

# I-205 Toll Project

## MEMORANDUM



**Date** 7/21/2021  
**To** Equity and Mobility Advisory Committee  
**From** Gareth Prior, ODOT  
**Subject** Neighborhood Health and Safety Performance Measures

The attached Neighborhood Health and Safety Performance Measures document was included in the meeting packet for the Equity and Mobility Advisory Committee (EMAC) meeting held on June 23, 2021. At that meeting, EMAC members participated in a workshop to discuss neighborhood health and safety policy and strategy options, and the draft social resources maps and their relationship to the I-205 Toll Project performance measures. The workshop included breakout rooms with three discussion questions. The third question was related to the social resources maps and performance measures – “Building upon the feedback from the NEPA Scuba team on the social resource maps, what is ODOT missing? Beyond putting these social resources on a map, how can we deepen our understanding of the community and the impact of tolling?” The following are EMAC’s comments in response to that question.

WHAT WE HEARD	WHAT WE ARE DOING ABOUT IT
<b>Social resource maps</b>	
<p><b>EMAC:</b> Add the following types of places to ODOT’s social resource maps:</p> <ul style="list-style-type: none"> <li>• Pharmacies</li> <li>• Grocery stores and other food resource centers (meals on wheels sites, food pantries, etc.)</li> <li>• Affordable housing complexes, especially those that serve families and transit-oriented developments</li> <li>• Culturally-specific businesses or locations that have assets for Equity Framework-identified communities</li> </ul>	<p><b>ODOT:</b> We are committed to deepening our knowledge of communities through analysis and engagement. In analysis, the use of maps to identify resources is helpful to understand proximity to where benefits and burdens for transportation are being impacted by tolling. Information on proximity would be used to target our community engagement before the NEPA process is complete to determine impact and help craft supports to advance equity, such as mitigation that is required or through strategic investments.</p> <p>Current mapping of social resources in the Portland metro area is limited. The mapping of schools, libraries, urgent care facilities, nursing homes, community centers, places of worship, and parks is derived from a regional database managed by Metro. There are no current mapped databases that we know about for pharmacies, food pantries/resource centers, grocery stores, or culturally specific businesses.</p> <p>To address this need, ODOT is proposing to do the following in areas where we are seeing diversion of automobiles increase on local roads:</p> <ul style="list-style-type: none"> <li>• Work with housing agencies and <a href="#">Metro</a> to identify and map locations of regulated affordable housing sites.</li> <li>• Create a general “cultural and community resources” category for places like pharmacies, food pantries, culturally specific small businesses that can be populated through our community engagement efforts over time.</li> </ul> <p>We are also working to update the social resource map categories so that we can better discern for equity within category types. For example, highlighting schools that receive Title 1 funding in the schools category.</p>

<b>WHAT WE HEARD</b>	<b>WHAT WE ARE DOING ABOUT IT</b>
<p><b>EMAC:</b> Study whether there are safe and attractive active transportation networks to the identified social/community resources.</p>	<p><b>ODOT:</b> We have been working with public agency partners to develop an existing conditions inventory of transit and multimodal infrastructure. Within the performance measures, ODOT is going to use an analysis called level of traffic stress (LTS) to help determine the impact to people who bike and walk on local roads impacted by tolling. In areas where we are expecting to see automobile diversion increase on local roads and negatively impact LTS, we will use that information to target our community engagement to determine impact and help craft supports to advance equity, such as mitigation that is required or through strategic investments.</p>
<p><b>EMAC:</b> Community engagement will be critical in identifying resources (community centers, Federally Qualified Health Centers, veteran centers, etc.).</p>	<p><b>ODOT:</b> In areas where we are expecting to see automobile diversion increase on local roads, we will use that information, along with our social resource maps, to target our community engagement to determine impact and help craft supports to advance equity, such as mitigation that is required or through strategic investments.</p>
<p><b>EMAC:</b> Consider the zoning of areas that experience rerouting. Is the rerouting primarily happening in commercial or residential areas?</p>	<p><b>ODOT:</b> Zoning and land use are considered in performance measures that are included in the federally required analysis. These are not in the highlighted sections on neighborhood health and safety, but in the section of the document titled, “federally required performance measures.”</p>
<p><b>EMAC:</b> Use mapping of health outcomes/existing conditions and heat islands in the analysis.</p>	<p><b>ODOT:</b> We are searching for the best regional data sources on heat islands and health outcomes to include as data layers in our analysis. For now, we have a <a href="#">research paper</a> on urban flooding and extreme heat from Portland State University and data from a <a href="#">Community Health Needs Assessment</a> for the Portland metro area.</p> <p>In areas where we are expecting to see automobile diversion increase on local roads and negatively impact heat islands or in areas where there are known health disparities in communities, we will use that information to target our community engagement to determine impact and help craft mitigation or strategic investments to advance equity.</p>

<b>WHAT WE HEARD</b>	<b>WHAT WE ARE DOING ABOUT IT</b>
<p><b>EMAC:</b> Identify other sources of air quality emissions from industry or long-term construction within the project area that might increase impacts when considered cumulatively with roadway/vehicle emissions.</p>	<p><b>ODOT:</b> There are multiple performance measures related to air quality that are listed in the neighborhood health and safety highlighted as well as what is federally required. We have not heard of a way to capture and track industry and long-term construction specifically. The air quality measures are evaluated at the cumulative, regional-level.</p>
<p><b>EMAC:</b> Use elements of the Health Impact Analysis (HIA) process to inform the performance measures.</p>	<p><b>ODOT:</b> We are incorporating elements in the alternatives analysis and performance measures that would be traditionally used in an HIA through the following:</p> <ul style="list-style-type: none"> <li>• Measuring access to community health resources and health promoting activities, like access to parks and greenspace</li> <li>• Including maps of heat islands and health existing conditions/outcomes</li> <li>• Measuring impacts of tolling on a multimodal network</li> <li>• Using an analysis called level of traffic stress (LTS) to help determine the impact to people who bike and walk on local roads</li> <li>• Supplementing our technical analysis with targeted community engagement to better understand impacts and craft solutions to advance equity, such as mitigation that is required or through strategic investments</li> </ul>
<b>Performance measures (general)</b>	
<p><b>EMAC:</b> Reexamine “catch-all” performance measures. Consider splitting and specifically calling out access to jobs as its own measure.</p>	<p><b>ODOT:</b> Access to jobs and community places will be reported separately. We are helping to clarify this by splitting the access performance measure into “A” for jobs and “B” for community places.</p>

<b>WHAT WE HEARD</b>	<b>WHAT WE ARE DOING ABOUT IT</b>
<p><b>EMAC:</b> Consider how tolling might impact land values in areas affected by diversion. Address this qualitatively in the economic analysis.</p>	<p><b>ODOT:</b> In the federally required performance measure list, there is a measure that will use land use and zoning data to understand impact by a “change in land use character as a result of the Project.” This will be determined as a qualitative or best judgement of the project team. To our knowledge, we do not know of a method to determine project financial (\$) impact to land use or property values based on the benefits or burdens that tolling would provide to a specific location. This issue could be a part of consideration for the future accountability and oversight of toll rates, which will be discussed at EMAC after the November 2021 meeting.</p>
<p><b>EMAC:</b> In-depth interviews with agencies and community members are needed to connect the dots for qualitative assessments.</p>	<p><b>ODOT:</b> In areas where we are expecting to see automobile diversion increase on local roads and negatively impact communities, we will use that information to target our community engagement to determine impact and help craft supports to advance equity, such as mitigation that is required or through strategic investments.</p>
<p><b>EMAC:</b> Consider economic impacts and benefits for small businesses as they could see an increase in people walking, biking, and driving local.</p>	<p><b>ODOT:</b> Our economic analysis will look at impacts on access to areas where businesses are concentrated through Traffic Area Zones (TAZs). We will look at land use and zoning. In the federally required performance measure list, there is a measure that will use land use and zoning data to understand impact by a “change in land use character as a result of the Project.”</p> <p>This would be a challenge to understand because there is limited or no data available on the local or small businesses and a way to track project pedestrian and bicycle counts. We are proposing that businesses that serve a culturally-specific community or Equity Framework-identified community could be included on our social resources maps. Their proximity would be used to target our community engagement to determine impact and help craft supports to advance equity, such as mitigation that is required or through strategic investments.</p>

<b>WHAT WE HEARD</b>	<b>WHAT WE ARE DOING ABOUT IT</b>
<b>Change in travel time, reliability, and access by mode (auto, transit, bike, and walk) to jobs and community places; delineate between the general population and Equity Framework-identified communities</b>	
<p><b>EMAC:</b> Consider access to social resources from areas where Equity Framework-identified communities live. Is access changing with rerouting? What improvements could be made?</p>	<p><b>ODOT:</b> We are committed to deepening our knowledge of communities through analysis and engagement. In analysis, the use of social resource maps to identify resources is helpful to understand proximity to where benefits and burdens for transportation are being impacted by tolling. Information on proximity would be used to target our community engagement to determine impact and help craft supports to advance equity, such as mitigation that is required or through strategic investments.</p>
<p><b>EMAC:</b> Improving non-auto travel should be prioritized when considering accessibility to jobs by different modes (not all modes are equally prioritized).</p>	<p><b>ODOT:</b> Performance measures are meant to be a neutral measure to gain information. Goals and objectives provide direction for prioritization. One of our main goals for the project is to support multimodal transportation choices.</p> <p>We have been working with partner agencies to gather bike and walk counts for intersections within the project’s area of impact. In areas where we are expecting to see automobile diversion increase and negatively impact intersections, this data will help us inform where to prioritize access for multimodal transportation.</p> <p>Additionally, assumptions for mode shift, meaning an increase of people moving from single-occupancy automobiles to other forms of transportation will be studied, but at a regional-scale.</p> <p>ODOT is going to use an analysis called level of traffic stress (LTS) to help determine the impact to people who bike and walk on local roads impacted by tolling. In areas where we are expecting to see automobile diversion increase on local roads and negatively impact LTS, we will use that information to target our community engagement to determine impact and help craft supports to advance equity, such as mitigation that is required or through strategic investments.</p>

<b>WHAT WE HEARD</b>	<b>WHAT WE ARE DOING ABOUT IT</b>
<b>Change in access to health promoting activities and health care facilities for the general population and Equity Framework-identified communities within 30-minute trip by mode.</b>	
<p><b>EMAC:</b> Important to understand the quality of non-vehicle options to resources (just because bike lanes exist, it doesn't mean they are safe).</p>	<p><b>ODOT:</b> We are going to use an analysis called level of traffic stress (LTS) to help determine the impact to people who bike and walk on local roads impacted by tolling. In areas where we are expecting to see automobile diversion increase on local roads and negatively impact LTS, we will use that information to target our community engagement to determine impact and help craft supports to advance equity, such as mitigation that is required or through strategic investments.</p>
<p><b>EMAC:</b> Consider specific kinds of trips and the logistics associated with those trips. For example:</p> <ul style="list-style-type: none"> <li>• Traveling to a dialysis center</li> <li>• Bus ride from Oregon City to downtown Portland or nursing home</li> </ul>	<p><b>ODOT:</b> We will use a mix of technical data and community engagement to understand impacts to these types of trips. The plan is as follows:</p> <ul style="list-style-type: none"> <li>• Use of a regional transportation model to understand benefits and burdens with tolling during peak traffic hours; reported through transportation analysis zones (TAZs)</li> <li>• The TAZs identified are then evaluated against the mapping of Equity Framework-identified communities, which includes environmental justice populations (low income and minorities), to identify changes in access.</li> <li>• The project team will then select example trips, called Origin-Destination pairs to assess travel time and reliability.</li> <li>• These Origin-Destination pairs will inform how we target our community engagement to determine impact and help craft supports to advance equity, such as mitigation that is required or through strategic investments.</li> </ul>



# PERFORMANCE MEASURES: NEIGHBORHOOD HEALTH AND SAFETY

As the performance measures are updated, they immediately influence the current I-205 Toll Project. The performance measures for the I-205 Toll Project will be the basis for creating performance measures for the Regional Mobility Pricing Project, which will occur in early 2022.

## I-205 TOLL PROJECT DRAFT SOCIAL AND COMMUNITY RESOURCES MAPS

The draft maps were developed to identify social and community resources within the area of potential impact (API) for the I-205 Toll Project. The draft maps focus on the same areas included in the presentation on rerouting during Equity and Mobility Advisory Committee (EMAC) Meeting #3 (see [EMAC Meeting #3 recording](#), 2:03:18). The following maps focus on areas identified through preliminary modeling of the I-205 Toll Project, as places that may experience the biggest changes in traffic volumes from vehicles choosing different routes (vehicle rerouting):<sup>1</sup>

- **Downtown Canby** (along 99E)
- **Gladstone** (multiple routes and along 99E)
- **Oregon City** (downtown and Arch Bridge)
- **West Linn** (Willamette Falls Drive)

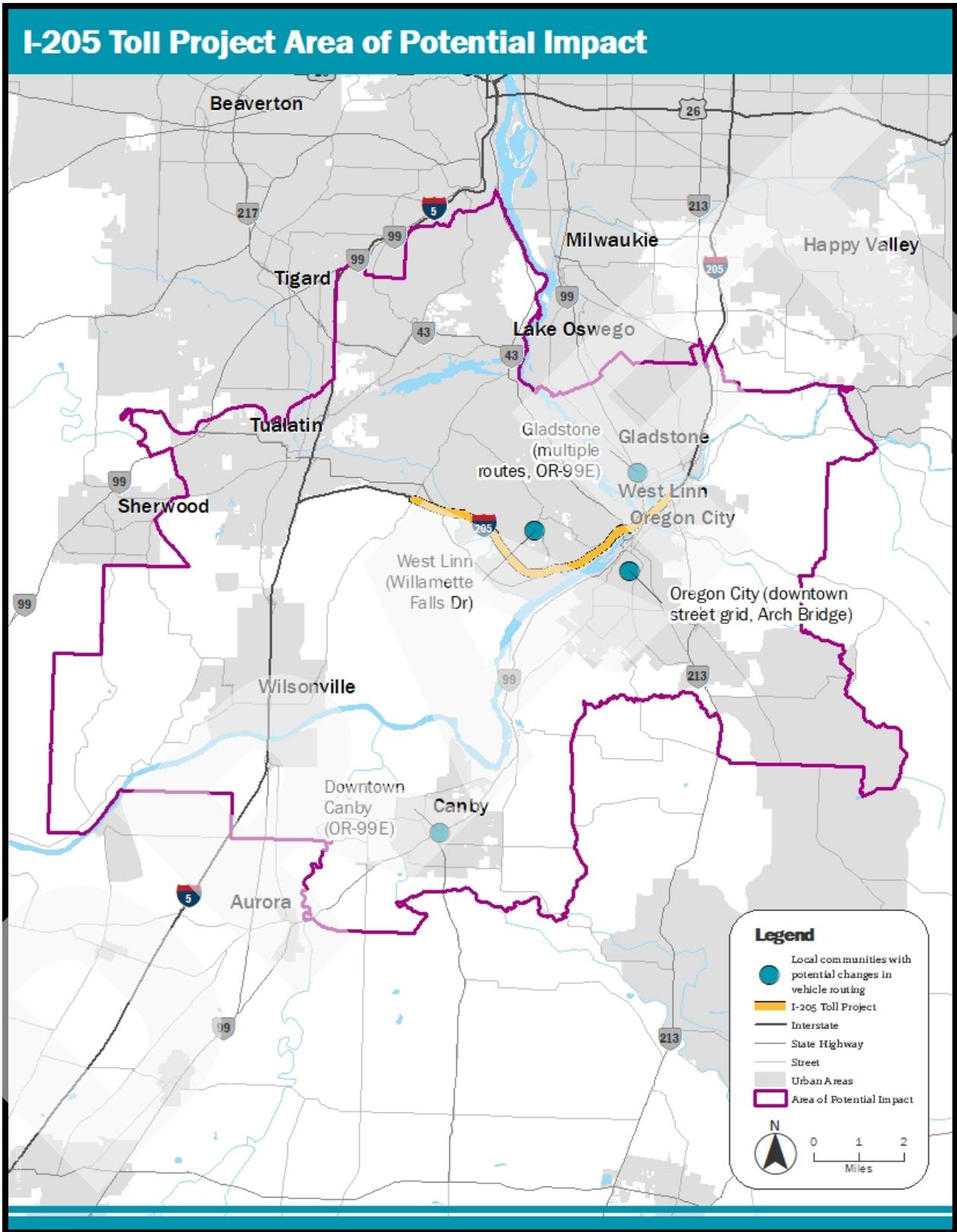
**Definition of what is included as a “social or community resource” is as follows:**

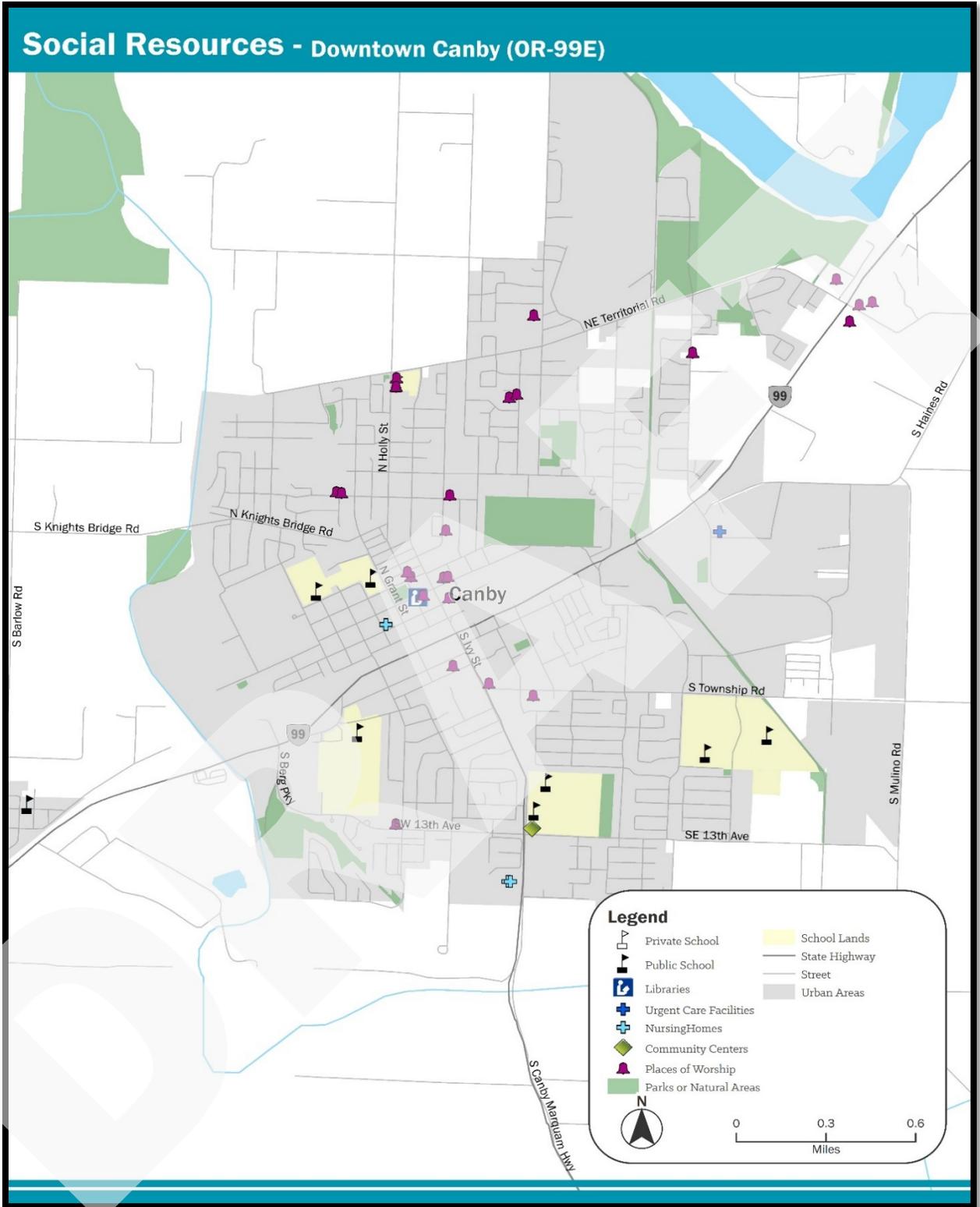
- Places of worship
- Community centers
- Hospitals
- Libraries
- Nursing homes
- Parks
- Schools
- Urgent care facilities

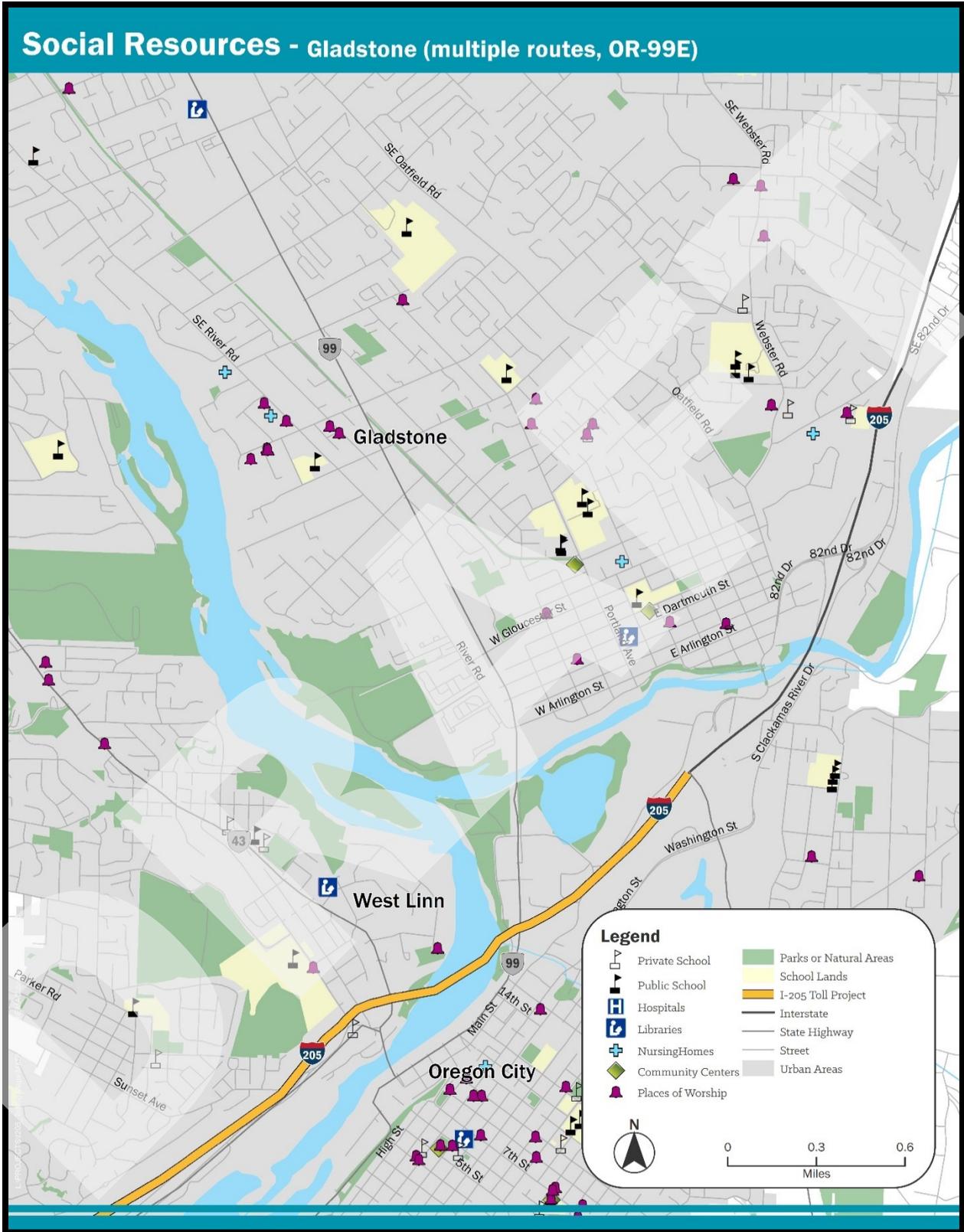
These resources were identified using data from Metro’s Regional Land Information System (RLIS), the Homeland Infrastructure Foundation-Level Data (HIFLD), and Environmental Systems Research Institute (Esri). The maps are a work in progress and will be updated through input from EMAC, additional engagement with communities identified in the Equity Framework, and additional technical analysis.

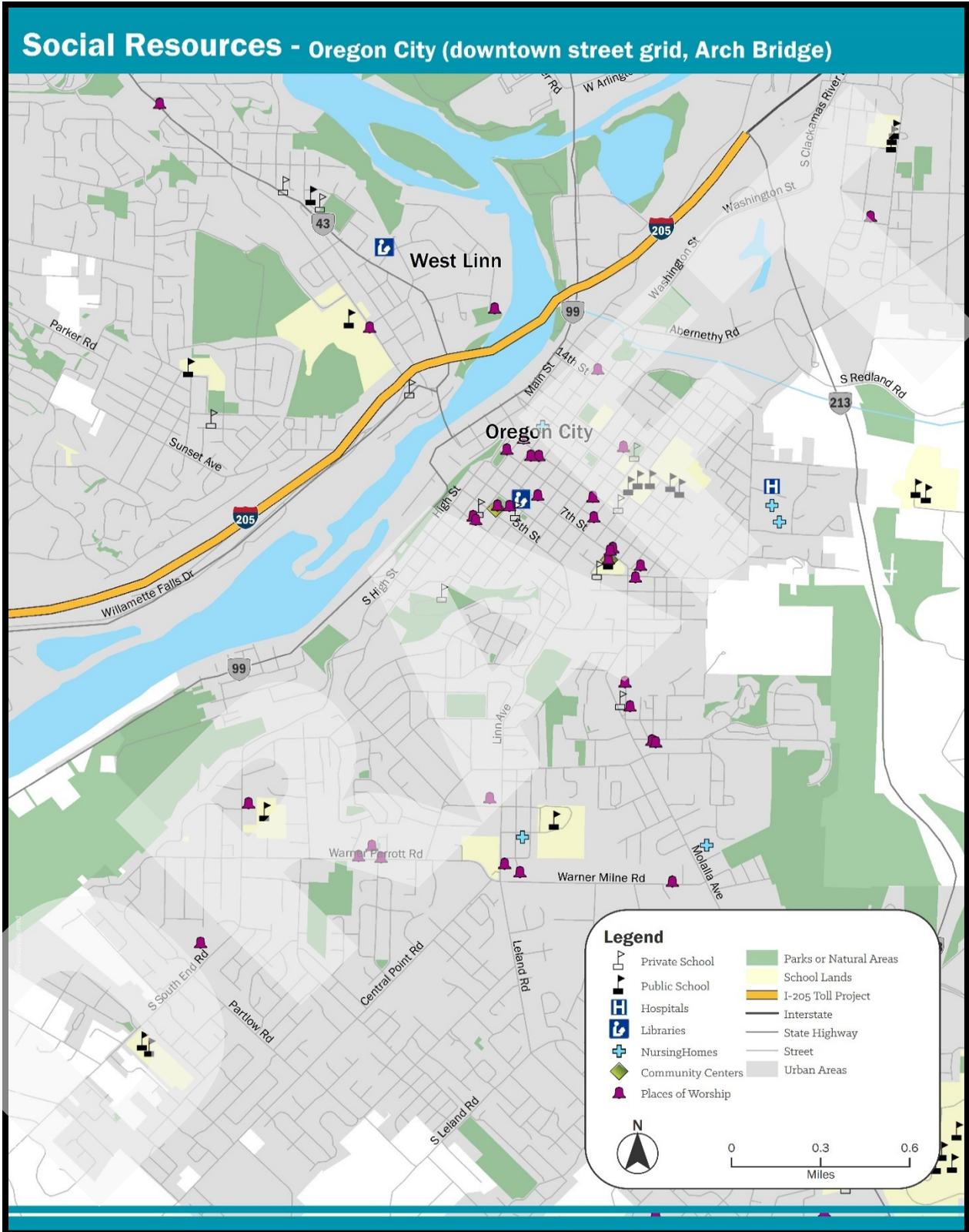
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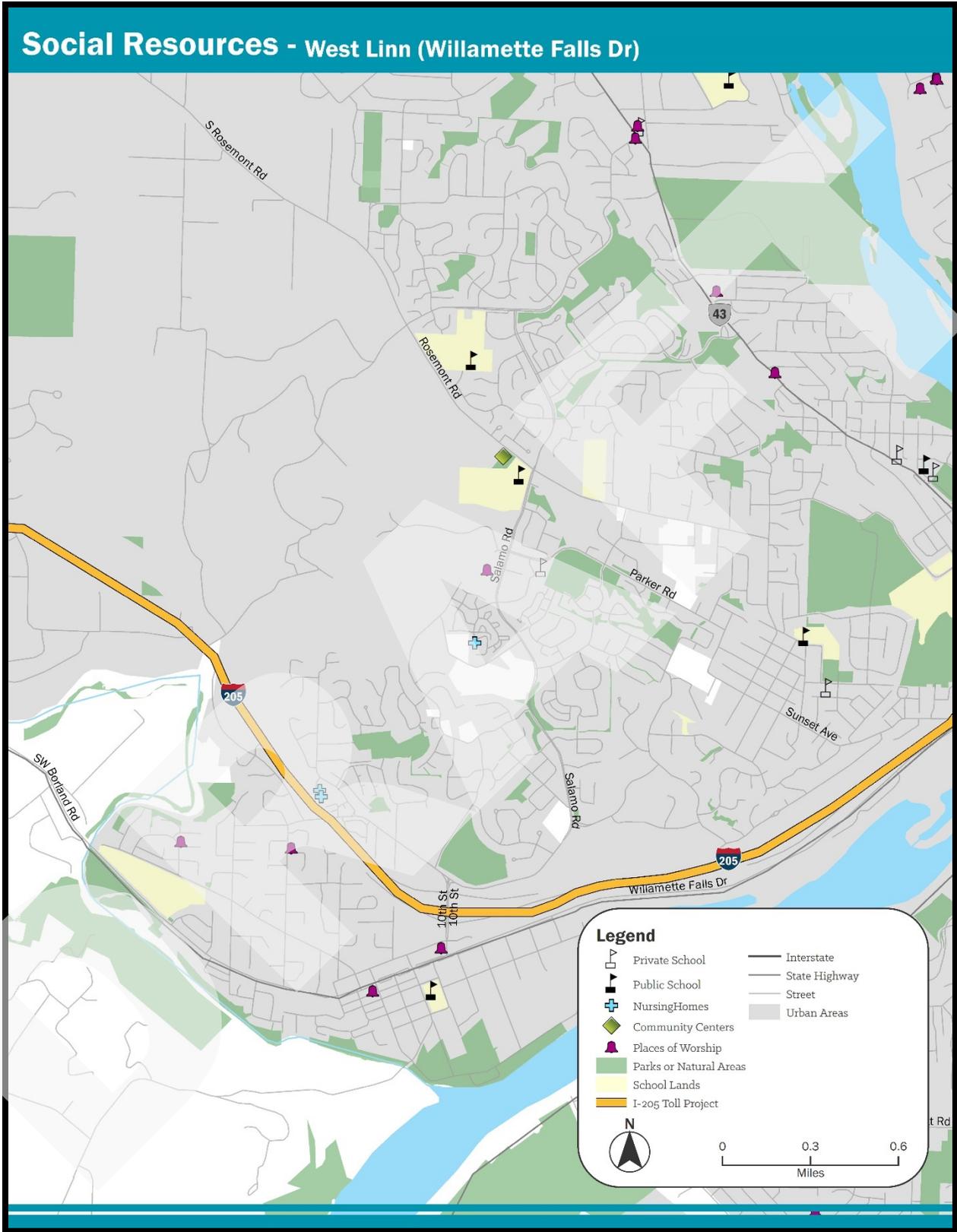
<sup>1</sup> Screening analysis model scenario results for 2027 based on data from the Metro Regional Travel Demand model.











## NEPA SCUBA TEAM REVIEW

### Social Resource Maps

The NEPA Scuba Team (an EMAC sub-team focused on performance measures) met on June 11, 2021 to review the social resources maps and provided the following comments:

- Include food-related businesses and small businesses that serve Equity Framework-identified communities (grocery stores, ethnic markets, etc.)
- Identify food banks and community meal sites such as Meals on Wheels locations or other places that communities may pick up food (for example, free lunch programs during the summer months)
- Ensure senior centers are included in community centers
- Identify affordable housing communities
- Look at school bus routes or safe routes to schools as a potential data resource
- Consider school demographic data and identify Title 1 schools that may serve a higher percentage of Equity Framework-identified communities.
- Include community clinics/neighborhood health centers and other specialized treatment centers, such as dialysis centers, cancer treatment centers, and drug addiction treatment centers. These clinics could replace hospitals on the maps.

### Neighborhood Health and Safety Performance Measures

The NEPA Scuba Team proposed specific revisions to the performance measures, which are as follows (identified in track changes on the following pages):

- Provide more details on how the qualitative assessments related to community impacts will be conducted. If engagement surveys will be used, what questions will be asked of community members? How will the surveys be distributed?
- Go beyond “best professional judgement” for qualitative assessment of impacts – consider experience of people living in the area.
- Add detail to the performance measures to identify the specific impacts being measured (i.e. safety and neighborhood livability versus access and environmental quality).
- Consider impacts to bus routes (public and school buses) as it relates to travel time, reliability, and access.
- Provide information on current condition of ADA facilities (where are sidewalks missing?).
- Comments were provided about the need to identify social and community resources and representative origin-destination (O-D) pairs.

## Performance Measures: Neighborhood Health and Safety

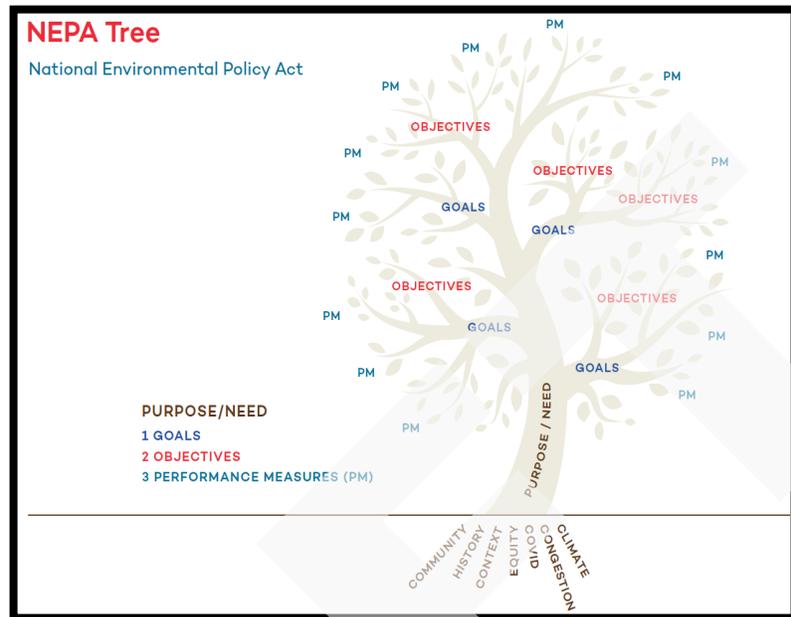
- Consider identifying representative “community places” in each social/community resource category (i.e. health centers, schools, etc.) to be included in the O-D pairs.
- Define “health promoting activities”.
- Consider federally qualified health centers as a data source to identify health centers that serve equity framework-identified communities.<sup>2</sup>
- Identify key community “connectors” – service and/or educational organizations/centers that may not directly provide health care services, but connect community members to other services.
- Include social security and government offices that provide financial resources.
- To select O-D pairs, identify areas that have overlapping concentrations of equity framework-identified communities, as these are the areas that are likely to experience the greatest impact/burden.
- Provide definitions for mobile source air toxins and regional energy consumption.
- Consider the following resources for performance measures related to health outcomes and incorporate health impact assessment principles and some discussion of health outcomes into the performance measures:
  - [RTP-Appendix J Climate Smart Strategy Monitoring181206.pdf \(oregonmetro.gov\)](#)
  - [OHA-PHD\\_CSS HIA\\_Final.pdf \(oregon.gov\)](#)
  - Consider highlighting the following performance measure for neighborhood health and safety: “Change in I-205 safety conditions, which includes frequency and/or severity of vehicular crashes, as well as mode shift.”
  - Related to the performance measure, “Change in roadway safety conditions by mode (transit, auto, bike, and walk) for areas impacted by diversion, especially for high crash corridors and/or locations that result in injury or death:”
  - Add more detail in the “how” column describing what features are captured in the model inputs and MCE toolkit.
  - Add “social and environmental” before “risks” in the qualitative assessment description.

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<sup>2</sup> Federally qualified health centers are community-based health care providers that receive funds from the Health Resources and Services Administration Health Center Program to provide primary care services in underserved areas. [Federally Qualified Health Centers | Official web site of the U.S. Health Resources & Services Administration \(hrsa.gov\)](#)

## DEFINITION

Performance measures identify the information needed to help us understand impacts and to understand if we are meeting project goals and objectives. Information can be numerical or measured (**Quantitative**) or through interviews, questionnaires, or focus groups (**Qualitative**). In the National Environmental Policy Act (NEPA) process, performance measures emanate from purpose, need, goals, and objectives.



## WHY ARE PERFORMANCE MEASURES IMPORTANT?

**Performance measures are used to compare the tolling alternatives for burdens and benefits. They can lead to identifying mitigation investments.**

Mitigation is a NEPA term that addresses impacts identified in the environmental analysis for a toll project. Mitigation can include a specific project or investment or be a general statement that describes how ODOT will work toward a solution in the future. Mitigation commitments are tied to the toll project environmental analysis and must be related to an identified impact.

The Oregon Toll Program seeks to advance equity, which requires that we go beyond traditional mitigation of negative impacts and focus on benefits to equity communities. Our approach is to use the performance measures to both address baseline mitigation and inform policies and strategies to advance equity.

The following pages identify the performance measures with the neighborhood health and safety measures highlighted in blue.

### Equity Framework informed performance measures that go beyond what is federally required

Goal	Objective	Performance Measure	How	Tool or Data Source
Provide benefits for historically and currently excluded and underserved communities	Maximize benefits and minimize burdens associated with implementation of tolling	Identify impacts to <b>safety and health for Equity Framework-identified Communities located near roadways experiencing traffic volume changes due to the project</b>	<p><b>Quantitative:</b> Traffic volume changes on select roadways (AM peak hour, PM peak hour, off-peak, daily).</p> <p><b>Qualitative:</b> <u>Maps will be overlaid with output from the traffic models identifying roadways with vehicle rerouting (AM peak hour, PM peak hour, off-peak) to assess impacts based on the best professional judgement of the project team.</u></p> <p><u>For areas of concern, the project team will use targeted community engagement to better understand impact and what is needed to advance equity.</u></p>	<p><u>Regional travel demand model for traffic volume changes and analysis of Metro Equity communities and TAZs identified as representative samples for Equity Framework-identified communities, which includes environmental justice populations (low income and minorities)</u></p> <p><u>Dynamic Traffic Assignment (DTA) model results for AM and PM peak hour travel times within the Transportation Area of Potential Impact</u></p> <p><u>Census data mapping of Equity Framework-identified communities, which includes environmental justice populations (low income and minorities).</u></p> <p><u>Transportation data and mapping that identifies high injury and crash corridors and locations.</u></p> <p><u>Social resource maps, which include: schools, places of worship, community centers, health centers, regulated affordable housing, nursing homes, libraries, parks or natural areas, and culturally-specific businesses or community gathering places.</u></p> <p><u>Data mapping of existing heat islands and health outcomes/existing conditions.<sup>3</sup></u></p> <p><u>Targeted community engagement Maps will be overlaid with output from the traffic models identifying roadways with vehicle rerouting (AM peak hour, PM peak hour, off peak) to qualitatively assess the Equity Framework-identified communities (low income, minority, other historically and currently excluded and underserved) and community resources potentially affected by rerouting)</u></p>
		Change in vehicle operating costs in the Portland metro area; delineate between general population and Equity Framework-identified communities	<p><b>Quantitative</b> Model outputs for Metro Equity groups and selected transportation area zones (TAZs) that represent areas with Equity Framework-identified communities.</p> <p><b>Qualitative</b> Best professional judgement based on analysis.</p>	WSP Benefit Cost Analysis (BCA) Model and Multi-Criteria Evaluation (MCE) Toolkit (indexed scenario comparison of vehicle operating costs)

<sup>3</sup> We are searching for the best regional data sources on heat islands and health outcomes to include as data layers in our analysis. For now, we have a research paper on urban flooding and extreme heat from Portland State University and data from a Community Health Needs Assessment for the Portland metro area.

Goal	Objective	Performance Measure	How	Tool or Data Source
		Change in travel costs as a percentage of household income for the general population and Equity Framework-identified Communities	<p><u>Quantitative</u>                      Model outputs for Metro Equity groups and selected transportation area zones (TAZs) that represent areas with Equity Framework-identified communities.</p>	<p>Metro travel demand model to identify number community of places one can access from a transportation analysis zone (TAZ) during peak hours within a mode-specific travel time threshold.<sup>4</sup> TAZ measures are aggregated to report average impacts for region and Transportation API, based on weighted average of households in each TAZ.</p> <p>Metro travel demand model to identify number of jobs one can access from a TAZ during AM peak hours within a mode-specific travel time threshold.<sup>5</sup> TAZ measures are aggregated to report average impacts for region and Transportation API, based on weighted average of households in each TAZ.</p> <p>For environmental justice, use TAZs identified as representative samples for Equity Framework-identified communities, which includes environmental justice populations (low income and minorities) to identify changes in access. Use representative Origin-Destination pairs to assess travel time and reliability for environmental justice populations.</p> <p>For social resources and communities, use TAZs identified as representative samples of Equity Framework-identified communities to identify changes in access. Use representative O-D pairs to assess travel time and reliability for other Equity Framework-identified communities.</p>

<sup>4</sup> For community places, peak period travel time thresholds of 30 minutes by auto, 45 minutes by transit, 30 minutes by bike, and 20-minute walk are applied.

<sup>5</sup> For jobs, AM peak period travel time thresholds of 20 minutes by auto, 30 minutes by transit, 15 minutes by bike, and 20-minute walk are applied.

Goal	Objective	Performance Measure	How	Tool or Data Source
<p>Provide benefits for historically and currently excluded and underserved communities</p>	<p>Support equitable and reliable access to job centers and community places, such as grocery stores, schools, and gathering places</p>	<p><b>Change in travel time, reliability, and access by mode (auto, transit, bike, and walk) and delineated between the general population and Equity Framework-identified communities for:</b></p> <p><b>(A) -jobs</b></p> <p><b>(A)(B) and community places; delineate between the general population and Equity Framework-identified communities</b></p>	<p><u>Quantitative</u> Community places accessible by mode (auto, transit, bike, walk); change in access will be assessed for region and Transportation Area of Potential Impact (areas possibly impacted by diversion), and model outputs for Metro Equity groups and selected transportation area zones (TAZs) that represent areas with Equity Framework-identified communities.</p> <p>Jobs accessible by mode (auto, transit, bike, and walk). Change in access will be assessed for region and Transportation Area of Potential Impact (areas possibly impacted by diversion), and model outputs for Metro Equity groups and selected transportation area zones (TAZs) that represent areas with Equity Framework-identified communities.</p> <p>Change in travel time by mode (auto, transit, bike, and walk) for sample origin to destination (O-D) pairs during average weekday peak periods and selected off-peak period times that represent Equity Framework-identified community commuting patterns.</p> <p><u>Qualitative</u> Best professional judgment for reliability based of travel time impacts and sample origin to destination (O-D) pairs. <u>Targeted community engagement for selected locations O-D pairs to better understand impacts to access.</u></p>	<p>Metro travel demand model to identify number of community of places one can access from a transportation analysis zone (TAZ) during peak hours within a mode-specific travel time threshold.<sup>6</sup> TAZ measures are aggregated to report average impacts for region and Transportation API, based on weighted average of households in each TAZ.</p> <p>Metro travel demand model to identify number of jobs one can access from a TAZ during AM peak hours within a mode-specific travel time threshold.<sup>7</sup> TAZ measures are aggregated to report average impacts for region and Transportation API, based on weighted average of households in each TAZ.</p> <p>For environmental justice, use TAZs identified as representative samples for Equity Framework-identified communities, which includes environmental justice populations (low income and minorities) to identify changes in access. Use representative O-D pairs to assess travel time and reliability for environmental justice populations.</p> <p>For social resources and communities, use TAZs identified as representative samples of Equity Framework-identified communities to identify changes in access. Use representative O-D pairs to assess travel time and reliability for other Equity Framework-identified communities.</p> <p><u>Social resource maps, which include: schools, places of worship, community centers, health centers, regulated affordable housing, nursing homes, libraries, parks or natural areas, and culturally-specific businesses or community gathering places.</u></p> <p><u>Targeted community engagement informed by selected O-D pairs</u></p>

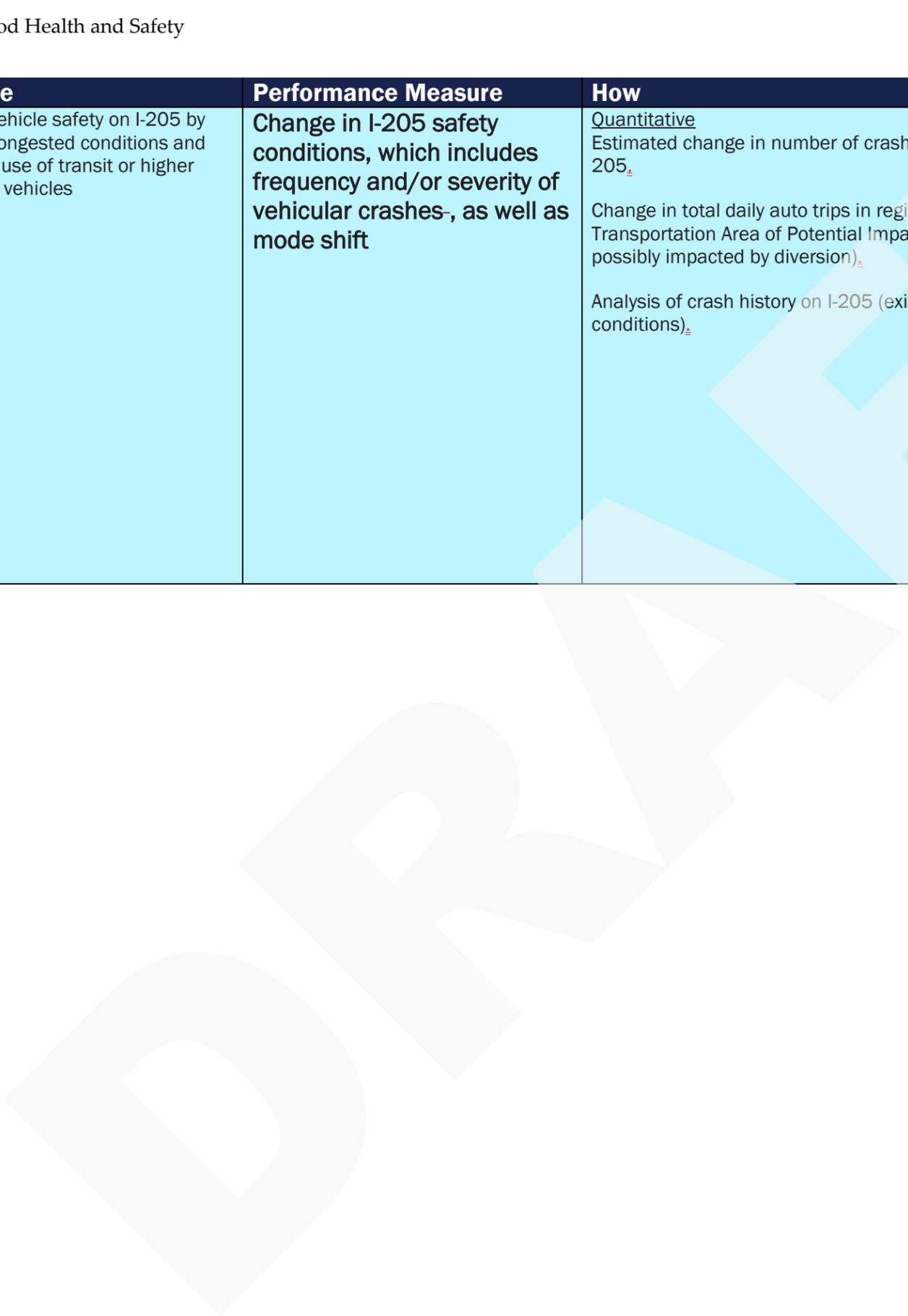
<sup>6</sup> For community places, peak period travel time thresholds of 30 minutes by auto, 45 minutes by transit, 30 minutes by bike, and 20-minute walk are applied.

<sup>7</sup> For jobs, AM peak period travel time thresholds of 20 minutes by auto, 30 minutes by transit, 15 minutes by bike, and 20-minute walk are applied.

Goal	Objective	Performance Measure	How	Tool or Data Source
<p>Provide benefits for historically and currently excluded and underserved communities</p>	<p>Support equitable and reliable access to health promoting activities (e.g. parks, trails, recreation areas) and health care facilities</p>	<p><b>Change in access to health promoting activities (i.e. <u>parks, open spaces, and trails</u>) and health care facilities for the general population and Equity Framework-identified communities within 30-minute trip by mode (auto, transit, walk, and bicycle)</b></p>	<p><u>Quantitative</u>                      Medical places accessibility within 30-minute drive will be assessed for region and Transportation API, and model outputs for Metro Equity groups and selected transportation area zones (TAZs) that represent areas with Equity Framework-identified communities.</p> <p>Mode shift from auto travel to active transportation travel modes (transit, bicycle, and pedestrian) <u>for the region and Transportation API.</u></p> <p>Change in auto travel time for sample origin to destination (O-D) pairs during average weekday peak periods and selected off-peak period times that represent Equity Framework-identified community commuting patterns.</p> <p><u>Qualitative</u>                      Best professional judgment for reliability based of travel time impacts and sample origin to destination (O-D) pairs. Targeted community engagement for selected locations to better understand impacts to access. Targeted community engagement for selected O-D pairs to better understand access. Overall assessment of access to health promoting activities based on above</p>	<p>Metro travel demand model to identify number of medical facilities (community places) one can access from a transportation analysis zone (TAZ) during peak hours within a 30-minute drive. TAZ measures are aggregated to report average impacts for region and Transportation API, based on weighted average of households in each TAZ.</p> <p>Metro travel demand model to identify daily mode shift to active transportation modes.</p> <p>For environmental justice, present table of change in auto travel time to health promoting activities and health care facilities for representative O-D pairs to assess the populations (low-income, minority, other historically and currently excluded and underserved) and community resources potentially affected by rerouting.</p> <p>For social resources and communities, present table of change in auto travel time to health promoting activities (i.e. <u>parks, open spaces, and trails</u>) and health care facilities (including dialysis centers, cancer treatment centers, and drug addiction centers) for representative O-D pairs to assess the populations (other historically and currently excluded and underserved populations) and community resources potentially affected by rerouting.</p> <p><u>Social resource maps, which include: schools, places of worship, community centers, health centers, regulated affordable housing, nursing homes, libraries, parks or natural areas, and culturally-specific businesses or community gathering places.</u></p> <p><u>Targeted community engagement informed by selected O-D pairs</u></p>
	<p>Design the toll system to support travel options for people experiencing low incomes</p>	<p>Compare the benefit of mitigation, strategy, and policy commitments for people experiencing low incomes relative to the general population</p>	<p><u>Quantitative</u>                      Using selected performance measures to study proposed investments to understand where we can advance equity.</p> <p><u>Qualitative</u>                      Best professional judgement based on comparison of benefits of mitigations, strategies, and commitments and community engagement feedback.</p>	<p>Consideration of the following:</p> <ul style="list-style-type: none"> <li>• Policy, strategy, or mitigation commitments to address affordability, neighborhood health and safety, transit, and multimodal transportation options</li> <li>• Interoperability with other transportation systems</li> <li>• Access to jobs and social resources</li> <li>• Vehicle operating costs</li> </ul> <p>Community engagement feedback</p> <p>Selected performance measures</p>

Goal	Objective	Performance Measure	How	Tool or Data Source
Limit additional traffic diversion from tolls on I-205 to adjacent roads and neighborhoods	Design the toll system to limit rerouting from tolling	<b>Change in auto volumes in the region, Transportation Area of Potential Impact (areas possibly impacted by diversion), and areas where Equity Framework-identified communities live.</b>	<p><u>Quantitative</u> Change in vehicle miles traveled within region, Transportation API (areas possibly impacted by diversion), and model outputs for Metro Equity groups and selected transportation area zones (TAZs) that represent areas with Equity Framework-identified communities.</p> <p>Change in travel time during peak hours on key corridors and selected off-peak period times that represent Equity Framework-identified community commuting patterns.</p> <p>Identify changes on key roadways or areas that are most relevant for (adjacent to) Equity Framework-identified communities, based on community mapping.</p>	<p>Regional travel demand model for Vehicle Miles Traveled measures and analysis of Metro Equity communities and TAZs identified as representative samples for Equity Framework-identified communities, <u>which includes environmental justice populations (low income and minorities)</u></p> <p>Dynamic Traffic Assignment (DTA) model results for AM and PM peak hour travel times within the Transportation Area of Potential Impact.</p> <p>Census data maps of Equity Framework-identified communities, <u>which includes environmental justice populations (low income and minorities)</u></p>
	Design the toll system to avoid and minimize impacts to quality of life factors, such as health, noise, safety, job access, travel costs, and environmental quality for local communities from traffic rerouting	<b>Change in the quality of life in areas impacted by diversion; delineate between the general population and Equity Framework-identified communities</b>	<p><u>Qualitative</u> Best professional judgement <u>to impact to quality of life</u>, based on analysis <u>factors</u>.</p> <p><u>For areas of concern, the project team will use targeted community engagement to better understand impact and what is needed to advance equity.</u></p>	<p>Consideration of the following (see other performance measures identified in this memo):</p> <ul style="list-style-type: none"> <li>• <u>Social resource mapping, which includes Access-access</u> to health promoting activities and health care facilities</li> <li>• Safety</li> <li>• Access to jobs</li> <li>• Travel costs</li> <li>• Air quality</li> <li>• <u>Heat islands</u></li> <li>• <u>Health outcomes/existing conditions</u></li> <li>• <u>Census mapping of Equity Framework-identified communities, which includes environmental justice populations (low income and minorities)</u></li> <li>• <u>Noise impacts: Traffic noise levels modeled with Federal Highway Administration (FHWA) Traffic Noise Model (TNM) 2.5; Traffic Data from Regional Travel Demand Model and Dynamic Traffic Assignment Model (peak hour and truck peak hour) with vehicle mix and posted speed limits; Project design imported into FHWA TNM 2.5</u></li> <li>• <u>Census mapping of Equity Framework-identified communities</u></li> </ul> <p><u>Targeted community engagement</u> For noise impacts:</p> <p><u>Traffic noise levels modeled with Federal Highway Administration (FHWA) Traffic Noise Model (TNM) 2.5</u></p> <p><u>Traffic Data from Regional Travel Demand Model and Dynamic Traffic Assignment Model (peak hour and truck peak hour) with vehicle mix and posted speed limits.</u></p> <p><u>Project design imported into FHWA TNM 2.5</u></p>

Goal	Objective	Performance Measure	How	Tool or Data Source
Support safe travel regardless of mode of transportation	Enhance vehicle safety on I-205 by reducing congested conditions and increasing use of transit or higher occupancy vehicles	Change in I-205 safety conditions, which includes frequency and/or severity of vehicular crashes-, as well as mode shift	<p><u>Quantitative</u>                      Estimated change in number of crashes on I-205.</p> <p>Change in total daily auto trips in region and Transportation Area of Potential Impact (areas possibly impacted by diversion).</p> <p>Analysis of crash history on I-205 (existing conditions).</p>	<p><a href="#">Regional travel demand model and Dynamic Traffic Assignment (DTA) model results for traffic volume changes, and analysis of Metro Equity communities and TAZs identified as representative samples for Equity Framework identified communities, which includes environmental justice populations (low income and minorities)</a></p> <p><a href="#">Dynamic Traffic Assignment (DTA) model results for AM and PM peak hour travel times within the Transportation Area of Potential Impact</a></p> <p>Highway Safety Manual Part C Methodology for corridors</p> <p><a href="#">MCE Toolkit (indexed scenario comparison of crashes) for region or study area</a></p> <p><a href="#">Regional model Mode shift assumptions estimates and</a></p> <p>analysis of existing <a href="#">safety</a> conditions <a href="#">based on crash history database</a> and</p> <p><a href="#">Proposed mitigation or strategy investments</a></p>



Goal	Objective	Performance Measure	How	Tool or Data Source
	<p>Support safe multimodal travel options (e.g. pedestrians, bicycles, transit, and automobiles) on roadways affected by tolling, especially in high crash corridors</p>	<p><b>Change in roadway safety conditions by mode (transit, auto, bike, and walk) for areas impacted by diversion, especially for high crash corridors and/or locations that result in injury or death</b></p>	<p><u>Quantitative</u>  <a href="#">Model Transportation model outputs for Metro Equity groups and selected transportation area zones (TAZs) that represent areas with Equity Framework-identified communities.</a>  <a href="#">Analysis of crash history in study area (existing conditions).</a></p> <p><u>Qualitative</u>  <a href="#">Best professional judgement to impact to safety, based on analysis factors.</a></p> <p><a href="#">Assessment of potential social and environmental risks to safety for multimodal travel options based on analysis and community engagement feedback. For areas of concern, the project team will use targeted community engagement to better understand impact and what is needed to advance equity.</a></p>	<p><a href="#">Regional travel demand model and Dynamic Traffic Assignment (DTA) model results for traffic volume changes</a> <a href="#">Regional travel demand model for traffic volume changes and analysis of Metro Equity communities and TAZs identified as representative samples for Equity Framework-identified communities, which includes environmental justice populations (low income and minorities)</a></p> <p><a href="#">Dynamic Traffic Assignment (DTA) model results for AM and PM peak hour travel times within the Transportation Area of Potential Impact</a></p> <p><a href="#">Transportation data and mapping that identifies high injury and crash corridors and locations</a></p> <p><a href="#">Existing conditions for transit and multimodal elements; identify high crash corridors and locations</a></p> <p><a href="#">MCE Toolkit (indexed scenario comparison of crashes) for region or study area and Highway Safety Manual Part C Methodology for corridors</a></p> <p><a href="#">MMLoS (level of service) calculation tool or LTS (Level of stress) for bike and walk, as well as</a></p> <p><a href="#">Existing conditions data counts for intersections within the Transportation API</a></p> <p><a href="#">Data mapping of existing heat islands and health outcomes/existing conditions.<sup>8</sup></a></p> <p><a href="#">Social resource maps, which include: schools, places of worship, community centers, health centers, regulated affordable housing, nursing homes, libraries, parks or natural areas, and culturally-specific businesses or community gathering places.</a></p> <p><a href="#">For environmental justice, use TAZs identified as representative samples for Equity Framework-identified communities, including environmental justice populations</a></p> <p><a href="#">For social resources and communities, use TAZs identified as representative samples for Equity Framework-identified communities</a> <a href="#">Targeted community engagement</a></p>

<sup>8</sup> We are searching for the best regional data sources on heat islands and health outcomes to include as data layers in our analysis. For now, we have a research paper on urban flooding and extreme heat from Portland State University and data from a Community Health Needs Assessment for the Portland metro area.

Goal	Objective	Performance Measure	How	Tool or Data Source
<p>Contribute to regional improvements in air quality and reduced contributions to climate change effects</p>	<p>Contribute to reduced vehicle air pollutants and greenhouse gas emissions in the Portland metro area through reducing congestion, resulting in more consistent vehicle speeds, less vehicle idling, and fewer overall motor vehicle emission hours on I-205 and on local roadways affected by tolling</p>	<p><b>Change in annual regional vehicle emissions of Mobile Source Air Toxics (MSATs)<sup>9</sup> from vehicle operations</b></p>	<p><u>Quantitative</u> Change in regional vehicle emissions<sub>2</sub></p>	<p>MOVES model (motor vehicle emissions simulator) - using 24-hour vehicle miles traveled (VMT) output by vehicle class and speed bin from the regional travel demand model<sub>2</sub></p> <p><u>MSAT emissions are estimated as part of the project's air quality analysis using volume and speed data from individual roadway segments in the study area, accounting for localized increases and decreases, to develop a regional estimate.</u></p>
	<p>Reduce localized air pollutants through reduced congestion and improved travel efficiency, particularly in community areas where pollutants may be concentrated due to traffic congestion</p>	<p><b>Change in annual regional energy consumptions and CO<sub>2</sub>e<sup>10</sup> emissions from vehicle operations</b></p>	<p><u>Quantitative</u> Change in regional vehicle energy consumption<sub>2</sub></p>	<p>MOVES model - using 24-hour VMT output by vehicle class and speed bin from the regional travel demand model<sub>2</sub></p> <p><u>Operational energy consumption from transportation projects is an evaluation of fuel used by vehicles traveling on the project roadways.</u></p> <p><u>Total energy consumption in units of British thermal units (Btu) and regional CO<sub>2</sub>e emissions are estimated as part of the I-205 Toll Project's energy analysis using volume and speed data from individual roadway segments in the study area, accounting for localized increases and decreases, to develop a regional estimate.</u></p>

<sup>9</sup> MSATs are a set of 9 pollutants (1,3-butadiene, acetaldehyde, acrolein, benzene, diesel particulate matter (diesel PM), ethylbenzene, formaldehyde, naphthalene, and polycyclic organic matter) for which the Federal Highway Administration requires an evaluation as part of its NEPA approval process. The 9 pollutants have been identified by the Environmental Protection Agency as being among the national and regional-scale cancer risk drivers or contributors with significant contributions from mobile sources (cars, trucks, and other on-road vehicles).

<sup>10</sup> CO<sub>2</sub> Equivalent (CO<sub>2</sub>e) is a combined measure of greenhouse gas (GHG) emissions weighted according to the global warming potential of each gas, relative to carbon dioxide (CO<sub>2</sub>). CO<sub>2</sub>e from vehicle exhaust is determined using contributions of CO<sub>2</sub>, nitrous oxide (N<sub>2</sub>O), and methane (CH<sub>4</sub>).

Goal	Objective	Performance Measure	How	Tool or Data Source
Support multimodal transportation choices	Support shifts to higher occupancy vehicles (including carpooling) and other modes of transportation (transit, walk, bike, telework)	Change in regional person trips by single occupancy vehicles compared to other modes (transit, vanpooling, or carpooling); delineate between impact to general population and Equity Framework-identified communities	<p><u>Quantitative</u> Change in regional person trips by mode, including high and single occupancy vehicles (HOV and SOV), transit, bike, and walk</p> <p><u>Qualitative</u> Potential impacts to carpool, vanpool, paratransit, and shared ride modes, not explicitly broken out in regional model</p> <p>Potential impacts to Equity Framework-identified communities, not explicitly broken out in regional model.</p>	<p>Regional travel demand model</p> <p>Feedback from the Transit Multimodal Work Group</p>
	Support shifts to higher occupancy vehicles (including carpooling) and other modes of transportation (transit, walk, bike, telework)	Change in level of traffic stress for bicycle and pedestrian corridors impacted by traffic volume changes due to the project	<p><u>Quantitative</u> Roadway corridor MMLoS (level of service) or LTS (level of stress) for bicycle and pedestrian</p> <p><u>Qualitative</u> Best professional judgement based on the impact to roadway corridors in Equity Framework-identified communities</p>	MMLoS (level of service) calculation tool or LTS (Level of stress) bike and walk
		Identify barriers and opportunities to encourage greater use of higher occupancy vehicles and other modes of transportation for the general population and Equity Framework-identified communities	<p><u>Qualitative</u> Best professional judgement based on the analysis and community engagement</p>	Feedback from the Transit Multimodal Work Group and community engagement
		Change in transit level of service and accessibility during peak periods and selected off-peak period times that represent Equity Framework-identified community commuting patterns	<p><u>Quantitative</u> Roadway corridor MMLoS (level of service) for transit</p> <p>Transit accessibility measures (identified in earlier performance measures)</p> <p>Peak hour travel times and selected off-peak period times that represent Equity Framework-identified community commuting patterns on select roadway corridors with existing or planned transit services</p>	<p>Regional travel demand model</p> <p>MMLoS (level of service) for transit users for study corridors within the Transportation Area of Potential Impact (areas possibly impacted by diversion)</p> <p>Dynamic Traffic Assignment (DTA) for peak hours</p>
		Identify barriers and opportunities to improve feeling of safety and ease for transit, carpooling, and vanpools users within areas impacted by diversion; delineate between the general population and Equity Framework-identified communities	<p><u>Qualitative</u> Best professional judgement based on the analysis and community engagement</p>	Feedback from the Transit Multimodal Work Group and community engagement

Goal	Objective	Performance Measure	How	Tool or Data Source
Support multimodal transportation choices (continued)	Collaborate with transit providers to support availability and enhancements to transit services in the I-205 corridor, especially for historically and currently excluded and underserved communities	Change in transit level of service and accessibility during peak periods and selected off-peak period times that represent Equity Framework-identified community commuting patterns	<p><u>Quantitative</u> Roadway corridor MMLoS (level of service) for transit</p> <p>Transit accessibility measures (identified in earlier performance measures)</p> <p>Peak hour travel times and selected off-peak period times that represent Equity Framework-identified community commuting patterns on select roadway corridors with existing or planned transit services</p>	<p>Regional travel demand model</p> <p>MMLoS (level of service) for transit users for study corridors within the Transportation Area of Potential Impact (API)</p> <p>Dynamic Traffic Assignment (DTA) for peak hours</p>
Support regional economic growth	Provide for reliable and efficient regional movement of goods and people through the I-205 corridor and on local roadways affected by tolling	Freight or commercial vehicle throughput on I-205 and nearby roadways impacted by volume changes due to toll project	<p><u>Quantitative</u> Change in vehicle volume by vehicle type on I-205 and local roadways</p> <p>Identification of commercial or freight by business or job type</p> <p><u>Qualitative</u> Best professional judgement of the impact to Equity Framework-identified populations and businesses based on the analysis and community engagement</p>	<p>Regional travel demand model (daily) and Dynamic Traffic Assignment (DTA) for peak hours</p> <p>Employment data by land use codes or other sources (e.g. NAICS)</p> <p>Census mapping Equity Framework-identified populations</p> <p>Community engagement feedback</p>
		Vehicle travel time savings: overall and for Equity Framework-identified communities, which includes environmental justice communities	<p><u>Quantitative</u> Vehicle travel time savings by TAZ from regional model</p> <p>Vehicle travel time savings for an OD pair during peak hour from regional or DTA traffic model</p> <p><u>Qualitative</u> Identify TAZs that have significant equity populations</p> <p>Identify OD pairs that have significant equity populations</p>	<p>MCE Toolkit (indexed scenario comparison)</p> <p>Regional travel demand model and/or DTA subarea model</p> <p>Select sample TAZ-level origin to destination pairs (TAZs that utilize I-205) identified as representative samples for Equity Framework-identified populations</p>
		People throughput on I-205 segments between Stafford Road and OR 213	<p><u>Quantitative:</u> Vehicle volume by vehicle type and conversion to person trip</p>	<p>Regional travel demand model (daily) and DTA (peak hours)</p>

Goal	Objective	Performance Measure	How	Tool or Data Source
Support regional economic growth	Improve regional access to jobs and employment centers, especially for historically and currently excluded and underserved communities	Change in jobs accessible by mode (auto, transit, bike, and walk); delineate between the overall movement and access that begins or ends in areas within or adjacent to Equity Framework-identified communities or job centers	<p><u>Quantitative</u> Job accessibility by mode (auto, transit, bike, and walk). Change in access will be assessed for region and Transportation Area of Potential Impact (areas possibly impacted by diversion), and model outputs for Metro Equity groups and selected transportation area zones (TAZs) that represent areas with Equity Framework-identified communities</p> <p><u>Qualitative</u> Best professional judgment for reliability based of travel time impacts and sample origin to destination (O-D) pairs</p>	<p>Metro travel demand model to identify number of jobs one can access from a TAZ during AM peak hours within a mode-specific travel time threshold.<sup>11</sup> TAZ measures are aggregated to report average impacts for region and Transportation API, based on weighted average of households in each TAZ.</p> <p>For environmental justice, use TAZs identified as representative samples for Equity Framework-identified communities, which includes environmental justice populations (low income and minorities) to identify changes in access. Use representative O-D pairs to assess travel time and reliability for environmental justice populations.</p> <p>For social resources and communities, use TAZs identified as representative samples of Equity Framework-identified communities to identify changes in access. Use representative O-D pairs to assess travel time and reliability for other Equity Framework-identified communities.</p>
Support management of congestion and travel demand	Design the toll system to improve efficient use of roadway infrastructure and improve travel reliability	Change in vehicle miles traveled (VMT) for highway and non-highway travel in the region and Transportation Area of Potential Impact (areas possibly impacted by diversion)	<p><u>Quantitative</u> Change in Vehicle Miles Traveled</p> <p><u>Qualitative</u> Best professional judgement based on vehicle travel time reliability impacts informed by model results for change in travel time on sample origin to destination (O-D) pairs</p>	Regional travel demand model and sample origin to destination (O-D) pairs
		Change in person trips by mode (auto, transit, bike, and walk) for the region; delineate between impact to general population and Equity Framework-identified communities	<p><u>Quantitative</u> Change in daily regional mode share based on the model outputs for Metro Equity groups and selected transportation area zones (TAZs) that represent areas with Equity Framework-identified communities</p>	Regional travel demand model
Maximize integration with future toll systems	Design a toll system that can be expanded in scale, integrated with tolling on other roadways, or adapted to future toll system applications	Potential to expand system in future to a broader tolling system including other state facilities or different tolling structures	<p><u>Qualitative</u> Best professional judgement</p>	
Maximize interoperability with other transportation systems	Design a toll system that is interoperable with other transportation systems in the region	Potential to integrate the toll system with other transportation systems, such as transit, carpooling, vanpooling, ride-hailing, and scooter or bike sharing (e.g. TriMet Hop Pass), that could support a shared system for payment (transit wallet) or service	<p><u>Qualitative</u> Best professional judgement based on feedback from partner mobility service providers and community engagement</p>	Feedback from the Transit Multimodal Work Group and community engagement

<sup>11</sup> For jobs, AM peak period travel time thresholds of 20 minutes by auto, 30 minutes by transit, 15 minutes by bike, and 20 minute walk are applied.

## Federally required analysis

Performance Measure(s)	Tool and/or Data Source
Impacts from (current or new) traffic diversion on identified business concentrations in the study area	Primary research and analysis of identified commercial corridors or concentrations, Metro Regional Travel Demand Model for diversion patterns
Changes in economic conditions (employment, labor income, economic activity) from project construction	IMPLAN economic modeling software
Changes in economic conditions (employment, labor income, economic activity) from collection and use of toll revenue	IMPLAN economic modeling software
Change in reliability, travel times, and travel costs for freight users	Dynamic Traffic Assignment Model, MCE Toolkit (indexed scenario comparison of truck segmentation of benefits, where applicable)
Monetary value of vehicle travel time savings to users	WSP Benefit Cost Analysis (BCA) Model and MCE Toolkit (indexed scenario comparison)
Monetary value of changes in safety, emissions, noise, pavement maintenance costs, and other identified impacts	WSP Benefit Cost Analysis (BCA) Model
Number of contaminated sites (low, medium, and high risk) disturbed by project constructed	Data will be collected from Federal and state environmental databases for potential sites within the API, historical and existing land uses, previously-prepared environmental reports, and review of historical data regarding land use and geologic and groundwater conditions.
Number, type, and location of historic properties (including archaeological sites) directly impacted by the project	Development footprint of the tolling gantries, associated signage, and utilities.
Number, type, and location of historic properties (including archaeological sites) indirectly impacted by the project	Information obtained from traffic model showing forecasted changes in traffic volumes that would result from tolling on roadways adjacent to historic properties.
Land area by type (vacant, open space, right-of-way) converted (temporary and permanent) from non-transportation uses to transportation improvements	GIS and/or AutoCAD output of impact and acquisition areas for permanent and temporary transportation improvements by parcel and for land use and zoning designations using RLIS.

Performance Measures: Neighborhood Health and Safety

Performance Measure(s)	Tool and/or Data Source
Change in land use character as a result of the Project	GIS and/or AutoCAD total impact areas by land use and zoning designation using RLIS.
Change in access (temporary and permanent) as a result of the Project	Location of temporary and permanent changes to access points on project design plans.
Construction easements needed and their effect on existing land uses	Project design plans showing construction easements and existing land use layer in RLIS
Changes to current and planned land uses located near roadways affected by vehicle rerouting	Current land use and zoning designations in RLIS and agency future land use maps and subarea plans outside the API along road corridors experiencing changes in traffic volumes based on Information obtained from traffic model.
Location, scale, and schedule of future development projects based on agency input	Conversation with agency planning and development review staff.
Number of sensitive noise receptors experiencing noise levels that reach the ODOT Noise Abatement Approach Criteria	Comparison of modeled traffic noise levels to ODOT Noise Abatement Approach Criteria.
Number of sensitive noise receptors experiencing noise levels that reach the ODOT Substantial Increase (10 dBA over existing noise levels)	Comparison of modeled traffic noise levels to ODOT Substantial Increase.
Anticipated construction noise levels and duration of construction noise at sensitive noise receptors	Qualitative assessment consistent with ODOT Noise Manual.
Distance of noise impact contour from future project alignment to undeveloped properties	Graphical representation of modeled Noise Abatement Approach Criteria distance for ODOT Land Use Activity Categories B and C using FHWA TNM 2.5 and graphics software.
Area of ground disturbance for project construction	Approximate locations of direct impacts from construction of toll gantries and relocated utilities will be determined from Project drawings. Additional information will be obtained from the APIs of land use and utilities and any changes that may occur.
Physical changes to park and recreation resources	Presence of park and recreation resources within the limits of construction and an assessment of short-term and long-term direct impacts to the identified resources.

Performance Measures: Neighborhood Health and Safety

Performance Measure(s)	Tool and/or Data Source
Changes to access to park and recreation resources located near roadways affected by vehicle rerouting	Information obtained from traffic model showing forecasted changes in traffic volumes that would result from tolling on roadways adjacent to park and recreation resources.
Change in intersection volume-to-capacity (v/c) ratios, level of service (LOS), delay and queuing	Synchro
Changes in LOS on I-205 between Stafford Road and OR 213	Synchro and/or Vissim
Change in travel time reliability on I-205 between Stafford Road and OR 213	MCE (indexed scenario comparison) and/or Regional Integrated Transportation Information System (RITIS).
Change in hours of congestion on I-205 between Stafford Road and OR 213	Regional travel demand model
Change in travel times on I-205 between Stafford Road and OR 213 and along other study corridors within the transportation API	Synchro and/or DTA
Regional and study area vehicle hours traveled (VHT) for freeway and non-freeway travel	Regional travel demand model
Relative effort associated with implementation	Best professional judgement
Flexibility to respond to changes in traffic conditions in the project vicinity	Best professional judgement
Eligibility under preferred federal tolling authority program	Best professional judgement
Gross toll revenue (less estimated revenue leakage)	Net Revenue Model
O&M costs associated with physical tolling infrastructure including (but not limited to): gantries, equipment cabinets, cameras, fixed signage, dynamic message signs, and telecommunications infrastructure as well as procurement of vendor services and vendor transition on a periodic basis	Net Revenue Model

Performance Measures: Neighborhood Health and Safety

Performance Measure(s)	Tool and/or Data Source
O&M costs associated with toll collections including (but not limited to): banking fees for credit card transactions, toll equipment maintenance, back-office systems support, customer service center operations, ODOT and consultant staffing, and administrative costs	Net Revenue Model
Net revenue (Adjusted gross toll revenue collected less toll O&M costs and highway O&M costs)	Net Revenue Model
Capital costs associated with implementing the physical toll infrastructure and procuring toll vendor services	Net Revenue Model
Utility relocations required due to Project construction	Existing utility locations will be identified using the ITIC program and other available sources. Use project design plans to identify any potential utility relocations
Temporary disruptions to existing electrical and communication services during construction when new utility connections for the tolling equipment are established	Use existing electrical and communication services information from ITIC and other available sources and project design plans to identify potential service disruptions
New utility lines/connections (electrical and communications) required to operate tolling equipment	Use project design plans to identify new utility lines and connections
Area of direct impacts to vegetation, wildlife, or aquatic species and their habitat	The approximate project footprint (limits of cut/fill) will be established from the project drawings, and this footprint will be overlain on the vegetation, wildlife, and aquatic species mapping to estimate an approximate quantity of direct impact to vegetation, wildlife, or aquatic species and their habitat.
Area of indirect impacts to vegetation, wildlife, or aquatic species and their habitat	The approximate project footprint (limits of cut/fill) will be established from the project drawings. Scientific Best Professional Judgement will be used to determine the extent of any indirect impacts to vegetation, wildlife, or aquatic species and their habitat.

Performance Measures: Neighborhood Health and Safety

Performance Measure(s)	Tool and/or Data Source
Change in visual quality resulting from installation of toll gantries	Visual quality will be evaluated by comparing proposed project elements to existing visual conditions and documenting how visual impacts would affect viewers. Visual impacts will be based on data and process provided in the FHWA Guidelines for visual impact assessment.
Area of wetlands/waters filled	The approximate project footprint (limits of cut/fill) will be established from the project drawings, and this footprint will be overlain on the wetlands/waters resource mapping to estimate an approximate quantity of direct wetland impact.
Area of wetlands/waters indirectly affected	The approximate project footprint (limits of cut/fill) will be established from the project drawings. Scientific Best Professional Judgement will be used to determine the extent of any indirect impacts to wetlands/water resources.

## DEFINITIONS AND DESCRIPTIONS

The following table provide definitions and descriptions for technical terms referenced in the performance measures:

### Definitions of technical terms

Term	Definition
24-hour VMT output	Vehicle miles traveled (VMT) in one 24-hour period. VMT means the total number of miles driven on the Portland metro area roadway network in an average weekday.
AM/PM peak hour; and off-peak	Generally, the highest traffic-volume time period in the morning and afternoon. In the Portland region, this is between 7 a.m. to 9 a.m. and 4 p.m. to 6 p.m. Off-peak means travel that occurs outside of 7 a.m. to 9 a.m. and 4 p.m. to 6 p.m. peak periods.
Annual toll cost estimate	Average total cost that toll users would pay in one year.
Corridor	The corridor for this project has not been specifically defined. Generally, a corridor can mean the roadway and the surrounding area, including frontage roads, on and off ramps, parallel routes, other transportation facilities (like bus stops), and adjacent land uses.
Environmental justice populations	Low-income populations and minority populations are collectively referred to as environmental justice populations by the federal government. During the National Environmental Policy Act (NEPA) process, additional populations also will be considered, such as older adults, people with limited English proficiency and people with disabilities.
Indexed scenario comparison	A comparison in which performance measures are normalized to more easily compare relative differences between alternative scenarios.
Interoperability	The ability of payment technology to transfer between systems; to pay for not only tolls in the project area, but also tolls in other regions or transit fare (e.g., TriMet).
Mode (or travel mode)	The various methods for travel. In this context, mode refers to walking (non-motorized travel), biking, driving a vehicle, riding in a vehicle as a passenger, riding transit, and truck trips.
Model	A technical tool that represents travel patterns and evaluates differences between alternative scenarios. Several models are using in the analysis of toll projects including the Metro Regional Travel Demand Model.
Origin-to-destination pairs	Refers to where a trip starts and where it ends.

Term	Definition
Social and community resources	Places that are significant to the social health of a community, for example: social service providers, community recreation centers, churches, schools, libraries, and parks.
Speed bin	Groupings of vehicle travel speeds. (e.g., 40-49mph, 50-59mph).
Transportation Analysis Zones (TAZs)	Geographical areas used in travel models to represent the travel behavior of categories of transportation system user groups. There are approximately 2,000 TAZs in the Portland region.
Toll cost range	The identified maximum and minimum that someone would pay for any given trip. With variable rate tolling, the range could change over the course of the day as well as on the distance travelled on tolled roadways.
Vehicle class	Types of vehicles included in the travel demand model roadway volumes. These include: single-occupancy vehicle (driving alone), high-occupancy vehicle (driving with at least one passenger), and various truck sizes.

## Tools and data sources

Tool/Data	Description
Best professional judgment	Judgment exercised on the job as informed by the education and experience of credentialed professionals. Credentialed professionals typically hold degrees from accredited institutions, and many have professional certifications that govern ethics and practice standards, such as American Institute of Certified Planners (AICP), Professional Engineer (PE) and Professional Transportation Planners (PTP).
Census data (American Community Survey 5-year estimates)	The American Community Survey is an ongoing survey, conducted by the United States Census Bureau, that provides vital information on a yearly basis about our nation and its people. This vital information includes demographic characteristics.
Census tracts	Census tracts are small, relatively stable and consistently defined geographic areas that usually have a population between 2,500 and 8,000 persons, roughly corresponding to the size of an average American neighborhood. The minimum population of 2,500 allows for statistically significant data analysis, while the maximum population of 8,000 facilitates the ability to create useful geographic blocks. There are approximately 490 census tracts in the Portland-Vancouver metro area.
Dynamic Traffic Assignment (DTA)	This is a type of traffic model being developed for the for I-205 subarea. It refines the Regional Travel Demand Model results for the purposes of peak-hour traffic analysis near the study area. There is no direct connection to equity.

Performance Measures: Neighborhood Health and Safety

Tool/Data	Description
FHWA Traffic Noise Model Version 2.5	This is the Federal Highway Administration’s most current version of a noise model. A traffic noise model helps predict the noise level of a specific roadway under various alternative scenarios.
GIS	GIS stands for geographic information system, and it is a framework for gathering, managing and analyzing data related to spatial location and geography.
Highway Safety Manual Part C Methodology	The American Association of State Highway and Transportation Officials Highway (AASHTO) produces and uses a highway safety manual. Part C of this manual defines the methods for predictive safety analysis.
MOVES model	This is the motor vehicle emissions simulator. The project team uses this tool to estimate motor vehicle emissions at the regional level.
Multi-Criteria Evaluation (MCE) toolkit	The MCE toolkit associates regional travel demand model outcomes for specific Transportation Analysis Zones with demographic data provided by the Census Bureau. This helps to give an indication of impacts on different populations and can support analyzing equity.
ODOT’s MMLOS calculation tool	MMLOS stands for multimodal level of service. The Oregon Department of Transportation (ODOT) uses this tool to calculate the quality of travel by walking, biking, or transit. ODOT does not use this tool for evaluating the quality of service for people driving vehicles.
Qualitative	This refers to project team evaluations that are generally not directly tied to specific numerical measures, but rather informed by best professional judgment and informed by technical results as available.
Regional Travel Demand Model	This tool is used by Portland Metro to represent travel behavior and patterns in the region. It is a primary tool used for projecting growth in future travel demand using assumptions about expected growth in population (households) and jobs (employment).
WSP Benefit Cost Analysis (BCA) model	This is a technical analysis tool, developed and used by the project’s consultant, WSP, that evaluates economic impacts including benefits and costs.

## Performance Measures: Neighborhood Health and Safety

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