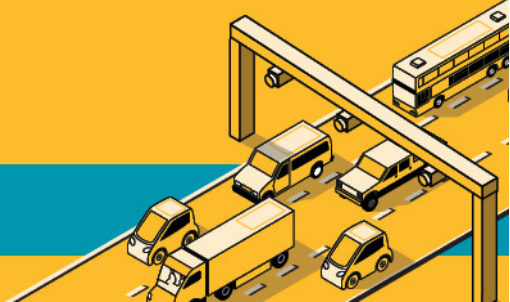


# I-205 Toll Project

## MEMORANDUM



**Date** September 1, 2021  
**To** Lucinda Broussard, Susan White, Carol Snead, and Michael Holthoff (ODOT)  
**From** Stephanie Sprague, WSP  
**Subject** Environmental Justice Methodology Memorandum  
**CC**

### INTRODUCTION

This memorandum describes the methods that will be used in the I-205 Toll Project (Project) Environmental Assessment (EA) analysis to evaluate impacts of the Project alternatives low-income populations and minority populations (collectively referred to as environmental justice populations). The analysis and results will be documented in a technical report and summarized in the EA that will be developed to comply with federal guidelines and regulations, including the National Environmental Policy Act (NEPA) and local and state policies, standards, and regulations. The environmental justice analysis will evaluate impacts from the construction, operations, and maintenance of the Project and will identify mitigation measures as needed.

### LEGAL REGULATIONS AND STANDARDS

#### Laws, Plans, Policies, Regulations, and Guidance

The following is a list of federal orders, laws, regulations, plans, policies, and guidance documents that ODOT is required to follow for an environmental justice analysis under NEPA for a federally-funded project. These serve as the primary references for the environmental justice analysis.

- Presidential Executive Order 12898 – Federal Actions to Address Environmental Justice to Minority Populations and Low-Income Populations
- Presidential Executive Order 13166 – Improving Access to Services for Persons with Limited English Proficiency
- Title 42 United States Code (USC) Section 4601, Uniform Relocation Assistance and Real Property Acquisition Policies for Federal and Federally Assisted Programs
- U.S. Department of Transportation (USDOT), Department of Transportation Updated Environmental Justice Order 5610.2a
- Federal Highway Administration (FHWA) Order 6640.23A, FHWA Actions to Address Environmental Justice in Minority Populations and Low-Income Populations

- FHWA Guidance on Environmental Justice and NEPA

The project team will also use the following references to design and implement the EJ analysis for the project:

- FHWA Environmental Justice Reference Guide
- Promising Practices for EJ Methodologies in NEPA Reviews: Report of the Federal Interagency Working Group on Environmental Justice and NEPA Committee

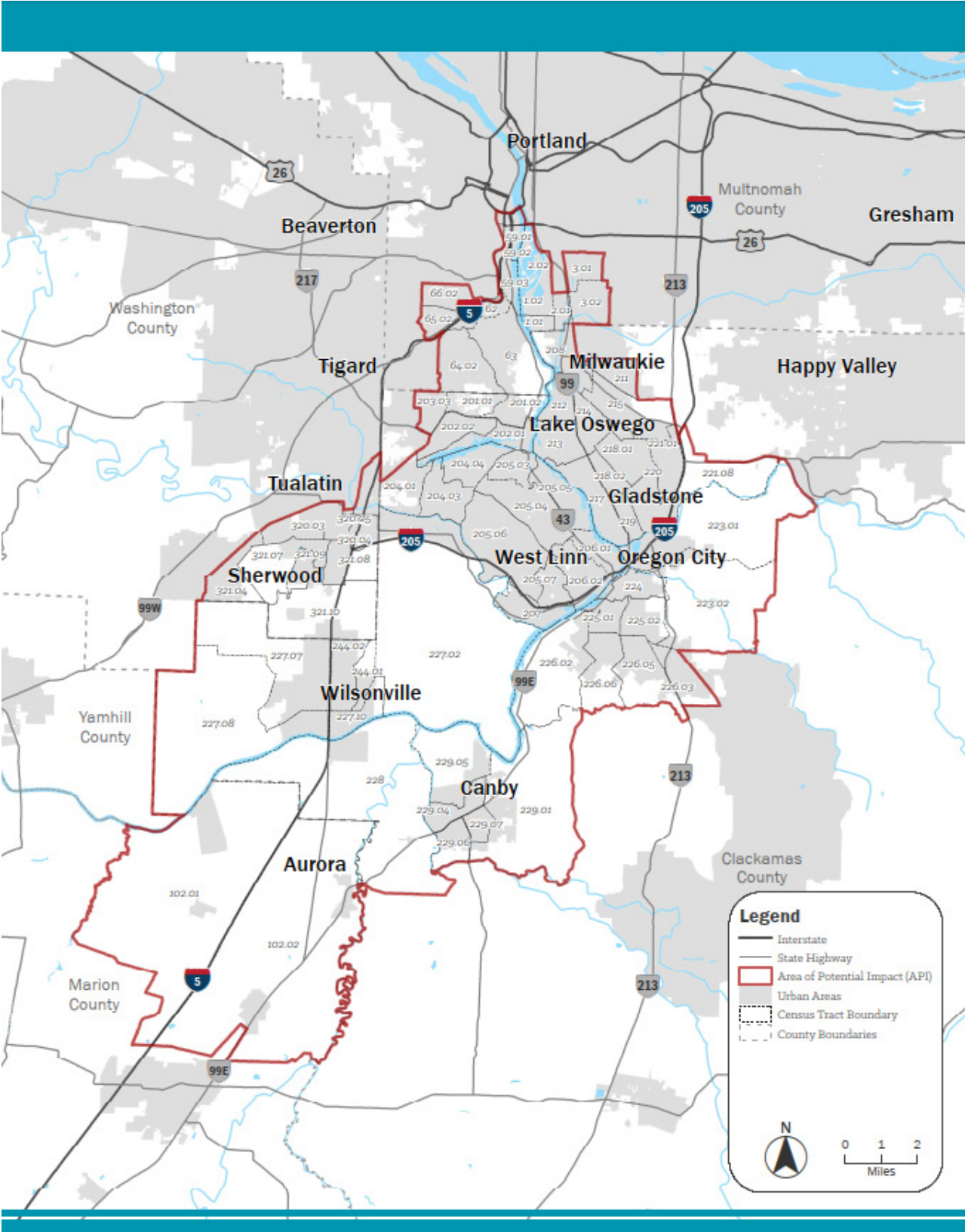
## **AREA OF POTENTIAL IMPACT**

An Area of Potential Impact (API) is a geographic boundary within which the Project alternatives could cause direct impacts to the human and natural environment. For tolling projects, there are potential impacts to the physical and natural environment, such as rerouting impacts on neighborhoods, community cohesion and business areas, air quality, and noise impacts, and impacts related to the placement of the toll gantries. For the Project, the largest proposed topic area APIs include air quality, economics, and energy and greenhouse gases. Therefore, the API for environmental justice adopts these individual resource topic area APIs as the “outer boundaries” of potential impacts; this API also matches the API identified for social resources and communities.

The environmental justice analysis will use U.S. Census Bureau data at the census tract geography and will consider those census tracts that are entirely within or intersect the environmental justice API shown on Figure 1.

Toll projects also have potential impacts on users of the toll facility such as changes in travel time and traffic flow, the cost of the toll and the potential disproportionate economic burden on low-income drivers and ability to access to the electronic toll payment system. These types of impacts are not necessarily geographically constrained to the area discussed above where physical and natural resource impacts might occur. Thus, in addition to analyzing the physical and natural resource impacts within the API described above, the Project will also consider the impacts of the tolls and accessibility of the electronic tolling system on different groups such as low-income populations and/or minority populations, including geographically dispersed/transient populations, and unbanked persons that travel through the API.

Figure 1. Environmental Justice API



## DESCRIBING THE AFFECTED ENVIRONMENT

### Affected Populations in Environmental Justice Memo versus Social Resources and Communities Memo

Table 1 below identifies which underserved and excluded populations and communities will be assessed in the Environmental Justice Methodology Memo and which will be assessed the Social Resources and Communities Methodology Memo. Populations are considered in only one memo, not both memos.

**Table 1. Underserved and Excluded Populations by Discipline**

Population	Discipline
Minorities (Race and Ethnicity)	Environmental Justice
Low-Income	Environmental Justice
Houseless and Geographically Dispersed/Transient	Environmental Justice
Migrant Workers	Social Resources and Communities
LGBTQ+	Social Resources and Communities
Disability	Social Resources and Communities
Seniors (65+)	Social Resources and Communities
Children (under 18)	Social Resources and Communities
Limited English Proficiency	Social Resources and Communities
No Vehicle Access Households	Social Resources and Communities

### Published Sources and Databases

Data used in the 2018 Documented Categorical Exclusion (DCE) prepared for the I-205 Improvements Project will be reviewed to confirm its relevancy and applicability to this study. The following is a list of the data that will be used to determine and describe environmental justice resources/existing conditions and develop a demographic profile for low-income populations and/or minority populations that reside within the API and those motorists traveling in or through the API, including dispersed/transient populations:

- U.S. Census Bureau
  - Most recent available 5-Year Estimates from U.S. Census Bureau American Community Survey (ACS)
  - Most recent available decennial census data<sup>1</sup>

<sup>1</sup> Although the 2020 U.S. Census was conducted, that data may not be available at the time the report is prepared. Census data is rolled out in packages over time, so for some measures 2010 data may still be the most recent available data.

- Oregon Department of Education student demographic data by school
- Metropolitan Portland Regional Travel Demand Model (Metro 2018a)
- County Point in Time Counts (PITC) of homeless persons

### Identifying Environmental Justice Populations

Low-income populations and/or minority populations will be identified through a no threshold approach using the most currently available decennial census and ACS census tract data<sup>2</sup>. A no threshold approach means that the project will not limit its analysis of environmental justice impacts to only census tracts that have a defined threshold percentage of low-income and/or minority persons. The no threshold approach minimizes the possibility of inadvertently missing concentrations of low-income and/or minority persons within census tracts that do not meet a pre-defined threshold level. As defined in US DOT and FHWA Orders on Environmental Justice, the Project team will report the demographic data described below. Margins of error for ACS data will be reported.

#### Low-Income

As defined in the USDOT Updated Order on Environmental Justice, low-income means a person whose median household income is at or below the Department of Health and Human Services (HHS) poverty guidelines (USDOT 2012). For 2020, the poverty guidelines for a household of four persons is \$26,200. However, FHWA allows flexibility for a state or locality to “adopt a more inclusive threshold for low-income than that specified by HHS as long as it is inclusive of all persons at or below the HHS poverty guidelines” (FHWA 2015).

The federal poverty level set by HHS does not account for variability in the cost of living across different locales. Metro’s Equity Baseline Report notes that the federal poverty level “is calculated primarily based on the cost of food because of its historical development alongside federal food assistance programs, and it fails to consider local variability in prices. This leads to a definition of poverty (and other low-income classifications) based on a household cost (food) that is relatively small compared to housing, transportation, health care, education, and other costs; and a definition of poverty that is the same for all 48 contiguous

#### Census Data to be Reported

- Federal poverty level
- 200% of federal poverty level

#### Other Data to be Reported

- Elementary school demographic data from Oregon Department of Education
- County PITC of Homelessness

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<sup>2</sup> When analyzing census data, the information will also be compared to a dasymetric allocation of population that illustrates where people are most likely to reside within an area based on land cover. This population distribution technique recognizes that people are unlikely to live in uninhabitable areas (e.g. open water, emergent wetlands, areas with slopes greater than 25 percent). By removing these areas and estimating the density of the habitable land, this map provides an improved representation of the population of an area.

states, regardless of local cost of living” (Metro 2015). For instance, in Oregon a family of four with two adults working full-time earning minimum wage and two children would have an annual income of \$55,120 (\$13.25 per hour x 2 persons x 2080 hours).

In light of the above limitations of the federal poverty level, regional stakeholders have defined low-income for their planning purposes to be more inclusive than the HHS poverty threshold. For example, TriMet defines low-income as 200 percent of the federal poverty level (TriMet 2019) and Metro also recommends using 200 percent of the federal poverty level to be inclusive of other costs of living besides food costs (Metro 2015).

For 2020, 200 percent of the federal poverty level for a household of four persons is \$52,400. The Project recommends adopting the definition of low-income as 200 percent of the federal poverty level to be consistent with data available through the U.S. Census Bureau, to be aligned with regional stakeholder definitions of low-income, and to be more inclusive of the costs of living above and beyond food costs. Any deviations from this definition that may be assumed in the travel demand model will be described during the technical analysis.

### Minority

Minority means a person who identifies as:

1. Black: a person having origins in any of the black racial groups of Africa
2. Hispanic or Latino: a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race
3. Asian American: a person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent
4. American Indian and Alaskan Native: a person having origins in any of the original people of North America, South America (including Central America), and who maintains cultural identification through tribal affiliation or community recognition
5. Native Hawaiian and Other Pacific Islander: people having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands (USDOT 2012)
6. Some other race or two or more races.

#### Census Data to be Reported

- Race: % minority and % non-minority
  - Black
  - Asian American
  - American Indian or Alaskan Native
  - Native Hawaiian or Other Pacific Islander
  - Some other race
  - Two or more races
  - White
- Ethnicity: % Hispanic or Latino and % non-Hispanic or non-Latino

#### Other Data To Be Reported

- Elementary school demographic data from Oregon Department of Education

### Contacts and Coordination

In addition to reviewing published information, the Project team will gather qualitative information on the presence of low-income populations, minority populations, and facilities and services that are culturally specific or of cultural importance to minority and/or low-income

populations. This information will be obtained from social service providers, community groups, community engagement liaisons, and from public engagement efforts such as surveys and open houses. The Project team will consult with the Oregon Toll Program's Equity and Mobility Advisory Committee (EMAC) to confirm environmental justice resources (community gathering places, social services, ethnic grocery stores, health clinics, churches, etc.) and demographic data gathered for the description of existing conditions. Equity and mobility strategies identified by EMAC will inform potential avoidance, minimization, and mitigation measures for environmental justice.

### **Observational Site Visit**

An observational site visit will be conducted jointly with the Social Resources and Communities Technical Lead to confirm the presence of any community resources of importance to low-income and/or minority populations that are identified through the public engagement process and via a desktop analysis.

## **IMPACT ASSESSMENT METHODS**

The impacts analysis will address the long-term and short-term impacts upon low-income populations and/or minority populations for each of the Project alternatives.

### **Long-Term Impact Assessment Methods**

The analysis of direct long-term environmental justice impacts resulting from the Project will assess whether the alternatives would create disproportionately high and adverse impacts to low-income populations and/or minority populations. This analysis will use qualitative and quantitative measures to consider the following changes that could potentially result from the implementation of tolls, and assess whether those impacts would be disproportionately high and adverse to environmental justice populations:

- Noise changes near neighborhoods, schools, parks, business areas, and other social gathering places in the API
- Traffic pattern changes to neighborhoods, schools, parks, business areas, and other social gathering places including rerouting in the API
- Accessibility to resources such as health care facilities, grocery stores, social service providers, and job centers in the API
- Travel time impacts for motorists and transit users traveling in or through the API, including those who live within and outside the API
- Change in household financial burden from paying tolls for motorists and transit users traveling in or through the API, including those who live within and outside the API
- Accessibility of an electronic toll system for motorists traveling in or through the API, including those who are unbanked and those who live within and outside the API

The Project also has the potential to create benefits to low-income populations and/or minority populations. The analysis of long-term impacts will consider potential benefits, such as an improvement in mobility or accessibility, that may offset adverse effects that could not be avoided or otherwise mitigated.

The Project team will also incorporate findings from the public engagement efforts to describe the Project's proactive efforts to ensure meaningful opportunities for public participation. These efforts will include descriptions of activities to increase low-income and minority participation, the views of the affected population(s) about the Project, and what steps are being taken to resolve any controversy that exists. Where specific impacts have been noted by the community, potential mitigation measures will be described. This report will reference the Equity and Environmental Justice Outreach section of the Public Involvement Plan and the Equity and Environmental Justice Impacts Briefing document that describe the degree to which the affected groups of minority populations and/or low-income populations, including geographically dispersed/transient persons, have been involved in the decision-making process related to the alternative selection and their input to the impact analysis and any mitigation measures. If additional impacts are identified through the Project's public engagement efforts, stakeholder coordination or through the EMAC, the analysis will be updated.

### **Short-Term Impact Assessment Methods**

The analysis of direct short-term environmental justice impacts resulting from the Project will assess whether construction of the Project would create disproportionately high and adverse impacts to low-income populations and/or minority populations. This analysis will consider:

- Construction-related impacts identified in the Project's individual resource memos and technical reports such as, but not limited to, minor sidewalk improvements or road restriping.
- Construction-related impacts related to toll gantry construction and placement and installation or relocation of signs or utilities in relation to low-income populations, minority populations and/or historically and currently excluded and underserved communities
- Any other construction-related impacts identified through the public engagement activities or coordination with community groups, community engagement liaisons, and the EMAC.

### **Indirect Impacts Assessment Methods**

The analysis of indirect environmental justice impacts resulting from the Project will assess whether the Project would indirectly create disproportionately high and adverse impacts to low-income populations and/or minority populations. This analysis will consider:

- Indirect impacts identified in the Project's air quality, noise, visual, and transportation resource memos and technical reports



- Potential quality-of-life impacts from reduced opportunities for employment and services because of degraded accessibility, mobility, and/or travel reliability
- Potential quality of life impacts from delayed or foregone activities and purchases because of reduced disposable income and/or less available time outside of travel time

### **Cumulative Impacts Assessment Methods**

In accordance with ODOT guidance (ODOT 2010), the cumulative impacts assessment will consist of an eight-step process to identify and evaluate cumulative impacts. The long-term, short-term, and indirect impacts identified for environmental justice will be used in Step 1 to identify whether the Project has the potential to contribute to cumulative impacts on environmental justice when considered in combination with other past, present, and future actions. For those resources studied in the cumulative impact assessment, the direct and indirect impacts identified in the respective technical analysis will also be used in Step 4: “Identify direct and indirect impacts that may contribute to a cumulative impact.” See the I-205 Toll Project Cumulative Impacts Methodology Memorandum for additional details on the eight-step process and cumulative impacts methodology.

### **MITIGATION APPROACH**

Equity and mobility strategies identified by the EMAC will be integrated into the Project design as the alternatives are advanced. The purpose of these strategies would be to avoid and/or minimize impacts to low-income and/or minority populations. Potential mitigation measures will be identified for any disproportionately high and adverse environmental justice impacts. The majority of these mitigation measures will be taken from other environmental topics, such as mitigation for community disruption, traffic impacts, air quality, economics, and noise. Dialog with both the EMAC and the EJ community members/leaders themselves, and coordination with FHWA Oregon Division, will identify any additional appropriate mitigation and enhancement measures. For any identified environmental justice impacts, the analysis will consider whether the Project’s mitigation measures and environmental enhancement actions will avoid, offset, or minimize these impacts, or whether additional mitigation is necessary.

### **PERFORMANCE MEASURES**

Table 2 presents a preliminary list of performance measures identified to evaluate how the alternatives compare in terms of impacts and benefits to environmental justice.

Additional performance measures may be identified during the course of analysis.

**Table 2. Preliminary Environmental Justice Performance Measures**

Performance Measure	How	Tool and/or Data Source used for Assessment of Measure
Identify impacts to safety and health for Equity Framework-identified Communities located near roadways experiencing traffic volume changes due to the project	<p><u>Quantitative</u>                      Traffic volume changes on select roadways (AM peak hour, PM peak hour, off-peak, daily).</p> <p><u>Qualitative</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.</p> <p>For areas of concern, the project team will use targeted community engagement to better understand impacts and what is needed to advance equity.</p>	<p>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).</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 mapping of Equity Framework-identified communities, which includes environmental justice populations (low income and minorities).</p> <p>Transportation data and mapping that identifies high injury and crash corridors and locations.</p> <p>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.</p> <p>Data mapping of existing heat islands and health outcomes/existing conditions.<sup>3</sup></p> <p>Targeted community engagement.</p>

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<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.

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Performance Measure	How	Tool and/or Data Source used for Assessment of Measure
<p>Change in vehicle operating costs in the Portland metro area; delineate between general population and Equity Framework-identified communities</p>	<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><u>Qualitative</u>            Best professional judgement based on analysis.</p>	<p>WSP Benefit Cost Analysis (BCA) Model and Multi-Criteria Evaluation (MCE) Toolkit (indexed scenario comparison of vehicle operating costs).</p>
<p>Change in travel costs as a percentage of household income for the general population and Equity Framework-identified Communities</p>	<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>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>

<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.

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Performance Measure	How	Tool and/or Data Source used for Assessment of Measure
<p>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:</p> <ul style="list-style-type: none"> <li>(A) Jobs</li> <li>(B) Community places</li> </ul>	<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. Targeted community engagement for selected locations to better understand impacts to access.</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>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>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>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.</p> <p>Targeted community engagement informed by selected O-D pairs.</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.

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Performance Measure	How	Tool and/or Data Source used for Assessment of Measure
<p>Change in access to health promoting activities (i.e. parks, open spaces, and trails) and health care facilities for the general population and Equity Framework-identified communities within 30-minute trip by mode (auto, transit, walk, and bicycle)</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) for the region and Transportation API.</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.</p>	<p>Metro travel demand model to identify the 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>Present table of change in auto travel time to health promoting activities (i.e. parks, open spaces, and trails) and health care facilities (including dialysis centers, cancer treatment centers, and drug addiction centers) 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>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.</p> <p>Targeted community engagement informed by selected O-D pairs.</p>

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Performance Measure	How	Tool and/or Data Source used for Assessment of Measure
<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>
<p>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</p>	<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, which includes environmental justice populations (low income and minorities).</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, which includes environmental justice populations (low income and minorities).</p>

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Performance Measure	How	Tool and/or Data Source used for Assessment of Measure
<p>Change in the quality of life in areas impacted by diversion; delineate between the general population and Equity Framework-identified communities</p>	<p><u>Qualitative</u>            Best professional judgement to impact to quality of life, based on analysis factors.</p> <p>For areas of concern, the project team will use targeted community engagement to better understand impact and what is needed to advance equity.</p>	<p>Consideration of the following (see other performance measures identified in this memo):</p> <ul style="list-style-type: none"> <li>• Social resource mapping, which includes access 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>• Heat islands</li> <li>• Health outcomes/existing conditions</li> <li>• Census mapping of Equity Framework-identified communities, which includes environmental justice populations (low income and minorities)</li> <li>• 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</li> </ul> <p>Targeted community engagement.</p>
<p>Change in I-205 safety conditions, which includes frequency and/or severity of vehicular crashes , as well as mode shift</p>	<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>Regional travel demand model and Dynamic Traffic Assignment (DTA) model results for traffic volume changes.</p> <p>Highway Safety Manual Part C Methodology for corridors.</p> <p>Regional model mode shift estimates.</p> <p>analysis of existing safety conditions based on crash history database.</p> <p>Proposed mitigation or strategy investments.</p>

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Performance Measure	How	Tool and/or Data Source used for Assessment of Measure
<p>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</p>	<p><u>Quantitative</u>            Analysis of crash history in study area (existing conditions).</p> <p><u>Qualitative</u>            Best professional judgement to impact to safety, based on analysis factors.</p> <p>For areas of concern, the project team will use targeted community engagement to better understand impact and what is needed to advance equity.</p>	<p>Regional travel demand model and Dynamic Traffic Assignment (DTA) model results for traffic volume changes            Transportation data and mapping that identifies high injury and crash corridors and locations.</p> <p>MCE Toolkit (indexed scenario comparison of crashes) for region or study area.</p> <p>MMLOS (level of service) calculation tool or LTS (Level of stress) for bike and walk.</p> <p>Existing conditions data counts for intersections within the Transportation API Data mapping of existing heat islands and health outcomes/existing conditions.<sup>8</sup></p> <p>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.</p> <p>Targeted community engagement.</p>

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<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.



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Performance Measure	How	Tool and/or Data Source used for Assessment of Measure
<p>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>	<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>
<p>Change in level of traffic stress for bicycle and pedestrian corridors impacted by traffic volume changes due to the project</p>	<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>	<p>MMLOS (level of service) calculation tool or LTS (Level of stress) bike and walk.</p>
<p>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>	<p><u>Qualitative</u>            Best professional judgement based on the analysis and community engagement.</p>	<p>Feedback from the Transit Multimodal Work Group and community engagement.</p>

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Performance Measure	How	Tool and/or Data Source used for Assessment of Measure
<p>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>	<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 roadways 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>
<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>	<p><u>Qualitative</u>            Best professional judgement based on the analysis and community engagement.</p>	<p>Feedback from the Transit Multimodal Work Group and community engagement.</p>
<p>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>	<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 roadways 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>

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Performance Measure	How	Tool and/or Data Source used for Assessment of Measure
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 Framework-identified populations.</p> <p>Identify OD pairs that have significant Equity Framework-identified 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>

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Performance Measure	How	Tool and/or Data Source used for Assessment of Measure
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>9</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>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>
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.
Number of sensitive noise receptors experiencing noise levels that reach the ODOT Noise Abatement Approach Criteria	Quantitative	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)	Quantitative	Comparison of modeled traffic noise levels to ODOT Substantial Increase.
Anticipated construction noise levels and duration of construction noise at sensitive noise receptors	Qualitative	Qualitative assessment consistent with ODOT Noise Manual.

<sup>9</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.

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