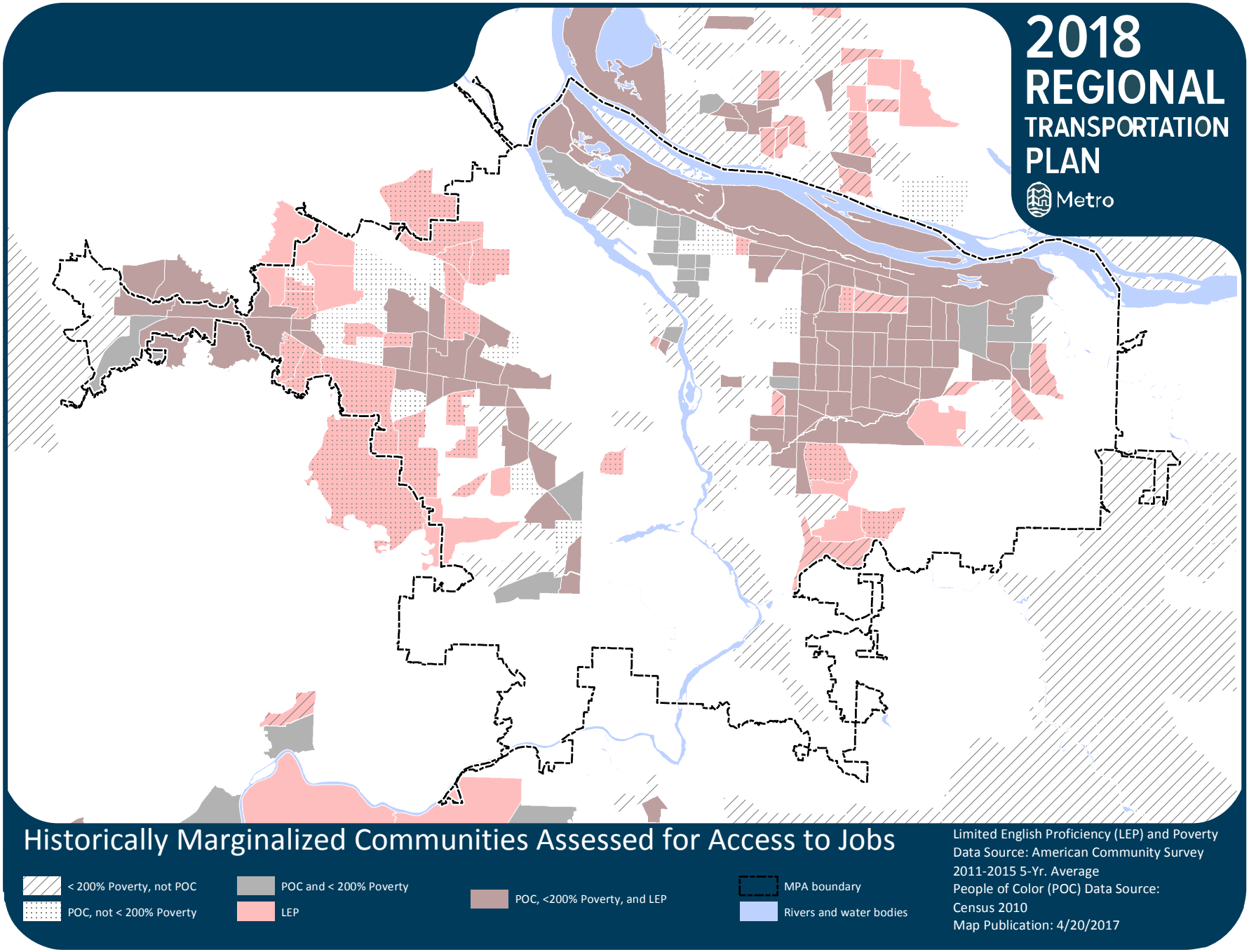
*Geographic Information Systems (GIS)*
Geographic Information Systems (GIS) uses spatial data to determine relationships between different data elements and map data. For the 2018 RTP transportation equity evaluation, the transportation investments are mapped to assess the spatial relationships between historically marginalized communities. In particular, access to a connected transportation system and safety considerations are being assessed through GIS.

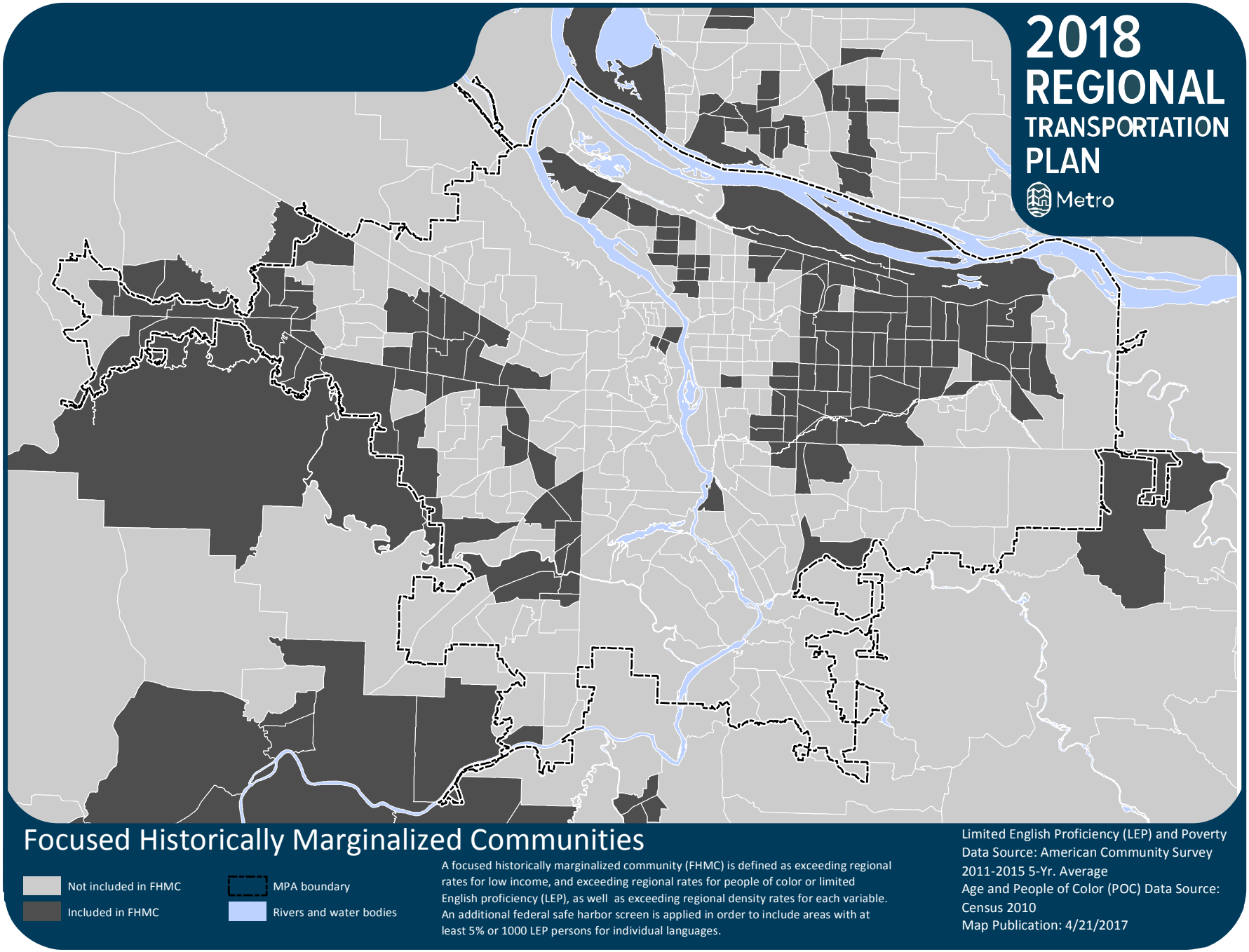
[9] Due to the nature of how the travel demand model operates, certain types of transportation investments cannot be reflected in the travel demand model tool. Some examples include roadway maintenance investments (e.g. repaving) and operations and system management (e.g. variable message signs, variable speed control, signal timing). Transportation investments which have macro-level effects to travel behavior (i.e. widening a roadway, adding a separated or protected bicycling facility, or increasing transit service) are those which the travel demand model can assess. Other "off-model" methods, namely geographic information systems (GIS), are used to assess the transportation investments which are unable to be captured as part of the model assessment.


2018
REGIONAL
TRANSPORTATION
PLAN
Metro
Historically Marginalized Communities
> 5% or 1000 Single-language Isolation
< 200% Poverty, not POC
POC, not < 200% Poverty
POC and < 200% Poverty
LEP
POC, <200% Poverty, and LEP
< 18 and > 65 Years of Age
< 18, > 65, and LEP
< 18, > 65, < 200% Poverty, and POC
All 5 Categories
MPA boundary
Rivers and water bodies
Limited English Proficiency (LEP) and Poverty Data Source: American Community Survey 2011-2015 5-Yr. Average
Age and People of Color (POC) Data Source: Census 2010
Map Publication: 4/21/2017


2018
REGIONAL
TRANSPORTATION
PLAN
Metro
Historically Marginalized Communities
Not included in HMC
Included in HMC
MPA boundary
Rivers and water bodies
A historically marginalized community (HMC) is defined as exceeding regional rates for low income, people of color or limited English proficiency (LEP), or exceeding regional rates for under 18 or over 65 years of age.
Limited English Proficiency (LEP) and Poverty Data Source: American Community Survey 2011-2015 5-Yr. Average
Age and People of Color (POC) Data Source: Census 2010
Map Publication: 4/21/2017


2018
REGIONAL
TRANSPORTATION
PLAN
Metro
Historically Marginalized Communities above Regional Rates
< 200% Poverty, not POC
POC, not < 200% Poverty
POC and < 200% Poverty
LEP
POC, <200% Poverty, and LEP
< 18 and > 65 Years of Age
< 18, > 65, and LEP
< 18, > 65, < 200% Poverty, and POC
All 5 Categories
MPA boundary
Rivers and water bodies
Limited English Proficiency (LEP) and Poverty Data Source: American Community Survey 2011-2015 5-Yr. Average
Age and People of Color (POC) Data Source: Census 2010
Map Publication: 4/20/2017


2018
REGIONAL
TRANSPORTATION
PLAN
Metro
Historically Marginalized Communities Assessed for Access to Jobs
< 200% Poverty, not POC
POC, not < 200% Poverty
POC and < 200% Poverty
LEP
POC, <200% Poverty, and LEP
MPA boundary
Rivers and water bodies
Limited English Proficiency (LEP) and Poverty
Data Source: American Community Survey
2011-2015 5-Yr. Average
People of Color (POC) Data Source:
Census 2010
Map Publication: 4/20/2017


2018
REGIONAL
TRANSPORTATION
PLAN
Metro
Focused Historically Marginalized Communities
Not included in FHMC
Included in FHMC
MPA boundary
Rivers and water bodies
A focused historically marginalized community (FHMC) is defined as exceeding regional rates for low income, and exceeding regional rates for people of color or limited English proficiency (LEP), as well as exceeding regional density rates for each variable. An additional federal safe harbor screen is applied in order to include areas with at least 5% or 1000 LEP persons for individual languages.
Limited English Proficiency (LEP) and Poverty Data Source: American Community Survey 2011-2015 5-Yr. Average
Age and People of Color (POC) Data Source: Census 2010
Map Publication: 4/21/2017

Attachment

April 2018

# Engagement and outreach summary

## 2018 Regional Transportation Plan

*Metro is updating the Regional Transportation Plan by working with the public and partners around the region to understand existing challenges and local and regional priorities for our system of roads, bridges, transit, frieght, sidewalks and bikeways.*

## 2014

### July

Adopton of the **2014 RTP Civil Rights Assessment and recommendations** for future work

## 2015

**Transportation Speakers Series** on designing livable streets

### June

Partnership with Metro's Diversity, Equity and Inclusion (DEI) team to hold a series of **discussion groups with communities of color and youth** on priorities and issues related to racial equity *(through Sept '15)*

RTP scoping launch and 31 **stakeholder interviews** *(through Sept '15)*

**Partnership with Center for Public Service (PSU) and 1000 Friends of Oregon** to explore components of inclusive public engagement to develop an approach to better reach underrepresented communities

### July

Planning department **public involvement retrospective summarizing feedback from communities of color** on transportation planning and project development *(through Feb '16)*

### September

**RTP online survey** on top transportation issues

### December

Adoption of **work plan and public engagement plan** for 2018 RTP update

## 2016

**Transportation Speakers Series** on safety, funding coalitions, affordability and livable communities

### January

**RTP online survey** focused on emerging trends, challenges and opportunities (*through Feb '16*)

### April

**Regional Leadership Forum #1**: Exploring Big Ideas for Our Transportation Future

**Regional snapshot series**: How the Portland region gets around

### June

Partnership with DEI to hold 8 **discussion groups with communities of color** and youth to review actions and priorities identified in the racial equity strategy

### August

**RTP online survey** focused on gathering input from communities of color

### September

**Regional Leadership Forum #2**: Building the future we want (technology and funding)

### November

**Transportation equity analysis measures tested** through 2018-2021 MTIP projects evaluation (*through Apr '17*)

### December

**Regional Leadership Forum #3**: Connecting our priorities to our vision

## 2017

### March

**RTP online survey** on investment priorities and funding

### May

Partnership with DEI to hold two **discussion groups with communities of color** on hiring practices and priorities related to department specific racial equity plans for Planning and Development

### June

**Regional snapshots series**: Greater Portland, on the move

## 2018

### January

**Community Leaders' Forum** on initial RTP analysis findings and investment priorities

**Councilor briefings** to business and community organizations *(through March '18)*

**RTP online survey** on priority outcomes and top strategies to get to priorities (*through Feb '18*)

### March

**Regional Leadership Forum #4**: Finalizing our shared plan for the region (refining investment priorities)


### Upcoming engagement opportunity

From June 29 to Aug. 13, the public will be able to review and comment on the draft plan, policies, strategies and project lists.

Learn more about the 2018 Regional Transportation Plan update at **oregonmetro.gov/rtp**

Metro

April 30, 2018

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www.oregonmetro.gov

# Attachment

Metro | *Memo*

Date: September 21, 2015
To: Grace Cho, Transportation Equity Analysis Project Manager
From: Justin Sherrill, Metro Communications Media and Marketing Intern
Subject: Identified Transportation Needs and Priorities – Public Comment Retrospective

**Overview:**
To support the 2018 Regional Transportation Plan (RTP) update and 2018-2021 Metropolitan Transportation Improvement Program (MTIP), Metro conducted a review of recent public input and comments related to the transportation needs of historically underrepresented communities as well as older adults and younger persons to help identify priority outcomes to be evaluated through the transportation equity analysis of the 2018 RTP and 2018-2021 MTIP.

The top four themes identified in this review are:
- Affordability
- Access to services
- Safety
- Involuntary displacement

**Introduction:**
This retrospective is intended to provide a macro-level overview of recurrent themes of public comments gathered in the engagement reports of several recently completed planning efforts. The themes addressed were chosen on the basis of their particular significance with and impact on historically underrepresented communities as well as older adults and younger persons in the region. The public comment reports reviewed include:
- the 2014 Regional Transportation Plan
- the 2014 Active Transportation Plan
- 2014 Climate Smart Strategy
- Powell-Division Transit and Development Project

The public comment reports for these projects were examined, and cross-referenced with their associated comment logs as needed, with an eye for finding common themes and language between reports. The findings are summarized in the following four sections. Attached is a more detailed explanation of the methodology used to identify the themes discussed in this assessment.

**Identified Public Comment Themes**

**Affordability:** Affordability is the most prominent and consistent theme from the pool of comments gathered from these reports. All historically underrepresented communities as well as older adults and younger persons in the region are significantly impacted by the economic costs of Metro's transportation projects and policies, and all are conscious to some degree of the financial burden associated with these projects. However, different communities expressed how they encounter these costs in different ways. For instance, groups and individuals representing low-

income communities consistently voiced concern that increased fares and fees would have a barrier effect on residents who are dependent on a particular form of transportation.

For example, in the public comment reports for the Powell-Division Transit Corridor Project and 2014 RTP, investments in expanding and improving the region's transit network were generally met with approval by advocates for low-income and older residents, but there were also consistent appeals for reduced-fare programs for historically marginalized communities to make those networks affordable.

Another way affordability was discussed in comments was as a higher public cost passed to residents as a result of the proposed projects or policies, and how these might function as an inequitable financial burden placed on those who do not or cannot utilize the transportation options they are being asked to support. Related to this, there was notable number of comments demanding that one particular mode or project be funded at the expense of defunding others. For example, funding the expansion and maintenance of existing roads over active transportation investment (and vice versa) was a reoccurring theme.

In reviewing the individual comments in more detail, the feedback from the public demonstrated conflicting priorities. Seen in aggregate, however, the comments show that a multi-modal transportation network is the surest means of providing transportation options to the greatest number (and greatest variety) of residents. The 2014 ATP report contained a sizeable portion of comments supporting this multi-modal strategy.

While affordability and cost are the most prominent themes, the comments also show a broad trend of support for sustainable practices and policies at the regional level. However, this support does not come without concern of the distribution of the costs of "going greener." Considerable concern remains around the question of how vulnerable communities will afford to adapt to growth and change in the region.

For example, comments on the 2014 Climate Smart Strategy emphasized finding ways to fund the proposed strategies in ways that do not unfairly affect commuting, low-income families who are dependent on their cars for work or child-care. Specifically, proposals for a vehicle mile traveled (VMT) tax remained a contentious issue, with equal support and opposition from respondents.

Comments on behalf of organizations or coalitions are also concerned with the lack of a clear-cut method for tracking the end cost that historically underrepresented communities as well as older adults and younger persons will have to bear. Furthermore, if not enough action is taken to mitigate the local effects of climate change, these same communities will often bear the burden of the various health and economic related impacts to our region. These include but are not limited to illnesses related to air pollution and heat, as well as decreased water quality and supply.

**Access and Service[1]:** Concern about access is one of the most consistent themes found across the reports, and one that is especially significant for vulnerable communities. All residents are

[1] In this summary report, **access** is used to describe the physical layout of Metro's transportation networks and how it impacts residents' abilities to utilize the transportation network and options provided to travel to their desired destinations. Examples include accommodations for disabled or mobility-impaired riders at transit stations or the whether the planned pedestrian route of a newly created bus line is in close proximity to transit-dependent riders. **Service** denotes the frequency, efficiency, reliability or maintenance of these

impacted positively or negatively by their relative proximity to various modes of transportation, as well as their ability to reach places to work, live and play via those modes. It is worth noting that there was a consistent theme of support for improving and expanding the region's transit networks and active transportation routes (found in ATP, RTP, Climate Smart Strategy, Powell-Division), while at the same time, there was a chorus of dissatisfaction with the access and service of these same networks. Many comments voiced concern about new projects and developments negatively affecting the access and service of preexisting transportation networks, either through direct disruption or by stretching limited resources too thin.

Route permanence and consistency of service were voiced as core needs for various historically underrepresented communities as well as older adults and younger persons. Comments from those who are transit-dependent and low-income expressed how disrupted service or the removal of a route can have a harmful effect on their ability to get to work on time or to access child/elder care, to name just two examples.

**Safety:** Safety emerged as a prominent theme found in the public comments of all reports. Similar to access and service, this theme could also be divided into two interpretations of safety.

The first interpretation has to do with the physical infrastructure or "designed" safety of the region's transportation system. Found prominently in the ATP and RTP reports, examples generally dealt with features such as wider bike lanes, more crosswalks, and other ways to increase the physical separation of modes and create an atmosphere of feeling safe while using that mode. Comments expressed that the physical structure of the region's transportation system could still be improved or altered to make them more accessible to people of varying levels of mobility, ability, age and experience.

The other interpretation of safety was more related to personal security as it has to do with monitoring and moderating the conduct of the region's transit users to protect those who might feel particularly vulnerable using such transportation options. Found in several reports, but most prominently in the Powell-Division comments, this concern for safety is mostly related to the region's transit networks. A consistent theme to emerge from Powell-Division was support for the project and use after completion, "if it felt safer."

**Involuntary Displacement:** Involuntary displacement emerged as a prominent theme found in all reports, but primarily in the Powell-Division Project public engagement report. The attention to this topic attracted more attention in part because the possible benefits and downsides become more tangible for these large-scale, near-term capital investments. Numerous comments from this report dealt with residents' fears of involuntary economic displacement resulting from the redevelopment of neighborhoods likely to follow the construction of the transit route. Concerns voiced in comments largely dealt with fears of rents and property taxes being raised to untenable levels for many of the corridor's more vulnerable residents.

Advocates and members of communities of color and low-income communities expressed doubts as to how Metro and other project partners will work to prevent or even mitigate such negative effects in the areas surrounding the proposed Powell-Division corridor. Many of the same groups were curious as to how Metro and other project partners will ensure that this project spurs economic growth and help existing businesses, while also connecting disadvantaged residents to jobs.

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aforementioned networks. Examples can range from the timeliness of a streetcar to the width and condition of a bike path. Both are included in this section because both are highly interconnected.

The public comment summaries of these projects were examined, and cross-referenced with their associated comment logs as needed, with an eye for finding common themes and language between reports. The findings are summarized in the following four sections. Attached is a more detailed explanation of the methodology behind identifying the themes discussed in this assessment.

**Table I: Public Comment Report Reviewed for Different Plan and Relative Theme Rankings**

| | 2014 Regional Transportation Plan | 2014 Active Transportation Plan | Powell-Division Transit and Development Project | Climate Smart Strategy |
|---|---|---|---|---|
| **Affordability/Public Cost** | Highest | High | High | Highest |
| **Access/Service** | High | Highest | Highest | Mid |
| **Health/Safety** | Low | Mid | Low | High |
| **Involuntary Displacement** | Mid | Low | Mid | Low |

**Addendum: Methodology**

Because of the wide variation between all the reports' public comment sample sizes and demographic makeup, as well as survey methods, no attempt was made to compare the prevalence of themes *across* reports. Rather, this assessment attempted to discern the prevalence of the various themes in relation to each other within each report. First, each survey summary was consulted to identify the most prominent topics discussed in the comment surveys. Second, the reports' comment appendices were examined in order to back up the findings in the summaries and determine a relative ranking of the four themes. The four themes were ranked in order of "Highest", "High", "Mid", and "Low". Broad trends can be identified across the reports, but with the understanding that there are some significant demographic differences between the reports' commenter populations.

Date: November 24, 2015

To: Grace Cho, Transportation Equity Analysis Project Manager

From: Charlie Tso, Regional Planning Intern

Subject: Identified Transportation Needs and Priorities – Public Comment Retrospective

## I. Background

To support the 2018 Regional Transportation Plan (RTP) update and 2018-2021 Metropolitan Transportation Improvement Program (MTIP), Metro conducted a review of recent public input and comments related to the transportation needs of historically underrepresented communities as well as older adults and younger persons to help identify priority outcomes to be evaluated through the transportation equity analysis of the 2018 RTP and 2018-2021 MTIP.

The top four themes identified in this review are:

- Access
- Safety
- Affordability

## II. Introduction

This memo provides an overview of common themes emerged from the public comments in two different public engagement reports: the Southwest Corridor Public Engagement Report and the Metro Diversity, Equity, and Inclusion (DEI) Equity Focus Groups Report[1]. It is important to note that the purpose, process of engagement, and methods of these two reports are very different. The questions in the Southwest Corridor Public Engagement Report were intended to solicit feedback on options for high capacity transit in the Southwest Corridor and concerns about project impact. The Metro DEI Equity Focus Groups Report asked questions related to improving community engagement and helped inform the draft of Metro's Strategic Plan to Advance Racial Equity, Diversity and Inclusion. The discussion groups were facilitated by Multicultural Collaborative and focused on topics such as housing, transportation, parks, etc. The Southwest Corridor Public Engagement Report focuses on feedback from business and neighborhood groups and placed-based dialogues whereas the Metro DEI Equity Focus Groups Report spoke with historically underrepresented communities as well as older adults and younger persons.

The Metro DEI Equity Focus Groups spoke with people from the following seven communities: Native American, Asian Pacific Islander, African American, Latino, Slavic and Russian, African Immigrant and Youth. Twenty-two different groups were engaged for the Southwest Corridor Public Engagement Report. The groups represented include South Portland, Hillsdale, Mt. Sylvania, Tigard, and Tualatin. Because the context and the stakeholders are different between the two reports, this memo summarizes the comment themes using broad concepts to encompass the

[1] http://www.oregonmetro.gov/public-projects/equity-strategy/community-input

various needs, concerns, and feedback documented in the reports. Overall, communities of different cultures, backgrounds, and places in the region share concerns about access, safety, and affordability in transportation / public transit.

*See Appendix A, B, and C for more details in the comments derived from each report.*

## III. Public Comment Themes

*1. Access:*

Having reliable transportation access is a shared concern among the communities in both Metro DEI Discussion Groups Report and the Southwest Corridor Public Engagement Report. Having safe access to jobs is important to historically underrepresented communities as well as older adults and younger persons. Specifically, providing transit services to living wage jobs, jobs in industrial areas, and for workers who have night and weekend schedules is critical.

In addition, many historically underrepresented communities expressed the importance of bringing transit connections to their neighborhoods and job opportunities. The importance of access to jobs and neighborhoods is echoed in the comments from the Southwest Corridor Public Engagement Report. There is wide consensus on improving access to Marquam Hill, Portland Community College Sylvania Campus, and bringing benefits of transit access to neighborhoods.

Other comments about access include improving transit access to parks and natural areas, reducing the difficulties of using transit due to language barriers, and maintaining access to businesses in the Southwest Corridor during constructions of transportation projects.

*2. Safety:*

Safety emerged as a prominent theme found in the public comments of all reports included in this memo. From both reports, there are comments from different groups about strategies Metro can use to enhance the safety of people taking transit, walking, and biking. Specifically, it was mentioned that lack of proper lighting and cleanness at bus shelters, lack of shelters and unsafe transit stops without sidewalks make people taking transit feel unsafe. Increasing funding better infrastructure like sidewalks and bicycle routes for people of all ages is also mentioned as a strategy. Additionally, one cultural group suggested more enforcement for both people in cars and people on bikes as a way to improve traffic safety.

*3. Affordability*

Affordability is not mentioned as a concern in the Southwest Corridor Public Engagement Report but strong concern for communities in the Metro DEI Equity Focus Groups Report. Four out of eight of these groups expressed that affordability in public transit is an issue that needs to be addressed. Specifically, Youth, Native American, Asian Pacific Islander, and Latino groups all explicitly said that Metro needs to be a convener to develop a regional approach to address transit affordability for youth, elders, and low income people.

Although there was no comment regarding the affordability of public transit or other transportation modes from the Southwest Corridor Public Engagement report, the cost of using

public transit or other modes may still affect quality of life for households and communities in the Southwest Corridor.

## Appendix

### A. Key Themes to Advance Equity in the Region from Metro DEI Equity Focus Groups Report

| | Transit Access to Parks and Natural Areas | Transit access for workers with night/weekend schedules | Transit access to living wage jobs and jobs at industrial areas | Affordable housing accessible by public transit | Transit Oriented Developments that connect neighborhoods to opportunities | Reduce language barriers to make buying fares and taking transit easier. | Adequate lighting and cleanness at bus shelter and transit stations. | Safety on the MAX | Funding for sidewalks and safe bicycle routes for people of all ages | Actively support Vision Zero | Improve road safety between cars and bicycles by enforcing traffic laws for users of both modes. | Regional approach to address transit affordability for elders, youth, and low-income people |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Native American | **x** | | | | | | | | | | | **x** |
| Youth | **x** | **x** | **x** | | | | **x** | | | | | **x** |
| Asian Pacific Islander | | | | | | | **x** | | **x** | **x** | | **x** |
| African American | | | | **x** | **x** | | | | | | | |
| Latino | | | | | | **x** | | | | | | **x** |
| Slavic Russian | | | | | | | | **x** | | | **x** | |
| African Immigrant | **x** | | | **x** | **x** | | | | | | | |
| Community leaders from culturally specific groups | | **x** | **x** | | | | | | | | | |

B. **Comment Summary from Southwest Corridor Public Engagement Plan**

- Increase transportation choices and create reliable / faster transit services
- Provide transportation choices for seniors, low income and people who do not drive
- Improve transit service to job and education opportunities
- Provide access and benefits to neighborhoods; don't just pass through on the way to somewhere else
- Improve safety for people who take transit
- Improve safety for people walking and biking
- Maintain community affordability

C. **List of groups engaged in Southwest Corridor Public Engagement Plan**

- National College of Natural Medicine
- South Portland Neighborhood Association
- Hillsdale Neighborhood Association
- Far Southwest Neighborhood Association
- Homestead Neighborhood Association
- Southwest Neighborhoods, Inc. Transportation Subcommittee
- Hillsdale residents
- Concerned Citizens for Social Justice
- Drinking Liberally in Tigard
- Portland Business Alliance
- Tigard Downtown Alliance
- Tigard Transportation Advisory Committee
- Supa Fresh Farm, Youth Source
- Oregon Somali Family Education Center
- Greenburg Oaks residents, Community Partners for Affordable Housing
- Lair Hill residents and business owners
- Southwest Neighborhoods Inc. Leadership
- PCC Sylvania leadership
- Upstream Public Health
- 1000 Friends of Oregon
- Coalition for a Livable Future
- Center for Intercultural Organizing

June 2016

**2018 REGIONAL TRANSPORTATION PLAN**

# Comment summary

## Winter 2016 comment opportunity

From Jan. 14 through Feb. 16, 2016 Metro hosted an online questionnaire to gather public feedback to inform the 2018 Regional Transportation Plan update.

## What did people say?

"The population is expanding and the infrastructure is aging and the city is unprepared for a natural disaster."

"Response to global climate change requires rethinking of current energy use, modal options, and land use."

"Need much more pedestrian and bike centric infrastructure to support aging population that can no longer drive, or younger generation that doesn't want to drive."

More than 7800 people started the poll, with **more than 5800 people working through the questions**.

We had expected between 1500 to 2000 participants for the online questionnaire. Because of wide distribution (thanks to city, county and community partners), 7885 participants entered the questionnaire (put in their ZIP codes).

## Contents

**Metro is the federally mandated metropolitan planning organization** designated by the governor to develop a regional transportation plan and to allocate federal funds for the Portland metropolitan region. The Joint Policy Advisory Committee on Transportation (JPACT) is a 17-member committee that provides a forum for elected officials and representatives of agencies involved in transportation to evaluate transportation needs in the region and to make recommendations to the Metro Council. The established decision-making process assures a well-balanced regional transportation system and involves local elected officials directly in decisions that help the Metro Council develop regional transportation policies, including allocating transportation funds. The preparation of this report was financed in part by the U.S. Department of Transportation, Federal Highway Administration and Federal Transit Administration. The opinions, findings and conclusions expressed in this report are not necessarily those of the U.S. Department of Transportation, Federal Highway Administration and Federal Transit Administration.

**Project website:** www.oregonmetro.gov/rtp

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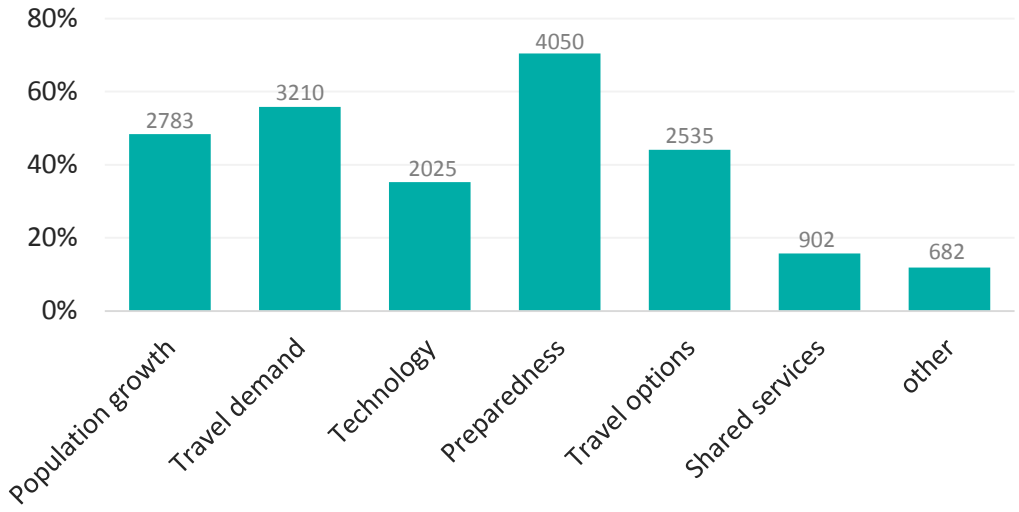
## Responses to 2018 Regional Transportation Plan questions

To help inform the 2018 Regional Transportation Plan, participants were asked questions on transportation trends and challenges, ways to measure performance, and ways to measure performance as it relates to social equity outcomes.[1]

### What emerging trends do you think will most affect the future of travel?

Respondents were asked to pick three or add their own. The full text of the options is provided below.

Respondents: **5746**




*Preparedness* (4050 | 70%): Our freeways, roads and bridges are aging and not as prepared for natural disasters (flooding, earthquakes, major storms) as they could be.

*Travel demand* (3210 | 56%): More people and goods are using the transportation system as our population and economy grow.

*Population growth* (2783 | 48%): Our population is growing, aging and becoming more ethnically diverse.

*Travel options* (2535 | 44%): Our system is more multimodal (car, transit, biking and walking options) than many metropolitan systems.

*Technology* (2025 | 35%): Advances in technology (GPS, mobile devices, driverless vehicles, online shopping, automation) will change how we travel and move goods.

[1] The questionnaire included questions that will inform the regional flexible funds allocation (RFFA); development of the 2018 Regional Transportation Plan; the strategic plan to advance racial equity, diversity and inclusion; and the equitable housing program. This summary focuses on the questions designed to inform the Regional Transportation Plan and corresponding responses.

*Shared services* (902 | 16%): People are using Uber, Zip Car, bike-share and other ride services more.

*Other* (682 | 12%)

**Open ended responses to "other" option**

Respondents who chose to offer thoughts often addressed several overlapping issues. Many respondents who chose to add a comment in the "other" option focused on providing more detailed thoughts on the multiple choice options provided. Four trends emerged that were exceptions to this:

1) About 70 respondents brought up the **economy and housing affordability**, especially housing costs in relation to income inequality. These respondents focused on the idea that as housing costs increase in central areas, there will be higher demand on the region's transportation system, increasing traffic. A main concern was income inequality in relation to housing costs, which in turn impacts access to transportation options: As more people of lower income are moved to outer parts of the region – especially in areas with less transit access – they will be forced to drive more often and further to reach jobs and services. Additional comments around this theme looked to the current patterns of changing employers more regularly (than for past generations), demand from Washington residents working in Oregon, the need for areas to be a mix of housing and employment opportunities, and safety concerns related to people without homes.

    - *"Low/fixed income residents being pushed out to the suburbs from "walkable" neighborhoods (and further from jobs) by skyrocketing rents in the city."*

    - *"Our economy is pushing vulnerable users to the geographic fringes, increasing their need but decreasing their access to efficient and affordable transportation."*

2) About 60 respondents focused on **climate change and the environment**, and how a response to those concerns will force an adaptation to how we travel, which would cause different pressures on the system, requiring more walking, biking, transit and carpool options. About another 10 had a similar perspective in relation to peak oil or volatile oil prices.

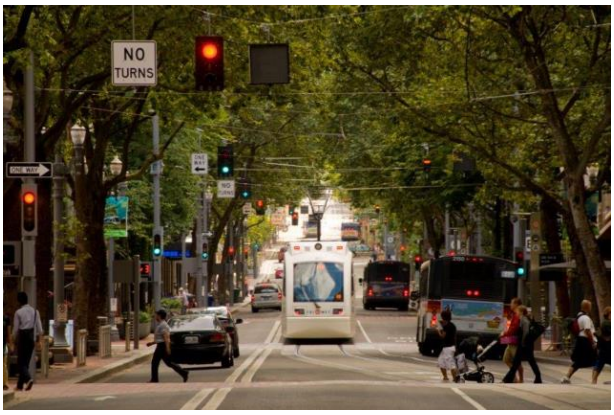
    - *"Response to global climate change requires rethinking of current energy use, modal options, and land use."*

3) About 30 respondents brought up the issue of limited **parking**, especially focused around new multifamily housing developments, around businesses and at transit park and ride facilities.

    - *"Many of the new high-rise apartments/condos have little to no parking. These draw people who own cars, but don't use them much, so they remain at the curb. On-street parking has become unbearable, especially for seniors and disabled.*

4) About 20 respondents focused on the need for **options for older adults and people with disabilities**, often related to the issue of housing affordability and transportation access.

A summary of comments that provided more detailed thoughts on the multiple choice options follows.




*Preparedness*: About 30 respondents focused on aging infrastructure and other maintenance issues (such as the disappointment that potholes were not fixed); about five additional respondents called out the potential of a major earthquake in the area.

*Travel demand*: About 160 respondents brought up congestion, with the comments ranging from a call for more and widened roads and freeways, more bike facilities and transit options, freight movement alternatives, and community design that provides a mix of housing and employment opportunities. Some forecast that cars will never go away, while others said that people will choose other options to get around. Several respondents expressed concern over impacts to quality of life, economics (personal and regional) and safety due to increased demand on the transportation system, often pointing out potential conflicts between freight and personal vehicles, autos and bikes, and autos and pedestrians.

*Population growth*: About 80 respondents focused on growth – especially the growth that has already occurred – and concern that our transportation infrastructure is not keeping up with demand. When solutions were offered, these comments most often specified the need for more road, freeway and bridge capacity for cars, but several called for more transit and bikeway options, with some saying that driving and parking should be difficult or costly in comparison to bike and transit options.

*Travel options:* About 300 respondents focused on some aspect of the region's travel options (car, transit, biking and walking options). These comments were both diverse and directly in contrast. Some stated there should be no further light rail investments, while others said that expansion of the MAX system should be the priority. Some said to focus on transit, biking and walking options, while others said there has been too much focus and money spent on those. Some said that there should be more focus on expanding roadways, while others said that there has been the focus for too long. Some said that people will always want to drive, while others said that people will find it more beneficial to use transit and "give up" their cars. Some comments about the need for better transit access and for more biking and walking facilities in suburban areas, however, did not have counterpoint comments (aside from the comments that said not to spend money on these options in general). Very few comments tied all modes together as needed parts to a transportation system.

*Technology*: Few respondents addressed new technologies and, when they did, they focused on work practices that could change with emerging trends.

*Shared services:* Only a few respondents mentioned car share services like Uber (none focused on bike share services). Those commenters were split on car share. Some commenters said that it could lower the cost of single passenger vehicle trips (thus decreasing incentives for other travel options). Other people said that more vehicles on the road is the wrong direction, saying that it could help reduce demand but not

significantly, and expressed concern for Uber specifically needing to unionize and "play by the rules" regarding taxes, insurance, etc.

### What challenges and opportunities – for you or for the Portland region – do you see from trends you selected?

Participants were asked to provide their thoughts on the challenges and opportunities they see from the emerging trends they selected in question two.

Respondents: **3742**

Many of the responses overlapped with the previous question including housing and the economy and travel options. Key themes most frequently addressed included:

1) A recurrent challenge addressed was population growth and congestion. Comments focused on how rapidly the region is growing and the increase in commute time as a result. Respondents expressed concern for the lack of opportunity to increase capacity to the transportation systems already in place.

    - *"Our roadway capacity (and maintenance/condition) have not kept pace with growth. Some areas (mostly outside the City of Portland) have incomplete street networks and the current funding system does not support their need to complete roadway systems for better connectivity. Get rid of the split so that projects can be brought forward that work for the local jurisdictions current needs. Multimodal is great, but that still includes cars."*

    - *"Too many users- system at capacity- freight should be on separate system."*

    - *"Nowhere to expand our freeways, or should I say our one freeway (I-5) with a growing population. We're years behind widening and improving the interstate."*

    - *"Challenges: traffic build up and frustration with road work/construction. Road systems becoming more like LA and Seattle. Opportunities: Increased opportunities for alternative transportation methods which could reduce the number of cars on the road depending on transit routes and speed."*

2) Respondents frequently brought up aging infrastructure and disaster preparedness. Particularly the ability to access services in a disaster if bridges and highways are damaged. Respondents were principally concerned with safety and upgrading bridges, roads and freeways to make them seismically sound if a major earthquake happens. A common theme was to invest in the infrastructure already in place.

    - *"The population is expanding and the infrastructure is aging and the city is unprepared for a natural disaster."*

    - *"Mainly the aging bridges around Portland, I would imagine to be the most challenging issue to address as far as transportation goes. This is the issue that's the most concerning for me and I believe will become the most problematic in the future."*

    - *"We need to take care of the roads and bridges we already have in place. Infrastructure is critical."*

- *"Infrastructure, particularly the bridges needs to be kept up and maintained. Bridges are not ready for an earthquake event. That is very scary."*

- *"The challenges all relate to funding. From the point that a major earthquake WILL happen which could lead to hundreds of deaths, it would seem like we should find a way to fund these repairs that are required.*

- *"I'm definitely concerned about the ability of our infrastructure to support a growing population as well as natural disasters. I'd love to see investment in that type of infrastructure."*

3) Respondent frequently brought up the region's aging demographic both as an opportunity to improve mobility with new technology such as self-driving cars and as a concern for access to goods and services.

- *"Baby Boomers are aging at a rapid rate! They will want more dense housing and they will walk to dine and shop."*

- *"Need much more pedestrian and bike centric infrastructure to support aging population that can no longer drive, or younger generation that doesn't want to drive."*

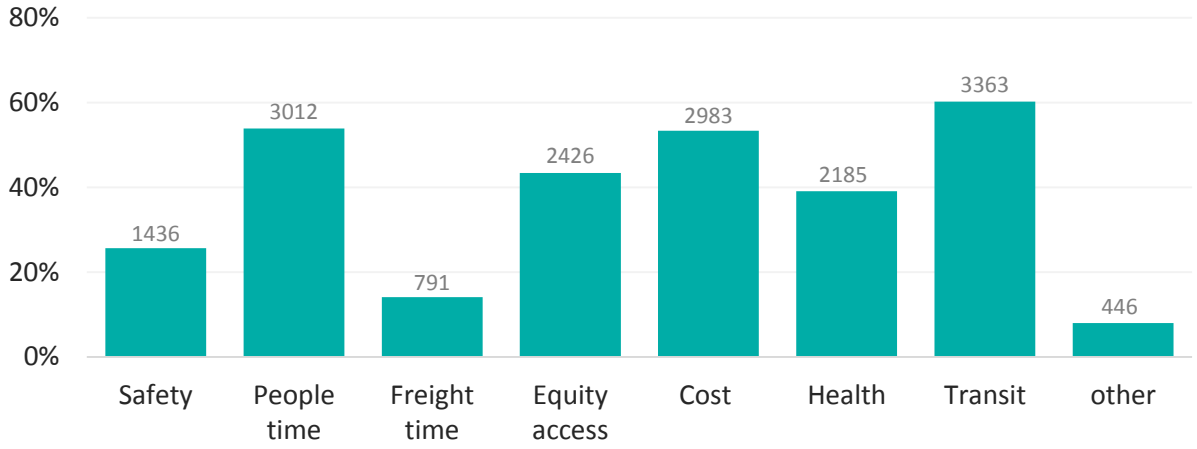
- *"There will be pressure from increasing (and aging) population, which will require smart transportation planning and development. We will only be able to be a resilient, economically sustainable and equitable region if we grow utilizing smart growth principles: multi-modal transportation system based on the 20-minute neighborhood and dense, mixed-use, multi-modal-oriented development."*

- *"The combination of aging population and technological changes (self-driving cars) may extend the mobility capacity for many that otherwise would not be in the system.*

**How do we know when we have created the best transportation system possible for our region?**

Respondents were asked to pick three or add their own. The full text of the options is provided below.

Respondents: **5585**




*Safety* (1436 | 26%): Fewer people are seriously injured or die from crashes.

*People time* (3012 | 54%): People spend less time in traffic.

*Freight time* (791 | 14%): Delivery trucks spend less time in traffic.

*Equity access* (2426 | 43%): It's easier for older people and people of color, with low incomes or living with disabilities to access stores and services.

*Cost* (2983 | 53%): Housing and transportation costs are manageable for households of all incomes.

*Health* (2185 | 39%): Community health is improved, because of less pollution from transportation and more people are able to walk and bike to get places.

*Transit* (3363 | 60%): Transit is more frequent and goes to more places.

Other (446 | 8%): The main themes from the 446 respondents who chose "other" were a focus on transit cost, reliability and access, overall safety concerns, pollution and race.

**Open ended responses to "other" option**


Safety was a concern for these respondents stating that easing traffic and congestion, providing off-street trails and paths and accessible biking and walking routes would allow people to safely get where they needed to go:

- *"Safe routes to school & after-school for 6-12 grade students."*
- *"It's as easy and safe to walk and bicycle as it is to drive."*
- *"All able-bodied kids walk or bike to school without fear of traffic."*
- *"Safety is a priority. I have commuted for 10 years (to OHSU and the VA) because it was safe and parking was convenient."*

Access to goods and services was also a concern:

- *"It's easier for older people or people living with disabilities to access stores and services."*
- *"The lives of residents will be enriched with more opportunities to access jobs, entertainment venues, parks, and schools."*
- *"It is easy for all people in the community to reach their essential services without NEEDING to drive."*

Reliable and affordable transit service was one of the most frequently raised issue:

- *"Everyone wants to ride public transit because it's fast, affordable and convenient."*
- *"As it is now, I cannot afford transit and have to give up food so I can buy tickets."*
- *"Transit is more efficient and cost effective to ride than my car."*
- *"There is less traffic not because of less congestion but because multi-modal transport is so accessible that fewer people drive."*

Several respondents raised concerns about pollution and climate change:

- *"Neighborhoods are improved by less auto traffic and its pollutions (exhaust, dust, etc.)."*
- *"Lower pollution, more safety and hopefully quicker travel times*
- *"Fossil fuel use decreases every year in line with City/County Climate Action Plan and state climate goals."*
- *"I like the last one, but I would add 'community and environmental health'"*
- *"CO2 emissions per capita are halved"*

Quite a few commenters raised concerns about race being a consideration in the questions.

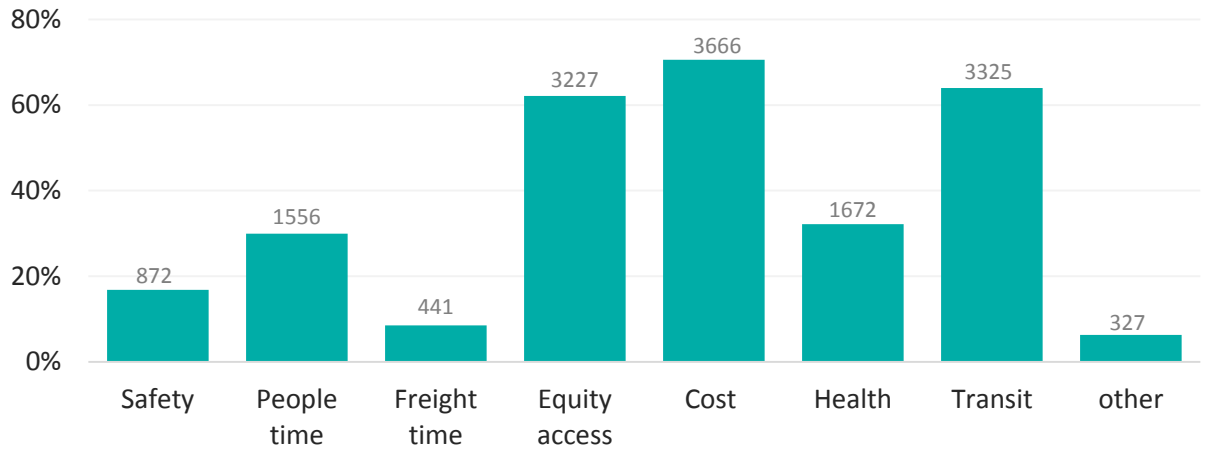
- *"Seriously? Ethnicity? I don't see how that is that relevant."*
- *"I don't know if you get out much but now a days it's not just people of color with low incomes."*
- *"What does "people of color" have anything to do with lack of access to stores or services?"*

Participants were then asked about their thoughts on the effects of the region's housing challenges and priorities for Metro's racial equity program (addressed below). To allow for comparison, responses to the question regarding measuring performance from a social equity perspective are presented next.

**When considering issues of social equity, what should be the priorities for our system?**

Respondents were asked to pick three or add their own. The full text of the options, which is the same as the performance question above, is provided below.

Respondents: **5195**




*Safety* (872 | 17%): Fewer people are seriously injured or die from crashes.

*People time* (1556 | 30%): People spend less time in traffic.

*Freight time* (441 | 8%): Delivery trucks spend less time in traffic.

*Equity access* (3227 | 62%): It's easier for older people and people of color, with low incomes or living with disabilities to access stores and services.

*Cost* (3666 | 71%): Housing and transportation costs are manageable for households of all incomes.

*Health* (1672 | 32%): Community health is improved, because of less pollution from transportation and more people are able to walk and bike to get places.

*Transit* (3325 | 64%): Transit is more frequent and goes to more places.

Other (327 | 6%): The main themes from the 327 respondents who chose "other" were a focus on transit: cost, access and reliability.

**Open ended responses to "other" option**

A summary of common themes from the open ended responses follows.

**Cost was a concern for these respondents**, stating that to better help underserved populations, lowering the cost of transit fares would provide direct benefit:

- *"Price of mass transit is critical. No matter how long or short the ride, $150 for a monthly pass is a lot for a minimum wage worker."*
- *"People with limited income can afford to ride the bus. At $5/trip, that's a significant cost for many people, especially families with several children who need to pay bus fare. Not every low income family is connected to an agency that provides bus pass."*

**Access to good service** was another issue raised, with respondents stating that ensuring that **where people of less means can live should also have convenient transit.** This interest in providing good access included increased frequency and stops designed for a more comfortable experience.

- *"Offering transit that is more frequent and goes more places can address issues that you want me to choose related to equity?"*
- *"People who rely exclusively on transit are able to get where they need to go and have shorter trip times."*
- *"Transit is more frequent, goes to more places, and is more equitably priced for people with low incomes."*
- *"Improve shelters for seniors & handicapped while they wait for the buses... Many have only standing areas, which is very hard for the elderly or when it rains (7-8 months/year)"*

**Reliable service also rose as a concern for these respondents:**

- *"I live 19 miles from my job in downtown Portland. Reliable transit would be my biggest one, upgrade the current systems and get timelier."*
- *"Dependability! If public transportation won't get you to work on time, its value is diminished."*

Another aspect of the issue of cost focused on the **affordability of housing and community design:**

- *"We created a bunch of downtown proximate housing that is priced outside the range of lower income people and left them to migrate to places like Rockwood and fringe areas where they are outside the bikeable trip range."*
- *"Housing, housing, housing, and transportation convenient to it."*

- *"Livable sub-communities / town centers that provide employment/services/walkability/natural resources within the area."*
- *"Support employment opportunities and services that are spread throughout the region, so that commutes are short and nonexistent."*

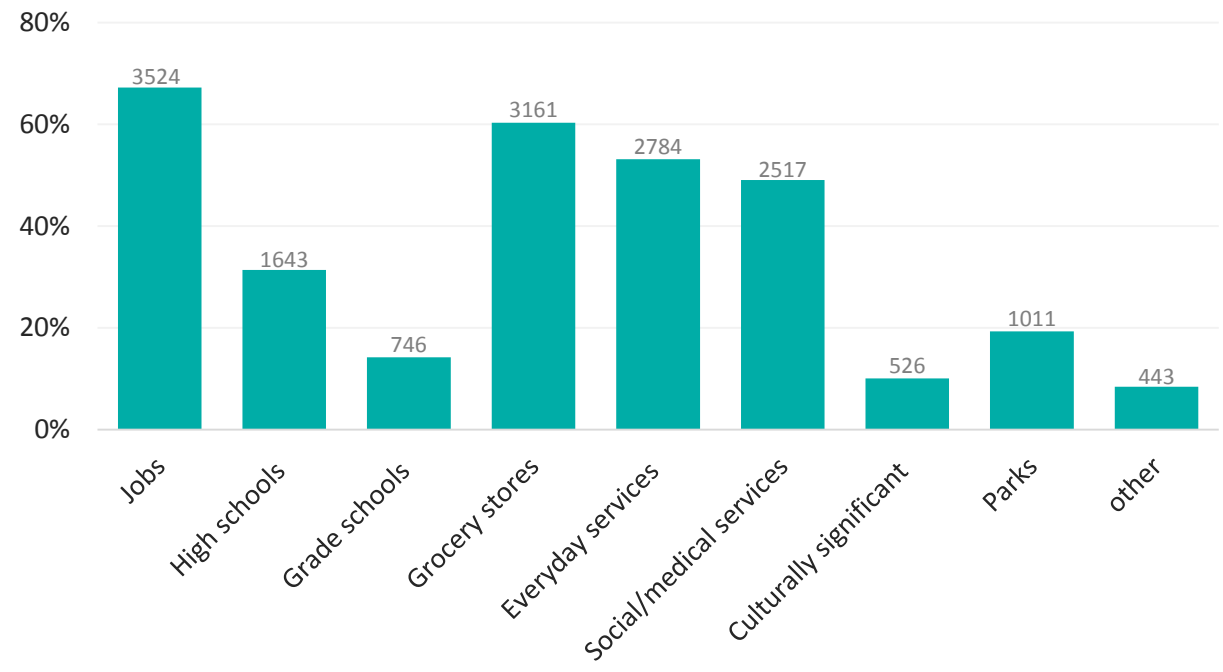
One less frequent but notable theme is that about 10 percent of the respondents raised **concern over a focus on social equity for Metro and its functions:**

- *"I don't believe that social equality should be a factor in determining how we invest in our transportation system."*
- *"It's not about feeling good or making sure everyone is included. Add more roads so people can get around and the social issues will solve themselves."*
- *"Social engineering does not work. In every society there are those who choose to not drive, or have not worked their way up the ladder to own a car. Leave it to the free market. This is the only country where you are rewarded for as hard as you work."*

### What types of places are most important to be easily accessible on our transportation system?

Respondents were asked to pick three or add their own. The full text of the options is provided below.

Respondents: **5240**




*Jobs* (3524 | 67%): areas with a lot of jobs

*High schools* (1643 | 31%): high schools and colleges

*Grade schools* (746 | 14%): grade schools and middle schools

*Grocery stores* (3161 | 60%): grocery stores

*Everyday services* (2784 | 53%): everyday services (post offices, libraries, banks)

*Social/medical service* (2571 | 49%): social and medical services

*Culturally significant* (526 | 10%): culturally significant places (places of worship, community centers)

*Parks* (1011 | 19%): parks and natural spaces

Other (443 | 8%)

## Online participant demographics

Participants were asked to provide demographic information to help Metro know if we are hearing from people across all races/ethnicities, ages and income levels on these important decisions.

| | Count | Percent | Regional population |
|---|---|---|---|
| **County**<br>Respondents to this demographic question | **5177** | | |
| Clackamas | 533 | 10% | 17% |
| Multnomah | 3539 | 68% | 49% |
| Washington | 1012 | 19% | 34% |
| Other | 116 | 2% | n/a |
| **Ethnicity**<br>Respondents were asked to pick all that apply and choose "other" or offer more specificity. [2] [3] [4]<br>Respondents (5200) minus "prefer not to answer" or similar comment expressing dissatisfaction with the inclusion of the question (501) [5] | **4699** | | |
| White alone[6] | 4070 | 87% | 73% |
| Black or African American | 96 | 2% | 5% |
| American Indian/Native American or Alaska Native | 142 | 3% | 2% |
| Asian or Asian American | 167 | 4% | 9% |
| Pacific Islander | 33 | 1% | 1% |
| Hispanic, Latino or Spanish origin | 226 | 5% | 12% |
| other (please describe) or offer more specificity | 126 | 3% | 6% |
| **Income**<br>Respondents (5210) minus "don't know/prefer not to answer" (709) | **4501** | | |
| less than $10,000 | 169 | 4% | 7% |
| $10,000 to $19,999 | 251 | 6% | 9% |
| $20,000 to $29,999 | 329 | 7% | 9% |
| $30,000 to $49,999 | 1583 | 35% | 18% |
| $50,000 to $74,999 | 913 | 20% | 18% |
| $75,000 to $99,999 | 719 | 16% | 13% |
| $100,000 to $149,999 | 862 | 19% | 15% |
| 150,000 or more | 537 | 12% | 11% |

[2] Race/ethnicity categories were simplified to allow for correlation with U.S. Census data on race and ethnicity.

[3] Since respondents could choose more than one ethnicity, totals add to more than 100 percent.

[4] "Other" responses were reviewed to provide consistent tallies in the other categories. For instance, if someone stated "White/Latina" in the other/more specificity space, staff verified that tallies were entered in the "White" and "Hispanic, Latino or Spanish origin."

[5] Sixty-seven comments questioning, objecting to or protesting the inclusion of this question were removed from the "other" category, including "human" or the like, and were added as tallies to "prefer not to answer," as appropriate. Responses such as "American," "Conservative Christian" or "Midwesterner" were left as self-identified ethnicities in the "other" tally.

[6] Since the ethnicity question is asked to determine if Metro is reaching diverse communities, responses were reviewed to calculate the number of respondents who were white and no other ethnicity.

| | Count | Percent | Regional population |
|---|---|---|---|
| **Gender**<br>Respondents (5209) minus "prefer not to answer" (266) or similar comment expressing dissatisfaction with the inclusion of the question or the inclusion of non-(cisgender)male/female options (34) [7] | **4909** | | |
| female | 2698 | 55% | 51% |
| male | 2153 | 44% | 49% |
| transgender female | 16 | >1% | n/a |
| transgender male | 12 | >1% | n/a |
| other identification | 64 | 1% | n/a |
| **Age**<br>Respondents (5222) minus "prefer not to answer" (223) | **5199** | | |
| younger than 18 | 8 | >1% | 23% |
| 18 to 24 | 125 | 2% | 9% |
| 25 to 34 | 829 | 16% | 16% |
| 35 to 44 | 1049 | 20% | 15% |
| 45 to 54 | 1009 | 19% | 14% |
| 55 to 64 | 1073 | 21% | 12% |
| 65 to 74 | 726 | 14% | 6% |
| 75 and older | 180 | 3% | 5% |

[7] Though no U.S. Census correlation for additional gender categories, these categories were expanded to be inclusive of more gender identifications.

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Metro | *Memo*

Date: May 5, 2016
To: Transportation Equity Working Group and interested parties
From: Grace Cho, Associate Transportation Planner
Subject: Synthesis of Feedback, Community Priorities Findings and Draft 2018 RTP Transportation Equity Evaluation Measures for Further Exploration

**Purpose**
Provide the Transportation Equity work group an overview of the input and findings (to date) leading to the proposed 2018 RTP draft transportation equity measures for further exploration. Outline the next steps in the process prior to work group action at the June 30th meeting.

**Introduction**
As the Portland region prepares to make its next set of investments in the transportation system, an equity analysis can help inform how transportation investments affect the communities where people have the fewest options for travel to meet everyday needs. Understanding these effects helps the region make more informed, equitable decisions about where transportation dollars go, especially as the region weighs many competing priorities for the transportation system.

The Transportation Equity Analysis (TEA) for the 2018 RTP and the 2018-2021 MTIP serves as the equity assessment to focus on better understanding how near and long-term transportation investments are effecting:

- Communities of color;
- Households with lower-income;
- Communities with limited English proficiency;
- Older communities; and
- Youth

As a first step in to begin the assessment is to define a set of measures to evaluate the transportation investments package against. To determine the measures, Metro staff is applying an approach to allow communities of color, households with lower-income, communities with limited English proficiency, older adults and younger persons to define their priorities and direct the measures. This approach is considered a best practice to social equity and transportation planning and more importantly, it is what Metro staff has heard through feedback.

Therefore, the work to define the draft transportation equity measures are intended to reflect community identified priorities to the degree the assessment of the regional investment package for 2018 RTP and the 2018-2021 MTIP can address them. An intention has been placed on sourcing and gathering community input for this process.

**Identifying Community Priorities**

In taking the direction of the having the 2018 RTP transportation equity measures reflect community priorities, Metro staff has undertaken a multi-pronged approach to cull and identify the different transportation needs, issues, concerns, and priorities of historically underrepresented communities as well as older adults and youth. The multi-pronged approach consisted of: 1) conducting a retrospective of recent public comment reports on various planning efforts; 2) conducting an exercise with members of the 2018 RTP Transportation Equity work group; and 3) requesting public input through an online questionnaire.

**Historically Underrepresented Communities** refers to the following communities:

- Communities of Color
- Households with Lower-Incomes ($50K and less)
- People with Limited English Proficiency

Using the three different approaches for collecting and identifying transportation concerns, needs, and priorities from communities of color, households with lower-income, communities with limited English proficiency, older adults and younger persons allowed staff to see the emerging themes of patterns. A brief overview of each approach is described below.

Public Comment Retrospectives

To support the 2018 Regional Transportation Plan (RTP) update and 2018-2021 Metropolitan Transportation Improvement Program (MTIP), Metro staff conducted a review of recent public input and comments related to the transportation needs of historically underrepresented communities as well as older adults and younger persons. The retrospective was conducted across six public comment documents:

- Southwest Corridor Public Engagement Summary (October 2014 – July 2015t)
- Metro Diversity, Equity, and Inclusion (DEI) Discussion Groups Groups Report (August 5, 2015)
- Public Comment Report for the 2014 Regional Transportation Plan (June 2014)
- 2014 Regional Active Transportation Plan Public Comment Report (June 2014)
- Climate Smart Strategy Public Comment Report (Dec. 9, 2014)
- Powell-Division Transit and Development Project Public Engagement Reports (March 16, 2015; September 29, 2014; June 23, 2014)
- Powell-Division Transit and Development Project – City of Gresham and Multicultural Engagement Report (February 2015)

In reviewing the public comment documents, staff looked to identify comments from members or representative community organizations for historically underrepresented communities, older adults, and youth. Additionally, any general comments made which addressed or considered one of the five communities was also included. The identified comments were synthesized into emerging themes and helped to establish a starting point of needs and priorities.

Transportation and Equity On-line Questionnaire

From January through February 2016 Metro hosted an online questionnaire to garner public feedback on several programs. The questionnaire included questions to inform the regional flexible funds allocation (RFFA), development of the 2018 Regional Transportation Plan, the DEI strategic plan to advance racial equity, diversity and inclusion, and the equitable housing program.

The questionnaire was marketed as the "Transportation and Equity" survey because of its emphasis on social equity concerns and the transportation system. Throughout the month the questionnaire was open, more than 5800 completed the survey.

To organize and synthesize the input, Metro staff reviewed the overall summary of responses to gather a sense of what transportation and equity themes were emerging. From the overall responses, equitable access to different travel options, cost, and more transit service emerged as priorities for the transportation system when considering social equity. Following the identification of the overall theme, Metro staff drew a subset of the responses from those who self-identified as a person of color or coming from a household of lower income. The subset was looked at more closely to see how they diverged from the overall responses and to look at other potential themes, sub-themes, or other issues. These responses trended to show the overall themes of access, costs, and transit were important, but also community health emerged as another area of importance for historically underrepresented communities when considering the transportation system.

Transportation Equity Work Group Exercise

At the February 2016 meeting of the Transportation Equity work group, members were asked to participate in a table exercise to brainstorm comments around the following questions:

- What are the transportation priorities you hear from your community?
- What are the biggest transportation needs?
- Based on that, what should be the focus of the evaluation?

The work group members were asked to consider more specifically what they have heard from historically underrepresented communities as well as older adults and younger persons in undertaking the exercise. The brainstorming session resulted in a list of transportation concerns, needs, and priorities, ranging from physical safety for people biking and walking on the region's streets to the availability of travel options to concerns over displacement. The exercise helped to reinforce themes heard through the retrospective, but the brainstorm exercise also added further depth, complexity, and nuance to the sub-themes emerging.

**Findings of Community Identified Priorities**

Utilizing the multi-prong approach to identify communities priorities led to synthesizing an enormous amount feedback and input gathered to date. From the significant amount of qualitative data collected and in respecting the time community members took to provide the feedback, Metro staff used the three main efforts to develop an initial set of findings of community identified priorities. These findings reflect, in aggregate, the major transportation-related needs, concerns, and priorities of the region's communities of color, households with lower-incomes, limited English proficiency populations, older adults, and young people.

The method to identify these community priorities was to look at the major themes and sub-themes which continued to emerge from each approach, but tease out the transportation needs, concerns, and priorities identified by historically underrepresented communities as well as older adults and young persons. In identifying these themes, some engagement efforts were targeted specifically at gathering input from historically underrepresented communities, such as Metro's Diversity, Equity, and Inclusion community discussions or emphasized social equity considerations such as the transportation and equity online questionnaire in early 2016. These targeted efforts made it easy toto identify the themes coming from historically underrepresented communities. However other public comments efforts, such as the 2014 RTP, the 2014 Regional Active Transportation Plan or the Southwest Corridor Engagement Report, sought to gather feedback from anyone and everyone.

Therefore, the approach was to find those themes which illustrated particular significance or resonance with historically underrepresented communities and cross-reference to the public comment logs to help verify the themes.

The feedback and input varied, ranging from a need for transportation infrastructure in areas where historically underrepresented communities live to greater public engagement to broader policy issues that would help address social inequities and social cohesion. In developing the findings, it was decided the feedback would not be filtered for applicability to the transportation system or in aiding the development of the 2018 RTP transportation equity evaluation at this stage of the work. The community identified priorities were to represent those themes and sub-themes which continued to emerge throughout feedback and comments. The themes results of the draft findings of community identified priorities, identified in Table 1.

*Table 1. Draft Findings of Community Identified Priorities**

| ***Transportation Theme*** | ***Sub-Theme*** | ***Description*** |
|---|---|---|
| Accessibility | Access to places | Historically underrepresented communities, older adults, and youth are able to get to jobs, every day services, and schools easily and by different forms of transportation and at different times of day. |
| | Infrastructure | A variety of modes should be physically accessible to historically underrepresented communities, older adults, and youth; multimodal investments should be designed for universal access and prioritized. |
| | Travel options | All places should have different travel options available to make a trip with a particular emphasis to invest in multimodal options in historically underrepresented communities. |
| | | All places should have different travel options available to make a trip and ultimately that means features like crosswalks, sidewalks, bikeways, and lighting. These elements should not be an afterthought in planning. |
| | Travel time and reliability | The travel time and the reliability of using other modes of transportation outside of a personal vehicle should be reliable, dependable, practical, competitive and timely which makes these options viable for historically underrepresented communities, older adults, and youth. |
| | Transit | It is more frequent and goes more places. |
| Transportation Safety | Infrastructure | Invest in safer more frequent crossings, overcrossings for arterials and freeways, bike lanes that are designed with physical separation of different modes and lighting throughout the region, but with particular emphasis in areas with communities of color, households with lower-incomes, older adults, and younger person. Safe routes and the infrastructure to make it safe for walking, biking, and accessing transit should not be an afterthought in planning and street design. Street retrofits should be an option and considered. Address infrastructure disparities first when funding safety improvements; pair with crash data and an equity lens. |

| *Transportation Theme* | *Sub-Theme* | *Description* |
|---|---|---|
| | Security | People should feel a sense of personal safety and free of being a target/victim of crime when using the transportation system, regardless of time of day, day of the week, location, or mode. |
| | Enforcement | Enforce traffic rules for users and infrastructure standards when building non-automobile infrastructure. |
| | | Certain community members should not experience or feel a disproportionate burden of being targeted by enforcement officials when using the transportation system; particularly as it pertains to any form of fee or fare evasion or traffic enforcement. |
| Affordability | Housing and transportation costs | Housing and transportation costs are manageable for households of all incomes by making housing options, particularly affordable housing options, available in areas with good transportation infrastructure and transit service. |
| | Transportation costs | Reduce transportation costs for historically underrepresented communities, older adults, and younger persons with an emphasis on reducing the upfront cost of using any travel options and the expense of getting to employment centers for low income neighborhoods. |
| | Transit | Greater affordability in the use of the transit system. |
| | | Certain community members should not experience or feel a disproportionate burden of being targeted by enforcement officials when using the transportation system; particularly as it pertains to any form of fee or fare evasion or traffic enforcement. |
| Public Health | Disproportionate environmental and health impacts | The environmental and health impacts and conditions established by transportation infrastructure, services, and use should not disproportionately impact historically underrepresented communities, older adults, and youth. |
| | | The implementation of transportation projects should not create environmental or public health conditions which disproportionately impact historically underrepresented communities in negative ways. |
| | | The implementation of transportation projects should aspire to more than preventing further harm, but rather or create conditions which strengthen social cohesion of communities, remedy historic injustices and existing health disparities. |
| | Community health and stability | Transportation should provide opportunities to contribute positively to community health and supporting communities. |
| Involuntary Displacement | Displacement | The transportation policies and/or investments which may create market conditions for the displacement of existing communities must be addressed at the forefront of planning and project development. The implementation of mitigation strategies is essential and support community stability and preventing the negative redesign of a community. |
| | Shared prosperity | The benefits of transportation investments should be experience and shared with the existing communities and in tandem with community mitigation measures to minimize fears of being priced |

| *Transportation Theme* | *Sub-Theme* | *Description* |
|---|---|---|
| | | out and unable to share in the benefits. |
| Community Input/ Acknowledgement | Community input | Ask communities what and where their priorities are to understand where different transportation considerations (i.e. modes, investments) falls in community hierarchy of need and ask how they want those considerations implemented. |
| | | Support efforts to have community conversations to gather input by funding CBOs to organize community conversations and improve planning process. Focus in areas rich for displacement to have the dialogue. |
| | Acknowledgement | Acknowledge community members are just as important as other traditional planning stakeholders and in turn make communities visible. |
| | | Recognize the lived experience by communities and use the past experience to inform strategies which mitigate and prevent negative impacts of communities in conjunction with good data in decision making. |
| | Community as an actor for transportation success | Plan for people and community stability over place and make space for lived experiences in conjunction with good data in implementing transportation projects. |
| Major Social Policies | Major policies | Transportation is a significant part of the fabric of communities, but transportation and its associated policies and investments cannot resolve and address all deep social inequities. Other major policies are needed in tandem, including reducing the gap of wage disparities and even significant innovation in certain transportation policy areas. |

** The themes are not in any form of ranking or prioritized order.*

**Proposed Draft 2018 RTP Transportation Equity Measures for Further Exploration**

Based on the findings of the community identified priorities, the next step was to focus in on the themes which lend best to an evaluation of future proposed transportation investments. In looking across the findings, the following themes continued to be reiterated and fit within the context of an investment package assessment. These community identified priorities are:

- Affordability
- Accessibility
- Transportation Safety
- Public Health
- Transit*

** Transit was not explicitly identified as a theme, however, the level of feedback and comments directed at the transit system and its intersection with affordability and access themes warranted identifying it explicitly.*

As noted, because of the widely varying feedback gathered and a conscious decision not to filter the findings, the community identified priorities represent a wide range of important subjects to members of historically underrepresented communities, older adults, and young people. For Metro staff, the task at hand was to understand the important subjects identified by communities and interpret how to utilize the information in a way that best supports the analytical work for the 2018 RTP and the 2018-2021 MTIP.

The interpretation of the community identified priorities began through a process of reviewing each theme and sub-theme. With each theme and sub-theme reviewed, two questions were applied:

1. Does this community priority make sense and be further informed through a transportation system evaluation?
2. How can this priority be measured across the transportation system?

Using these two questions as a form of screen to look at the community priorities, several themes were decided not to be explored further under the context of the 2018 RTP transportation equity evaluation. While these priorities may fall outside the scope of measuring the regional transportation investment package, they serve useful to inform other elements of transportation planning, such as communications and messaging and designing a public process. Therefore, all the community identified priorities were categorized under four groupings:

- potential measures for further exploration
- communications and messaging
- process
- other.

The groupings (as shown in Table 2) allow for Metro staff to determine the most appropriate place for these different concerns, needs, and community identified priorities to be addressed. The groupings are also being used a mechanism to recognize the feedback provided to Metro staff and also organize the best ways in which to address the comment. It is also important to note that those community identified priorities not selected for further exploration and consideration in the 2018 RTP transportation equity evaluation does not mean the feedback is rendered useless or ignored. In respect to the time and effort provided by communities, these priorities will continue to be seen to as part of 2018 RTP transportation equity analysis and will be re-examined and further discussed as part of developing

**Short Descriptions of Categories for the Community**

**Potential Measures for Further Exploration** –Priorities which address transportation concerns and needs in which the regional transportation investment package evaluation can potentially address and lead to information to inform and shape transportation system policies or projects or performance.

**Communications and Messaging** – Priorities which address how to effectively communicate or discuss the transportation system, modes, infrastructure and/or service inequities

**Process** – Priorities which address how to design the public involvement and/or community engagement process.

**Other** – Priorities which fall outside the scope of the other groups and/or touch upon greater social issues or of issues in which the regional transportation plan is not the best mechanism for addressing. Examples such as raising the minimum wage or racial profiling in enforcement are examples of this grouping.

recommendations on future public processes, RTP policy refinements as well as recommendations for a short list of actions to work towards as part of RTP implementation.

*Table 2. Categorized Community Identified Priorities*

| ***Transportation Theme*** | ***Description*** | ***Category*** |
|---|---|---|
| Accessibility | Historically underrepresented communities, older adults, and youth are able to get to jobs, every day services, and schools easily and by different forms of transportation and at different times of day. | Potential Measure for Further Exploration |
| | A variety of modes should be physically accessible to historically underrepresented communities, older adults, and youth; multimodal investments should be designed for universal access and prioritized. | Potential Measure for Further Exploration |
| | All places should have different travel options available to make a trip with a particular emphasis to invest in multimodal options in historically underrepresented communities. | Potential Measure for Further Exploration |
| | All places should have different travel options available to make a trip and ultimately that means features like crosswalks, sidewalks, bikeways, and lighting. These elements should not be an afterthought in planning. | Communications and Messaging |
| | The travel time and the reliability of using other modes of transportation outside of a personal vehicle should be reliable, dependable, practical, competitive and timely which makes these options viable for historically underrepresented communities, older adults, and youth. | Potential Measure for Further Exploration |
| | It is more frequent and goes more places. | Potential Measure for Further Exploration |
| Transportation Safety | Invest in safer more frequent crossings, overcrossings for arterials and freeways, bike lanes that are designed with physical separation of different modes and lighting throughout the region, but with particular emphasis in areas with communities of color, households with lower-incomes, older adults, and younger person. Safe routes and the infrastructure to make it safe for walking, biking, and accessing transit should not be an afterthought in planning and street design. Street retrofits should be an option and considered. Address infrastructure disparities first when funding safety improvements; pair with crash data and an equity lens. | Potential Measure for Further Exploration |
| | People should feel a sense of personal safety and free of being a target/victim of crime when using the transportation system, regardless of time of day, day of the week, location, or mode. | Other |
| | Enforce traffic rules for users and infrastructure standards when building non-automobile infrastructure. | Other |
| | Certain community members should not experience or feel a disproportionate burden of being targeted by enforcement officials when using the transportation system; particularly as it pertains to any form of fee or fare evasion or traffic enforcement. | Other |
| Affordability | Housing and transportation costs are manageable for households of all incomes by making housing options, particularly affordable housing options, available in areas with | Potential Measure for Further Exploration |

| *Transportation Theme* | *Description* | *Category* |
|---|---|---|
| | good transportation infrastructure and transit service. | |
| | Reduce transportation costs for historically underrepresented communities, older adults, and younger persons with an emphasis on reducing the upfront cost of using any travel options and the expense of getting to employment centers for low income neighborhoods. | Potential Measure for Further Exploration |
| | Greater affordability in the use of the transit system. | Potential Measure for Further Exploration |
| | Certain community members should not experience or feel a disproportionate burden of being targeted by enforcement officials when using the transportation system; particularly as it pertains to any form of fee or fare evasion or traffic enforcement. | Other |
| Public Health | The environmental and health impacts and conditions established by transportation infrastructure, services, and use should not disproportionately impact historically underrepresented communities, older adults, and youth. | Potential Measure for Further Exploration |
| | The implementation of transportation projects should not create environmental or public health conditions which disproportionately impact historically underrepresented communities in negative ways. | Potential Measure for Further Exploration |
| | The implementation of transportation projects should aspire to more than preventing further harm, but rather or create conditions which strengthen social cohesion of communities, remedy historic injustices and existing health disparities. | Communications and Messaging |
| | Transportation should provide opportunities to contribute positively to community health and supporting communities. | Communications and Messaging |
| Involuntary Displacement | The transportation policies and/or investments which may create market conditions for the displacement of existing communities must be addressed at the forefront of planning and project development. The implementation of mitigation strategies is essential and support community stability and preventing the negative redesign of a community. | Other |
| | The benefits of transportation investments should be experience and shared with the existing communities and in tandem with community mitigation measures to minimize fears of being priced out and unable to share in the benefits. | Communications and Messaging |
| Community Input/ Acknowledgement | Ask communities what and where their priorities are to understand where different transportation considerations (i.e. modes, investments) falls in community hierarchy of need and ask how they want those considerations implemented. | Process |
| | Support efforts to have community conversations to gather input by funding CBOs to organize community conversations and improve planning process. Focus in areas rich for displacement to have the dialogue. | Process |
| | Acknowledge community members are just as important as other traditional planning stakeholders and in turn make communities visible. | Communications and Messaging/Process |
| | Recognize the lived experience by communities and use the past experience to inform strategies which mitigate and prevent negative impacts of communities in conjunction with | Communications and Messaging/Process |

| *Transportation Theme* | *Description* | *Category* |
|---|---|---|
| | good data in decision making. | |
| | Plan for people and community stability over place and make space for lived experiences in conjunction with good data in implementing transportation projects. | Communications ad Messaging |
| Major Social Policies | Transportation is a significant part of the fabric of communities, but transportation and its associated policies and investments cannot resolve and address all deep social inequities. Other major policies are needed in tandem, including reducing the gap of wage disparities and even significant innovation in certain transportation policy areas. | Other |

Following the categorization, the resulting themes are sub-themes listed indicate which community identified priorities Metro staff would like to further explore as draft 2018 RTP transportation equity evaluation measures. These are identified in Table 3.

*Table 3. Proposed Draft 2018 RTP Transportation Equity Measures for Further Exploration*

| *Theme* | *Sub-Themes* | | | |
|---|---|---|---|---|
| **Affordability** | Housing and transportation costs | | Transportation costs | |
| **Accessibility** | Access to places | Infrastructure | Travel options | Travel time and reliability |
| **Transportation Safety** | Infrastructure | | Infrastructure disparities | |
| **Public Health** | Disproportionate environmental and health impacts | | | |
| **Transit*** | Transit costs | Transit access | Transit reliability | |

** Consolidates the transit-related community identified priorities, which were initially categorized under other themes.*

**Feedback from the Transportation Equity Work Group**

Based on the findings of community identified priorities and the screening to further explore potential draft transportation equity measures, Metro staff seeks input from the work group members on the following questions:

1. Do the community identified priorities summarized in this memo reflect what you have heard from your community members? Is there a transportation need, concern, or priority missing and unaddressed?
2. Are the draft 2018 RTP transportation equity measures proposed for further exploration on the right track? Are these the right measures for which to seek further confirmation during the engagement planned for May and June?
3. Do work group members support Metro and NITC grant-funded staff moving forward into a research and method exploration phase with the draft 2018 RTP transportation equity measures? This exploratory work would begin prior to the June meeting to help inform further narrowing and recommendations by the work group.
4. Does the proposed approach of identifying what community priorities may be addressed as part of the 2018 RTP transportation equity analysis and what community priorities may be addressed as part of other 2018 RTP discussions or beyond seem reasonable?

**Next Steps**
Prior to the June 30th work group meeting, Metro staff will undertake several activities to help inform the work group's recommendation on the measures to be used in the 2018 RTP transportation equity analysis. These activities include:

1. Conducting targeted engagement activities to validate the priorities and themes with particular emphasis on the draft measures.
2. Researching evaluation methods for the draft measures to understand what approaches and methods are established and understand the advantages and disadvantages of the methods.
3. Coordinating with the other 2018 RTP work groups to understand their approaches and recommendations on overlapping topics and developing a strategy to support analyses for both work groups. For example, work with the lead of the Transportation Safety work group and the Regional Transit Strategy to determine how to address the community priorities pertaining to transportation safety and transit.

Aside from the targeted spring engagement activities, it would be anticipated the research and coordination activities would likely extend beyond the June 30th work group meeting.

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Metro | *Meeting Summary*

# 2018 RTP Transportation Equity Work Group – Meeting #2
## Thursday, February 18, 2016
## 1:00 – 3:00 p.m.
## Metro Regional Center, Room 401

| Committee Members | Affiliation | Attendance |
|---|---|---|
| Duncan Hwang | APANO | Present |
| Jessica Berry | Multnomah County | Present |
| Stephanie Caldera | Oregon Department of Environmental Quality | Present |
| Brad Choi | City of Hillsboro | Present |
| Corky Collier | Columbia Corridor Association | Present |
| Nicole Phillips | OPAL/Bus Riders Unite | Present |
| Jared Franz | Amalgamated Transit Union | Present |
| Aaron Golub | Portland State University | Present |
| Heidi Guenin | Transportation Council | Present |
| Scotty Ellis | Metro | Present |
| Jon Holan | City of Forest Grove | Present |
| Jake Warr | TriMet | Present |
| Noel Mickelberry | Oregon Walks | Present |
| Cora Potter | Ride Connection | Present |
| Karen Buehrig | Clackamas County | Present |
| Kari Schlosshauer | National Safe Routes to School Partnership | Present |
| Karen Savage | Washington County | Present |
| Nancy Kraushaar | City of Wilsonville | Present |
| Kelly Clarke | City of Gresham | Present |
| Brendon Haggerty | Multnomah County Health Department | Present |
| **Interested Parties** | | |
| Katie Selin | Portland State University | Present |
| **Metro Staff** | | |
| Grace Cho | Metro | Present |
| Lake McTighe | Metro | Present |
| Cliff Higgins | Metro | Present |
| Ted Leybold | Metro | Present |
| Jamie Snook | Metro | Present |
| Janet Toman | Metro | Present |
| Joyce Felton | Metro | Present |

## I. WELCOME

Cliff Higgins welcomed meeting attendees and walked through the agenda for the work group meeting.

## II. WORK GROUP MEMBERS INTRODUCTIONS AND PARTNER UPDATES

All those present introduced themselves and provided a brief update on who they've discussed the transportation equity work plan with and what they heard in response.

## III. TRANSPORTATION EQUITY POLICY FRAMEWORK

Ms. Cho provided an overview of the policy framework in which the Regional Transportation Plan (RTP) operates under as the first item of business for the meeting. She noted the desire to walk through the policy framework as a means of ensuring members of the work group have the same shared understanding of the RTP as a policy document. She mentioned her ultimate goal was to have all work group members feel better equipped when the time comes to start discussing policy refinement and recommendations for the 2018 RTP. As part of her presentation, Ms. Cho discussed the different entities which shape and influence the content of the RTP. She also discussed what local, state, and regional plans and programs the RTP has the ability to influence. She noted at the end of the policy framework discussion, this first pass at the policy framework is the beginning to a number of discussions and as a follow up the work group will receive federal, state, and regional policy scoping document to review prior to the May work group meeting. The scoping document outlines the applicable policies to regional transportation planning which address social equity issues and concerns.

At the end of the presentation, Ms. Cho paused to take any questions.

A work group member made a comment that the policy framework did not emphasize the entity of local jurisdictions as an influence on the RTP as local jurisdictions see through and carry out the RTP policies.

Ms. Cho responded that was an oversight on her part in not making that come across clearly in the framework presentation.

Another work group member noted that community voices are not well represented in the policy framework.

Ms. Cho responded that is the representation of community voices, particularly hard to reach communities, continues to be an area in which the RTP works better to reflect and respond. She said that previous processes in the past may not have emphasized grassroots engagement of communities, but rather utilized the traditional civic process.

Other work group members noted that this process is working to change the process to engage communities and reflect community voices.

**IV. TRANSPORTATION TRENDS AND EXISTING CONDITIONS**

For the second item of business, Ms. Cho presented the overarching timeline for the 2018 RTP. She explained the process is in the existing conditions and trends and challenges phase of the work plan. As part of this phase Metro staff has been collecting data and information to help update the existing conditions chapter of the 2018 RTP and shape the Regional Snapshot series. Following the introduction, the work group was presented some select very early draft information about the transportation trends and existing conditions of the region, with a particular focus on how these trends break out by different race and ethnic communities or income levels. She covered basic information about the demographics of the region, but also addressed travel trends, access to jobs, and housing trends. Ms. Cho noted Metro staff is still in the process of gathering, refining, and sorting the data and more information and takeaways are still yet to come.

At the end of the transportation trends and existing conditions presentation, she posed the following question to the work group for a brief discussion:

> "What do we want to communicate to other working groups, technical advisory committees (TPAC and MTAC), and to our elected officials?"

Work group responses to the question included:

- Recognizing that transportation inequities are a symptom of a number of broader societal and systematic inequities and that in many ways what is being asked of the transportation system is to solve the broader issue.
- There remains a need to have a meaningful conversation about the jobs-housing balance. Reinforce to other work groups, technical advisory committees, and elected officials the interconnectivity of transportation and land use in widening disparities. That to address the disparities a holistic approach must be taken.
- A recognition that changes to federal programs, particularly in the transit realm, are moving away from holistic considerations. As a region, seeing the disparities by race and ethnicity as well as income, there is a need to communicate back to the federal government the importance of taking a holistic approach when considering improvements or enhancements to the transportation system.
- In seeing some draft trends and statistics around the disparities experienced by communities of color and the white population, a message to push forward is that race should be the central focus of the transportation equity work.

Additionally a work group member noted that there is a danger when sorting and refining data which might not fully articulate the nuance of what is happening. The work group member expressed that not articulating the nuance may lead the region down a path of wrong solutions. An example was raised by the work group member that there is a growing income disparity in the region, but when looking at per capita income or median income, a solution may be to increase or attract the number of high wage jobs and skilled workers to the region. This solution does not address bringing economic opportunity to those who are already in the region and not receiving a share of the economic prosperity.

**V. BREAK**

Mr. Higgins excused everyone for a short stretch break and Ms. Cho and Metro staff reset the room for a breakout exercise.

## VI. TRANSPORTATION EQUITY PRIORITY OUTCOMES EXERCISE

Following the break, the meeting room was reset with markers and butcher paper set at each table. Ms. Cho reminded the work group members at the end of the first work group meeting, members were asked to complete a "homework" assignment. The homework was to bring to the second meeting a list of the transportation priorities, needs, and desires their communities want to see from the region's transportation system. For the remainder of the meeting, the work group had the opportunity to write those community priorities and values on butcher paper and had an opportunity to discuss shared priorities. But before launching into the exercise, Ms. Cho and Mr. Higgins walked through what was heard and major themes to emerge from past public comment periods. Additionally, Ms. Cho provided time for Lake McTighe and Jamie Snook, the leads for the Safety and Transit work groups, to provide an overview of their work and make a request to the work group members on areas in which their work groups need feedback. Ms. Cho notes as a result there are additional butcher paper sheets with the specific questions from the Safety and Transit work groups that members are free to discuss. At the end of the discussion of the public comment themes, she provided the work group instructions for the exercise and allowed work group members to break out into the exercise.

## VII. QUESTIONS AND ANSWERS AND NEXT STEPS

At the end of the exercise Ms. Cho walked through the next steps for herself and the homework assignments for the work group. She mentioned she will follow up with communication with the presentation slides, since they were a challenge to see, as well as the policy scoping memos, and a memo or summary which outlines the feedback from the exercise.

Between the second and third work group meeting, she asked members to complete the following "homework" assignments:

- Report back to your people what was discussed at the work group meeting and bring any feedback.
- Review the forthcoming federal, state, and regional policy scoping papers.
- Based on what was seen through the exercise, come prepared at the next work group meeting to vote on three transportation priority areas in which the transportation equity evaluation of the 2018 RTP investment scenarios should focus on.

She also mentioned during the interim period there will likely be communication to the work group regarding updates and other opportunities to engage in the broader RTP process.

## VIII. ADJOURN

There being no further business, Ms. Cho and Mr. Higgins adjourned the meeting at 3:00 p.m.

*Meeting summary prepared by: Grace Cho, Transportation Equity Project Manager*

Meeting materials:

| Item | Topic | Document Date | Description |
|---|---|---|---|
| 1 | Agenda | 02/18/16 | Meeting Agenda |
| 2 | Meeting Overview Memorandum | 02/18/16 | Overview of what is covered in the packet of materials and anticipated for the meeting |
| 3 | Work Group Meeting 1 Summary | 02/18/16 | Summary of transportation equity work group meeting #1 |
| 4 | Public Comment Review | 02/18/16 | Public Comment Retrospective Memo 1 |
| 5 | | 02/18/16 | Public Comment Retrospective Memo 2 |
| 6 | Presentation | 01/08/16 | TE Work Group Presentation |
| 7 | Mtg. Evaluation | 01/08/16 | TE Meeting #2 Meeting Evaluation |

# Attachment

## M E M O R A N D U M

| | |
|---|---|
| TO: | Metro RTP Staff |
| FROM: | Dayna Webb, PE – Project Engineer |
| DATE: | May 18, 2018 |
| SUBJECT: | 2018 RTP Project List Round 2 Updates |

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Following are Oregon City's 2018 RTP Project List Round 2 Updates.

**10144 SB 99E/I-205 SB Interchange Access**

- This project was moved from Strategic to 2018-2027 Financially Constrained.
- This project is located within a high injury corridor & in an equity area.

**4179826 SB 99E/I-205 NB Interchange Access**

- This project was moved from Strategic to 2018-2027 Financially Constrained.
- This project is located within a high injury corridor & in an equity area.

**11186 Willamette River Shared Use Path**

- This project was moved from Strategic to 2027-2040 Financially Constrained.
- This project is located within an equity area.

**10149 Beaver Lake Trail**

- This project was added back in from the 2014 RTP, it was not previously included in the 2018 RTP project list.

**11543 Regional Center Road**

- This project was added back in from the 2014 RTP, it was not previously included in the 2018 RTP project list.
- This project is located within an equity area.

**11630 City Wide Transportation System Management & Operations**

- This project was added back in from the 2014 RTP, it was not previously included in the 2018 RTP project list.
- As these projects are spread out city wide, some are located within high injury corridors & in equity areas.

**10124 Molalla Avenue Bike & Ped Improvements, Phase 2**

- This project was added back in from the 2014 RTP, it was not previously included in the 2018 RTP project list.
- This project is located within a high injury corridor & in an equity area.

CLACKAMAS COUNTY

DAN JOHNSON
DIRECTOR

DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

DEVELOPMENT SERVICES BUILDING
150 BEAVERCREEK ROAD | OREGON CITY, OR 97045

**MEMORANDUM**

**TO:** Kim Ellis, Metro RTP Project Manager
**FROM:** Stephen Williams, Principal Transportation Planner
**DATE:** May 21, 2018

**SUBJECT:** 2018 RTP Call for Project Round 2 Updates

The following are projects were advanced on the project list from the Strategic Project List to one of the Fiscally Constrained lists or from the 2028-2040 Fiscally Constrained List to the 2018-2027 Fiscally Constrained List.

**10003 Harmony Road Improvements**
- Project moved from the Strategic Project List to the 2028-2040 Fiscally Constrained List
- The project is on an identified safety corridor and serves a low income area

**10043 Borland Rd from Tualatin to Stafford Rd**
- Project moved from the Strategic Project List to the 2028-2040 Fiscally Constrained List
- The project is a bicyclist safety priority for Clackamas County and Tualatin

**10054 65th/Elligsen/Stafford Intersection Roundabout**
- Project moved from the Strategic Project List to the 2028-2040 Fiscally Constrained List
- The project is a safety priority for Clackamas County and Wilsonville

**11522 97th Ave / Mather Rd**
- Project moved from the Strategic Project List to the 2018-2027 Fiscally Constrained List
- This project is a bicyclist safety priority for Clackamas County and serves a low income community

**11668 Sunrise Multi- use path Phase II**
- Project moved from the Strategic Project List to the 2028-2040 Fiscally Constrained List
- This project is a priority for bicyclist and pedestrian safety, removing active transportation from a high crash corridor, and also serves a low income area

**11763 Johnson Creek Blvd/79th Ave Intersection (TSAP)**
- Project moved from the 2028-2040 Fiscally Constrained List to the 2018-2027 Fiscally Constrained List
- This project will reduce fatal and severe crashes on an identified high crash corridor that serves communities of color and low income populations

**11766 Johnson Creek/Linwood Ave ITS Improvements (TSAP)**
- Project moved from the Strategic Project List to the 2018-2027 Fiscally Constrained List
- This project will implement ITS bicyclist and pedestrian safety improvements to reduce fatal and severe crashes on an identified high crash corridor that serves communities of color and low income populations

**11774 Johnson Creek Blvd and Bell Ave Intersection Safety Improvements (TSAP)**
- Project moved from the Strategic Project List to the 2018-2027 Fiscally Constrained List
- This project will implement ITS bicyclist and pedestrian safety improvements to reduce fatal and severe crashes on an identified high crash corridor that serves communities of color and low income populations

P. 503.742.4400 | F. 503.742.4272 | WWW.CLACKAMAS.US

The identified primary or secondary purposes, and/or the project description for the following projects were revised to highlight:

- Safety improvements for projects on identified regional or local high crash or safety priority corridors
- Project serving communities of color, those with Limited English Proficiency or low income
- Active transportation system improvements
- Freight improvements

**10001 Johnson Creek Blvd. Interchange Improvements**
- Description revised to highlight safety improvements

**10002 Johnson Creek Blvd. Improvements**
- Description revised to highlight safety improvements on a high crash corridor
- Project serves communities of color and those with Limited English Proficiency/low income
- Project also supports freight movement serving an existing industrial area

**10014 82nd Ave. Multi-Modal Improvements**
- Description revised to highlight implementation of proven safety counter measures on a high crash corridor to improve safety for bicyclist and pedestrians

**10018 82nd Ave. Bike and Ped Safety Improvements**
- Description revised to highlight implementation of proven safety counter measures on a high crash corridor to improve safety for bicyclist and pedestrians

**10022 82nd Drive Bike and Pedestrian Improvements**
- Description revised to highlight implementation of proven safety counter measures on a high crash corridor to improve safety for bicyclist and pedestrians

**10023 82nd Dr. Improvements**
- Description revised to highlight implementation of proven safety counter measures on a high crash corridor to improve safety for bicyclist and pedestrians

**10024 McLoughlin Blvd. Improvement**
- Description revised to highlight implementation of proven safety counter measures on a high crash corridor, completing bicycle and pedestrian system and adding transit supportive elements

**10085 Lake Oswego Oak Grove Bike Ped Bridge Over the Willamette River**
- Description revised to highlight the safety benefits of the bicycle/pedestrian bridge that will reduce the trip from between Oak Grove and Lake Oswego from 10 miles on a high crash corridor to 1 mile on a bike/ped parkway.

**11499 River Rd**
- Description revised to highlight implementation of proven safety counter measures on a high crash corridor

**11500 River Rd**
- Description revised to highlight implementation of bicyclist/pedestrian safety by filling gaps in the bike/ped system and implementation of proven safety counter measures on a high crash corridor

**11503 Jennings Ave**
- Description revised to highlight implementation of bicyclist/pedestrian safety by filling gaps in the bike/ped system and implementation of proven safety counter measures on a high crash corridor

**11514 82nd Drive/Strawberry Lane Intersection**
- Description revised to highlight implementation of proven safety counter measures at a key intersection on a high crash corridor, as well as operational improvements due to the installation of a traffic signal and dedicated turn lanes

**11517 Jennings Ave**

- Description revised to highlight implementation of bicyclist/pedestrian safety by filling gaps in the bike/ped system and implementation of proven safety counter measures on a high crash corridor

**11518 Webster Rd**

- Description revised to highlight implementation of proven safety counter measures and filling bicycle/pedestrian system gaps on the main access route to a Title 1 elementary school

**11762 Sunnyside Road Adaptive Signal Control Phase II**

- Description revised to better highlight improvements to operations and reduction in congestion resulting from implementation of adaptive signal control

**11767 I-205 Multiuse Path from OR 224 to OR 212**

- Description revised to highlight the safety benefits of filling an existing one mile gap in the I-205 Multiuse path and also creation of new regional connections for bicyclist/pedestrians between town centers

**11768 Strawberry Lane/I-205 Overpass Widening (TSAP)**

- Primary purpose of the project revised from Roads and Bridges to Active Transportation

**11772 Clackamas Industrial Area Bike/Ped Improvements (TSAP)**

- Description revised to highlight bicycle and pedestrian safety improvements on an existing freight corridor

**11937 McLoughlin Blvd HCT extension**

- Description revised to highlight improved safety and transit accessibility that will result from extension of HCT (light rail/bus rapid transit) from the current end of the MAX Orange Line to the Oregon City transit center with consideration of ETC improvements in advance of full project development

**11938 172nd Avenue Frequent Transit Access and Safety Enhancements**

- Description revised to identify the transit access benefits of extension of frequent transit in the 172nd corridor and the safety benefits of frequent transit in the OR212 corridor, an identified high crash corridor

**11939 I-205 Bus Service from Clackamas to Bridgeport**

- Description revised to identify the reductions in congestion and improvements in safety that will result from extending High Capacity Transit (light rail or bus rapid transit) connecting Clackamas Town Center and Bridgeport

# Lori Stegmann
Multnomah County Commissioner
Representing East County, District 4


## *East Multnomah County Transportation Committee*

*City of Fairview  City of Gresham  City of Troutdale  City of Wood Village  Multnomah County  Port of Portland*

May 25, 2018

Metro
Attn.: Kim Ellis
600 NE Grand Avenue
Portland, OR 97232-2736

**Re: Regional Transportation Plan projects for submittal – Round 2**

Dear Kim Ellis,

On May 14, 2018 the East Multnomah County Transportation Committee (EMCTC) reviewed the proposed Regional Transportation Plan projects for inclusion in the early year constrained (2018-2027), late year constrained (2028-2040), and strategic (not constrained but identified for 2028-2040). The projects on the three lists reflect changes based on the following:

1. Additional Revenue from HB 2017 has been captured in the Constrained early and late year project lists.
2. Project naming and descriptions have been refined.
3. Projects have been edited to reflect additional safety components when located on high injury corridors.
4. Projects that are in high equity areas have been moved to earlier time frame where if applicable.

EMCTC endorses the projects shown on the three lists. These projects represent regionally significant investments in transportation infrastructure in east Multnomah County.

Sincerely,

Lori Stegmann, Multnomah County Commissioner - District 4
Representing East Multnomah County

cc: Mayor Ted Tosterud, Fairview
Councilor Jerry Hinton, Gresham
Mayor Casey Ryan, Troutdale
Mayor Tim Clark, Wood Village
Emerald Bogue, Port of Portland


501 SE Hawthorne Blvd,. Suite 600 Portland, OR 97214 • Phone: 503-988-5213 • Email: district4@multco.us


*Alis Volat Propriis* - "She Flies with Her Own Wings"

**MEMORANDUM**

**To:** Kim Ellis and Rebecca Hamilton, Metro

**From:** Brad Choi, City of Hillsboro

**Date:** May 17, 2018

**Subject**: RTP Project List Refinement Approach - Hillsboro

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In response to Metro's guidance (memo dated March 27, 2018) to review and refine the draft RTP project list, Hillsboro made the following changes to the city's project list previously submitted to the RTP hub. The focus of the refinement was to better reflect each project's impact on equity and safety. It should be noted that no new projects were added to the Hub from this refinement exercise.

Previously, only one project (11932 – Safety Action Projects) out of the 100 projects submitted by Hillsboro was identified as a "Safety Project" (projects with a primary purpose addressing safety). Following review of Metro's crash data and re-evaluation of the submitted projects, the following ten projects have been identified as "Safety Projects" by identifying the primary purpose as either "Reduce fatal and severe injury crashes" or "Reduce minor or non-injury crashes". Each of the following projects covers a location that is identified as either a high crash or where fatality or serious injuries have occurred. Care was taken to ensure that the improvement in each project actually addresses the specific transportation mode that the fatality or serious injury was related to.

The ten projects are as follows:

- 10824 – Cornell Rd Turn Lanes and Bike/Ped Improvements (Main to Arrington)
- 11170 – Cornell Rd & Brookwood Pkwy and Cornell Rd & 48th Ave Intersection Improvements
- 11285 – Farmington Rd Widening and Bike/Ped Improvements Phase 2
- 10826 – Jackson School Rd Turn Lanes and Bike/Ped Improvements
- 11284 – Farmington Rd Widening and Bike/Ped Improvements Phase 1
- 11905 – 25th Ave Turn Lanes and Bike/Ped Improvements
- 11390 – TV Hwy & 198th Ave Intersection Improvements
- 11392 – TV Hwy & River Rd Intersection Improvements
- 11169 – Cornell Rd & 25th Ave Intersection Improvements
- 10849 – Downtown Hillsboro Regional Center Multimodal and Safety Improvements

Subsequent to the refinement exercise, Metro staff made a change to the how "safety" projects were designated (Kim Ellis email from May 7, 2018). This change added 32 more Hillsboro projects, bringing the total "Safety Benefit Projects" from Hillsboro to 43 (out of 100).

PBOT
PORTLAND BUREAU OF TRANSPORTATION
1120 SW Fifth Avenue, Suite 800 Portland, OR 97204 503.823.5185
Fax 503.823.7576 TTY 503.823.6868 www.portlandoregon.gov/transportation
**Dan Saltzman** Commissioner **Leah Treat** Director

May 18, 2018

Kim Ellis, Principal Transportation Planner
Metro
600 NE Grand Ave
Portland, OR 97232

Dear Ms. Ellis,

This letter serves as our transmittal for the refinement of our draft project list for the Regional Transportation Plan (RTP) update. Our revised list received the support of the Portland Coordinating Committee at its April 24th meeting and was submitted to Metro on April 27, 2018.

Throughout our participation in the RTP update, we've heard from community members, elected officials, and our partners that the region needs to do more to meet its goals. We are pleased this message came out of the Regional Leadership Forum 4 and this is the direction Metro Council provided to jurisdictions as part of the project list refinement process. We took this message to heart, focusing the refinement of our project list on outcomes that will advance safety, equity, and climate goals. This approach included:

1. More clearly defining the safety elements of projects on the high injury network: More than half our projects in the 2018-2027 constrained list occur on the high injury network. Many of these projects serve multiple purposes (i.e., active transportation, freight, etc.). We have reviewed these projects to ensure they include significant safety elements and are labeled appropriately. More than just checking a box, however, the City of Portland is committed to achieving Vision Zero. Our focus for the first ten years is addressing our deadliest roadways.

2. Advancing projects in communities of color, lower income households and limited English proficiency: More than 80 percent of our projects are in census tracks with disproportionate representations of race, income, and limited English proficiency characteristics. With the additional allocation of funding from the revised financial

forecasts, we moved fourteen projects from the 2028-2040 list to the 2018-2027 list. Additionally, we expanded the scope of projects on two corridors – 148th and 162nd – as they are a priority for many in in East Portland. The net impact of these investments will be safer roads, increased opportunities for active transportation and transit, and improved access to jobs, education, and services for historically marginalized communities.

3. Supporting Climate Smart strategies: With the additional funding allocation, we will build out the active transportation network faster by moving nine active transportation projects to an earlier timeframe and by expanding the funding/scope of seven more. Additionally, we looked for opportunities, particularly in the 2028-2040 timeframe, to advance other Climate Smart strategies. This includes bolstering investments in centers to reduce VMT, and addressing congestion through transportation demand management and transportation system management.

The City of Portland appreciates all the work that Metro and our regional partners have done as part of the 2018 Regional Transportation Plan update. Please let me know if you would like any additional information about our projects list and our refinement approach.

Sincerely,

Leah Treat

cc: Metro Council
Commissioner Dan Saltzman
Susan Anderson, Director, Bureau of Planning and Sustainability

# LAND USE & TRANSPORTATION MEMORANDUM

Office of the Director

To: Kim Ellis, Principal Planner

c: Roy Rogers, WCCC Chair
Washington County Coordinating Committee Members

From: Andrew Singelakis, Director

Date: May 21, 2018

Subject: **Washington County Regional Transportation Plan Project List Endorsement**

At its May 14 meeting, the Washington County Coordinating Committee (WCCC) endorsed a final list of projects in Washington County for submission in the Regional Transportation Plan (RTP). This RTP project list is consistent with Metro Council guidance to better meet regional goals specifically around regional equity, safety, climate change and congestion. The projects meet the financial revenue forecast established by Metro, including updated financial forecasts for Federal funds and increases due to HB 2017. The endorsed list is attached.

Revisions to the project list respond to and are consistent with Metro Council guidance as follows:

- **Congestion relief** - Washington County has committed local funding (TDT, MSTIP and SDCs) to build out the arterial and collector streets to improve mobility, better distribute traffic and accommodate all users through complete street design (bike lanes, sidewalks and safe crossing treatments) where appropriate.
- **Safety** - Washington County does a good job providing a safe system by investing in proven safety counter measures like complete streets and access management BEFORE safety problems emerge. This is reflected in the lower crash rate in Washington County compared to the region. In addition to projects specifically identified as safety improvements, the project list includes an investment of over $750 million by 2040 in active transportation improvements. Furthermore, of the nearly 200 road projects on the list, close to 50 percent also benefit safety by closing gaps on the bicycle and pedestrian network. Since bike lanes, curbs and sidewalks account for approximately 25 percent of a road project cost; these projects add another $250 million in active transportation investment for a total of over $1 billion by 2040.
- **Equity** - Over forty percent of all projects (by cost) and sixty six percent of projects (by cost) that provide a safety benefit in the first ten years are targeted to historically marginalized communities.

Please contact Chris Deffebach at (503) 846-3406 if you have any questions.

Attached: Washington County 2018 Regional Transportation Plan List

155 N First Avenue, Suite 350, MS 16, Hillsboro, OR 97124-3072 • phone: 503-846-3822 • fax: 503-846-3588
www.co.washington.or.us/transportation • transportation@co.washington.or.us

PUBLIC WORKS 4100 Norfolk St. West Linn Oregon 97068 Telephone: (503) 656-6081 Fax: (503) 742-8636

City of West Linn

May 3, 2018

Oregon Metro
600 NE Grand Ave
Portland, OR 97232

RE: 2018 RTP List – Project for inclusion (#11748)

This letter is to express the City of West Linn's preference to retain project #11748 (Ostman Rd/Blankenship Rd.) within the 2018 RTP list. The route in question is designated as a collector within the City's Transportation System Plan and also a main transit route. A significant component of this project is construction of bike and pedestrian improvements. Through guidance provided by Metro staff on April 25, 2018, the City intends to take the following measures to ensure inclusion of project #11748 within the 2018 RTP list.

- Update the project hub to reflect the City's desired outcome (completed).
- Change the project from roads and bridges to active transportation (completed).
- Add facility to the Regional AT networks as a regional bikeway (along with Blankenship Rd) so route connects to the rest of the AT network on both ends (in process).

Please inform the City of any additional information that may be needed in order to ensure inclusion of project #11748 in the 2018 RTP list.

Courteously,

Morgan Coffie
Management Analyst
City of West Linn – Public Works

Cc: Lance Calvert, P.E. – Public Works Director/City Engineer

Evaluation Measure Title: **Affordability (Combined Housing + Transportation Expenditure and Cost Burden)**

**Due to budget and capacity constraints this methodology is deferred for development in the next RTP.**

Evaluation Measure Title: **Share of Safety Projects**
*(New System Evaluation Measure)*

**Purpose and Goals**
Overall purpose: To identify where and at what level of investment the 2027 and 2040 constrained investment strategies address transportation safety and fatal and severe crashes through the development of transportation infrastructure projects with proven safety countermeasures.

Transportation Equity Purpose: To look at how the 2027 and 2040 constrained investment strategies addresses transportation safety and fatal and severe crashes through the development of transportation infrastructure projects with proven safety countermeasures in equity focus areas relative to the region and non-equity focus areas.[1]

The **Share of Safety Projects** performance measure will assess the following questions for the region's transportation system region-wide and in historically marginalized communities:

1) How many and what percentage of the 2027 and 2040 constrained investment strategies are identified as safety projects?
2) What percentage of the total 2027 and 2040 investment strategies (cost) are attributed to safety projects?
3) What percentage of the total number of transportation safety investments in the 2027 and 2040 constrained investment strategies are located in equity focus areas?
4) Is there a difference of transportation safety investment (cost) in equity focus areas relative to the region and non-equity focus areas?

**2014 RTP Goals**

| | | | |
|---|---|---|---|
| | Foster vibrant communities and compact urban form | | Promote environmental stewardship |
| ● | Sustain economic competitiveness and prosperity | ● | Enhance human health |
| | Expand transportation choices | | Demonstrate leadership at reducing greenhouse gas emissions |
| | Effective and efficient management of system | ● | Ensure equity |
| ● | Enhance safety and security | | |

**Associated 2014 RTP Performance Target**
By 2035, reduce the number of fatal and severe injury crashes for pedestrians, bicyclists and motor vehicle occupants each by 50% compared to 2007-2011 average. (*Target proposed to be updated in 2018 to: By 2035 eliminate transportation related fatalities and serious injuries for all users of the region's transportation system, with a 16% reduction by 2020 (as compared to the 2015 five year rolling average), and a 50% reduction by 2025.*)

**Methodology Description**
The method for calculating the **Share of Safety Projects** performance measure will entail:

[1] Historically marginalized communities are areas with above the regional rate of people of color, people with low-incomes, people with limited English proficiency, older adults and/or young people. Focused historically marginalized communities are areas with high concentrations (compared to the regional average) of people of color, people with low-incomes, and people with limited English proficiency.

1. Identifying safety projects in the RTP investment packages. (Safety projects are identified as such by agencies submitting the projects.)
2. Calculating the number of safety projects in the regional transportation investment packages by investment time period region-wide[2], in historically marginalized communities and in focused historically marginalized communities;
3. Calculating the cost of safety projects in the regional transportation investment packages by investment time-period region-wide, in historically marginalized communities and in focused historically marginalized communities;
4. Calculating the per-person expenditure of transportation safety projects for the number of people by investment time-period region-wide and for the number of people identified within in historically marginalized communities and focused historically marginalized communities.
5. Identify which safety projects are on Regional High Injury Corridors.

**Output Units:** Number and percentage (%) of transportation safety projects compared to total 2027 and 2040 constrained investment strategies; percentage of total cost of 2027 and 2040 constrained investment strategies; Percentage of safety projects on regional high injury corridors regionwide and in equity focus areas.

**Potential Output of Assessment:**

| | RTP Investment Strategies | | |
|---|---|---|---|
| **Within Area** | **2015 Base Year** | **2027 Constrained** | **2040 Constrained** |
| Region (Metropolitan Planning Area) | N/A | Number and % Safety Projects, % cost allocated to Safety Projects, | |
| Equity Focus Areas | N/A | Number and % Safety Projects, % cost allocated to Safety Projects, | |
| Non-Equity Focus Areas | N/A | Number and % Safety Projects, % cost allocated to Safety Projects, | |

**Key Assumptions to Method**

**Dataset Used:**

| Dataset | Type of Data |
|---|---|
| Geospatial and cost information for transportation safety projects proposed for the RTP investment packages | Project information provided by jurisdictions |

**Tools Used for Analysis:** ArcGIS

[2] Within the MPA boundary.

**Definitions:**

Safety Projects in the RTP are capital infrastructure projects with the primary purpose of reducing the occurrence of traffic related fatalities and serious injuries, allocating a majority of the project cost to a documented safety countermeasure(s) to address a specific documented safety problem (as indicated by location-specific data on fatalities and serious injuries, and/or where it is determined that the specific project can, with confidence, produce a measurable and significant reduction in such fatalities or serious injuries), or addresses systemic safety for vulnerable users, including people walking and bicycling, people with disabilities, older adults and youth.

Safety countermeasures are actions taken to decrease the number of traffic injuries and fatalities, either through systemic or hot spot safety projects. Safety countermeasures may include geometric design, engineering solutions, systemic safety projects, signalization, signs, markings and operational upgrades and intelligent transportation systems. Countermeasures should be selected based on analytical techniques that prove effectiveness. Examples of proven safety countermeasures include, but are not limited to, FHWA's nine proven safety countermeasures: road diets, medians and pedestrian crossing islands, pedestrian hybrid beacons, roundabouts, access management, retroreflective backplates, safety edge, enhanced curve delineation, and rumble strips. Systemic safety projects are applied over an entire road/corridor to reduce crashes and risks along the entire roadway/corridor.

Criteria to identify specific documented safety problem

- On high risk bike/ped corridor identified in ODOT Pedestrian and Bicycle Safety Implementation Plan[3]
- On Metro High Injury Corridor
- High crash corridor identified in state, city or county safety plan
- Area with one fatal or severe crash in the last five years
- High injury intersection

Identifying safety countermeasure projects

- Countermeasures identified in ODOT's HSIP Countermeasures and Crash Reduction Factors[4]
- Bike/ped projects identified by the FHWA as eligible for HSIP funding, if correcting or improving a hazardous road location or feature and consistent with Oregon Transportation Safety Action Plan[5]
- Paths/trails and bridges/undercrossing if directly adjacent to the high injury location (e.g. path alongside high injury corridor

Projects not identified as safety projects

- Pavement/preservation/replacement projects
- Trail/multi-use path/ bike-ped bridge projects – unless directly adjacent to a roadway/bridge with a safety issue
- ADA transition plans, stand alone ADA projects
- Transit project, e.g. bus replacement, (not including bike/ped access to transit projects)
- Majority of project cost going to capacity/mobility

[3] https://www.oregon.gov/ODOT/HWY/TRAFFIC-ROADWAY/docs/pdf/13452_report_final_partsA+B.pdf
[4] https://www.oregon.gov/ODOT/HWY/TRAFFIC-ROADWAY/docs/pdf/CRF_Appendix.pdf
[5] Types of bike/ped projects eligible for HSIP funding:
https://www.fhwa.dot.gov/environment/bicycle_pedestrian/funding/funding_opportunities.pdf

Evaluation Measure Title: **Exposure to Crash Risk**
*(New System Evaluation Measure – Measure was not used in second round evaluation of the 2018 RTP)*

**Purpose and Goals**
Overall purpose: To approximate risk of exposure to crashes for all modes by identifying whether the 2027 and 2040 constrained investment strategies increase or decrease non-freeway vehicle miles traveled (VMT) within each transportation area zone (TAZ), region-wide (within the Metropolitan Planning Area boundary), and in historically marginalized communities and focused historically marginalized communities.[1]

Transportation Equity Purpose: To approximate risk of exposure to crashes for all modes by identifying whether the 2027 and 2040 constrained investment strategies increase or decrease non-freeway vehicle miles traveled (VMT) within each transportation area zone (TAZ) in historically marginalized communities and focused historically marginalized communities.

The **Exposure to Crash Risk** performance measure will assess the following questions for the region's transportation system region-wide and in historically marginalized communities:
1) What is the region's vehicle miles traveled in each TAZ and how does it change with the 2027 and 2040 constrained investment strategies?
2) Is there a difference in exposure to vehicle miles traveled in TAZ's in historically marginalized communities relative to the region?

**2014 RTP Goals**

| | | | |
|---|---|---|---|
| | Foster vibrant communities and compact urban form | | Promote environmental stewardship |
| ● | Sustain economic competitiveness and prosperity | ● | Enhance human health |
| | Expand transportation choices | | Demonstrate leadership at reducing greenhouse gas emissions |
| | Effective and efficient management of system | ● | Ensure equity |
| ● | Enhance safety and security | | |

**Associated 2014 RTP Performance Target**
By 2035, reduce the number of fatal and severe injury crashes for pedestrians, bicyclists and motor vehicle occupants each by 50% compared to 2007-2011 average. (*Target proposed to be updated in 2018 to: By 2035 eliminate transportation related fatalities and serious injuries for all users of the region's transportation system, with a 16% reduction by 2020 (as compared to the 2015 five year rolling average), and a 50% reduction by 2025.*)

**Methodology Description**

[1] Historically marginalized communities are areas with above the regional rate of people of color, people with low-incomes, people with limited English proficiency, older adults and/or young people. Focused historically marginalized communities are areas with high concentrations (compared to the regional average) of people of color, people with low-incomes, and people with limited English proficiency.

To calculate the **Exposure to Crash Risk** system evaluation performance measure:

1. For Base Year (2015) aggregate non-freeway average weekday VMT vehicle miles traveled (VMT) within each transportation analysis zone (TAZ) wholly or partially within the MPA boundary.

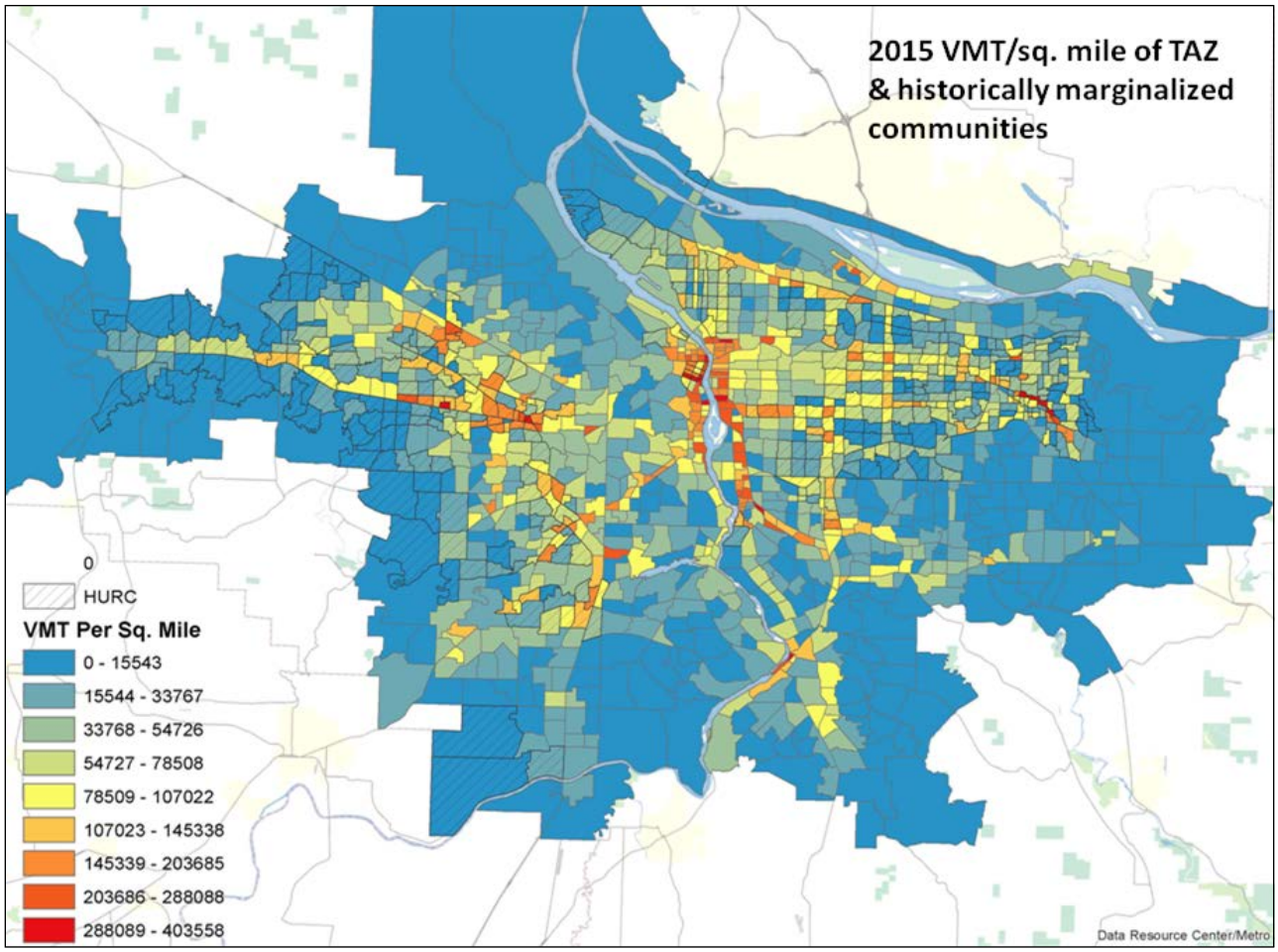
2. Determine VMT for the 2027 and 2040 no-build by aggregating non-freeway average weekday VMT vehicle miles traveled (VMT) within each transportation analysis zone (TAZ) wholly or partially within the MPA boundary as a result of population growth.

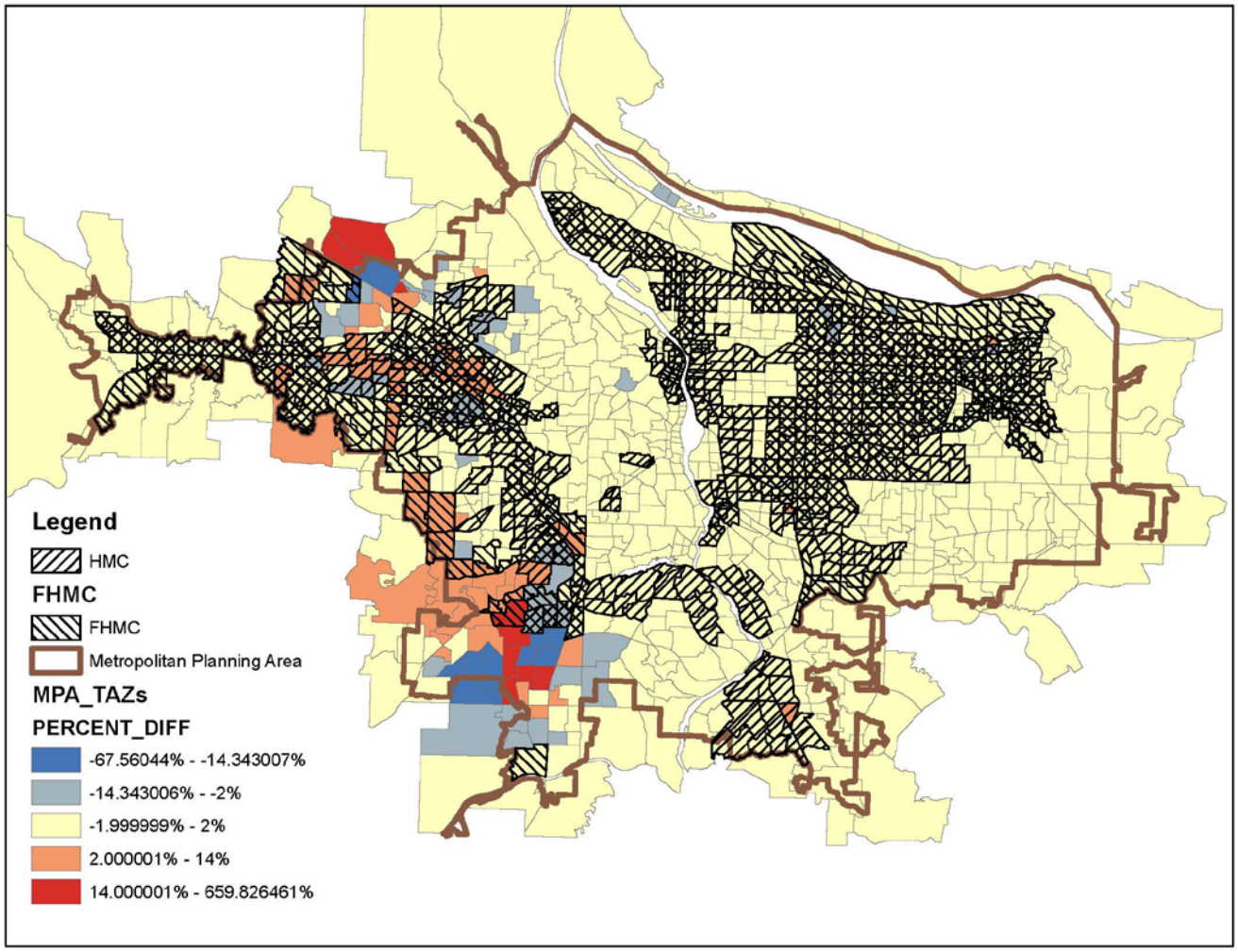
3. Determine VMT with the addition of the 2027 and 2040 constrained investment strategies by aggregating non-freeway average weekday VMT vehicle miles traveled (VMT) within each transportation analysis zone (TAZ) wholly or partially within the MPA boundary. Calculate the change in VMT per TAZ from the no-build. Change is relative to TAZs within the MPA boundary.

4. Calculate the overall change (decrease or increase) in VMT region-wide, and for historically marginalized communities.

**Potential Output of Assessment:** Map of vehicle miles traveled per TAZ area

| | Absolute VMT | | | | | Change in VMT | |
|---|---|---|---|---|---|---|---|
| | 2015 Base Year | 2027 No Build | 2027 Constrained | 2040 No Build | 2040 Constrained | 2027 Constrained – 2027 NB Difference | 2040 Constrained – 2040 NB Difference |
| Region-wide VMT | | | | | | | |
| Historically Marginalized Communities VMT | | | | | | | |
| Focused Historically Marginalized Communities VMT | | | | | | | |


2015 VMT/sq. mile of TAZ
& historically marginalized
communities
0
HURC
VMT Per Sq. Mile
0 - 15543
15544 - 33767
33768 - 54726
54727 - 78508
78509 - 107022
107023 - 145338
145339 - 203685
203686 - 288088
288089 - 403558
Data Resource Center/Metro




**Key Assumptions to Method**

**Dataset Used:**

| Dataset | Type of Data |
|---|---|
| Geospatial project information for proposed transportation projects | Shapefiles provided by jurisdiction |
| Vehicle miles traveled by TAZ | Forecasted using travel demand model |

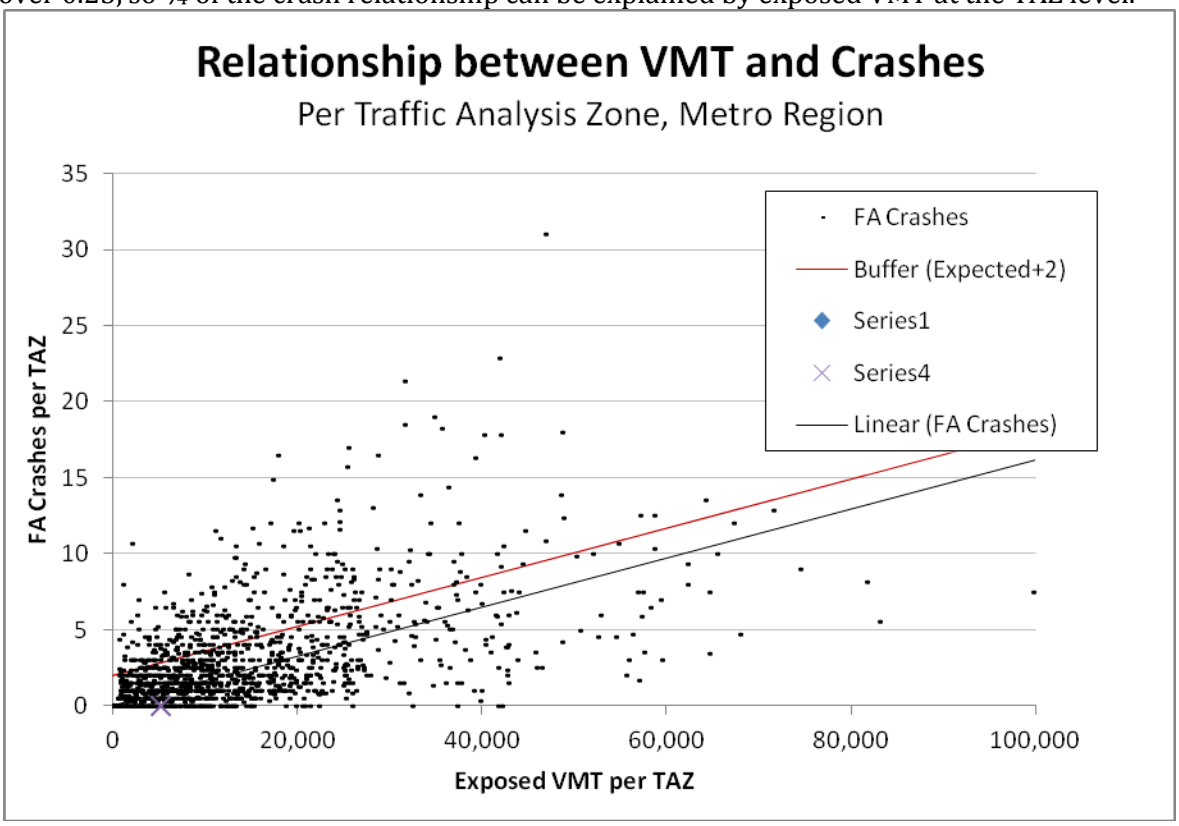
**Tools Used for Analysis:**
Metro's travel demand model and ArcGIS

**Considerations**
Research has found a correlation between VMT and traffic crashes; the more auto traffic a person is exposed to (inside or outside of the vehicle) the higher the risk of a crash.[2] This analysis does not

[2] 2015 Motor Vehicle Crashes: Overview, US DOT, National Highway Traffic Safety Administration National Center for Statistics and Analysis

forecast actual crashes. The measure relies on the correlation between vehicular travel to the occurrence of crashes and relies on the travel-demand model to output the amount of VMT.

Analysis conducted showed correlation between VMT and crashes in the region; the R2 was just over 0.25, so ¼ of the crash relationship can be explained by exposed VMT at the TAZ level.



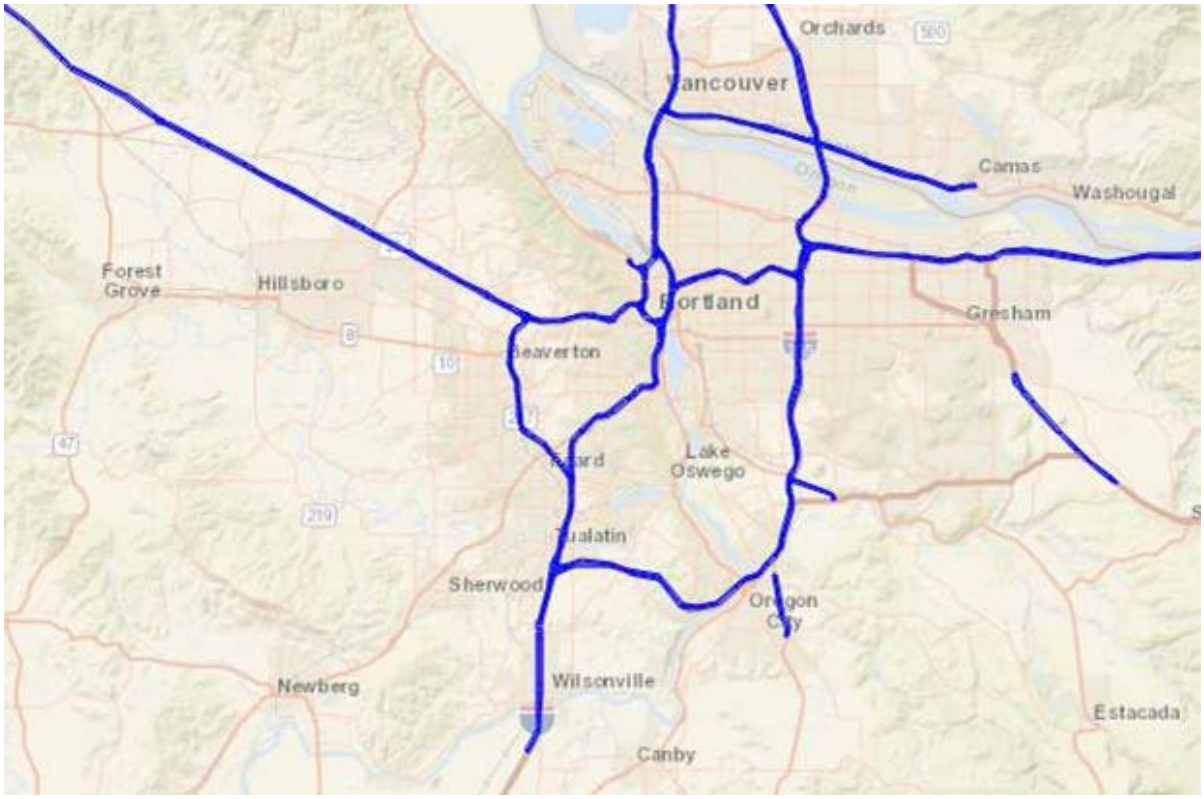

Strength of correlation: for simpler relationships we'd like to see a higher R-squared, but the reality is the complexity of safety analysis means no single factor is overarching. One quarter of the relationship is significant, and results were discussed/ vetted with safety professionals.

There are two major reasons why it can be just fine to have low R-squared values.
In some fields, it is entirely expected that your R-squared values will be low. For example, any field that attempts to predict human behavior, such as psychology, typically has R-squared values lower than 50%. Humans are simply harder to predict than, say, physical processes.
Furthermore, if your R-squared value is low but you have statistically significant predictors, you can still draw important conclusions about how changes in the predictor values are associated with changes in the response value. Regardless of the R-squared, the significant coefficients still represent the mean change in the response for one unit of change in the predictor while holding other predictors in the model constant. Obviously, this type of information can be extremely valuable.

VMT on limited access highways (freeways) are excluded from the analysis because the crash characteristics of limited access highways are significantly different from other types of roadways (freeways have the lowest serious crashes per VMT by roadway class). Non-freeway VMT includes 2015 auto and truck vehicle miles traveled on all non-freeway roadway links as defined in Metro's travel demand model.

Limited access highways in Oregon excluded from analysis (see map):

- 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



Evaluation Measure Title: **Access to Travel Options – System Connectivity and Completeness**
*(Replacing the 2014 RTP System Evaluation Measure– Miles of sidewalk, bikeways, and trails)*

**Purpose:** To identify how the package of future transportation investments will increase the connectivity and completeness of the pedestrian, bicycle, trail and roadway network and increase access to transit through the development of sidewalks, bikeways, trails and new street connections within the metropolitan planning area, and in equity focus areas.[1]

The **Access to Travel Options – System Completeness and Connectivity** performance measures will assess the following questions for the region's transportation system within the metropolitan planning area and in equity focus areas:

1) How many miles of the planned regional pedestrian, bicycle, trail and street networks are completed? How many miles are left to complete?
2) What percentage of existing arterials have pedestrian and bicycle facilities?
3) What percentage of streets with bikeways and sidewalks within ½ mile of transit stops and stations are completed?
4) Is there and increase in street/sidewalk and bikeway connectivity?
5) What time-frame are the pedestrian, bicycle, trail and new street investments proposed for?

**2014 RTP Goals**

| | | | |
|---|---|---|---|
| ● | Foster vibrant communities and compact urban form | ● | Promote environmental stewardship |
| | Sustain economic competitiveness and prosperity | ● | Enhance human health |
| ● | Expand transportation choices | ● | Demonstrate leadership at reducing greenhouse gas emissions |
| | Effective and efficient management of system | ● | Ensure equity |
| | Enhance safety and security | | |

**Associated 2014 RTP Performance Target:**
Basic Infrastructure: Increase by 50% the miles of sidewalk, bikeways, and trails compared to the regional network in 2010. *(This target will be updated in the 2018 RTP.)*

**Methodology Description:**

1) Regional system completeness: Use a geospatial analysis to determine how much of the planned regional pedestrian, bike, trail and street networks are completed in the 2018 RTP. Determine results for the following three geographies at the TAZ level: within the MPA and in equity focus areas. Determine results for the base year (2015) and each of the 2018 RTP future year investment packages.

    a) Calculate the **miles** of existing facilities on the regional system for the base year (2015).

[1] Historically marginalized communities are areas with high concentrations (compared to the regional average) of people of color, people with low-incomes, people with limited English proficiency, older adults and/or young people. Focused historically marginalized communities are areas with high concentrations (compared to the regional average) of people of color, people with low-incomes, and people with limited English proficiency.

b) Calculate **miles** of proposed projects for the future year investment packages.

c) Calculate the **percent** completeness for regional networks, both in the base year of 2015 and future year investment packages.

2) Arterial streets: Use a geospatial analysis to determine completeness of sidewalk and on-street bike networks on arterial streets in the 2018 RTP. This follows the same methodology of (1) Regional system completeness, subset to only arterial streets.
3) 2040 Centers and station communities: Use a geospatial analysis to determine how much of the planned regional sidewalk, on-street bike and street networks are completed within 2040 analysis centers and station communities in the 2018 RTP. This follows the same methodology of (1) Regional system completeness, subset to 2040 analysis centers and station communities.
4) Transit stops (access to transit): Use a geospatial analysis to determine how much of the planned regional pedestrian, bike, trail and street networks are completed within a walking distance to transit in the 2018 RTP. This follows the same methodology of (1) Regional system completeness, subset to the area within ½ mile from light rail stops, 1/3 mile from street car stops, and ¼ mile from bus stops; existing and planned stops.

**Output Units:** Miles and percentage (%) of bikeways, sidewalks, trails and new street connections, region-wide within MPA and inequity focus areas.

**Potential Output of Assessment:** Maps and tables

| **Geographic areas** | **Measure** | **Base Year (2015)** ***Existing Regional System*** | **Interim Year (2027)** | **Future Year – Constrained** | **Future Year – Strategic** |
|---|---|---|---|---|---|
| Region-wide (MPA boundary) | Miles sidewalks/ % complete | | | | |
| | Miles on-street bikeways, % complete | | | | |
| | Miles trails, % complete | | | | |
| | Miles streets, % complete | | | | |
| | Sidewalk completeness | | | | |
| | On-street bikeway completeness | | | | |
| Historically Underrepresented Communities | | | | | |
| Focused Historically Underrepresented Communities | | | | | |

B – Bikeways; S –Sidewalks; T –Trails; NS – New Street Connections

**Key Assumptions to Method**

**Dataset Used:**

| Dataset | Type of Data |
|---|---|
| Line features in a GIS for projects proposed for the 2018 RTP - sidewalk, bikeway, trail and new street connection projects | GIS data provided by jurisdictions and agencies |
| Line features in a GIS for existing (constructed) sidewalks, bikeways, trails, and streets | RLIS GIS data |
| Line features in a GIS for planned regional bicycle, pedestrian and roadway networks | GIS RTP |

**Tools Used for Analysis:** ArcGIS

**Definitions:**

*Connectivity* is defined as the density of street intersections in the regional system.

*Completeness* is defined as the percentage of the regional system that has been completed, and the percentage of regional streets that have completed bikeways and sidewalks.

*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.

Evaluation Measure Title: **Access to Jobs**
*(New System Evaluation measure)*

**Purpose and Goals**
Overall Purpose: To identify whether the 2027 and 2040 constrained investment strategies will increase the ability of region's residents to get to jobs (by wage profile) in the region.

Transportation Equity Purpose: Furthermore, to look at how the 2027 and 2040 constrained investment strategies increase access to jobs, but more specifically to low and middle-wage jobs, particularly for equity focus areas, relative to the region and non-equity focus areas.

The **Access to Jobs** performance measure looks to assess the following questions for the region's transportation system:

1) How many jobs can be reached in a given time window by different travel modes?
2) How many more jobs can be reached with the 2027 and 2040 constrained investment strategies?
3) Are different transportation modes outpacing its ability to get the region's residents to jobs?

More specifically, from the transportation equity perspective, the **Access to Jobs** performance measure looks to assess the following questions:

1) How many low and middle-wage jobs can be reached in a given time window by different travel modes?
2) What are differences in low and middle-wage job access for the region, equity focus areas, and non-equity focus areas?
3) Is the access to low and middle-wage jobs also in proportion or providing greater access to jobs to equity focus areas compared to the region and non-equity focus areas?

**2014 RTP Goals**

| | | | |
|---|---|---|---|
| ● | Foster vibrant communities and compact urban form | ● | Promote environmental stewardship |
| ● | Sustain economic competitiveness and prosperity | ● | Enhance human health |
| ● | Expand transportation choices | | Demonstrate leadership at reducing greenhouse gas emissions |
| | Effective and efficient management of system | ● | Ensure equity |
| | Enhance safety and security | | |

**Function of Performance Measure**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ● | System Evaluation | | Project Evaluation | | System Monitoring | | Performance Target |

Associated 2014 RTP Performance Target: None

**Methodology Description:**

The **Access to Jobs** performance measure is calculated by using forecasted data from Metroscope to identify and geographically distribute jobs throughout the region, including categorized low-wage and middle-wage jobs (defined in assumptions). The analysis determines the weighted average number of jobs, with emphasis on low and middle-wage jobs, reached using the existing transportation system by travel mode (automobile, transit, bicycle, and walking) in a given travel time window for the entire region, equity focus areas, and non-equity focus areas to determine base year conditions. The next step is to conduct the same assessment under no-build conditions to determine the weighted average number of jobs as a result of employment growth. Then lastly using the 2027 and 2040 constrained investment strategies determine the weighted average accessibility to forecasted jobs, including more focused look at low and middle-wage jobs, by mode for the entire region and in equity focus areas. Lastly, the measure will look at the change in the accessibility to jobs between the no-build and the 2027 and 2040 constrained investments, but with a particularly emphasis on the change in access to low and middle-wage jobs in equity focus areas and non-equity focus areas.

Output Units: Weighted average number of jobs and change in number of jobs, by wage profile, accessed by mode (Auto; Transit; Bike; Walk)

Potential Output of Assessment: Percentage change in jobs and total jobs reached within different travel time sheds by different modes.[1]

Jobs Accessible – Change Table

| Job Access – All Jobs | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **Change in # of Jobs 2027 (over NB)** | | | | **Change in # of Jobs 2040 (over NB)** | | | |
| | **A – R/NR** | **T – R/NR** | **B** | **W** | **A – R/NR** | **T – R/NR** | **B** | **W** |
| **Region** | | | | | | | | |
| **Equity Focus Areas** | | | | | | | | |
| **Non-Equity Focus Areas** | | | | | | | | |
| Job Access – Low-Wage Jobs | | | | | | | | |
| | **Change in # of Jobs 2027 (over NB)** | | | | **Change in # of Jobs 2040 (over NB)** | | | |
| | **A – R/NR** | **T – R/NR** | **B** | **W** | **A – R/NR** | **T – R/NR** | **B** | **W** |
| **Region** | | | | | | | | |
| **Equity Focus Areas** | | | | | | | | |
| **Non-Equity Focus** | | | | | | | | |

[1] Weighted average is the average accessibility from each Transportation Analysis Zone (TAZ) weighted by the number of households in that TAZ. TAZs with many households will influence the weighted average more than TAZs with fewer households, which results in the average accessibility to jobs for households in the region.

| Areas | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Job Access – Middle-Wage Jobs: | | | | | | | | |
| | Change in # of Jobs 2027 (over NB) | | | | Change in # of Jobs 2040 (over NB) | | | |
| | A – R/NR | T – R/NR | B | W | A – R/NR | T – R/NR | B | W |
| Region | | | | | | | | |
| Equity Focus Areas | | | | | | | | |
| Non-Equity Focus Areas | | | | | | | | |

A – Automobile – Rush hour and Non-rush hour; T – Transit – Rush hour and Non-rush hour; B – Bicycle; W - Walk

Jobs Accessible – Totals Table

| Job Access – All Jobs | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Base Year & 2027 and 2040 No Builds | | | | 2027 and 2024 Constrained | | | |
| | A – R/NR | T – R/NR | B | W | A – R/NR | T – R/NR | B | W |
| Region | | | | | | | | |
| Equity Focus Areas | | | | | | | | |
| Non-Equity Focus Areas | | | | | | | | |
| Job Access – Low-Wage Jobs | | | | | | | | |
| | Base Year & 2027 and 2040 No Builds | | | | 2027 and 2024 Constrained | | | |
| | A – R/NR | T – R/NR | B | W | A – R/NR | T – R/NR | B | W |
| Region | | | | | | | | |
| Equity Focus Areas | | | | | | | | |
| Non-Equity Focus Areas | | | | | | | | |
| Job Access – Middle-Wage Jobs: | | | | | | | | |
| | Base Year & 2027 and 2040 No Builds | | | | 2027 and 2024 Constrained | | | |
| | A – R/NR | T – R/NR | B | W | A – R/NR | T – R/NR | B | W |
| Region | | | | | | | | |
| Equity Focus Areas | | | | | | | | |
| Non-Equity Focus Areas | | | | | | | | |

A – Automobile – Rush hour and Non-rush hour; T – Transit – Rush hour and Non-rush hour; B – Bicycle; W - Walk

Key Assumptions to Method:

Dataset Used:

| Dataset | Type of Data |
|---|---|
| Geospatial project information for proposed transportation projects | GIS data from project sponsors |
| Employment/jobs outputs from Metroscope[2] | Forecasted |

Tools Used for Analysis: Metro's Travel Demand Model, Metro's Metroscope Model

Definition of Low-Wage Jobs: Jobs which pay an annual salary between $0 - $39,999.[3]

Definitions of Middle-Wage Jobs: Jobs which pay an annual salary between $40,000 – $65,000. [4]

Methods for Defining and Identifying All Jobs: The projections (total jobs) and geographic distribution of employment is based on underlying U.S. Bureau of Labor Statistics data and assumptions regarding growth for the employment industries in MetroScope. (See MetroScope documentation regarding employment forecast.)

Methods for Defining and Identifying Low and Middle-Wage Jobs: The annual salary band was based on the average household size of three (3) and a combination of different income, program eligibility, and self-sufficiency definitions (HUD median income, UW self-sufficiency index, federal poverty level, and uniform relocation assistance and real property acquisition act) The definition of low and middle-wage jobs is not taking into consideration employer benefits provided as part of the identification of wages.

Distribution of Low and Middle-Wage Jobs Assumptions: The distribution of low and middle-wage jobs is based on underlying U.S. Bureau of Labor Statistics data and assumptions regarding growth for the employment industries in MetroScope. (See MetroScope documentation regarding employment industry forecast assumptions.) The low and middle-wage band will not change according to inflation. Low and middle-wage jobs were determined by the wage profile of each MetroScope industry, looking at the percentage of jobs, which paid within the annual salary range. This range was applied to the employment forecast for the future year to determine the distribution.

Travel Time Windows by Mode[5]:

[2] Forecasted estimates are based on MetroScope assumptions on employment industries and based off U.S. Bureau of Labor Statistics data. Documentation can be found at: http://www.oregonmetro.gov/forecasting-models-and-model-documentation

[3] Wages are set as static for the purposes of the analysis and are not indexed to inflation. Therefore, the wage bands for low-wage and middle wage will not adjust between the based-year and future year.

[4] See Footnote 4.

[5] The travel time windows represents the average number of places which can be reached within a +/- 5 minutes of the stated travel time window. For example, for automobile, the number of jobs accessed will be

- Automobile – 30 minutes*
- Transit – 45 minutes*
- Bicycle – 30 minutes
- Walk – 20 minutes

*Includes access and egress times.

Travel Time Assumptions: Travel time windows by mode were developed with information from the Oregon Household Activity Survey (OHAS) and research from around the country on travel time by different modes for different types of trips. Additionally, internal Metro staff consultation was conducted and work groups were provided the opportunity to give input.

Transit Service Networks Used:

- Peak/Rush Hour – Represented as transit service running from 4pm – 6pm
- Off-Peak/Non Rush Hour – Represented as transit service running from 12pm – 1pm

an average of places reached between 25 minutes – 35 minutes. This is to address in the travel demand model the potential for a "cliff effect" when a hard cut off time is used and a number of jobs may not be reached because the travel time to reach the jobs in the travel model is one (1) second beyond the cut off time.

Evaluation Measure Title: **Access to Community Places**
*(Replacing the 2014 RTP System Evaluation Measure– Access to daily needs - # of essential destinations accessible within 30 minutes by bicycling and public transit for low-income minority, senior and disabled populations)*

**Purpose and Goals**
Overall Purpose: To identify whether the 2027 and 2040 constrained investment strategies increase the ability of region's residents to get to existing community places that provide/serve daily or weekly needs.

Transportation Equity Purpose: Furthermore, to look at how the 2027 and 2040 constrained investment strategies increase access to existing community places that provide/serve daily or weekly needs, but with a particular emphasis in equity focus areas relative to the region and non-equity focus areas.

Questions to Be Addressed:
The **Access to Community Places** performance measure looks to assess the following questions for the region's transportation system:

1) What are the number of existing community places (i.e. places which provide services or items) that can be reached on the existing transportation system by travel mode (e.g. driving, transit, biking, and walking) in a given travel time?
2) How does accessibility, measured by the change in the number of existing community places reached, change (across travel modes) with the 2027 and 2040 constrained investment strategies?

More specifically from a transportation equity perspective, the **Access to Community Places** performance measures looks to further assess the additional question:

1) What are the differences/change between the number of community places accessible for equity focus areas relative to non-equity focus areas and the entire region? Are there large differences in access seen?
2) Are there significant differences (or lack of differences) seen between equity focus areas, non-equity focus areas and the region once the 2027 and 2040 constrained investments are added?

**2014 RTP Goals**

| | | | |
|---|---|---|---|
| ● | Foster vibrant communities and compact urban form | ● | Promote environmental stewardship |
| ● | Sustain economic competitiveness and prosperity | ● | Enhance human health |
| ● | Expand transportation choices | | Demonstrate leadership at reducing greenhouse gas emissions |
| | Effective and efficient management of system | ● | Ensure equity |
| | Enhance safety and security | | |

**Function of Performance Measure**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| • | System Evaluation | | Project Evaluation | | System Monitoring | • | Performance Target |

Associated 2014 RTP Performance Target – By 2040, increase by 50% the number of essential destinations accessible within 30 minutes by bicycling & public transit for low-income, minority, senior and disabled populations compared to 2010.

**Methodology Description:**

The **Access to Community Places** performance measure is calculated by using existing data from the U.S. Bureau of Labor Statistics to identify the existing community places which provide key services and/or daily needs (defined in assumptions) for people in the region. The analysis determines the weighted average of community places reached using existing transportation system by different travel mode (automobile, transit, bicycle, and walking) in a given travel time window for the entire region, equity focus areas, and non-equity focus areas to determine base year conditions.[1] The same assessment is to conduct for no-build conditions to determine the weighted average number of community places accessible without investment. Then lastly using the 2027 and 2040 constrained investment strategies determine the weighted average accessibility to determine the investments impact on accessibility to community places by mode for the entire region, equity focus areas, and non-equity focus areas. Lastly, the measure will look at the change in the accessibility to these existing community places between the no-build and future year with added transportation investments, with an emphasis in looking at the change in equity focus areas relative to non-equity focus areas and the region. The report out for this measure will show the percent change in access to community places by mode for each package.[2]

Output Units: Number and change in number of community places accessed by mode (# - Auto; # - Transit; # - Bike; # - Walk)

Potential Outputs of Assessment:

Community Places Accessible – Change Table

| | **Change in # of Community Places 2027 (over NB)** | | | | **Change in # of Community Places 2040 (over NB)** | | | |
|---|---|---|---|---|---|---|---|---|
| | **A – R/NR** | **T – R/NR** | **B** | **W** | **A – R/NR** | **T – R/NR** | **B** | **W** |
| **Region** | | | | | | | | |
| **Equity Focus Areas** | | | | | | | | |

[1] Weighted average is the average accessibility from each Transportation Analysis Zone (TAZ) weighted by the number of households in that TAZ. TAZs with many households will influence the weighted average more than TAZs with fewer households, which results in the average accessibility to community places for households in the region.

[2] Due to the nature where community places are located and that each TAZ can access these community places (therefore the weighted average for community places for the region is 100%), the percent difference from the region is used to depict how the

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Non-Equity Focus Areas** | | | | | | | | |

A – Automobile – Rush hour and Non-rush hour; T – Transit – Rush hour and Non-rush hour; B – Bicycle; W - Walk

Community Places Accessible – Totals Table

| | **2015 Base Year** | | | | **2027 No-Build** | | | | **2027 Constrained** | | | | **2040 No-Build** | | | | **2040 Constrained** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | T | B | W | A | T | B | W | A | T | B | W | A | T | B | W | A | T | B | W |
| Region-wide | | | | | | | | | | | | | | | | | | | | |
| Equity Focus Areas | | | | | | | | | | | | | | | | | | | | |
| Non-Equity Focus Areas | | | | | | | | | | | | | | | | | | | | |

A – Automobile; T – Transit; B – Bicycle; W - Walk

Key Assumptions to Method:

Dataset Used:

| **Dataset** | **Type of Data** |
|---|---|
| Geospatial project information for proposed transportation projects | GIS data from project sponsors |
| U.S. Bureau of Labor Statistics – Quarterly Census of Employment and Wages (2013) | Existing |

Tools Used for Analysis: Metro Travel Demand Model and ArcGIS

Definitions of Places:

Select North American Industry Classification System (NAICS) codes. Codes include those used as part of TriMet's Transit Equity Index with select additions based on consultation with 2018 RTP work groups, TPAC, and Metro Planning and Development Department and Diversity, Equity, and Inclusion staff.

| **Category** | **NAICS** | **Description** |
|---|---|---|
| Civic/Health | 491110 | Postal Service |
| | 519120 | Libraries and Archives |
| | 611110 | Elementary and Secondary Schools |
| | 611210 | Junior/Community Colleges |
| | 611310 | Colleges, Universities, and Professional Schools |
| | 624110 | Child and Youth Services |
| | 624120 | Services for the Elderly and Persons with Disabilities |
| | 624190 | Other Individual and Family Services |
| | 624210 | Community Food Services |
| | 624229 | Other Community Housing Services |
| | 624230 | Emergency and Other Relief Services |
| | 624310 | Vocational Rehabilitation Services |
| | 624410 | Child Day Care Services |

| Category | NAICS | Description |
|---|---|---|
| | 624221 | Temporary Shelters |
| | 813110 | Religious Organizations |
| Essential Retail | 444130 | Hardware Stores |
| | 446110 | Pharmacies and Drug Stores |
| | 452111 | Department Stores |
| | 452990 | All Other General Merchandise Stores |
| | 812111 | Barber Shops |
| | 812112 | Beauty Salons |
| | 812310 | Coin-Op Laundry |
| | 812320 | Dry Cleaning and Laundry Service |
| Financial/Retail | 522110 | Commercial Banking |
| | 522120 | Savings Institutions |
| | 522130 | Credit Unions |
| Food | 445110 | Supermarkets and Other Grocery (except convenience) Stores |
| Medical | 621111 | Offices of Physicians (except Mental Health Specialists) |
| | 621112 | Office of Physicians, Mental Health Specialists |
| | 621210 | Offices of Dentists |
| | 621310 | Offices of Chiropractors |
| | 621320 | Offices of Optometrists |
| | 621330 | Offices of Mental Health Practitioners (except Physicians) |
| | 621340 | Offices of Physical, Occupational, and Speech Therapists and |
| | 621391 | Audiologists |
| | 621399 | Offices of Podiatrists |
| | 621410 | Offices of All Other Miscellaneous Health Practitioners |
| | 621420 | Family Planning Centers |
| | 621491 | Outpatient Mental Health and Substance Abuse Centers |
| | 621492 | HMO Medical Centers |
| | 621498 | Kidney Dialysis Centers |
| | 621512 | All Other Outpatient Care Centers |
| | 622110 | Diagnostic Imaging Centers |
| | 622210 | General Medical and Surgical Hospitals |
| | 622310 | Psychiatric and Substance Abuse Hospitals |
| | | Specialty (except Psychiatric and Substance Abuse) Hospitals |

For the purpose of the analysis, the existing places which currently provide/serve daily needs are being used to determine access to community places in the base year, no-build, and future year conditions. This approach is being taken because Metro's land use forecast model, Metroscope, currently does not project to the level of detail the locations of these types of businesses (i.e. food, commercial, retail, civic, and health-related services). In assessing the access to existing places which provide/serve daily needs, the rational is that greater access to community places will further increase as a result new places opening for service because of population and employment growth.

Travel Time Windows by Mode[3]:

- Automobile – 20 minutes*
- Transit – 30 minutes*
- Bicycle – 15 minutes
- Walk – 20 minutes

*Includes access and egress times.

Travel Time Assumptions:
Travel time windows by mode were developed with information from the Oregon Household Activity Survey (OHAS) and research from around the country on travel time by different modes for different types of trips. Additionally, work groups provided input and suggested manual adjustments to travel time windows as reflected in the final.

Transit Service Networks Used:

- Peak – Represented as transit service running from 4pm – 6pm
- Off-Peak – Represented as transit service running from 12pm – 1pm

[3] The travel time windows represents the average number of places which can be reached within a +/- 5 minutes of the stated travel time window. For example, for automobile, the number of daily needs accessed will be an average of places reached between 15 minutes – 25 minutes. This is to address in the travel demand model the potential for a "cliff effect" when a hard cut off time is used and a destination may not be reached because the travel time to reach the destination in the travel model is one (1) second beyond the cut off time.

Evaluation Measure Title: **Habitat impact**
*(Used in first round evaluation of the 2018 RTP transportation equity evaluation, not the second round)*

**Purpose and Goals**
Overall Purpose: To identify and flag those 2027 and 2040 constrained investments which are in proximity to (e.g. intersect or overlap with) the region's identified high value habitat areas and note additional environmental consideration and potential mitigation may be needed in implementing the investment.

Transportation Equity Purpose: Furthermore, to look at those 2027 and 2040 constrained investments which are in proximity to (e.g. intersect or overlap with) high value habitat and in historically marginalized communities. These projects would be flagged and noted that in addition to further environmental considerations, other environmental justice considerations mitigation and/or strategies may be needed in implementing the investment.

Questions to Be Addressed:
The **Habitat impact** performance measure looks to assess the following questions for the region's transportation system:

1) What percentage of the region's 2027 and 2040 constrained roadway investments are in proximity to (e.g. intersect or overlap with) and have may have a potential conflict with the region's resource habitats and needs further assessment of environmental considerations through project development?

More specifically, from the transportation equity perspective, the **Habitat impact** performance measure looks to assess the following questions:

1) What percentage of resource habitats are in proximity to (e.g. intersect or overlap with)historically marginalized communities? Are these resource habitats seeing a greater percentage of the 2027 and 2040 constrained roadway investments which may have a potential conflict with the region's resource habitats? Is the percentage in historically marginalized communities greater than the region?

**2014 RTP Goals**

| | | | |
|---|---|---|---|
| ● | Foster vibrant communities and compact urban form | ● | Promote environmental stewardship |
| | Sustain economic competitiveness and prosperity | ● | Enhance human health |
| | Expand transportation choices | | Demonstrate leadership at reducing greenhouse gas emissions |
| | Effective and efficient management of system | ● | Ensure equity |
| | Enhance safety and security | | |

**Function of Performance Measure**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ● | System Evaluation | | Project | | System | | Performance Target |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | Evaluation | | Monitoring | | |

Associated 2014 RTP Performance Measure: Percent of projects which intersect high value habitats

**Methodology Description:**

The method for calculating the **Habitat impact** performance measure entails a geospatial analysis the 2027 and 2040 constrained investments which are in proximity to (e.g. intersect or overlap with) the region's resource habitats. The percentage of projects which overlap/intersect resource habitats will be looked at region-wide and in historically marginalized communities.

Output Units: Percentage (%) of transportation projects intersecting identified resource habitats

Potential Output of Assessment:

| | Base Year | Interim Year | Future Year – Financially Constrained | Future Year – Strategic |
|---|---|---|---|---|
| Region-wide | | | | |
| Historically Marginalized Communities | | | | |
| Focused Historically Marginalized Communities | | | | |

Key Assumptions to Method:
Dataset Used:

| Dataset | Type of Data |
|---|---|
| Geospatial project information for proposed transportation projects | GIS data from project sponsors |
| Geospatial resource conservation information from Metro identified resource and conservation habitat areas | Assessed GIS data |

Tools Used for Analysis: ArcGIS

Definition of Resource Habitats:
Resource habitats are those areas with the top 25% modeled score of high value habitat or riparian quality. Habitat quality took into account factors such as habitat interior, influence of roads, total patch area, relative patch area, habitat friction, wetlands, and hydric soils. The riparian areas took into account criteria of floodplains, distance from streams, and distance from wetlands. The analysis and modeled scoring was conducted for the entire Portland-Vancouver region and conducted through a collaborative effort with partners across the region and topic area experts through the development in the Resource Conservation Strategy process. More detail about the high value habitats can be found at www.regionalconservationstrategy.org.

Assumptions:

Certain roadway transportation projects which meet the requirements of the National Environmental Protection Act (NEPA) listing of categorical exclusions (as identified through the Code of Federal Regulations 23.771.117) may be removed from the percentage calculation for the habitat impact performance measure. Per federal definition, a categorical exclusion identifies a category of actions, based on past experience with similar actions, which do not individually or cumulatively have a significant effect on planned growth or land use for the area, do not require the relocation of significant numbers of people; do not have a significant impact on any natural, cultural, recreational, historic or other resource; do not involve significant air, noise, or water quality impacts; do not have significant impacts on travel patterns; and do not otherwise, either individually or cumulatively, have any significant environmental impacts. Examples of categorical exclusion projects include: bicycle and pedestrian lanes, paths, and facilities, installation of noise barriers, and installation of fencing, signs, pavement markings, small passenger shelters, traffic signals, and railroad warning devices. A full listing of categorical exclusions can be found in the Code of Federal Regulations 23.771.117.

## Access to Travel Options - System Completeness

**Results Tables - By Region, by Geography, and by Facility**

| | | 2015 Base Year (2015) | | 2027 Constrained | | 2040 Constrained | | 2040 Strategic | | Percent Change - | Percent Change - |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Geographic area | Measure | miles | % complete | miles | % complete | miles | % complete | miles | % complete | 2027 | 2040 |
| Regional | Roads | 1270 | 96% | 1286 | 97% | 1296 | 98% | 1300 | 98% | 1% | 2% |
| | Sidewalks | 566 | 55% | 645 | 63% | 703 | 69% | 737 | 72% | 8% | 13% |
| | On-street bikeways | 596 | 51% | 679 | 59% | 731 | 63% | 771 | 67% | 7% | 12% |
| | Off-street bikeways | 196 | 41% | 203 | 43% | 212 | 45% | 223 | 47% | 2% | 3% |
| | Trails | 185 | 36% | 204 | 40% | 262 | 51% | 296 | 58% | 4% | 15% |
| Equity Focus Areas | Roads | 504 | 99% | 507 | 99% | 510 | 100% | 510 | 100% | 1% | 1% |
| | Sidewalks | 355 | 69% | 397 | 77% | 418 | 81% | 422 | 82% | 8% | 12% |
| | On-street bikeways | 324 | 56% | 374 | 65% | 400 | 70% | 411 | 71% | 9% | 13% |
| | Off-street bikeways | 81 | 49% | 85 | 52% | 87 | 53% | 94 | 57% | 3% | 4% |
| | Trails | 68 | 39% | 75 | 43% | 90 | 51% | 109 | 62% | 4% | 12% |
| Non-Equity Focus Are | Roads | 766 | 95% | 779 | 96% | 786 | 97% | 790 | 98% | 2% | 3% |
| | Sidewalks | 211 | 42% | 248 | 49% | 285 | 56% | 315 | 62% | 7% | 15% |
| | On-street bikeways | 271 | 47% | 305 | 52% | 331 | 57% | 361 | 62% | 6% | 10% |
| | Off-street bikeways | 115 | 37% | 118 | 38% | 125 | 40% | 130 | 42% | 1% | 3% |
| | Trails | 117 | 35% | 129 | 39% | 172 | 52% | 187 | 56% | 4% | 17% |

| | | | 2015 Base Year (2015) | | 2027 Constrained | | 2040 Constrained | | 2040 Strategic | | Percent Change - | Percent Change - |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Facility Type | Geographic area | total buildout | miles | % complete | miles | % complete | miles | % complete | miles | % complete | 2027 | 2040 |
| Sidewalks | Regional | 171 | 566 | 55% | 645 | 63% | 703 | 69% | 737 | 72% | 8% | 13% |
| | Equity Focus Areas | 67 | 355 | 69% | 397 | 77% | 418 | 81% | 422 | 82% | 8% | 12% |
| | Non-Equity Focus Areas | 104 | 211 | 42% | 248 | 49% | 285 | 56% | 315 | 62% | 7% | 15% |
| On-street bike | Regional | 176 | 596 | 51% | 679 | 59% | 731 | 63% | 771 | 67% | 7% | 12% |
| | Equity Focus Areas | 87 | 324 | 56% | 374 | 65% | 400 | 70% | 411 | 71% | 9% | 13% |
| | Non-Equity Focus Areas | 89 | 271 | 47% | 305 | 52% | 331 | 57% | 361 | 62% | 6% | 10% |
| Off-street bike | Regional | 27 | 196 | 41% | 203 | 43% | 212 | 45% | 223 | 47% | 2% | 3% |
| | Equity Focus Areas | 13 | 81 | 49% | 85 | 52% | 87 | 53% | 94 | 57% | 3% | 4% |
| | Non-Equity Focus Areas | 15 | 115 | 37% | 118 | 38% | 125 | 40% | 130 | 42% | 1% | 3% |
| Trails | Regional | 111 | 185 | 36% | 204 | 40% | 262 | 51% | 296 | 58% | 4% | 15% |
| | Equity Focus Areas | 41 | 68 | 39% | 75 | 43% | 90 | 51% | 109 | 62% | 4% | 12% |
| | Non-Equity Focus Areas | 71 | 117 | 35% | 129 | 39% | 172 | 52% | 187 | 56% | 4% | 17% |

# Access to Travel Options - System Completeness

**Results Tables - Centers, Arterials, and Near Transit**

### Active Transportation System Completeness - In 2040 Growth Centers

| | | 2015 Base Year (2015) | | 2027 Constrained | | 2040 Constrained | | 2040 Strategic | | Percent Change - | Percent Change - |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Facility Type | Sub-Geography in Centers | miles | % complete | miles | % complete | miles | % complete | miles | % complete | 2027 | 2040 |
| Sidewalks | Centers | 773 | 47% | 806 | 49% | 830 | 51% | 840 | 52% | 2% | 3% |
| | Equity Focus Areas | 577 | 55% | 599 | 57% | 616 | 58% | 622 | 59% | 2% | 4% |
| | Non-Equity Focus Areas | 196 | 34% | 207 | 36% | 214 | 37% | 219 | 38% | 2% | 3% |
| On-street bike | Centers | 341 | 21% | 387 | 24% | 412 | 25% | 424 | 26% | 3% | 4% |
| | Equity Focus Areas | 234 | 22% | 272 | 26% | 288 | 27% | 294 | 28% | 4% | 5% |
| | Non-Equity Focus Areas | 107 | 19% | 114 | 20% | 125 | 22% | 130 | 23% | 1% | 3% |

### Active Transportation System Completeness - Arterial Facilities

| | | 2015 Base Year (2015) | | 2027 Constrained | | 2040 Constrained | | 2040 Strategic | | Percent Change - | Percent Change - |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Facility Type | Geographic Area & Arterials | miles | % complete | miles | % complete | miles | % complete | miles | % complete | 2027 | 2040 |
| Sidewalks | Arterials | 393 | 51% | 449 | 58% | 489 | 63% | 505 | 65% | 7% | 13% |
| | Equity Focus Areas | 249 | 66% | 282 | 75% | 299 | 80% | 301 | 80% | 9% | 13% |
| | Non-Equity Focus Areas | 238 | 63% | 265 | 71% | 277 | 74% | 281 | 75% | 7% | 10% |
| On-street bike | Arterials | 435 | 56% | 478 | 62% | 507 | 66% | 529 | 69% | 6% | 9% |
| | Equity Focus Areas | 144 | 36% | 167 | 42% | 191 | 48% | 204 | 51% | 6% | 12% |
| | Non-Equity Focus Areas | 197 | 49% | 213 | 54% | 229 | 58% | 248 | 62% | 4% | 8% |

### Active Transportation System Completeness - Near Transit Stops

| | | 2015 Base Year (2015) | | 2027 Constrained | | 2040 Constrained | | 2040 Strategic | | Percent Change - | Percent Change - |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Facility Type | Geographic Area & Transit | miles | % complete | miles | % complete | miles | % complete | miles | % complete | 2027 | 2040 |
| Sidewalks | Transit | 554 | 63% | 614 | 70% | 654 | 74% | 671 | 76% | 7% | 11% |
| | Equity Focus Areas | 353 | 73% | 390 | 80% | 407 | 83% | 409 | 84% | 8% | 11% |
| | Non-Equity Focus Areas | 201 | 51% | 224 | 57% | 247 | 63% | 261 | 66% | 6% | 12% |
| On-street bike | Transit | 539 | 57% | 611 | 65% | 646 | 69% | 668 | 71% | 8% | 11% |
| | Equity Focus Areas | 310 | 59% | 358 | 69% | 377 | 72% | 386 | 74% | 9% | 13% |
| | Non-Equity Focus Areas | 229 | 55% | 253 | 61% | 270 | 65% | 282 | 68% | 6% | 10% |
| Off-street bike | Transit | 152 | 55% | 156 | 56% | 159 | 57% | 166 | 60% | 2% | 2% |
| | Equity Focus Areas | 74 | 58% | 77 | 61% | 78 | 61% | 82 | 64% | 3% | 3% |
| | Non-Equity Focus Areas | 78 | 51% | 79 | 52% | 81 | 54% | 85 | 56% | 1% | 2% |
| Trails | Transit | 134 | 45% | 144 | 48% | 172 | 57% | 193 | 65% | 3% | 13% |
| | Equity Focus Areas | 58 | 44% | 64 | 49% | 74 | 56% | 87 | 66% | 5% | 12% |
| | Non-Equity Focus Areas | 75 | 45% | 80 | 48% | 97 | 58% | 106 | 64% | 3% | 13% |

Transit = within 1/2 mile of light rail stops, 1/3 mile of street car line, 1/4 mile of bus line

**Job Access -- All Jobs**

| | (2027 Constrained - 2027 No Build) | | | | | | (2040 Constrained - 2040 No Build) | | | | | | (2040 Strategic - 2040 No Build) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W |
| **MPA All** | 15,169 | 8,460 | 21,448 | 19,371 | 907 | 18 | 36,300 | 37,097 | 39,665 | 39,241 | -509 | 70 | 47,286 | 44,003 | 57,916 | 54,061 | -201 | 78 |
| **MPA Non-HMC (POC LEP LI)** | 16,694 | 9,087 | 17,157 | 15,797 | 1,467 | 25 | 37,027 | 34,746 | 31,726 | 30,697 | 350 | 72 | 49,133 | 42,386 | 48,450 | 46,280 | 891 | 83 |
| **MPA HMC (POC LEP LI)** | 13,210 | 7,534 | 24,155 | 21,549 | 365 | 11 | 34,139 | 37,472 | 44,659 | 44,791 | -1,242 | 65 | 43,650 | 43,502 | 63,336 | 58,184 | -1,158 | 70 |

**Job Access -- Low-Wage Jobs**

| | (2027 Constrained - 2027 No Build) | | | | | | (2040 Constrained - 2040 No Build) | | | | | | (2040 Strategic - 2040 No Build) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W |
| **MPA All** | 7,194 | 4,040 | 10,197 | 9,192 | 411 | 9 | 17,118 | 17,512 | 18,671 | 18,452 | -255 | 32 | 22,285 | 20,786 | 27,294 | 25,448 | -114 | 36 |
| **MPA Non-HMC (POC LEP LI)** | 7,906 | 4,343 | 8,138 | 7,486 | 667 | 13 | 17,508 | 16,480 | 14,897 | 14,415 | 130 | 35 | 23,178 | 20,097 | 22,811 | 21,784 | 386 | 40 |
| **MPA HMC (POC LEP LI)** | 6,277 | 3,595 | 11,502 | 10,235 | 162 | 5 | 16,063 | 17,631 | 21,055 | 21,079 | -583 | 28 | 20,558 | 20,492 | 29,869 | 27,389 | -550 | 31 |

**Job Access -- Medium-Wage Jobs**

| | (2027 Constrained - 2027 No Build) | | | | | | (2040 Constrained - 2040 No Build) | | | | | | (2040 Strategic - 2040 No Build) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W |
| **MPA All** | 4,168 | 2,318 | 5,883 | 5,322 | 258 | 5 | 10,017 | 10,223 | 10,929 | 10,829 | -131 | 20 | 13,052 | 12,118 | 15,953 | 14,905 | -46 | 22 |
| **MPA Non-HMC (POC LEP LI)** | 4,596 | 2,488 | 4,711 | 4,341 | 417 | 6 | 10,202 | 9,563 | 8,758 | 8,473 | 115 | 19 | 13,551 | 11,660 | 13,357 | 12,749 | 263 | 23 |
| **MPA HMC (POC LEP LI)** | 3,621 | 2,067 | 6,622 | 5,919 | 103 | 3 | 9,433 | 10,334 | 12,290 | 12,360 | -341 | 19 | 12,056 | 11,991 | 17,435 | 16,053 | -318 | 21 |

**Job Access -- High-Wage Jobs**

| | (2027 Constrained - 2027 No Build) | | | | | | (2040 Constrained - 2040 No Build) | | | | | | (2040 Strategic - 2040 No Build) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W |
| **MPA All** | 3,807 | 2,102 | 5,368 | 4,857 | 239 | 4 | 9,165 | 9,362 | 10,065 | 9,960 | -122 | 18 | 11,949 | 11,099 | 14,669 | 13,708 | -41 | 20 |
| **MPA Non-HMC (POC LEP LI)** | 4,191 | 2,256 | 4,308 | 3,970 | 382 | 6 | 9,317 | 8,703 | 8,071 | 7,810 | 105 | 18 | 12,404 | 10,630 | 12,282 | 11,748 | 242 | 21 |
| **MPA HMC (POC LEP LI)** | 3,312 | 1,873 | 6,032 | 5,395 | 99 | 3 | 8,643 | 9,507 | 11,314 | 11,353 | -318 | 17 | 11,036 | 11,019 | 16,032 | 14,743 | -290 | 19 |

**Access to Community Places -- All Community Places**

| | (2027 Constrained - 2027 No Build) | | | | | | (2040 Constrained - 2040 No Build) | | | | | | (2040 Strategic - 2040 No Build) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W |
| **MPA All** | 57 | 33 | 100 | 78 | 1 | 0 | 114 | 76 | 143 | 139 | 0 | 1 | 155 | 102 | 203 | 184 | 0 | 1 |
| **MPA Non-HMC (POC LEP LI)** | 59 | 35 | 72 | 60 | 1 | 1 | 123 | 79 | 109 | 105 | 1 | 1 | 167 | 109 | 159 | 151 | 1 | 1 |
| **MPA HMC (POC LEP LI)** | 52 | 31 | 120 | 90 | 1 | 0 | 101 | 69 | 165 | 161 | 0 | 0 | 137 | 90 | 231 | 204 | -1 | 0 |

**Access to Community Places -- Food**

| | (2027 Constrained - 2027 No Build) | | | | | | (2040 Constrained - 2040 No Build) | | | | | | (2040 Strategic - 2040 No Build) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W |
| **MPA All** | 2 | 1 | 3 | 3 | 0 | 0 | 4 | 2 | 5 | 5 | 0 | 0 | 5 | 3 | 7 | 6 | 0 | 0 |
| **MPA Non-HMC (POC LEP LI)** | 2 | 1 | 2 | 2 | 0 | 0 | 4 | 2 | 3 | 3 | 0 | 0 | 5 | 3 | 5 | 5 | 0 | 0 |
| **MPA HMC (POC LEP LI)** | 2 | 1 | 4 | 3 | 0 | 0 | 3 | 2 | 5 | 5 | 0 | 0 | 4 | 3 | 8 | 7 | 0 | 0 |

**Access to Community Places -- Medical**

| | (2027 Constrained - 2027 No Build) | | | | | | (2040 Constrained - 2040 No Build) | | | | | | (2040 Strategic - 2040 No Build) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W |
| **MPA All** | 21 | 12 | 36 | 27 | 0 | 0 | 42 | 28 | 52 | 50 | 0 | 0 | 57 | 37 | 73 | 65 | 0 | 0 |
| **MPA Non-HMC (POC LEP LI)** | 22 | 13 | 26 | 22 | 0 | 0 | 46 | 29 | 41 | 40 | 0 | 0 | 62 | 39 | 58 | 55 | 0 | 0 |
| **MPA HMC (POC LEP LI)** | 20 | 12 | 43 | 31 | 0 | 0 | 36 | 25 | 60 | 57 | 0 | 0 | 50 | 33 | 83 | 71 | -1 | 0 |

**Access to Community Places -- All Others**

| | (2027 Constrained - 2027 No Build) | | | | | | (2040 Constrained - 2040 No Build) | | | | | | (2040 Strategic - 2040 No Build) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W |
| **MPA All** | 34 | 20 | 61 | 48 | 1 | 0 | 69 | 46 | 86 | 84 | 0 | 0 | 93 | 61 | 123 | 113 | 0 | 1 |
| **MPA Non-HMC (POC LEP LI)** | 35 | 21 | 43 | 36 | 1 | 0 | 73 | 48 | 65 | 63 | 0 | 1 | 100 | 67 | 96 | 92 | 1 | 1 |
| **MPA HMC (POC LEP LI)** | 31 | 18 | 73 | 57 | 1 | 0 | 62 | 42 | 100 | 98 | 0 | 0 | 83 | 54 | 141 | 126 | -1 | 0 |

| | | | Mode | Comm Places | Job | | 2015 | 2027 | 2040 |
|---|---|---|---|---|---|---|---|---|---|
| **MPA** | Metropolitan Planning Area | | | | | | | | |
| **HMC** | Historically Marginalized Communities (restrictec | **A** | Auto | 20 min | 30 min | **Total MPA Jobs** | 895,093 | 1,071,016 | 1,240,653 |
| **POC** | People of Color | **T** | Transit | 30 min | 45 min | **Low-Wage Jobs** | 244,199 | 294,487 | 342,293 |
| **LEP** | Low English Proficiency | **B** | Bike | 15 min | 30 min | **Medium-Wage Jobs** | 222,094 | 271,238 | 316,849 |
| **LI** | Low Income | **W** | Walk | 20 min | 20 min | **High-Wage Jobs** | 428,801 | 505,291 | 581,510 |

**Job Access -- All Jobs**

| | 2015 Base | | | | | | 2027 No Build | | | | | | 2027 Constrained | | | | | | 2040 No Build | | | | | | 2040 Constrained | | | | | | 2040 Strategic | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W |
| **MPA All** | 388,377 | 456,578 | 65,887 | 51,905 | 90,778 | 3,742 | 415,438 | 518,229 | 86,042 | 72,541 | 110,714 | 4,587 | 430,607 | 526,689 | 107,490 | 91,912 | 111,621 | 4,605 | 421,064 | 553,337 | 96,485 | 83,732 | 128,795 | 5,325 | 457,363 | 590,434 | 136,151 | 122,973 | 128,286 | 5,395 | 468,349 | 597,340 | 154,401 | 137,792 | 128,594 | 5,403 |
| **MPA Non-HMC (POC LEP LI)** | 333,071 | 404,800 | 44,664 | 33,630 | 78,914 | 2,666 | 342,137 | 452,581 | 57,138 | 47,196 | 95,365 | 3,202 | 358,831 | 461,668 | 74,296 | 62,992 | 96,832 | 3,227 | 337,086 | 476,909 | 62,363 | 53,492 | 110,572 | 3,679 | 374,113 | 511,655 | 94,089 | 84,189 | 110,922 | 3,752 | 386,218 | 519,295 | 110,813 | 99,772 | 111,463 | 3,763 |
| **MPA HMC (POC LEP LI)** | 421,543 | 485,206 | 81,474 | 65,528 | 96,808 | 4,527 | 463,198 | 556,830 | 107,381 | 91,354 | 118,851 | 5,608 | 476,409 | 564,365 | 131,536 | 112,903 | 119,215 | 5,619 | 477,868 | 600,059 | 121,899 | 106,286 | 138,563 | 6,545 | 512,007 | 637,530 | 166,559 | 151,077 | 137,321 | 6,610 | 521,518 | 643,560 | 185,235 | 164,470 | 137,405 | 6,615 |

**Job Access -- Low-Wage Jobs**

| | 2015 Base | | | | | | 2027 No Build | | | | | | 2027 Constrained | | | | | | 2040 No Build | | | | | | 2040 Constrained | | | | | | 2040 Strategic | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W |
| **MPA All** | 187,220 | 220,262 | 31,814 | 25,096 | 43,890 | 1,836 | 197,070 | 245,980 | 40,887 | 34,492 | 52,646 | 2,211 | 204,264 | 250,020 | 51,084 | 43,684 | 53,057 | 2,220 | 198,339 | 260,705 | 45,495 | 39,511 | 60,773 | 2,545 | 215,457 | 278,218 | 64,166 | 57,963 | 60,517 | 2,578 | 220,624 | 281,491 | 72,789 | 64,959 | 60,659 | 2,581 |
| **MPA Non-HMC (POC LEP LI)** | 160,567 | 195,241 | 21,531 | 16,255 | 37,966 | 1,301 | 162,299 | 214,821 | 27,142 | 22,424 | 45,207 | 1,547 | 170,205 | 219,165 | 35,280 | 29,910 | 45,874 | 1,559 | 158,766 | 224,733 | 29,412 | 25,237 | 52,027 | 1,765 | 176,274 | 241,213 | 44,309 | 39,652 | 52,157 | 1,800 | 181,944 | 244,830 | 52,223 | 47,021 | 52,413 | 1,805 |
| **MPA HMC (POC LEP LI)** | 203,229 | 234,145 | 39,369 | 31,688 | 46,976 | 2,228 | 219,755 | 264,366 | 51,033 | 43,452 | 56,644 | 2,700 | 226,032 | 267,961 | 62,535 | 53,687 | 56,806 | 2,706 | 225,142 | 282,776 | 57,470 | 50,159 | 65,519 | 3,123 | 241,205 | 300,407 | 78,525 | 71,237 | 64,936 | 3,151 | 245,700 | 303,268 | 87,339 | 77,548 | 64,968 | 3,154 |

**Job Access -- Medium-Wage Jobs**

| | 2015 Base | | | | | | 2027 No Build | | | | | | 2027 Constrained | | | | | | 2040 No Build | | | | | | 2040 Constrained | | | | | | 2040 Strategic | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W |
| **MPA All** | 105,786 | 124,304 | 17,920 | 14,105 | 24,651 | 1,005 | 114,121 | 142,326 | 23,577 | 19,869 | 30,333 | 1,246 | 118,289 | 144,643 | 29,460 | 25,191 | 30,591 | 1,251 | 116,054 | 152,525 | 26,546 | 23,021 | 35,433 | 1,455 | 126,071 | 162,748 | 37,475 | 33,850 | 35,302 | 1,475 | 129,106 | 164,643 | 42,499 | 37,927 | 35,387 | 1,477 |
| **MPA Non-HMC (POC LEP LI)** | 90,749 | 110,245 | 12,169 | 9,144 | 21,522 | 717 | 94,010 | 124,327 | 15,674 | 12,952 | 26,189 | 864 | 98,606 | 126,814 | 20,385 | 17,293 | 26,606 | 870 | 92,927 | 131,462 | 17,174 | 14,737 | 30,484 | 997 | 103,129 | 141,025 | 25,932 | 23,209 | 30,599 | 1,016 | 106,478 | 143,121 | 30,531 | 27,485 | 30,748 | 1,020 |
| **MPA HMC (POC LEP LI)** | 114,794 | 132,061 | 22,141 | 17,802 | 26,206 | 1,216 | 127,217 | 152,882 | 29,410 | 24,999 | 32,506 | 1,529 | 130,837 | 154,949 | 36,032 | 30,918 | 32,610 | 1,532 | 131,687 | 165,371 | 33,525 | 29,195 | 38,062 | 1,795 | 141,120 | 175,705 | 45,815 | 41,555 | 37,720 | 1,815 | 143,744 | 177,362 | 50,960 | 45,248 | 37,744 | 1,816 |

**Job Access -- High-Wage Jobs**

| | 2015 Base | | | | | | 2027 No Build | | | | | | 2027 Constrained | | | | | | 2040 No Build | | | | | | 2040 Constrained | | | | | | 2040 Strategic | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W |
| **MPA All** | 95,370 | 112,012 | 16,154 | 12,704 | 22,237 | 900 | 104,247 | 129,924 | 21,578 | 18,180 | 27,735 | 1,130 | 108,054 | 132,025 | 26,945 | 23,037 | 27,974 | 1,134 | 106,670 | 140,107 | 24,444 | 21,199 | 32,589 | 1,325 | 115,835 | 149,469 | 34,509 | 31,159 | 32,466 | 1,343 | 118,619 | 151,206 | 39,113 | 34,907 | 32,547 | 1,345 |
| **MPA Non-HMC (POC LEP LI)** | 81,755 | 99,314 | 10,964 | 8,231 | 19,427 | 648 | 85,829 | 113,433 | 14,322 | 11,820 | 23,969 | 791 | 90,020 | 115,689 | 18,630 | 15,790 | 24,351 | 798 | 85,392 | 120,714 | 15,777 | 13,519 | 28,061 | 917 | 94,709 | 129,417 | 23,848 | 21,328 | 28,167 | 935 | 97,796 | 131,344 | 28,059 | 25,266 | 28,303 | 938 |
| **MPA HMC (POC LEP LI)** | 103,520 | 119,000 | 19,964 | 16,038 | 23,626 | 1,083 | 116,227 | 139,583 | 26,937 | 22,903 | 29,700 | 1,379 | 119,540 | 141,455 | 32,969 | 28,298 | 29,799 | 1,382 | 121,038 | 151,911 | 30,904 | 26,932 | 34,983 | 1,626 | 129,681 | 161,418 | 42,218 | 38,285 | 34,665 | 1,644 | 132,074 | 162,930 | 46,936 | 41,675 | 34,692 | 1,645 |

**Access to Community Places -- All Community Places**

| | 2015 Base (difference from MPA All) | | | | | | 2027 No Build (difference from MPA All) | | | | | | 2027 Constrained (difference from MPA All) | | | | | | 2040 No Build (difference from MPA All) | | | | | | 2040 Constrained (difference from MPA All) | | | | | | 2040 Strategic (difference from MPA All) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W |
| **MPA All** | 1,681 | 2,082 | 304 | 231 | 360 | 66 | 1,478 | 1,945 | 325 | 269 | 362 | 67 | 1,535 | 1,978 | 425 | 347 | 363 | 68 | 1,294 | 1,800 | 317 | 271 | 364 | 68 | 1,408 | 1,876 | 460 | 410 | 365 | 68 | 1,449 | 1,902 | 520 | 455 | 364 | 69 |
| **MPA Non-HMC (POC LEP LI)** | 1,553 | 1,955 | 206 | 148 | 298 | 48 | 1,318 | 1,796 | 214 | 174 | 290 | 47 | 1,377 | 1,830 | 286 | 234 | 291 | 47 | 1,117 | 1,639 | 199 | 170 | 285 | 46 | 1,240 | 1,718 | 308 | 275 | 286 | 47 | 1,284 | 1,749 | 358 | 322 | 287 | 47 |
| **MPA HMC (POC LEP LI)** | 1,719 | 2,103 | 376 | 293 | 398 | 81 | 1,554 | 1,991 | 407 | 339 | 409 | 83 | 1,606 | 2,022 | 527 | 429 | 410 | 83 | 1,393 | 1,864 | 406 | 346 | 416 | 85 | 1,494 | 1,933 | 571 | 507 | 417 | 85 | 1,530 | 1,954 | 637 | 550 | 415 | 85 |

**Access to Community Places -- Food**

| | 2015 Base (difference from MPA All) | | | | | | 2027 No Build (difference from MPA All) | | | | | | 2027 Constrained (difference from MPA All) | | | | | | 2040 No Build (difference from MPA All) | | | | | | 2040 Constrained (difference from MPA All) | | | | | | 2040 Strategic (difference from MPA All) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W |
| **MPA All** | 55 | 67 | 10 | 7 | 12 | 2 | 49 | 63 | 10 | 8 | 11 | 2 | 51 | 64 | 14 | 11 | 11 | 2 | 43 | 58 | 10 | 8 | 11 | 2 | 47 | 60 | 15 | 13 | 11 | 2 | 48 | 61 | 17 | 15 | 11 | 2 |
| **MPA Non-HMC (POC LEP LI)** | 50 | 62 | 6 | 4 | 9 | 1 | 43 | 57 | 7 | 5 | 9 | 1 | 44 | 58 | 9 | 7 | 9 | 1 | 36 | 52 | 6 | 5 | 9 | 1 | 40 | 54 | 9 | 8 | 9 | 1 | 41 | 55 | 11 | 10 | 9 | 1 |
| **MPA HMC (POC LEP LI)** | 58 | 69 | 12 | 9 | 13 | 2 | 53 | 66 | 13 | 11 | 13 | 2 | 54 | 66 | 17 | 14 | 13 | 2 | 47 | 61 | 13 | 11 | 13 | 2 | 50 | 63 | 18 | 16 | 13 | 2 | 52 | 64 | 21 | 18 | 13 | 2 |

**Access to Community Places -- Medical**

| | 2015 Base (difference from MPA All) | | | | | | 2027 No Build (difference from MPA All) | | | | | | 2027 Constrained (difference from MPA All) | | | | | | 2040 No Build (difference from MPA All) | | | | | | 2040 Constrained (difference from MPA All) | | | | | | 2040 Strategic (difference from MPA All) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W |
| **MPA All** | 585 | 738 | 111 | 84 | 129 | 25 | 513 | 690 | 118 | 99 | 130 | 26 | 535 | 702 | 154 | 127 | 130 | 26 | 447 | 638 | 115 | 100 | 131 | 26 | 489 | 665 | 168 | 150 | 131 | 26 | 504 | 675 | 188 | 165 | 131 | 26 |
| **MPA Non-HMC (POC LEP LI)** | 552 | 704 | 75 | 53 | 108 | 18 | 467 | 647 | 78 | 64 | 106 | 18 | 489 | 659 | 104 | 86 | 106 | 18 | 394 | 590 | 72 | 63 | 104 | 18 | 440 | 618 | 113 | 102 | 104 | 19 | 456 | 629 | 130 | 118 | 104 | 19 |
| **MPA HMC (POC LEP LI)** | 587 | 734 | 137 | 107 | 140 | 30 | 530 | 697 | 147 | 125 | 146 | 31 | 550 | 708 | 190 | 156 | 146 | 31 | 473 | 651 | 147 | 128 | 149 | 32 | 509 | 676 | 207 | 185 | 149 | 32 | 524 | 684 | 230 | 199 | 148 | 32 |

**Access to Community Places -- All Others**

| | 2015 Base (difference from MPA All) | | | | | | 2027 No Build (difference from MPA All) | | | | | | 2027 Constrained (difference from MPA All) | | | | | | 2040 No Build (difference from MPA All) | | | | | | 2040 Constrained (difference from MPA All) | | | | | | 2040 Strategic (difference from MPA All) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W | AP | AOP | TP | TOP | B | W |
| **MPA All** | 1,040 | 1,277 | 184 | 140 | 220 | 39 | 916 | 1,192 | 197 | 161 | 221 | 40 | 950 | 1,212 | 258 | 209 | 221 | 40 | 803 | 1,104 | 192 | 162 | 221 | 40 | 873 | 1,150 | 278 | 246 | 222 | 40 | 897 | 1,166 | 315 | 275 | 222 | 40 |
| **MPA Non-HMC (POC LEP LI)** | 951 | 1,189 | 124 | 91 | 181 | 28 | 809 | 1,092 | 129 | 104 | 175 | 27 | 844 | 1,113 | 173 | 140 | 176 | 27 | 687 | 998 | 121 | 102 | 173 | 26 | 760 | 1,046 | 186 | 165 | 173 | 27 | 787 | 1,064 | 217 | 194 | 173 | 27 |
| **MPA HMC (POC LEP LI)** | 1,073 | 1,299 | 227 | 177 | 244 | 48 | 972 | 1,229 | 247 | 203 | 250 | 49 | 1,002 | 1,247 | 320 | 260 | 251 | 49 | 872 | 1,152 | 246 | 207 | 254 | 50 | 935 | 1,193 | 345 | 306 | 254 | 50 | 955 | 1,206 | 386 | 334 | 254 | 50 |

| | |
|---|---|
| **MPA** | Metropolitan Planning Area |
| **HMC** | Historically Marginalized Comm |
| **POC** | People of Color |
| **LEP** | Low English Proficiency |
| **LI** | Low Income |

| **Mode** | **Comm Places** | **Jobs** |
|---|---|---|
| **A** Auto | 20 min | 30 min |
| **T** Transit | 30 min | 45 min |
| **B** Bike | 15 min | 30 min |
| **W** Walk | 20 min | 20 min |

| | 2015 | 2027 | 2040 |
|---|---|---|---|
| **Total MPA Jobs** | 895,093 | 1,071,016 | 1,240,653 |
| **Low-Wage Jobs** | 244,199 | 294,487 | 342,293 |
| **Medium-Wage** | 222,094 | 271,238 | 316,849 |
| **High-Wage** | 428,801 | 505,291 | 581,510 |

Attachment 9.

# Looking Back In Order to Move Forward

*An Often Untold History Affecting Oregon's Past, Present and Future*

## Timeline of Oregon and U.S. Racial, Immigration and Education History

8,000 BCE *(Before the Common Era)* The first record of ancient human activity in Oregon came from archaeologist Luther Cressman's 1938 excavations at Fort Rock Cave in Central Oregon. He used radiocarbon dating to determine the age of 10,000 year old sandals now on display at the University of Oregon Museum of Natural and Cultural History in Eugene.

7,300 BCE A 9,300 year old nearly complete skeleton found on the banks of the Columbia River on the Washington-Oregon border in 1996 was dubbed the Kennewick Man. Battles between Indian tribes and scientists for jurisdiction over the skeleton spawned lengthy court battles between dominant culture scientists & Indian tribes' beliefs/religion.

1492 – 1700 CE (*In the Common Era)* The Smithsonian Institute at the National Museum of the American Indian in Washington D.C. estimates that 9 out of 10 indigenous people perished during the first two centuries after first contact between Europeans and the inhabitants of the Western Hemisphere due to disease and violence.

1543 Spanish explorers sight the Oregon Coast north of the forty-second parallel near the Rogue River.

1619 A Dutch ship brought 20 black Africans as indentured servants to the English Colony of Jamestown, Virginia. They and their descendants became enslaved not merely indentured.

1647 The General Court of the Massachusetts Bay Colony decreed that every town of fifty families should have an elementary school and that every town of 100 families should have a Latin school. The goal was to ensure that Puritan children learn to read the Bible and receive basic information about their Calvinist religion.

1680 – 1705 Colonial land-owners passed "Slave Codes" legalizing *chattel slavery (children of enslaved women would be themselves enslaved for life aka outright ownership of a slave)*. "Slave Codes" severely restricted the rights of "Free Africans". They equated the term "slave" with "Negro" thus institutionalizing the world's first system of racialized slavery.

1776 A passage condemning the slave trade was removed from a rough draft of the Declaration of Independence due to pressure from both northern and southern slave holding delegates.

1779 Thomas Jefferson proposed a three level system of education: three years of primary education for all girls and boys; advanced studies for a select number of boys; a state scholarship to the College of William and Mary for one boy from each district every two years. (proposal never adopted).

1785 The Land Ordinance of 1785 created rules for the survey, sale, and settlement of public domain. This law created "townships"; reserving a portion of each township for a local school. From these "land grants" eventually came the U.S. system of "land grant colleges," the precursor to the state public universities that exist today.

1786 The U.S. established first Native American reservation. The policy dealt with each tribe as an independent nation. If tribes did not voluntarily move to reservations the government began forcefully removing people from their tribal land.

*Boxes contain national events.*



*Compiled by Elaine Rector as part of CFEE (Coaching for Educational Equity)*
*contact elrector@comcast.net (Revised May 16, 2010)*

1787 The U.S. Constitution was ratified with the provision that the slave trade continue for another 20 years. It required states to aid slaveholders in the recovery of fugitive slaves. It also stipulated that an enslaved person counted as only three-fifths of a man for purposes of determining representation for each state in the House of Representatives.

1787 The Northwest Ordinance was passed. It created a system of government and specified how this territory would become states. It assumed that the United States had the right to occupy, give away or sell land that was already occupied by Native peoples.

1787 The New York African Free School was created by a group of wealthy white men dedicated to advocating for African Americans. The school was to educate black children to take their place as equals to white U.S. citizens.

1790 Pennsylvania's state constitution called for free public education but only for poor children (white only). It was expected that rich people would pay for their children's schooling, but educating the poor (whites) would help society.

1790 The Naturalization Act, the first act of the newly established U.S. Congress, guaranteed that white immigrants could become citizens. It established a uniform rule of naturalization and a two-year residency requirement for aliens who were "free white persons" of "good moral character".

1792 Captain Gray and crew entered the Columbia River and named it. This expedition gave the U.S, claim to the Oregon Territory. Marcus Lopez, cabin boy of Captain Robert Gray, became the first person of African descent known to have set foot on Oregon soil. He was killed by Indians near Tillamook.

1805 York (William Clark's body servant—slavery's version of a valet) came west with Lewis and Clark's Corps of Discovery. The group was aided by a Shoshone woman, Sacajawea, in their travel to explore and document the Pacific Northwest. Their mission was part of U.S. expansion plans for the Louisiana Purchase and beyond. The southern and western boundaries of this land deal were undefined at the time. The journey supported the country's sense of "manifest destiny": the belief that the U.S. was justified and in fact ought to occupy and ruleland from the Atlantic to the Pacific.

1811 Fur traders employed by New York merchant, John Jacob Astor, built a trading post named Astoria. They traded mostly for beaver pelts and became the first permanent white residents of Oregon.

1808 U.S. Congress banned the importation of additional enslaved Africans but did not change other laws related to slavery currently in practice.

1814 Thomas Jefferson proposed a two-track educational system. "The mass of our citizens may be divided into two classes—the laboring and the learned. The laboring will need the first grade of education to quality them for their pursuits and duties; the learned will need it as a foundation for further acquirements."

1817 American Colonization Society (ACS) was formed to send free African-Americans to Africa as an alternative to emancipation in the United States. In 1822, the society was established on the west coast of Africa as a colony that in 1847 became the independent nation of Liberia. By 1867, the society had sent more than 13,000 emigrants.

1817 A petition presented in the Boston Town Meeting called for establishing of a system of free public primary schools for white students. Main support came from local merchants, businessmen and wealthier artisans. Many wage earners opposed it, because they didn't want to pay the taxes.

1821 First public high school in the U.S., Boston English, opened for white students.

1823 Supreme Court ruled in Johnson v. McIntosh that because natives were wanderers, their rights were impaired and subordinate to the "discovery rights" of Europeans. While Indian tribes retained an occupancy right, they did not have title to the land. This ruling became a convenient justification for moving tribes from their ancestral homelands.

1827 Massachusetts passed the first state law for public high schools making all grades of public school open to all pupils (which meant "all white pupils") free of charge.

1828 Congress designated the land that would become Oklahoma as Indian Territory. White settlers were required to leave so that this territory would always remain the designated area for various Indian tribes.

1830 Congress passed the Indian Removal Act, compelling Native Americans to settle in Indian Territory west of the Mississippi River. They were forced off their land to make way for expanding railroads, commercial farming in the Midwest and the cotton plantation industry in the South. Among those forced out were the "Five Civilized Tribes"- the Cherokee, Choctaw, Chickasaw, Creek and Seminole. The removal was hoped to be voluntary and peaceful but when tribes did not voluntarily leave their lands, President Jackson ordered the military to drive them out.

.1830s By this time, most southern states had laws forbidding the teaching of enslaved people to read. Even so, around 5 percent of enslaved African Americans became literate at great personal risk.

1830's Methodist missionaries came to Oregon led by Jason Lee. Unfortunately they and the natives suffered from a horrendous epidemic which killed 70% of the Kalapuyans the missionaries had come to "save".

1832 At Fort Vancouver, the first school in the Oregon Territory was established to teach the métis (children of white fathers and Indian mothers) boys at the fort.

1833 First school opened in what was to become the state of Oregon in Marion County for white students.

1836 The Whitmans and Spaldings travelled to Oregon to open a mission. A measles outbreak in 1847 killed many Indians because they lacked immunity, while most Whites survived. A group of Cayuse Indians attacked the mission, killing 14 Whites and taking hostage 47 women and children. Five Cayuse men were convicted and hanged in Oregon City. The "massacre" drew national attention and directly led to the Cayuse War that lasted until 1850.

1820-1860 The percentage of people working in agriculture plummeted as family farms were gobbled up by larger agricultural businesses. Many people were forced to look for work in towns and cities. Cities grew tremendously, fueled by new manufacturing industries, the influx of people from rural areas and many immigrants from Europe. From 1846 to 1856, 3.1 million immigrants arrived: a number equal to 1/8$^{th}$ of the entire U.S. population. Owners of industry needed a docile, obedient workforce & looked to public schools to provide it.

1836 Slave trader James "Jim" Bowie and Indian-killer Davy Crockett became national heroes when they were among those killed in the Battle of the Alamo in Texas, in their attempt to take Texas by force from Mexico. "Remember the Alamo" became a national justification for violent U.S. expansion into Mexican and Indian lands.

1838 Cherokee Indians were forced on a thousand-mile march out of their ancestral homeland to the established Indian Territory. It is estimated that at least 4,000 Cherokees died on this "Trail of Tears."

1840s Irish immigration increased due in part to the Irish potato famine. Called the "2nd Wave of Immigration" this time period saw entire families, not just Irish men coming to the U.S. In the 1840's over a million Irish came to the U.S. comprising nearly half of all immigrants at that time. Irish Catholics in New York City struggled for local neighborhood control of schools as a way of preventing their children from being force-fed a Protestant curriculum.

1842 First Oregon university opened. Wealthy Oregonians attended Willamette University after a private grammar school education.

1843 Champoeg territorial government adopted a measure "prohibiting slavery" that required slave holders to free their slaves with the added requirement that all Blacks must leave the territory within three years.

1843 First public school opens in Oregon City. White students from the surrounding area attended.

1844 Acts to prohibit slavery and to exclude Blacks and Mulattoes from Oregon were passed. The infamous "Lash Law," required that Blacks in Oregon – "be they free or slave – be whipped twice a year until he or she shall quit the territory." It was soon deemed too harsh and its provisions for punishment were reduced to forced labor.

1845 U.S. annexed Texas with full citizenship rights for Free Whites and "White Mexicans" residing prior to 1845. The term "White Mexicans" referred to fair skinned descendents of the Spanish without Indian heritage or appearance.

1846 President James Polk ordered the invasion of Mexico starting the Mexican-American War.

1848 Massachusetts Reform School at Westboro opened. Children who had refused to attend public schools were sent there. This began the long tradition of "reform schools," combining education with the juvenile justice system.

1848 The war against Mexico ended with the signing of the Treaty of Guadalupe-Hidalgo. It gave the U.S. almost half of what was then Mexico (all of what is now the U.S. Southwest, plus parts of Utah, Nevada and Wyoming and most of California). The treaty guaranteed citizenship rights to everyone living in these areas mostly Mexicans and Native people and the continued right to use the Spanish language, including in education. *In 1998, California broke that treaty, by passing Proposition 227, which made it illegal for teachers to speak Spanish in public schools.*

1848-1879 Three decades of continuous conflict between Whites and Indian tribes started with the Cayuse War continuing until the region's Indian tribes were forced onto and confined to reservations. Anson Dart, Oregon Territory's first Superintendent of Indian Affairs organized reservations on remote, semiarid land east of the Cascades. Tribes of the coast and Willamette Valley balked at the move. Efforts to obtain reservation land west of the Cascades ran afoul of the Oregon Donation Land Claim Act. It sanctioned homesteading without regard for the legal obligations to Indian titles to the land. Only a few remote parcels of land not yet encumbered by white claims were procured as reservation land.

1848 President Polk appointed Joseph Lane as Governor of the new Oregon Territory. Lane was raised in North Carolina and held traditionally southern pro-slavery beliefs. He had fought and supported the Mexican American War to expand U.S. control of the North American continent. He arrived at Oregon City in 1849 to being his duties with included traveling to Walla Walla to secure the surrender of five Cayuse Indians accused in relation to the "Whitman Massacre."

1849 The California Gold Rush sparked first mass emigration from China.

1850 The California Legislature passed the Foreign Miners Tax that required non-U.S. born miners to pay a monthly $20 tax. This was the first anti-Chinese legislation in California.

1850-51 California statue defined an Indian as having one-half "Indian blood" and allowed white men to force Indians into unpaid labor for vagrancy. In 1851 the definition was changed to an Indian as someone having one fourth or more "Indian blood". Many local laws were passed to restrict what Indians and "Half-Breeds" could do.

1850 Organic Act of New Mexico Territory granted full citizenship to "Free Whites" and Mexican citizens as covered by the 1848 Treaty of Guadalupe Hidalgo. It also asserted that no Indian may be a citizen. This act also set aside sections of land in every township to create and finance a public school system throughout the territory.

1851 An extensive body of discriminatory legislation was enacted in California including testimony restrictions which outlawed testimony by African Americans, Chinese and Native Americans against Whites in any court of law.

1850 The Oregon Donation Land Act was enacted by the U.S. Congress to promote homestead settlement in the Oregon Territory; swelling the ranks of emigrants on the Oregon Trail. It granted free land to "Whites and half-breed Indians" in the Oregon Territory. (The language of the act prevented non-Whites from claiming land in Oregon even if they had already settled here whether they had previous deeds to the land or not.)

Mid 1850's Mexican mule packers dominated the overland trade routes between northern California and Southern Oregon. They supplied the Second Regiment Oregon Mounted Volunteers during the Rogue River Indian Wars. They played a very valuable role in communication and transportation of supplies.

1851 Jacob Vanderpool, an owner of a saloon, restaurant and boarding house in Salem, was the only person known to have been kicked out of the Oregon Territory because of his skin color based on the Exclusion Laws. Other incidents may not have been officially recorded.

1851 Josefa Segovia was lynched in Downieville, CA. Josefa was accused of murdering an anglo miner who attempted to assault her after breaking into her home. She pleaded self-defense but she was charged with murder. Her jury was made up of the miner's friends. Her racial status most assuredly contributed to her death by hanging at the hands of a white mob.

1852 Massachusetts passed the first compulsory education law to make sure that the children of poor white immigrants got "civilized" by learning obedience and restraint. Education would help them became good workers who did not contribute to social upheaval.

1854 Oregon's Exclusion Law was repealed, to be replaced three years later by amending the Oregon Constitution with similar exclusionary language to keep Blacks out of Oregon. *(Much of this racist language was not removed from the official Constitution until 2000.)*

1855 After the gold strikes in southern Oregon, pro-slavery forces advocated forming a new state in southern Oregon and northern California. It failed when Californians rejected the idea of reducing the size of their state.

1856 Rogue River Indian Wars ended with the surviving Native Americans sent to two newly created reservations: the Siletz and the Grand Ronde.

1857 U.S. Supreme Court's Dred Scott Decision declared Blacks are African not U.S. Citizens. It ruled 1820 Missouri Compromise's ban on slavery in certain territories unconstitutional and reaffirmed fugitive slave laws.

1857 Oregon residents voted against slavery but in favor of excluding "free Negroes" from the state. The state's African American population faced either leaving the state or suffering southern-style segregation well into the 20th century. Meanwhile, a new exclusion law was added by popular vote to Oregon Constitution's Bill of Rights.

1858 Just prior to statehood, Oregon elected its first state officials. Governor "Honest John" Whiteaker, as well as many lesser officials, were well known for their pro-slavery views.

1859 On February 14, 1859, Oregon became the only state admitted to the Union with an exclusion law written into a state's constitution.

1860's: Large numbers of Asians, primarily Chinese, began to arrive mostly to mine and construct railroads.

1860's Mexican miners joined the Oregon Gold Rush. One of the important technologies they brought with them was the arrastre, a large but inexpensive, stone device for crushing quartz to remove the gold.

By the 1860's In his book, *How the Irish Became White*, Noel Ignatiev described how an oppressed class of immigrants, Irish Catholics, changed. They previously had lived and worked with "Free Blacks". However, by this time they started to collaborate in the oppression and discrimination against of another "race," Africans in America. From being oppressed themselves they started to secure their place in the white protestant dominant culture.

1861 Abraham Lincoln took the Presidential Oath of Office. The southern Confederacy ratified a new constitution and elected Jefferson Davis as the first Confederate president. The Civil War began with Confederate soldiers firing upon Fort Sumter.

1861 The Knights of the Golden Circle, an anti-Union and pro-slavery group, opened chapters in many Oregon communities. Their ultimate goal in the Northwest was to secede from the U.S. and create a Pacific Coast Republic.

1862 Oregon adopted a law requiring all Blacks, Chinese, Hawaiians (Kanakas), and Mulattos (an archaic term referring to people of mixed ethnic heritage) residing in Oregon to pay an annual tax of $5. If they could not pay this tax, the law empowered the state to press them into service maintaining state roads for 50 cents a day. Also, interracial marriages were banned in Oregon. It was against the law for whites to marry anyone ¼ or more Black.

1862 The American Homestead Act allowed any white male over the age of 21 and a head of a family to claim up to 160 acres of land. He would improve it within five years or purchase the land at a small fee. The Homestead Act made 50 million acres of Indian land available to white homesteaders. It created the official policy for U.S. soldiers to wage war on the indigenous nations of the west to protect the white settlers encouraged to take their land.

1862 The Union Army permitted black men to enlist as laborers, cooks, teamsters, and servants.
1863 The Emancipation Proclamation abolished slavery in territories occupied by the Union Army & permitted African American men to join the Union Army.

1864 Congress legalized the importation of contract laborers through the Contract Labor Law.

1864 Thousands of Navajo Indians endured the "Long Walk," a three-hundred mile forced march from a southwest Indian Territory to Fort Sumner, New Mexico.

1864 Congress made it illegal for Native Americans to be taught in their native languages. Native children, as young as four years old, were taken from their parents and sent to Bureau of Indian Affairs off-reservation boarding schools. Richard Henry Pratt, U.S. Army officer and educator, summed up the schools' mission: "Kill the Indian in him, and save the man."

1865-1877 African Americans mobilized to bring public education to the South for the first time. After the Civil War, and with the legal end of slavery, African Americans in the South made alliances with white Republicans to push for many political changes. A major goal was to, for the first time, rewrite state constitutions to guarantee free public education to ALL children. However in practice, white children continued to benefit more than black children.

1865 The Civil War ended and the Thirteenth Amendment, banning slavery in the United States, passed by referendum in Oregon and throughout the Union states.

1865 The Cherokee, Choctaw, Chickasaw, Creek and Seminole tribes, who had been forced to relocated to the Oklahoma Indian Territory, allied themselves with the South during the Civil War. Following the war, the U.S. government looked upon these tribes as defeated enemies. This animosity combined with increasing pressure to open up more Indian land led to reoccurring conflict.

1866 Ex-Confederates, to regain some sort of control during Reconstruction, formed secret organizations that used intimidation and terrorism against Blacks and unionists. Names like Pale Faces, Sons of Midnight and Knights of the White Camellia were used. A group formed in Pulaski, Tennessee named the Ku Klux Klan grew to be the largest and best known of the groups opposed to Reconstruction governments and attempts by freed Blacks to receive their rights.

1866 California enacted the Common School Act excluding Indians, Blacks & "Mongolians" from public school, but did allow local school boards to establish separate schools for such children. Although persons of Mexican descent were considered "white" under state laws, de facto segregation was prevalent due to local practices of drawing school attendance lines to correspond with residential segregation.

1866 Oregon's citizens did not pass the Fourteenth Amendment, granting citizenship to Blacks. Exclusion Laws were still in effect making it illegal for Blacks to live in Oregon.

1866 Oregon banned all interracial marriages The state's ban on interracial marriages was extended to prevent Whites from marrying anyone who was ¼ or more Chinese, or Hawaiian, and ½ or more Native American. It was previously illegal for Whites and Blacks to marry.

1867 Even though the total black population in Oregon in the 1860's number 128, Portland assigned black and mulatto children to a segregated school.

1868 The Fourteenth Amendment, endowing African Americans with citizenship, passed in Oregon and throughout the country. A clause in the 14th Amendment, "excluding Indians not taxed", prevented Native American men from receiving the right to vote. Though this amendment established full citizenship rights for people of Mexican heritage born in the U.S., often the Indian heritage of Mexicans was used to exclude and deny them rights.

1868 Large numbers of Japanese laborers arrived in Hawaii to work in sugar cane fields.

1868 A ban on interracial marriages in the Washington Territory was lifted.

1868 Corvallis College was designated as the Agricultural College of Oregon as part of the Morrill Land-Grant Act of 1862. It became the first state-supported institution of higher education and was charged with training teachers.

1869 Mexican vaqueros drove large herds of cattle from California to eastern Oregon helping to develop the ranching business in that part of the state and therefore settlement.

1869 Oregon's first public high school opened in Portland.

1870 The Fifteenth Amendment, granting black men the right to vote, was added to the U.S. Constitution despite failing to pass in both Oregon and California. This federal law banning voting qualifications based on "race, color or previous condition of servitude" superseded a clause in the Oregon State Constitution banning black suffrage.

1870 There were only 500 public high schools in the United States with approximately 50,000 students, almost exclusively white boys. Education for women and most men was deemed only appropriate through the early grades.

1872 First tax supported public elementary school program was put in place throughout Oregon. While most Oregonians eventually accepted the idea of tax supported elementary schools, the concept of public high schools was slow to win popular support. Influential people like Harvey Scott, editor of the Portland Oregonian from 1865 – 1910, were firm believers that high schools would serve only as "havens for drones, a luxury certain to undermine self-reliance and individualism." Many influential people believed that higher education in Oregon was needed by the elites only.

1874 With a court ruling in Michigan that taxes could be levied for high schools as well as elementary schools, the modern public high school movement began. Schools started to be built designed to support a wider array of both men and women so that they could learn more than the basics. Still public education was not seen as necessary for all children, especially children of color.

1876 A California Senate committee investigated the "social, moral, and political effect of Chinese immigration." Asian immigrants were blamed for crime and drug use and therefore they were considered "undesirables."

1877-1900 Reconstruction ended in 1877 when federal troops, which had occupied the South since the end of the Civil War, were withdrawn. Southern Whites regained political control of the South and laid the foundations of legal segregation and white supremacy.

1877 The Nez Perce Tribe clashed with the U.S. Army in their Wallowa homeland in northeast Oregon. Chief Joseph and his people refused to go to a reservation. Instead, Chief Joseph tried to lead 800 of his people to Canada and freedom. Fighting the U.S. Army all along their 1100 mile journey, they were trapped just 40 miles from Canada. After a five-day fight, with only 431 remaining Nez Perce, Chief Joseph made his speech of surrender stating: "From here to where the sun sets, I will fight no more forever."

1879 Chemawa Indian Boarding School opened in Salem, Oregon as the third such boarding school in the nation. These schools were designed to assimilate Indian children into white culture and teach them vocational skills. Students were prohibited from speaking their tribal languages or practicing any of their traditional customs or culture. (This Indian School still operates in Salem, but without the extreme notions of assimilation of its original intent.)

1880 By this date, the U.S. government had forced most Indians of the Northwest onto reservations.

1880's Chinese immigrants were driven by mobs out of Oregon City, Mount Tabor and Albina.

1881 Attempts to establish public funded colleges met with opposition from those who felt that the Willamette Valley's several denominational academies and colleges provided adequate facilities for higher education. The critics seemed justified. Only seven students graduated from the University of Oregon in 1881 and only four in 1885.

1882 Ignoring the crucial role Chinese immigrants played in constructing the infrastructure of the West, Congress passed the Chinese Exclusion Act. It suspended further Chinese immigration until 1892. It also made all Chinese immigrants ineligible for citizenship and barred them from several professions including mining.

1883 An attempt to amend the Oregon Constitution to remove its ban on black suffrage did not pass. The effort failed despite the fact that the clause in question was rendered moot following the passage of the Fifteenth Amendment to the U.S. Constitution in 1870. *(Further attempts to remove this language prohibiting Blacks from voting were unsuccessful in 1895, 1916 and 1927. Many racist and discriminatory sections in the Oregon Constitution were not changed until 2000)*

1884 The Oregon statewide railroad system was completed connecting all regions of the state. Oregon remained relatively isolated until this completion of the railroad network. The Central Pacific's Chinese immigrant workers received $26-$35 a month for a 12-hour day, 6-day work week and had to provide their own food and tents. White workers received about $35 a month and were furnished with food and shelter. Chinese immigrant workers saved as much as $20 a month which many eventually used to buy land. They earned a reputation as tireless and extraordinarily reliable workers. 12,000 of the Central Pacific railroad's 13,500 employees were Chinese immigrants.

1885 Congress banned the admission of contract laborers. The Contract Labor Law was largely a response to Chinese "coolie" labor but it explicitly had exemptions written into the law that demonstrated occupational preference.

1887 Congress altered its focus and passed the General Allotment Act, the Dawes Severity Act, which attacked traditional tribal cultures. It encouraged Indians to become farmers and to fully assimilate into white society. Indians, of course, were not consulted on how their lives on the reservations were going to change.

1888 In a trial in Enterprise, Oregon, three men were acquitted of murder for the massacre of at least 34 Chinese gold miners. The ring-leaders fled the area and were never tried. Unknown is how much gold the gang might have plundered. Rumors put the figure from $3,000 to more than $50,000. The trial attracted little attention from the press, and Wallowa County folks swept the sordid saga under the carpet for more than a century. In 1995, a county clerk opened an old safe in the Wallowa County Courthouse and found a long-secreted cache of documents relating to the massacre.

1889 Washington gained statehood. The state constitution included a ban on racial discrimination in schools.

1890 When gold was discovered in the Black Hills of the Dakotas, many miners and settlers came to the lands that had been granted by treaty to the Lakota Sioux tribes. Tensions increased as the Indians lost more and more of their land. They suffered violent assaults from the U.S. cavalry. The massacre at Wounded Knee is considered by historians as the last major attack of U.S. forces on Indians. Some call it the last event of the "Indian Wars" while others see it as the last major event in the U.S. policy of genocide toward the original inhabitants of North America.

1890's Widespread introduction of grade levels into elementary and secondary education was based on the notion that all students need to be taught the same basic knowledge and skills in a specific, pre-determined order. Grade level organization of schools also led to the development of the report card to document formal achievement scores and matriculation to the next grade level.

1890's Reduction in Chinese immigration contributed to a dramatic increase in Japanese immigrants to Oregon: typically young males arriving without families. They came to work on railroads, in lumber and canning industries and as farm workers. Many restaurants and businesses posted signs reassuring customers that they employed no Asian help.

1892 First federal immigration station opened by order of President Benjamin Harrison on Ellis Island in New York harbor. Prior to 1890, individual states regulated immigration. Not all immigrants had to go through the rigorous screening. First and second class passengers were quickly processed with only a cursory inspection aboard ship, but passengers who arrived in steerage were scrutinized closely and often rejected for admission to the U.S.

1893 A cannon's boom unleashed the largest land rush the U.S. has ever seen. An estimated 100,000 settlers raced to claim plots of land in the northern Oklahoma Territory known as the Cherokee Strip. These "unoccupied lands" were made available to white settlers against the existing provisions of treaties with tribes who had been forced to relocate there. The "Boomers" waited for the signal, while the "Sooners" snatched Indian land before the official start of the race.

1896 In the Plessy v. Ferguson decision, the U.S. Supreme Court ruled that Louisiana had the right to require "separate but equal" railroad cars for Blacks and Whites. This decision meant that the federal government officially recognized racial segregation as legal. One result was that southern states passed laws requiring racial segregation in many different areas of life including for public schools.

1897 California passed its first civil rights legislation.

1898 The Spanish-American War began with a naval blockade of Cuba and attacks on the island. The four-month conflict ended with Cuba's independence and the U.S. acquisition of Puerto Rico and Guam. Though it was assumed that these new territories would become states, their language and racial composition made them unacceptable to some people as full members of the country. Instead they were seen as and remain territories of the U.S. empire.

1898 United States annexed Hawaii at the urging of American plantation owners who exerted tremendous power over the indigenous people. Queen Liliuokalani was overthrown with U.S. support. Hawaii was made a territory in 1900, and Sanford Dole became its first governor. Racial attitudes and party politics in the United States deferred statehood until a bipartisan compromise linked Hawaii's status to Alaska, and both became states in 1959.

1898 The U.S. Supreme Court recognized children born in U.S. of Chinese parents as citizens.

1898 Oregon Historical Society formed from an association of early settlers. It was a "cult" of pioneer ancestors. This organization became no less elitist and biased than the Daughters of the American Revolution with an emphasis on proving & preserving pioneer genealogy rather than focusing on research/documentation of a diverse history of Oregon.

1901 Oregon Legislature created the initial statewide system of high school education.

1903 *The Advocate* started as a weekly newspaper for the "intelligent discussion and authentic diffusion of matters appertaining to the colored people, especially of Portland and the State of Oregon." It featured birth and death announcements, society news, and general good news about African Americans. Articles and editorials about segregation, lynching, employment opportunities and other issues helped keep the realities of "Jim Crow" laws and the pressing need for civil rights on the local, state, and national agenda. The newspaper challenged attempts to deprive black people of their rights, to deny Blacks their humanness, and to degrade their African cultural heritage.

1904 Oregon law established a minimum school term at 4 months.

1905 The first intelligence test was developed by Alfred Binet. He wanted to find a way of identifying children who were behind in their academic performance so that they could receive remedial education. Intelligence testing became a part of the tools used by the Eugenics movement (the study and practice of selective breeding applied to humans) with the aim of improving the species. Race and ethnicity were often used to classify students who scored poorly on the tests.

1906 Carnegie Foundation for the Advancement of Teaching created a definition of college preparation for high schools. They defined a unit of instruction as a "Carnegie Unit" which reflected 5 periods of instruction per week for an entire year; each period to be between 50 and 60 minutes in length. Colleges began to require 4 units of English, 4 for math, 3 for science, 2 in history and 2 in a foreign language (preferably Latin or Greek). The elite students striving to go on to college were provided "college prep" classes which created a "tracking" system in high schools. Tracking and "Carnegie Units" are still in place in high school education of the 21st century.

1907 The United States and Japan formed a "Gentleman's Agreement" in which Japan ended issuance of passports to laborers and the U.S. agreed not to prohibit all Japanese Immigration. Therefore only certain "types" of Japanese could come to the United States; only if they were educated or of a higher socio-economic status than a poor laborer.

1908 The Binet-Simon test was revised and was renamed the Stanford-Binet Intelligence Test. Part of the change was the invention of the "Intelligence Quotient", better well-known as IQ. It was designed as a way to sort people by their level of intellect, meaning their ability to think, reason and understand.

1909 First Junior High School started in Columbus, Ohio. By 1920 there were over 800 Junior Highs. The system of elementary, junior and senior high schools was modeled after the factory system to be efficient on a large scale.

By 1910 there were 10,000 high schools in the U.S.; a dramatic increase from less than 500 in 1870. Subject area instruction in high schools became increasingly specific. Elementary teachers continued to use written descriptions and narrative reports to document student learning. High school teachers started using per cent grading systems in discrete subject area classes. This was the beginning of the traditional 100 point grading and reporting system that still exists.

1910 Angel Island began operation. Although billed as the "Ellis Island of the West" within the Immigration Service, it was mostly known as "The Guardian of the Western Gate", designed to control the flow of Chinese into the U.S. The facility was primarily a detention center to inhibit immigration under the Chinese Exclusion Act of 1882. All Asian immigrants were affected, but the greatest impact was on the Chinese.

1910, Oregon ranked seventh among states outside the Southwest with Mexican born migrant workers. Between 1910 – 1925, Mexican workers were contracted to work on sugar beet farms and on railroads. Farm workers marked the first Mexican families to settle permanently in the state. Oregon's agriculture relied on the large numbers of Mexican resident and migrant workers until wide spread mechanization in the 1950's.

1911 The Dillingham Commission identified Mexican laborers as the best solution to the Southwest's labor shortage. Mexicans were exempted from immigrant "head taxes" set in 1903 and 1907. Also, this commission had concluded by 1911 that immigration from southern and eastern Europe posed a serious threat to American society and culture and should therefore be greatly reduced.

1912 A study by two Wisconsin researchers, Daniel Starch and Edward Charles Elliott, challenged the validity of percentage grading systems. They found great variability and subjectivity in how teachers graded the same student's work and how they set up tests and assessments. They found that using criteria for A-F grades more reliable.

1913 California's Alien Land Law ruled that "aliens ineligible for citizenship" (i.e. all Asian immigrants) were barred from owning land or property, but permits for three year leases of agricultural land were permitted.

1914 The Portland chapter of the NAACP, the oldest continually chartered chapter west of the Mississippi River, was founded.

1917 U.S. entered World War I and anti-German sentiment swelled at home. Names of schools, foods, streets, towns and even some families were changed to sound less Germanic.

1917 Immigration Act prohibited the entry of immigrants who were "induced…to migrate to this country by offers or promises of employment", imposed a head tax and excluded "immigrants over 16 who could not read in any language." Its provisions banned almost all Asian Immigrants.

1917 The first Bracero program was an exception to U.S. immigration law. With "Food to Win the War" as a motto, farmers and railroads persuaded the U.S. Department of Labor to suspend until 1921 the head tax and literacy test for Mexican workers. These laborers were offered contracts to work in agriculture for up to 12 months. Many of these first Braceros did not return to Mexico as scheduled. There was not Border Patrol to regulate immigration until 1924. Some U.S. employers did not pay Braceros the wages promised so they had no money to fund their return trip.

1918 Commission on Reorganization of Secondary Education created the foundation of modern American high school curriculum. Only the top 20% was thought to need college preparatory instruction. The rest of the students were to receive "general studies" which addressed neither college nor vocational preparation. To some degree the commission was responding to the impact of child labor and truancy laws that forced more students to attend school. This shift increased the "custodial nature" of public schools to keep all students busy and off the streets during the day.

1918-1919: The Department of Labor encouraged the admission of Mexican, and Canadian laborers for mining, agriculture and railroads.

1919-1921 The "Palmer Raids" were a series of controversial U.S. Justice and Immigration round-ups of suspected radical leftists. Many resident immigrants were deported because of their alleged "radical political" views.

1920's "Bell Curve" distribution of A-F grades became popular. Students' achievement was ranked according to teacher measures of performance in comparison to others. Grades were distributed using the "normal probability of the bell curve." Some advocates even specified a precise distribution: (A) 6% - (B) 22% – (C) 44% – (D) 22% – (F) 6%.

1919 Oregon teacher certification required high school graduation plus 12 weeks of professional training.

1919 Portland Board of Realty approved a "Code of Ethics" prohibiting realtors and bankers from selling property in white neighborhoods to people of color or providing mortgages for such purchases.

1920's KKK flourished in Oregon. By the mid 1920's its membership was estimated between 14,000 – 20,000 with numerous sympathizers who were not official members. Oregon's Governor from 1922 – 26, Walter M. Pierce, though not a member, was overtly supported by the Klan and he promoted the Klan's agenda.

1922 Together with Freemasons, Klansmen spearheaded a drive to outlaw private and parochial schools which they viewed as primary obstacles in their drive for "Americanism." The Klan used an initiative that would require all children

between the ages of eight and eighteen to attend public schools. The rallying cry of its sponsors was “One Flag! One School! One Language!” Oregonians, by a margin of 11,000, voted to make their state the first in the U.S. to mandate a strict uniform school system. In 1924 the federal court in Portland declared this law unconstitutional. In 1925 in Pierce v. Society of Sisters, the U.S. Supreme Court declared it unconstitutional as well.

1922 The Supreme Court of the United States ruled in Ozawa v. United States that first-generation Japanese were ineligible for citizenship and could not apply for naturalization.

1923 The Oregon state legislature, dominated by members of the Klan, passed a number of restrictive laws. The Alien Land Law prevented first generation Japanese Americans from owning or leasing land. The Oregon Business Restriction Law allowed cities to refuse business licenses to first generation Japanese Americans.

1923 An Oregon WWI veteran was denied U.S. citizenship. The U.S. Supreme Court unanimously ruled that Bhagat Singh Thind could not be a naturalized citizen. Anthropologists defined people of India as belonging to the Caucasian race. A previous ruling had affirmed that immigration law referring to “white" meant “Caucasian” as it applied to denying citizenship to light skinned Japanese immigrants. In this case, Justice Sutherland argued that the "common man's" definition of “white” did not correspond to all "Caucasians". Even though Indians were considered “Caucasian” they were not “white”. Therefore they could not be naturalized. Thus the color of skin became the legal qualification for citizenship.

1924 An act of Congress made Native Americans U.S. citizens for the first time.

1924 Immigration Act of 1924 (the Johnson Reed Act) established fixed quotas of national origin and eliminated “Far East” immigration. In 1929 these annual immigration quotas were made permanent. The Oriental Exclusion Act prohibited immigration from Asia, including foreign-born wives and children of U.S. citizens of Chinese ancestry.

1924 U.S. Border Patrol was established to strictly limit immigration especially from Mexico.

1925 Oregon teacher certification was raised to high school graduation plus 36 weeks of professional training.

1926 Oregon repealed its Exclusion Law, which barred Blacks from the state, by amending the state constitution to remove it from the Bill of Rights.

1927 the Oregon State Constitution was finally amended to remove a clause denying Blacks the right to vote and eliminating restrictions that discriminated against Blacks and Chinese voters.

1928 Japanese American Citizens League founded. There are two chapters in Oregon.

1930’s The Great Depression decreased Mexican immigration and increased U.S. policies of deportation / exclusion. More than 1/3 of the nation’s Mexicans and Mexican-Americans were forced back to Mexico. This deportation / repatriation of 500,000 Mexicanos included U.S. born citizens.

1930-1950 The NAACP brought a series of suits over unequal teachers' pay for Blacks and Whites in southern states. At the same time, southern states realized they were losing African American labor to the northern cities. These two sources of pressure resulted in some increase in spending on black segregated schools in the South.

1932 A survey of 150 school districts revealed that 75 % of larger U.S. cities were using so-called "intelligence testing" to place students in different academic tracks. The racial and ethnic composition of the different tracks was evident with most students of color in the lowest tracks.

1934 The Indian Reorganization Act (Indian New Deal) provided some federal support. It also tried to restore some reservation lands and provide land for landless tribes.

1935 Oregon law officially segregated Mexican students on the basis of being of Indian descent. It made clear to exempt "White Mexicans" those fair-skinned descendents of the Spaniards who do not have "Indian blood".

1938 Forerunner of community colleges came into being with the formation of the Eugene Technical Vocational School.

1937-1945 Oregon passed a number of laws restricting Indians, mostly concerning the possession of alcohol.

1941 Residents of southern Oregon and northern California proposed creation of a new state, Jefferson. A group of young men gained national media attention when, brandishing hunting rifles for dramatic effect, they handed out copies of a Proclamation of Independence. It stated that the state of Jefferson was in "patriotic rebellion against the States of California and Oregon" and would continue to "secede every Thursday until further notice."

1941 Japan's attack on Pearl Harbor, Hawaii, galvanized the U.S. war effort. Over 1,000 Japanese-American community leaders were incarcerated because of national security concerns.

1941 President Roosevelt signed Executive Order 8802 (creating the Fair Employment Practices Commission). It forbade discrimination in federal hiring, job-training programs, and defense industries. The order also empowered the Fair Employment Practices Commission to investigate discrimination against black employees and to take action.

1942 President Roosevelt signed Executive Order 9066, authorizing the building of "relocation camps" for Japanese Americans living along the Pacific Coast.

1942-1964 Bracero Program recruited more than 4 million agricultural workers, mostly Mexican, to work in the U.S.

During WWII Oregon's African-American population grew substantially – in Portland increasing from 2,565 in 1940 to 25,000 in 1944. Over 7,000 "non-white" workers were employed in the Portland shipyards. Although Kaiser had promised good jobs in the shipyards, local unions resisted integration. Many help-wanted notices specified "white only." After pressure from NAACP, the Kaiser Brothers, a federal inspection team and a reprimand from President Roosevelt, the unions compromised. More skilled jobs were opened to Blacks, but only for the duration of the war. Blacks were allowed to work in union controlled shops and paid union dues, but were denied union benefits. To accommodate the influx of workers, a new town was built in the lowland area adjacent to the Columbia River just north of Portland. First called Kaiserville and then Vanport, it was the world's largest housing project with 35,000 residents making it the second largest community in Oregon. With this rise in diversity in populations came signs throughout Portland: 'We Cater to White Trade Only."

1942 A Japanese submarine shelled Fort Stevens near Astoria. Despite having caused no significant damage, the attack raised awareness of possible future threats. It is the only hostile shelling of a military base on the U.S. mainland during World War II and the first since the War of 1812. Also, a Japanese submarine launched seaplanes that dropped bombs on the southern Oregon coast. Incendiary (fire) bombs were to cause fires in the thick Siskiyou National Forest. If the trees had been as dry as normal, the Japanese plan might have worked, leaving forest fires to divert hundreds of fire fighters and large amounts of money from the war effort while also triggering panic in Oregon's population.

1942 After the attack on Pearl Harbor, all persons of Japanese heritage living in the western portion of Oregon (and all western states) were forced to move to camps by the Wartime Civil Control Administration. More than 4,500 Japanese Americans from western Oregon were sent to internment camps: 2/3 were American citizens.

1943 The Magnuson Act of 1943 repealed the Chinese Exclusion Act of 1882, establishing quotas for Chinese immigrants but also making them eligible for U.S, citizenship.

1943-1947 Large numbers of Mexican laborers under the Mexican Farm Labor Program (MFLP) or Bracero program (referring to brazos, arms of helping hands) came to Oregon. Migrant workers were used throughout the state.

1944 Balloons launched from Japan and carrying explosive and incendiary bombs drifted on the jet stream to the United States. The goal was to start forest fires and wreak devastation. Oregon alone counted 45 balloon incidents. Balloon bombs caused the only deaths due to enemy action on the U.S. mainland during World War II. On May 5, 1945 a pastor and his wife took five children for a picnic east of Bly. One of the children tried to remove a balloon from a tree and triggered the bomb. The mangled bodies of Elsye and the children were strewn around a crater that was three feet wide and one foot deep. Elsye lived briefly but most of the children died instantly.

1944 Federal government's Public Proclamation No. 21 of December 17, 1944 ended the exclusion of people of Japanese descent from the Pacific Coast.

1944 Under the Servicemen's Readjustment Act (commonly known as the GI Bill of Rights) the federal government authorized the largest affirmative action program in the nation's history. These preferential federal programs did not challenge institutional racism in employment, housing and education. Almost all of the benefits went to white men.

1945 The Oregon House of Representatives passed Joint Memorial No. 9 on February 28, 1945. The statement called on President Roosevelt to prevent the return of Japanese Americans "for the duration of the present war with Japan." The legislators based their request on what they described as "considerable antagonism to such return" to Oregon. It also claimed that the internees would be "safer and cause less civilian disturbance in the relocation centers."

1945 The former internees who did trickle back to their old homes were often met with open hostility by white neighbors. Some found their homes looted and their orchards vandalized while others endured boycotts of their fruits and vegetables or heard racial slurs or threats. A few were assaulted physically. Along with the many instances of blatant racism, intimidation, and hatred, some Oregonians welcomed and supported the returning Japanese Americans.

1945 Hood River received national attention when the local American Legion Post removed the names of 16 "Nisei", Japanese American members of the U.S. military from a plaque honoring local members of the armed forces.

1945 Alien Land Law passed to supplement the original 1923 restrictions limiting land ownership by immigrants.

1945 The War Bride Act and the G.I. Fiancées Act allowed immigration of foreign-born wives, fiancés, husbands, and children of U.S. armed forces personnel.

1946 Mexican Americans in Orange County, California won a class action lawsuit to dismantle the segregated schools. The ruling held that the equal protection provision of the Fourteenth Amendment pertained to equal access to education. California governor, Earl Warren, lobbied the California state legislature to enact legislation repealing the state's educational codes that allowed for segregation in public schools. The *Mendez* case represented the first successful challenge to the decades-old "separate but equal" doctrine in public school education and established an important legal

precedent. Governor Warren would go on to become the Chief Justice of the United States Supreme Court and write the opinion in *Brown v. Board of Education*.

1947 Oregon's Basic School Support Fund was established and a rural school/equalization measure passed which encouraged consolidation and raised standards for Oregon's public schools.

1947 PL – 45, the new Bracero program, called for employers to pay for screening, selection and roundtrip transportation for workers from Mexico to the Northwest – previously paid for by the U.S. government. Northwest growers were shocked at the terms of the agreement. There was growing anti-Mexican sentiment and anxiety about the protests mounted by Braceroes. Therefore, they decided to no longer contract Braceros; ending the program in Oregon.

1947 The Urban League of Portland took the Housing Authority to task for not enforcing the official federal policy of non-discrimination in housing. The Housing Authority's local policy was to separate tenants according to race, making it impossible to serve either whites or people of color on a first come, first served basis. Some vacant housing in Vanport and Guilds Lake were unavailable to white people because they were in an area designated for Blacks only. The Urban League's urging had little effect on the Housing Authority actions. The Portland Housing Authority did not integrate its operations until 1950 and even by 1957 was not offering housing to most Blacks.

1948 On Memorial Day, a Columbia River flood left 39 people dead and obliterated all of Vanport. It had become a declining settlement as war-time workers were replaced and non-whites were encouraged to leave the area. They were not needed for the war effort. There was no direct action taken by Portland's Housing Authority to resettle flood victims as patterns of segregation were reinforced. Most displaced Blacks were forced to congregate in the Albina section of town or left they Portland area. There were no places to live and no more well paying jobs now that WWII was over.

1948 Oregon's Constitution was amended to give every voter the right to vote in school elections.

1948 Educational Testing Service was formed, merging the College Entrance Examination Board, the Cooperative Test Service, the Graduate Records Office, the National Committee on Teachers Examinations and others. They received huge grants from the Rockefeller and Carnegie foundations. These testing services continued the work of Eugenicists like Carl Brigham (originator of the SAT) who did research "proving" that "immigrants were feeble-minded".

1948 The Supreme Court ruled that California's Alien Land Laws, prohibiting the ownership of agricultural property, violated the Constitution's 14th Amendment.

1948 The United States revised immigration policy to admit persons fleeing persecution in their native lands; allowing 205,000 refugees to enter within two years; mostly from Eastern Europe.

1948 Oregon realtors followed the "National Realtors Code" (based on an earlier state law) that proclaimed that "a realtor shall never introduce into a neighborhood members of any race or nationality whose presence will be detrimental to property values".

1949 Fair Employment Act empowered the State Labor Bureau to prevent discrimination in employment. Oregon's Fair Employment Practices Commission created.

1951 Oregon repealed its law prohibiting interracial marriages.

1951 Discrimination in vocational schools was banned.

1952 The Immigration and Nationality Act allowed individuals of all races to be eligible for naturalization. The act also reaffirmed national origins quota system; introduced a system of preference based on skill sets and family reunification.

1952 The Bureau of Indian Affairs began selling 1.6 million acres of Native American land to developers.

1952 Hundreds of Oregon Issei, those born in Japan, applied for citizenship after Congress lifted the ban.

1953 Congress amended the 1948 refugee policy to allow for admission of 200,000 more refugees.

1954 Congress terminated federal aid granted by treaties with 109 tribes, dissolving the Klamath, Grand Ronde and Siletz reservations and sanctioning the selling of their tribal lands.

1954 In Brown v. Board of Education of Topeka, the Supreme Court unanimously agreed that segregated schools were "inherently unequal" and must be abolished. Almost 45 years later in 1998, schools, especially in the north, were as segregated as ever. One of the most significant immediate effects of this ruling was the firing of thousands of black teachers and principals in southern black schools after these schools were integrated with white students. It was not believed to be appropriate to have Blacks teaching white children or supervising white teachers.

1954 Operation Wetback began to round up and deport 1 million Mexicans who were not able to provide legal immigration documents. In some cases these "illegal immigrants" were deported along with their children who were U.S. citizens born in the United States. Mexican-looking people were often stopped and asked for official identification.

1955 Oregon teacher certification raised to four-year college degree.

1957 The mighty and picturesque Celio Falls on the Columbia River east of The Dalles was destroyed with the construction of The Dalles Dam. The falls and a way of life for Indian tribes who had fished there for millennia disappeared. After 11,000 years, the oldest continuously inhabited community in North America ceased to exist.

1957 Lawmakers passed the Oregon Fair Housing Act, barring practices that had discriminated against African Americans in buying and renting places to live. This law made it illegal for property owners or their agents receiving any public funding to discriminate "solely because of race, color, religion, or national origin."

1957 A federal court ordered integration of Little Rock, Arkansas, public schools. Governor Orval Faubus sent his National Guard to physically prevent nine African American students from enrolling at all-white Central High School. Reluctantly, President Eisenhower sent federal troops to enforce the court order not because he supported desegregation, but because he could not let a state governor use military power to defy the U.S. federal government.

1957 Soviet Union's Sputnik, first orbiting satellite around the earth, marked beginning of the Space Race. It caused increased attention to math and science instruction for the top 20%. They were believed to be the next generation of scientists and engineers necessary for national security during the Cold War era. As a result, high school courses changed & high school facilities were modernized to include science labs plus better football facilities and band rooms.

1959 Fidel Castro's Cuban revolution prompted a mass exodus to the U.S. of over 200,000 people within three years.

1959 Oregon finally ratified the 15th Amendment to the U.S. Constitution which provided that no government may prevent a citizen from voting based on that citizen's "race, color, or previous condition of servitude" (slavery).

1961 The Cuban Refugee Program handled the major influx of immigrants to Miami with 300,000 relocated across the U.S. during the next two decades.

1962 NAACP charged Portland with having racially segregated schools.

1964 First Fiesta Mexicana held by the Mexican committee Pro Fiesta Mexicanas in Woodburn.

1964 The Civil Rights Act of 1964 outlawed unequal application of voter registration requirements. It also prohibited racial segregation in schools, in the workplace and by facilities that served the general public ("public accommodations.") It invalidated the "Jim Crow" laws, but attitudes and behaviors did not change just because of this federal law.

1965 Congress passed the Voting Rights Act of 1965. It prohibited any "voting qualification or prerequisite to voting, or standard, practice, or procedure ... to deny or abridge the right of any citizen of the United States to vote on account of race or color." The act outlawed literacy tests in order to register to vote, a principal means by which southern states had prevented African-Americans from exercising their rights.

1965 U.S. Congress enacted the Elementary and Secondary Education Act beginning an era of massive federal aid to education.

1965 The Immigration Act of 1965 abolished the prior quota system. Instead it created a system based on different limits for 20,000 countries. Preference was given to immediate families of immigrants and skilled workers.

1965 "Freedom Flight' airlifts began for Cuban refugees assisting over 260,000 people over the next eight years.

1965 The Bracero Program ended after temporarily employing almost 4.5 million Mexican nationals.

1965 Busing of African American students began in Portland as the major means to desegregate schools.

1966 The Cuban Refugee Act permitted more than 400,000 people to enter the U.S. This act allowed any Cuban who had lived in the U.S. for a year to become a permanent resident—a privilege that has never been offered to any other immigrant group.

1967-69 Racial tensions escalated into riots in Portland's African American communities.

1970 Chicano National Moratorium March to protest Chicano casualties in the Vietnam War. Three people killed during the march. Prominent LA times columnist, Ruben Salazar, killed by LA County Sheriff.

1970's saw school populations decline throughout the state leaving far more school facilities than could be fully utilized. Due to the rise of suburbs, these underused facilities were mainly in urban or older areas usually populated by people of color and of lower socio-economic status.

1970's Though no current concrete evidence that "Sundown Laws" existed on the statute books has been found in Oregon, there is a rich oral history. It describes signs and attitudes throughout Oregon well into the 1970's that warned Blacks and other People of Color to be out of town by sundown. James Loewen's book, *Sundown Towns: A Hidden Dimension of American Racism,* documents this practice throughout the United States.

1971 The Commission for Chicano Affairs established. In 1983 the group was renamed the Governor's Commission on Hispanic Affairs.

1972 Title IX, mandating the end of sex discrimination in all educational institutions receiving federal funds passed by U.S. Congress.

1973 Colegio Cesar Chavez, the first Latino four-year college in the U.S., was created on the former campus of Mt. Angel College in Silverton. It closed in 1983.

1973 Indian activists, drawing on the courage of their ancestors, staged a confrontation. The town of Wounded Knee, South Dakota was seized by followers of the American Indian Movement (AIM). The occupiers controlled the town for 71 days while the United States Marshals Service and other law enforcement agencies cordoned off the town. "Wounded Knee" became a catch phrase for all the wrongs inflicted on Native Americans by the descendants of Europeans.

1974 In Milliken v. Bradley, the U.S. Supreme Court ruled that schools may not be desegregated across school districts. The ruling legalized segregation of students of color in inner-city districts from white students in wealthier suburban districts. It perpetuated gerrymandering of school district boundaries to maintain racial segregation of schools.

Mid 1970's Oregon Indian Education Association was formed. OIEA works to update and help implement the Oregon American Indian/Alaska Native Education State Plan. OIEA continues to help to formulate state policy to eliminate stereotypical Native American mascots in Oregon public schools and keep native languages and cultures alive.

1975 Congress first recognized the need to provide a federal law to ensure local schools would serve the educational needs of students with disabilities. The law was originally called the Education for All Handicapped Children Act.

1977 Willamette Valley Immigration Project opened in Portland. It then moved to Woodburn to protect and represent undocumented workers. It was founded in response to an increase in Immigration and Nationalization (INS) raids in Oregon. WVIP provides legal advice and representation to undocumented immigrants.

1977 in Rosebud Sioux Tribe v. Kneip, the Supreme Court denied First Amendment protection to Native American religious practices established long before the colonization of the United States. Similar rulings have allowed infringement on sacred sites. For example, in Sequoyah v. Tennessee Valley Authority in 1979, the Supreme Court refused to grant certiorari when a federal circuit court ruled the flooding of holy places, ancestral burial grounds, and gathering sites did not violate religious freedom of Cherokees because they had no property rights in the area.

1979 Federal District Court affirmed Klamath Indians' hunting and fishing rights within their former reservation.

1978 In the Bakke Decision, the Supreme Court ruling generally upheld the principle of affirmative action. Allan Bakke, a white man, was denied admission to medical school that admitted black candidates with weaker academic credentials. Bakke contended he was a victim of racial discrimination. The Court ruled Bakke had been illegally denied admission. They ruled that schools were entitled to consider race as a factor in admissions, but were not to use strict racial quotas.

1978 The Tribally Controlled Community College Assistance Act of 1978 established a community college on every Indian reservation, which allows young people to go to college without leaving their families and tribal affiliations.

1980 The Refugee Act redefined criteria and procedures for admitting refugees to the United States.

Until 1980, Portland used what amounted to mandatory busing to "improve" racial balance of public schools. Ron Herndon, & members of the Black United Front, worked to stop busing. The Portland School Board eventually responded with a plan to desegregate schools "voluntarily": by ending forced busing; infusing the city's black schools with extra money and teachers, creating additional "magnet" schools in black neighborhoods and letting black and white students transfer out of their neighborhoods to different schools. For the first time, all students, regardless of race, could attend their neighborhood school or go elsewhere. The idea was to boost the quality of the black schools (to attract white students) and to give black students the choice to move to white schools. It had very limited impact, and Portland schools remained very segregated.

1981 Two police officers dumped dead opossums at an African American-owned restaurant in Portland. The incident evoked ugly KKK imagery and touched off one of the most contentious disputes between police, city government and the public. As a result a citizen's committee to review police actions in Portland was created.

1981 El Hispanic News began publication

1982-84 Congress restored the Cow Creek Band of the Umpqua Tribe, Confederated Tribes of Grand Ronde Indian Community and Confederated Tribes of Coos, Lower Umpqua and Siuslaw Indians to federally recognized status.

1983 *A Nation at Risk* report from the National Commission on Excellence in Education declared that high schools were failing to "impart enough academic skills and knowledge to their pupils".

1986 The Immigration Reform and Control Act (IRCA) legalized undocumented immigrants residing in the U.S. unlawfully since 1982. The focus was on curtailing illegal U.S. immigration. It introduced employer hiring sanction fines and language to prevent bogus marriage fraud.

1988 Congress approved Civil Liberties Act paying $20,000 to each surviving interned Japanese-American.

1988 In Lyng v. Northwest Indian Cemetery Assn., the Supreme Court refused to extend sacred status to natural terrain. The ruling meant that First Amendment rights did not protect the practice of religion for many Indian Tribes.

1988 A 28 year old Ethiopian student and father, Mulugeta Seraw, was fatally beaten in Portland by three racist skinheads.

1990 Mulugeta Seraw's father and son, represented at no cost by the Southern Poverty Law Center and the Anti-Defamation League, successfully filed a civil law suit against the killers and an affiliated organization. They won a civil case against White Aryan Resistance's operator Tom Metzger and his son John Metzger for a total of $12.5 million. The Metzgers declared bankruptcy, WAR went out of business and Metzger lost his home and went on welfare.

1990 Oregon voters passed Measure 5, property tax limitations, that capped spending for public schools. The shift was designed to help equalize support of public education throughout the state. However, this change from local school funding caused Oregon's schools to suffer budget reductions despite economic prosperity in the state. No new revenue sources were identified or created to fund schools.

1990's Poverty rate increased. Oregon's child poverty rate shot up 25% between 1993 and 1998, so that one in five children in the state was living in poverty.

1990 Law ensuring services to special education students got a new name - The Individuals with Disabilities Education Act, or IDEA. It strengthened the system for ensuring public education as a right for students with disabilities.

1990 Immigration Act established annual limit for certain categories of immigrants while favoring persons who could make educational, professional or financial contributions. It also created The Immigrant Investor Program to stimulate the U.S. economy through job creation and capital investment by foreign investors.

1990 In Employment Div., Dept. of Human Resources of Oregon v. Smith, several members of the Native American Church lost their jobs and subsequently were denied unemployment benefits by Oregon because they tested positive at drug screenings after participating in religious use of peyote. The Supreme Court refused them First Amendment protection. Justice O'Connor in the dissenting opinion explained that "the First Amendment was enacted precisely to protect the rights of those whose religious practices are not shared by the majority and may be viewed with hostility."

1991 Oregon Legislature passed the Minority Teacher Bill setting the goal that by the year 2001 the number of minority teachers and administrators shall be approximately proportionate to the number of minority children enrolled in public schools. This goal was not reached by 2001, nor is it currently the reality for Oregon schools.

1993 A joint Apology Resolution regarding Hawaii was passed by Congress and signed by President Clinton. It requested forgiveness for the overthrow of the Hawaiian Kingdom. It was the first time in American history that the United States government officially apologized for overthrowing the legitimate government of a sovereign nation.

1993 in Alabama & Coushatta Tribes of Texas v. Trustees of Big Sandy Independent School District , the Fifth Court of Appeals issued an injunction enjoining the school from enforcing a hair regulation against Native American students who asserted that the maintenance of their long hair represented moral and spiritual strength. The court found this to be a symbol of their religion and thus it was protected as a matter of religious freedom.

1994 Proposition 187 passed in California making it illegal for children of undocumented immigrants to attend public school. Federal courts held Proposition 187 unconstitutional, but anti-immigrant feelings spread across the country.

1995 The Chicano/Latino Studies Program was established at Portland State University.

1995 CAUSA, Oregon Immigrant Rights Coalition was formed.

1996 Oregon's Executive Order 96-30 acknowledged the need for better relationships between state government and federally recognized Indian tribal governments in the state. The Governor created a forum to maximize intergovern-mental relations. The forum included an Education Committee.

1996 California passed Proposition 209, which outlawed affirmative action in public employment, public contracting and public education. Other states jumped on the bandwagon with their own initiatives. Anti-affirmative action groups hoped to pass similar legislation on a federal level.

1996-2000 over 20 federal acts, statutes and amendments passed to limit the rights of immigrants including the first special deportation provisions for persons deemed terrorists.

1997 Nez Perce Tribe bought 10,000 acres and returned to Wallowa County.

1998 California passed Proposition 227 eliminating most bilingual education.

1999 The Oregon state legislature held a Day of Acknowledgement to recognize the past discrimination earlier legislatures had sanctioned.

1999 Oregon Legislature passed Senate Bill 103 relating to multicultural education policy for public schools. It called for the development and implementation of guidelines to be developed by the Oregon Department of Education by 2003.

2000 Oregonians finally voted to remove all racist language from its constitution which still had a clause that read: "*No free Negro, or mulatto, not residing in this state at the time of the adoption of this constitution, shall come, reside, or be within this State, or hold any real estate."* Though this and other discriminatory language was rendered unenforceable by federal laws and amendments to the U.S. Constitution, it was not until this election that removal of several examples of institutional racism and oppression was taken out of the Oregon Constitution.

2000, *The Oregonian* reported that Ron Herndon arranged a mock casket demonstration in front of the Portland School Board and orchestrated demonstrators shouting: "We're all fired up! Can't take no more! No more promises! No more lies!" The mock coffin symbolized the "death sentence" Portland Public Schools handed to low-income and minority students because of the achievement gap between them and white students in reading, math and writing.

Post 9-11-2001 The U.S. enacted 19 additional acts and statutes including the USA Patriot Act to tighten immigration and extend national security provisions. The Patriot Act tripled the number of Border Patrol and INS inspectors, increased release of FBI information and identity verification requirements. It tried to curtail entry of terrorist immigrants.

2001 A memorial honoring Japanese-American veterans and detainees opened in Washington D.C.

2001 No Child Left Behind (Public Law 107-110) reauthorized and expanded a number of federal programs aiming to improve performance of U.S. students. It increased standards of accountability for states, school districts, and schools as well as provided parents more flexibility in choosing which schools their children attend.

2003 U.S. Immigration and Naturalization Service became part of the Department of Homeland Security. This department's new U.S. Citizenship and U.S. Immigration Services (USCIS) was designed to handle immigration services and benefits. U.S. immigration enforcement functions are under the auspices of the Department's Border and Transportation Security Directorate, known as the U.S. Immigration and Customs' Enforcement (BICE).

2004 The Oregon Mexico Education Partnership (OMEP) agreement brought Spanish language content materials to Oregon students to use while they continued to learn English.

2005 Native Language Preservation and Instruction Partnership was formed through a collaborative effort between Oregon's nine federally-recognized tribes and the Oregon Department of Education to support implementation of endangered American Indian language and culture instruction programs in Oregon schools.

2005 New standards for Oregon administrative licensure were developed to include required demonstration of knowledge, skills and dispositions related to equity and cultural competence.

2005 Black survivors of Hurricane Katrina charged that racism contributed to the slow disaster response.

2006 Thousands of Latinos and supporters rallied in Portland, Salem and Hood River to protest a federal proposal that would make illegal immigration a felony.

2007 U.S. Immigration and Customs Enforcement (ICE) personnel "raided the offices" of Fresh Del Monte Produce Inc. in Portland. More than 165 detained workers were sent to a processing facility for possible deportation. Staffing at the plant is the responsibility of American Staffing Resources Inc, whose offices were also raided.

2007 An independent investigation commissioned by the Oregon School Activities Association (OSAA) confirmed that racial slurs and inappropriate actions occurred during and after games at the state basketball tournament between Portland's Roosevelt High and two Eugene schools, Churchill and North Eugene. Students from the three schools met and worked together on reconciliation and understanding in order to create a positive outcome from ugliness.

2007 In the October 22nd edition of the Daily Barometer , the student-run newspaper of Oregon State University, a front page article showed a photograph of a white student in "blackface". The article encouraged OSU students to "blackout" the football stadium. On November 8th a noose was hanging from a tree outside OSU's Phi Gamma Delta fraternity. The fraternity claimed it originally had a witch hanging from it as part of their Halloween decorations, yet all other Halloween decorations had been removed leaving only the noose hanging from a tree.

2008 Eugene Oregon's 4J school district announced retooling of its decades-old open-enrollment policy because schools there were becoming socioeconomically segregated.

2008 A family in Medford, Oregon had a cross and the letters KKK burned into their lawn. The man, an immigrant from Jamaica, has lived in Medford with his family since 2000. Medford police consider this incident to be the 5th local "hate crime" this year.

2008 Effective July 1, 2008, all applicants for new, renewal, or replacement Oregon driver licenses, instruction permits, or identification cards must provide acceptable proof of U.S. citizenship or lawful presence in the country. They are required to share full legal name, identity, date of birth and Social Security number (SSN) at the time of application.

2008 Oregonians defeated Measure 58 that would have effectively banned all programs that support bilingualism for English language learners. It would have mandated students enroll in (undefined) "English immersion classes" for one to two years. After this time, the student would be prohibited by law from receiving instruction in any other language, regardless of the student's, parent's or teacher's choice. The initiative exempted classes which "teach English speaking students a foreign language," creating the possibility of an alarming inequality in state education policy.

2008 Four students at George Fox University in Newberg confessed to hanging an effigy of Barack Obama from a tree with a sign saying "Act Six Reject". Act Six is a scholarship and leadership program for Portland students, many of whom are minorities. The culprits were suspended for up to a year, must complete community service and multicultural education before returning to school. The FBI concluded its investigation. No federal charges were filed.

2008 OSAA lists 16 Oregon high schools with mascots that many Indians feel ridicule their heritage.: *Aloha High School: Warriors, Amity High School: Warriors, Banks High School: Braves, Chemawa Indian School: Braves, Lebanon High School: Warriors, Mohawk High School: Indians, Molalla High School: Indians, North Douglas HS: Warriors, Philomath High School: Warriors, Reedsport High School: Braves, Rogue River HS: Chieftains, Roseburg High School: Indians, Scapoose High School: Indians, Siletz Valley School: Warriors, The Dalles Wahtonka HS: Eagle Indians, Warrenton High School: Warriors.* OSAA has no regulatory authority. Only the Oregon Department of Education can address this issue.

2009 On January 20th, Barack Obama was sworn in as the forty fourth President of the United States, the first African American to hold this office.

2009 To celebrate Oregon's 150th birthday, the Oregon Library Association selected the book, Stubborn Twig, about a Japanese American family in Hood River, for the statewide Oregon Reads program. The Oregon Library Association wanted to bring focus on and stimulate dialogue and study of Oregon's racial and immigration history.

2009 The film, *Papers*, debuted in Portland Oregon. It is the story of undocumented youth and the challenges they face as they turn 18 without legal status. Currently there are more than 1.8 million undocumented children who were born outside the U.S. and raised in this country. 65,000 undocumented students graduate every year from high school without "papers." In most cases, it is against the law for them to go to college, work or drive, yet they have no path to citizenship.

2009 In a 5-4 decision, the Supreme Court ruled that white New Haven, Connecticut firefighters should be promoted. At issue was the city's decision to throw out scores on an employment advancement test because no Blacks and only one Hispanic passed. While critical of New Haven for using "raw, racial statistics" to invalidate a promotional examination, the court stopped short of ordering broad changes to race-and-hiring laws.

2009 National controversy raged after Harvard professor, Henry Gates Jr., was arrested during a confrontation with Cambridge police around breaking into his own home. Professor Gates, Sgt. James Crowley, Vice President Biden, and President Obama met at the White House to discuss the incident over beers. "It is incumbent upon Sergeant Crowley and me to utilize the great opportunity fate has given us to foster greater sympathy among the American public for the daily perils of policing on one hand, and for the genuine fears of racial profiling on the other hand."

Separately, a Boston Massachusetts, police officer became part of the controversy by referring to Gates in a mass e-mail as a "banana-eating jungle monkey." As a result of this action, Justin Barrett lost his job on Feb. 5, 2010.

Meanwhile, a black Cambridge police sergeant, Leon Lashley, on the scene for the Gates' arrest, says he is now known as an "Uncle Tom". "I'm forced to ponder the notion that as a result of speaking the truth and coming to the defense of a friend and colleague, who just happens to be white, that I have somehow betrayed my heritage."

2009 Judge Sonia Sotomayor became the first Hispanic on the U.S. Supreme Court.

2010 New standards around racial/ethnic identification of students and staff cause controversy. Race and ethnicity have always been collected and reported to the U.S. Department of Education but new guidelines redefine some race and ethnicities and require school officials to racially identify by observation student or staff members who choose not to report. Native leaders call it "genocide by paper." The reports are required for federal eligibility and accountability reports and to assist with enforcement of laws prohibiting discrimination on the basis of race and national origin.

2010 The passage of Arizona's SB 1070 calls for police to use "reasonable suspicion" to question and detain possible undocumented immigrants. It also bars people from soliciting work or hiring day laborers off the street, and empowers citizens to sue to force authorities to enforce the law. Concern around racial profiling based on this state authorization of police officers to stop suspected illegal immigrants and demand proof of citizenship has prompted national debate, protest and boycotting of Arizona.

2010 The Oregon League of Minority Voters implement a new civil rights tactic. They are offering scholarships to white students to take classes in race relations to encourage white college students in Oregon to pursue studies in race relations. "We lack white participation in the racial conversation in this state, so we are trying to do something about it," says Promise King, executive director of the Oregon group.

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**ACKNOWLEDGEMENTS**

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December 6, 2018