Memorandum

Date	July 2022
To	Regional Mobility Pricing Project Agency Partners
From	ODOT Oregon Toll Program
Subject	The RMPP Greenhouse Gas Emissions Assessment Approach

This memorandum documents the technical approach that will be used to evaluate the Regional Mobility Pricing Project's (RMPP) potential to reduce greenhouse gas (GHG) emissions and contribute towards statewide climate goals. This document describes the technical approach for the current planning phase as well as the anticipated approach that will be used during the National Environmental Policy Act (NEPA) environmental review phase, expected to begin in late 2022.

The Oregon Department of Transportation (ODOT) acknowledges that climate change is an urgent issue that the transportation sector has fallen short of tackling. Climate change has major impacts to equity and disadvantaged communities by reducing air quality and contributing to the heat island effect. The State of Oregon, ODOT, Oregon Metro (Metro), the City of Portland and federal agencies have identified congestion pricing as a necessary tool to manage demand and accelerate the transition to low-carbon transportation to meet the Paris Climate Agreements goal of limiting global warming to below 2 degrees Celsius, compared to pre-industrial levels. With the overwhelming policy directive to address climate change and the growing need to address congestion in Oregon, the RMPP has committed to integrate climate and equity into all aspects of project development.

RMPP (the Project) is currently in the USDOT planning and environmental linkages (PEL) phase in which ODOT asks, at a high level, how congestion pricing will impact the Portland metropolitan area, the economy, climate, and surrounding communities. During this phase, traffic modeling provides regional outputs that ODOT can interpret using evaluation criteria to understand how different toll rates can effectively meet Project goals and objectives. For this regional analysis, the Project team is working to identify the resources and tools available to measure a change in GHG emissions between Project scenarios and identify questions that will need to be addressed during the subsequent NEPA phase.

The NEPA environmental review phase will narrow the analysis to evaluate the impacts between two Project alternatives: No Action and the Proposed Action. During this phase, the Project team will conduct a more focused analysis based on refined assumptions, develop indicators to assess performance, and determine, in more detail, how the Project will influence climate change.

Figure 1. Regional Mobility Pricing Project Study Area

1 Introduction

The United States transportation sector is responsible for 29 percent of national GHG emissions, resulting in the buildup of carbon dioxide, methane, and other harmful gasses in the atmosphere. In Oregon, approximately 40 percent of GHG emissions are from transportation, making it the highest emitting sector in the state. Roadway congestion - daily backups, slow moving vehicles and stop-and-go traffic - wastes fuel and results in additional transportation GHG emissions. Key strategies that can help address climate change include:

- Reduce roadway congestion, idling and stop-start conditions that reduce fuel efficiency, especially for heavier trucks. Motor vehicles run most efficiently and create less pollution at speeds above 30 mph and under 60 mph.
- Reduce system-wide vehicle miles traveled (VMT).
- Support mode shift from single occupancy vehicle (SOV) travel to shared and active transportation, such as public transit, vanpools, and walking or biking, including addressing safety issues for these vulnerable road users.
- Incentivize short trips to use local routes and multi-modal options to allow highways to primarily serve longer regional and intercity movement.
- Incentive early adoption of electric vehicles where consistent with social equity goals.
- Reduce transportation energy consumption.
- Propose, monitor, report and adjust strategic approach as necessary.

What about electric vehicles?

Electric vehicles generate fewer GHGs than vehicles with an internal combustion engine (ICE) and make up a small, but growing share of total vehicle sales in Oregon and worldwide.

Although incentivizing electric vehicle (EV) adoption is not a specific goal of the RMPP, the Project team will conduct analysis to better understand how discounts or rebates for early adoption of electric and low-emissions vehicles could influence GHG emissions in the study area.

The Oregon Department of Transportation (ODOT) is working to reduce the amount of GHGs emitted through operation and management of the state's transportation system. ODOT's Regional Mobility Pricing Project (RMPP) would apply congestion pricing on all lanes to more than 50 miles on I-5 and I-205 in the Portland metropolitan area to manage traffic congestion and raise revenue for priority transportation projects. Variable-rate tolling, a type of congestion pricing, would bring more reliable travel and reduce congestion by applying higher tolls during peak hours and encouraging some drivers to change travel behavior. For example, higher fees during peak travel times would encourage some drivers to travel at less congested times of day, when fees are lower and travel is more efficient, thereby reducing fuel consumption. Congestion pricing fees also encourage other drivers to shift to modes of travel that generate

less GHG emissions, such as carpooling and public transit. These changes combined can result in lower GHG emissions throughout the region.

With the formation of the Climate Office in 2021, ODOT is dedicating time and resources to address climate issues through the Department's programs, projects, and operations. The mission of the ODOT Climate Office is to identify and pursue actions that reduce transportation GHG emissions and adapt to a changing climate. ODOT programs, projects, and operations that aim to reduce GHG emissions through more efficient transportation including: shifting to low carbon vehicles and fuels, operations that improve vehicle fuel efficiency, higher use of non-driving modes through a robust multi-modal network, and true cost pricing. Legislative and State directives have established and furthered the implementation of these GHG reduction goals. The RMPP team will collaborate with the Climate Office to identify effective strategies to evaluate GHG emissions reduction potential during the Project's planning and environmental phases.

2 GHG Emissions Reduction Policies Addressing Congestion Pricing

This section highlights key policies established by the Oregon Legislature and ODOT related to both GHG emissions and congestion pricing, which help guide the RMPP's approach to evaluating GHG emissions reduction. ODOT's Statewide Transportation Strategy (STS), ODOT's Climate Action Plan, and House Bill 3055, among other documents, plans and laws (see Climate Office quick links), provide robust policy guidance that advocate for congestion pricing projects that quantify and reduce GHG emissions. Additional GHG emissions reduction policies, directives and supportive legislation not directly tied to congestion pricing can be found in Appendix A.

2.1 ODOT Statewide Transportation Strategy

The Oregon STS (2013) is a state-level scenario planning effort that examines all aspects of the transportation system, including the movement of people and goods, and identifies a combination of strategies to reduce GHG emissions. The STS was developed as part of the Oregon Sustainable Transportation Initiative program and involved extensive research and technical analysis, as well as policy direction and technical input from local governments, industry representatives, metropolitan planning organizations, state agencies and others. In 2018, the Oregon Transportation Commission adopted an amendment to incorporate the STS as part of the Oregon Transportation Plan (OTP).

Through the 2.5-year, cooperative analysis process, the STS concluded that no single solution was the answer to reduce transportation related emissions, and that a multi-faceted and aggressive approach was needed from all sectors. The roadmap for reducing GHG emissions from transportation, as outlined in the STS, includes transitioning to low carbon vehicles and fuels, adopting operations that improve vehicle fuel efficiency, and reduction of overall vehicle

miles traveled, through pricing policies like tolling that can increase use of and provide funds for investments in alternative transportation. The STS Short Term Implementation plan (2014) and STS Monitoring Report (2018) identified a road user charge economic analysis, among other actions, to be conducted over a five-year period to understand the economic impact of pricing strategies, specifically road-usage fees. At the time the STS was developed, there was much debate over the economic impact of GHG reduction efforts.

Several metropolitan areas across the state have also developed their own GHG emissions reduction roadmaps with similar policy actions on mode shift, operational efficiencies and pricing policies, including the Portland Climate Smart Strategy adopted in 2014, detailed in Appendix A.

2.2 ODOT Climate Action Plan

The Climate Action Plan 2021-2026 was published in 2021 and details ODOT's 5-year work plan to evaluate and address reducing GHG emissions as well as adapting the transportation system in Oregon to a changing climate. Climate is a critical lens through which ODOT will make decisions and investments, balanced alongside other important considerations like equity, mobility, safety, and the economy. The Climate Action Plan contains several actions across a variety of categories that are relevant to the RMPP. More detail can be found in Appendix A.

2.3 State of Oregon House Bill 3055

House Bill 3055 (2021) states that "significant traffic congestion adversely impacts Oregon's economy and the quality of life of Oregon's communities. Where appropriate, variable rate tolls should be applied to reduce traffic congestion and support the state's GHG emissions reduction goals" (Section 134-10). Toll strategies that reduce VMT, cause vehicles to travel at more fuel efficient speeds, reduce crash delays (especially for heavy trucks), and encourage mode shift to low-emissions transportation options are the best-known tools to reduce GHG emissions from transportation. The majority of House Bill 3055 has now been enrolled as statute at ORS title 31 chapter 383. Other parts of the bill are being promulgated in rulemaking - most notably in OAR 660-012 and OAR 660-044.

2.4 Metro Climate Smart Strategy

The Climate Smart Strategy (CSS) responds to a state mandate to develop and implement a strategy to reduce per capita GHG emissions from cars and small trucks by 2035 that meets state-set GHG reduction targets (OAR 660-044), as part of the overall STS Vision that meets statewide GHG reduction goals. The CSS includes multiple strategic policies that may be supported by RMPP and toll revenues, including:

- Improving access and service to public transit.
- Improving safety and convenience for bicyclists and pedestrians.

- Making streets and highways safe, reliable and connected.
- Transition to cleaner, low-carbon fuels and more efficient vehicles.

Most relevant, the CSS recommends policies that *use technology to actively manage the transportation system* to reduce idling and improve the speed and reliability of transit.

2.5 PBOT Strategic Plan

In its 2019-2022 Strategic Plan, the Portland Bureau of Transportation (PBOT) developed goals that contribute to a more equitable and climate friendly transportation system. The Plan identifies pricing congestion in response to demand as a method to move more people, instead of more vehicles, reduce pollution, and advance transportation options. PBOT, alongside the City of Portland, acknowledge the disproportionate impacts of climate change to low-income communities and people of color. PBOT commits to the following strategic initiatives.

- Advocate for demand management through pricing on ODOT freeways to mitigate existing inequities, improve safety on local roads and reduce carbon emissions.
- Produce a regional pricing model with key partners that allows PBOT to evaluate different demand management strategies in combination with levels of transit investment.
- Implement an equitable pricing strategy in partnership with the community.

This strategic plan coincides with Portland's winning participation in the Bloomberg American Cities Climate Challenge. The initiative supports near-term actions to reduce carbon emissions while providing a guiding framework for the strategic plan with clear outcomes and measures.

3 Planning Phase Analysis

This section describes how ODOT is assessing the potential effects of RMPP related to GHG emissions during the present transportation planning phase. This phase of the Project is intended to provide a high-level understanding of how congestion pricing could affect the region so ODOT can plan for focused analyses of findings during the NEPA phase. During this phase, the Project team is evaluating project options to develop a single congestion pricing concept or "Proposed Action" that will be evaluated against a "No Action" during NEPA. The strategies and tools used in this phase include:

- Identifying project purpose, needs, goals and objectives.
- Future year scenario planning using a regional travel demand model.
- Interpretation of data using evaluation criteria.
- Analysis of current travel behaviors.

The following sections describe each strategy and/or tool in detail.

3.1 Project Purpose and Need

A key outcome of the planning phase is establishing a **Draft Purpose and Need Statement** that provides the justification for the Project and the goals and objectives that will inform Project decision making. Taken together, these needs, goals and objective statements provide a framework for the technical analysis of GHG emission reduction for the RMPP. For example, the evaluation criteria that will be used to evaluate Project scenarios and options are directly tied to the six "needs" categories.

One of the need statements specifically relates to GHG emissions reduction:

- *Our transportation system must reduce GHG emissions by managing congestion.*

  Climate change is a significant threat to Oregon's economy, environment, and way of life (Gov. Kate Brown 2019). To reduce the negative effects of climate change, Oregon has committed to reducing GHG emissions by at least 45% below 1990 levels by the year 2035, and by 80% by 2050 (EO 20-04 2020). The transportation sector creates approximately 36% of GHG emissions in Oregon (Oregon Global Warming Commission 2020). Traffic congestion leads to an increase in fuel consumption and carbon dioxide emissions. During congestion, vehicles spend more time on the road, idling or crawling, and undergoing numerous acceleration and deceleration events that leads to an increase in emissions. To meet the state's goals for GHG emissions reduction, total vehicle emissions must be reduced by decreasing the number of hours vehicles spend stuck in traffic, the amount of stop-and-go traffic, and the number of miles traveled by motor vehicles in the state.

Several of the other need statements are less directly linked to climate but concern GHG emissions indirectly:

- *Daily traffic congestion is negatively affecting the quality of life in a growing region.*
- *Our transportation system must support multimodal travel to reduce congestion.*
- *The Portland metropolitan area's transportation networks have resulted in inequitable outcomes for historically and currently excluded and underserved communities.*

The needs statements are supplemented by **goals and objectives**, which provide more detail on the desired outcomes of the Project. The GHG emissions-specific goals and objectives are:

Goal: Contribute to regional improvements in air quality and reduction in GHG emissions that contribute to climate change effects.

- *Objective: Contribute to reduced vehicle air pollutants and greenhouse gas emissions in the Portland metropolitan area by reducing congestion and incentivizing mode shift to low carbon options, therefore resulting in more consistent and fuel-efficient vehicle*

speeds, less vehicle idling, and fewer overall motor vehicle emission hours on I-5 and I-205 and on local roadways affected by congestion pricing.

- *Objective: Reduce localized air pollutants by reducing congestion and improving travel efficiency, particularly in areas where pollutants may be concentrated due to traffic congestion.*

3.2 Regional Travel Demand Modeling

The Metro Regional Travel Demand Model (RTDM) is the primary tool used to forecast regional multi-modal travel demand during the planning phase and evaluates changes in travel behavior in response to pricing. It estimates person trips for all modes and roadway network vehicle demand by hour for all 24 hours for an average weekday. The model version was developed for the 2018 Regional Transportation Plan (RTP) and represents model years for 2015, 2027, and 2045. The future model includes assumptions about expected land use growth and changes to the regional transportation network including anticipated projects, based on the regionally adopted growth assumptions from the RTP.

Permanent changes in travel behavior due to COVID-19 are currently unknown and not considered in future model assumptions. Long-range transportation forecasts rely on historical trends and current behavior to understand future conditions and areas of uncertainty. It is important to observe patterns over a significant period of time to reveal long-range trends and avoid misinterpreting short-term changes, such as economic cycles or random shocks to the system (wildfires, COVID-19) as changes in long-range behavior.

The Metro RTDM will be used to generate data to compare an RMPP scenario to a "No Action" alternative. This data will be used as inputs into the most recent version of the EPA Motor Vehicle Emissions Simulator (MOVES) during the NEPA phase to understand potential emissions changes after congestion pricing is implemented. At the end of the planning phase, a version of MOVES built into the Metro Multicriteria Evaluation Toolkit (MCE) will be used to compare scenarios at a less granular level. These scenarios will be based on a 2045 model year, which helps to identify potential long-term Project effects, where future demand for travel is expected to increase and levels of congestion are expected to worsen. Emission rates from previous versions of MOVES are generally higher than the current version, particularly from medium and heavy-duty vehicles. While the absolute emissions may change between MOVES model versions, this method will still provide a reasonable estimate about the scale of emissions changes between scenarios.

3.3 Evaluation Criteria

Evaluation criteria will be used to interpret the transportation data from modeling and are the primary tool that can help the Project team better understand the potential for changes in traffic patterns and vehicle use. These criteria provide comparisons of different future year build outcomes for the RMPP and No Action alternatives to understand and evaluate performance. The evaluation criteria in this planning phase:

- Reflect the purpose and need and goals and objectives for the Project.
- Are largely quantitative in nature and based primarily on interpretation of outputs from the Metro RTDM.
- Will be refined and built upon during the environmental review phase expected to begin in 2022, including specifically refined to provide more information on GHG emissions.
- Draw connections to the Project's objectives related to equity and provide information to support the five-step process outlined in the Equity Framework.

A single criterion – "change in GHG emissions" – seeks to measure the change in GHG emissions through modeling[1]. This criterion will largely be impacted by programs like the Oregon Department of Environmental Quality (DEQ) GHG Emissions Program, studied in 2021, encouraging early investment in electric vehicles. Additional evaluation criteria can be observed as indicators for changes in GHG emissions. More than half of the 21 draft criteria provide information about how RMPP could impact GHG emissions. Taken together, these evaluation criteria tell a more complete story of how GHG emissions may be affected by the Project. Table 3-1 provides examples of evaluation criteria being used in the planning phase, including the GHG-specific evaluation criterion. As described in Table 3-1, this measure examines the potential change in vehicle emissions in the region by applying emission modeling to the regional travel demand modeling results.

Table 3-1. RMPP Planning Phase Draft Evaluation Criteria

Transportation Evaluation Criteria	Metric(s)
Congestion/Demand Management	
Regional vehicle miles traveled (VMT)	This metric assesses total daily vehicle miles of travel (VMT) on the Portland metropolitan area roadway network based on regional travel demand modeling. The model considers the number of vehicle trips being made and the routing of trips through the network from origin to destination. This metric identifies the total regional travel distance traveled for all vehicle trips.
Regional vehicle time savings (VHT)	This metric examines total daily vehicle hours of travel (VHT) on the Portland metropolitan area roadway network, based on the regional travel demand model. This model considers the number of vehicle trips being made, the routing of vehicle trips through the network and the vehicle travel time required from origin to destination. This metric identifies the total regional travel time for all vehicle trips.
Vehicle speed	This metric, based on distribution of travel by speed bin (vehicle travel speed range), illustrates the relative efficiency of vehicles traveling on and off I-5 and I-205 in response to congestion.

[1] Modeling in PEL assumes that the fleet mix is based on the latest version of the RTDM. Modeling results at this stage are useful in comparing the benefits of Project alternatives, however, they are not absolute.

Transportation Evaluation Criteria	Metric(s)
Greenhouse Gas Emissions and Climate Change	
Change in GHG emissions	This measure examines the potential change in vehicle emissions in the Portland region. The Measure is informed by applying emission modeling to the regional travel demand modeling results. VMT and VHT measures may also be used as indicators for qualitative assessments.
Multimodal Travel	
Mode share shift (HOV, SOV, transit, bike/walk)	This metric considers potential changes in the share of daily person trips by mode. It is based on results from the regional travel demand model and assesses the ability of congestion pricing to encourage shifts away from SOV travel.

Evaluation criteria in this phase will also provide information on:

- Level of traffic rerouting that might occur – shifting local trips from the interstates to local roads and arterials while sustaining longer, intercity trips on the interstate.
- Other types of diversion, accounting for changes in travel behavior such as:
  - Changes in trip destination.
  - Changes in time of day of travel.
  - Mode shifts to transit and active transportation.
  - Shifts from single occupancy vehicles (SOVs) to high occupancy vehicles (HOVs).
- Duration of daily congestion and changes in average vehicle speeds during peak times.
- Changes in freight VMT and VHT, by freight classification (heavy vs. light trucks)

3.4 Analysis of Current Conditions

A true evaluation of current conditions on I-5 and I-205 will be conducted during NEPA using a tool that will be determined later in PEL. The RMPP **Corridor User Analysis** examines current regional trip patterns respective to the I-5 and I-205 corridors. The report presents the following data findings:

- **Travel Characteristics** of trips on I-5 and I-205, including trip distances and the share of trips that are local or external (trips that begin and end outside the geographic evaluation area).
- **Origin/Destination** analysis, including the distribution of where trips are coming from or going to on specified stretches of both highways.
- **Travel shed** analysis, or an analysis of how trips route through the roadway network respective to specific points on I-5 or I-205.

- **Rerouting/Diversion** analysis, which analyzes a given travel pattern and how driver routing choices can change between peak hours and off-peak hours.

Travel behavior allows us to make inferences about the efficiency of trips currently moving through the region. Less efficient trips result in higher emissions due to idling, stopped vehicles, lower travel speeds, or longer trip distances made to avoid congested areas. For example, the analysis shows notable diversion during peak traffic times off I-5 between Wilsonville and Tigard. This indicates that the level of congestion on I-5 in both directions is enough to make alternative routes more attractive during peak times. While these alternative routes may result in a shorter travel time for the driver, they can be a less direct and less efficient route, resulting in a higher VMT, lower speeds, and more emissions. Using this analysis of current travel patterns, ODOT can better identify future opportunities for GHG emissions to be reduced.

4 Environmental Review Phase Analysis

This section describes how the Project team will evaluate changes in GHG emissions and potential to influence these changes during the NEPA phase. The NEPA environmental review phase is intended to identify and analyze potential impacts of the RMPP and consider additional measures that could reduce Project-related GHG emissions. The Project team will evaluate the impacts between two alternatives: No Action (no RMPP) and the Proposed Action. In addition to the 2045 modeled scenarios used in the planning phase, an additional time horizon, likely 2027, would be used to understand near term changes in travel patterns in finer detail. These analysis results will help ODOT understand near- and long-term effects of transportation system improvements and make plans to ensure GHG emissions reductions over time. The methods described here are preliminary and may be revised or added to during the environmental review, based on feedback from local agency partners, members of the public, and/or revised guidance from state and federal agencies.

The area of potential impact (API) for the Project and each environmental impact assessment is determined during the environmental review phase. The API may be as large as the regional metropolitan area or a smaller study area. The GHG emissions API will be determined by the end of 2022 and account for changes in traffic on and off the study corridor.

The NEPA analysis will be focused on potential impacts and will not establish targets for GHG emissions reductions. The Energy and GHG emissions analysis will consider impacts from the construction, operations, and maintenance of the Project and will identify impacts that are short or longer term (through 2045) and direct or indirect. Emissions from construction will be qualitatively analyzed due to the minimal construction required for this type of Project, in which changes in traffic behavior will have the greatest impact on GHG emissions. This knowledge will help ODOT understand the overall influence of the Project on GHG emissions and help the Oregon Toll Program develop plans to use congestion pricing as a tool to incentivize a shift to low-carbon transportation. Table 4-1 outlines potential effects that the

Project could have on GHG emissions that are intended to be qualitatively or quantitatively analyzed during the NEPA phase. This information is subject to change based on findings in PEL.

Table 4-1. Categories of Effects to be Evaluated during NEPA

Type of Effect	Potential Changes in GHG Emissions
Direct Effects – long term	The direct effects could include regional changes in vehicle emissions from changed travel patterns in the study area on I-5 and I-205, including route diversion and changes in congestion, VMT, VHT, time of travel, mode shift and vehicle occupancy. This includes changes to freight travel patterns.
Indirect Effects – long term	The indirect effects of the production and transport of fossil fuels will be estimated by applying the FHWA fuel cycle factor of 0.27 to the modeled GHG emissions, the FHWA method of accounting for upstream emissions. Prior to applying the fuel cycle factor, consideration of the number of electric vehicles in the fleet will be made.

The latest version of the EPA MOVES model will be used in NEPA to estimate GHG emissions from mobile sources from the study area network. MOVES results for individual counties will be added together to estimate annual on-road GHG emissions in units of tons of carbon dioxide equivalent (CO2e). CO2e emissions are output directly from MOVES and is based on the total emissions of CO2, methane, and nitrous oxide. Because MOVES only estimates tailpipe emissions from on road and non-road vehicles, indirect (lifecycle) emissions released during fuel extraction, refining, and transport prior to use by vehicles will be calculated using the FHWA fuel cycle factor of 0.27 (applied to tailpipe emissions). MOVES accounts for electric vehicle adoption by incorporating a conservative adoption rate determined by the Oregon DEQ Clean Fuels Program. The emissions calculations will be used to compare GHG emissions across Project alternatives that will help ODOT understand climate change impacts with or without the Project.

The analyses conducted in the planning and NEPA phase will indicate how the RMPP Action and No Action alternatives relatively contribute to regional GHG emissions reductions and align with State climate goals. Creating indicators (see section 4.2) that influence decision-making during NEPA will help develop a Project that contributes to achieving Oregon's ambitious GHG emissions reduction goals.

4.1 Additional Traffic Modeling

The Project will evaluate traffic conditions in more detail at the beginning of the NEPA phase. At this time, ODOT is considering the Statewide Integrated Model (SWIM), Regional Integrated Transportation Information System (RITIS) and Portal to complete this analysis.

4.2 Proposed Indicators

Table 4-1 proposes indicators, based on the tools discussed above, that will be used to evaluate any change in GHG emissions after congestion pricing has been implemented. Indicators

developed to understand a change in GHG emissions, as a result of congestion pricing, are based on the existing conditions determined in the planning and environmental assessment for the RMPP.

Indicators differ from evaluation criteria used in PEL because they are informed by the more detailed NEPA analysis and used to evaluate post-implementation data, whereas the evaluation criteria are used to evaluate potential model outputs using future year (2027 and 2045) model projections.

Table 4-2. Proposed GHG Emission Indicators developed in NEPA Phase

Indicators	Method	Tool and/or data source used for assessment of measure
Changes in GHG emissions	Calculate regional vehicle CO2e emissions comparing congestion pricing Proposed Action to No Action alternatives	MOVES model – using 24-hour RTDM outputs by vehicle type, volume, distance, and speed. VMT and VHT measures may also be used as indicators for qualitative assessments, such as sensitivity testing
Mitigation for Project impacts identified in the environmental analysis that align with State climate goals and EO 20-04	Identify project mitigations that could further support efforts to reduce GHG emissions	Review ODOT STS, Climate Action Plan, and Governor Brown's Executive Order 20-04 to ensure Project mitigation efforts support State and Metro Climate Smart goals and directives
Change in total regional vehicle travel time	Calculate regional VHT comparing congestion pricing Proposed Action to No Action alternatives	Metro RTDM to compare VHT between 2045 Action and No Action alternatives
Change in regional vehicle miles traveled (VMT) by speed bin	Calculate VMT by speed bin within the API comparing congestion pricing Proposed Actionto No Action alternatives	Daily VMT on the Portland metropolitan area roadway network based on the RTDM
Change in regional VMT by vehicle type	Calculate VMT by vehicle type within the API comparing congestion pricing Proposed Action to No Action alternatives	Daily VMT on the Portland metropolitan area roadway network based on the RTDM
Regional mode share shift (HOV, SOV, transit, bike/walk) (RMPP draft evaluation criteria)	Calculate regional change in the share of daily person trips by mode comparing congestion pricing Proposed Action to No Action alternatives	Metro RTDM to evaluate shift to public transportation, carpool, walking and biking (lower emissions alternatives to driving alone) between 2045 Action and No Action alternatives
Potential to incorporate additional toll system operational GHG reduction methods	Identify practices from other toll programs to reduce GHG emissions that could be incorporated into the RMPP.	Existing literature and web research. Potential interviews with staff from other toll systems

4.3 Other Considerations

There are other impacts that ODOT will account for qualitatively during the NEPA environmental review, after environmental review, and in program implementation.

First, the impacts from the materials constructed: the toll gantries. RMPP would add tolls to roughly 50 miles of highway across the Portland region, in both the north and southbound directions. Gantries will be placed at the termini to the toll corridor (four) and at each on and off-ramp between termini. ODOT may consider the following:

- The lifecycle impacts of these materials.
- How potential impacts effect the overall emissions change of the Project.
- Using recycled materials.

Second, the RMPP will require ongoing, in-office operations for revenue management, responding to general inquiries, handle toll violations and other needs. Office space, server capacity and utilities come with additional GHG emissions, predicted to equate to less than one percent of total program emissions. These considerations will be evaluated qualitatively relative to the Projects overall impact on tailpipe emissions. The following assumptions can be made in the planning phase and will be addressed qualitatively during and after NEPA:

- A separate RMPP office or an extension of the existing ODOT office.
- A Leadership in Energy and Environmental Design (LEED)-certified office, with reliance on renewable energy, resulting in carbon neutral or negative facilities.
- Electronically distribute bills and violations when possible.

References

Argonne National Laboratory. 2021. “Fuel Economy at Various Driving Speeds”. https://afdc.energy.gov/data/10312

ODOT. 2021. “COVID-19 Impacts on Future Transportation”. https://www.oregon.gov/odot/Planning/Documents/TrafficForecastsPost.pdf

Executive Order (EO) 20-04. 2020. “Directing State Agencies to Take Actions to Reduce and Regulate Greenhouse Gas Emissions.” https://www.oregon.gov/gov/Documents/executive_orders/eo_20-04.pdf

Governor Kate Brown. “Policy Offices: Energy and Climate Change.” n.d. Accessed March 2019. https://www.oregon.gov/gov/policy/Pages/energy_climatechange.aspx.

Oregon Department of Transportation. 2021. RMPP Draft Purpose and Need. https://www.oregon.gov/odot/tolling/Documents/Regional Mobility Pricing Project - Purpose and Need_remediated.pdf

Oregon Department of Transportation. 2021. Climate Action Plan. https://www.oregon.gov/odot/Programs/Documents/Climate_Action_Plan_2021-2026.pdf

Oregon Global Warming Commission. 2020. Biennial Report to the Oregon Legislature. Accessed March 16, 2021. https://www.keeporegoncool.org/reports/

Oregon DEQ. 2022. "2022 Clean Fuels Forecast". https://www.oregon.gov/deq/ghgp/Documents/CleanFuelsForecast2022.pdf

Appendix A. Key Policies

Climate Action Plan

The following list of ODOT Climate Action Plan actions represents work ODOT committed to conduct between 2021 and 2026 to reduce emissions from transportation and make the transportation system more resilient to extreme weather events that relate to or apply to RMPP and congestion pricing.

Policy, Investments, Equity and Engagement – Generating revenue for congestion relief and active transportation is a top priority for the RMPP. It is critical to incorporate climate change and emissions reductions considerations into policy and investment frameworks to ensure a long-term vision and foundation to guide transportation system development and investment.

1. **GHG Emissions Evaluation** to the STIP decision-making process to estimate potential emissions of programmatic decisions and projects. ODOT will collect baseline climate-related data from past STIPs and use that to inform programs and projects being scoped. The STIP is a potential avenue ODOT could use to disperse funding from toll revenue. Impacts from climate change will inform assessments to advance projects. Projects will move forward for a variety of reasons but with a clear understanding of potential climate impacts.
2. **Revenues from congestion pricing**[2] **may be allocated to STIPs to support active transportation and public transit improvements.** These include sub-programs that provide funding for public transportation services and capital projects, pedestrian and bicycle projects, Safe Routes to School (SRTS) education and infrastructure, and Transportation Options programs. These types of transportation system improvements aid in overall emissions reductions due to a push for mode shifts.
3. **Climate Justice** requires acknowledgment that past and current policies, practices, and investments may exacerbate differing social, economic, public health and other adverse effects on communities and seeks to eradicate or mitigate these adverse effects on marginalized and underserved communities as much as possible. The Oregon Toll Program, in collaboration with the Projects Equity and Mobility Advisory Committee (EMAC), created an equity framework to guide decisions and ensure alignment with ODOT's greater climate justice goals.
4. **GHG Emissions Reduction** – Managing demand by providing alternative transportation options is a key component of reducing emissions from vehicles.

[2] The Oregon Constitution (Article IX, Section 3a) specifies that revenues collected from the use or operation of motor vehicles is spent on roadway projects, which could include construction or reconstruction of travel lanes, as well as bicycle and pedestrian facilities or transit improvements in or along the roadway. In addition, the cost of projects or services needed to address negative effects of tolling could be paid using toll revenue.

1. **Adaptation, Sustainability and Monitoring** – ODOT's mission is to provide an efficient and reliable transportation system for Oregonians. This can be achieved through transitioning to more sustainable funding sources to maintain and operate the transportation system, by enhancing sustainability in design and construction, and improving resiliency to the impacts of climate change. The RMPP and I-205 Toll Project are working to implement variable rate tolling to reduce congestion and increase efficiency on I-5 and I-205 in the Portland metropolitan area. Through reducing the vehicle emissions associated with congestion and encouraging the use of alternative modes of travel, the Oregon Toll Program helps ODOT work towards achieving the state GHG emissions reduction goals.

   The traditional structure of transportation fees and charges does not recover the full costs of the transportation system when external impacts such as congestion, climate change, health and social impacts are considered. **True cost pricing** strategies seek to recover the full costs of operating, maintaining, and constructing the transportation system, and to mitigate the negative environmental impacts associated with these actions.

2. **Electrifying Oregon's transportation system** supports one of the most effective ways to reduce vehicle emissions. The state's goal is to triple the number of electric vehicles on Oregon roads by 2023, and to expand statewide electric vehicle charging infrastructure by 10-percent by the end of 2025. Opportunities for hydrogen fuel cell electric vehicles are included in this category because they can be used to power electric motors for various vehicles. Developing or completed efforts to achieve this goal include:

   - A Transportation Electrification Infrastructure Needs Analysis (TEINA) is needed.
   - To accelerate EV charging infrastructure deployment, significant state and federal investments are needed, particularly where the business case is not well established such as rural, BIPOC and historically marginalized communities.
   - As a follow-up to the TEINA study, the ODOT Climate Office is undertaking a micro-mobility study to better understand the barriers to electric micro-mobility adoption in Oregon and recommend ways to address these barriers.
   - The ODOT Climate Office has developed comprehensive Transportation Electrification Activity Maps (TEAM) of Oregon's transportation electrification initiatives to assist ODOT, other state agencies, utilities, and the private sector identify opportunities and gaps in the transportation electrification realm.
   - To better serve Oregon drivers of electric vehicles, the Oregon Legislature and the Oregon Transportation Commission have identified approximately $4 million in funding to update and enhance Oregon's public West Coast Electric Highway (WCEH) network.

3. ODOT is working to identity opportunities to increase the operating efficiency of multiple transportation modes through **transitions to more fuel-efficient vehicles**, adoption of alternative fuels, and other vehicle technological advancements. These efforts include procurement of zero-emission vehicles (ZEV) to support ODOT's fleet and support for

transit providers adopting alternative fuels (see additional legislation and regulations in the Other Plans, Regulations, Legislation and Directives section). These vehicles will support RMPP operations and maintenance. Additionally, the Project team hopes to use toll revenue to improve public transit operations.

4. Efforts to **improve system efficiency** to reduce congestion and emissions from vehicle idling, improve vehicle throughput and fuel consumption, and provide the needed safety measures to support walking and bicycling. Solutions to improving operations and safety are diverse, but ODOT has set up a few that may couple well or be partially funded by congestion pricing:
    - The ODOT All Roads Transportation Safety (ARTS) program works to reduce the frequency of fatal and serious injuries on all public roads.
    - Traffic Incident Management (TIM) is used to detect, respond to, and clear traffic incidents so that traffic flow may be restored as safely and quickly as possible. TIM partners include transportation departments, fire and rescue, law enforcement, emergency medical services, towing, and hazardous material clean-up crews.
5. The agency is working to identify opportunities to improve **sustainability** through products and fuels, reduce energy and water consumption, recycle materials and equipment, and reduce the agency's carbon footprint. Sustainable practices are also incorporated into how ODOT plans, designs and builds transportation programs and projects.
6. Reducing transportation emissions and achieving Oregon's climate goals requires collaboration across all sectors and levels of government. Many of the actions needed to reduce transportation emissions will require **agency partnerships** with organizations like Metro, TriMet, SMART, DEQ, and others.

Monitoring progress is necessary to ensure that ODOT is on track to meet Oregon's GHG emissions reduction goals and to effectively steer resources towards this effort. To effectively monitor this progress requires continued advancements in the **data sources and analysis tools** used to measure reductions in transportation emissions and increased resiliency of the transportation system. These tools will be necessary to understand how RMPP impacts GHG emissions.

Executive Order 20-04

Governor Kate Brown's Executive Order 20-04 directed state agencies to reduce and regulate GHG emissions. Specific to ODOT, the Order established goals that the department must meet in project development and approval processes. Signed into effect on March 10, 2020, the Order reminds Oregonians and State agencies that urgent action is needed to meet the following commitments:

- As a member of the U.S. Climate Alliance, the State has committed to implementing policies to advance the emissions reduction goals of the international Paris Agreement.

- Through Senate Bill 1044 (2019), the Oregon Legislation established ambitious goals for the adoption of zero-emissions vehicles.
- Reduce GHG emissions to at least 45% less than 1990 levels by 2035 and at least 80% by 2050.

Through the Order, ODOT, among other agencies, is directed to execute the following tasks related to RMPP:

- Facilitate in the achievement of these goals,
- Prioritize and expedite any processes and procedures that may aid in acceleration of GHG emissions reductions, and
- Consider and integrate climate change, associated impacts and the state's goals into planning, budgets, investments and policy making decisions. In addition, agencies are directed to prioritize actions that reduce GHG emissions and help vulnerable populations impacted by climate change.

The Oregon Transportation Commission (OTC), Land Conservation and Development Commission (LCDC), Environmental Quality Commission, Oregon Department of Energy (ODE) and ODOT are directed to:

- Identify and implement the means to provide financial and technical assistance to metropolitan planning areas that meet state or local GHG emissions reduction goals.

Additionally, ODOT is directed to:

- Conduct a statewide Transportation Electrification Infrastructure Needs Analysis (TEINA), focusing on rural areas, to understand use types and vehicle classes, facilitate electrification goals as set in Senate Bill 1044.
- Develop and apply a process to evaluate GHG emissions implications of transportation projects as part of its regular capital planning and Statewide Transportation Improvement Planning (STIP) processes.

In summary, ODOT has been directed by the Governor to prioritize climate in its operations, including projects like RMPP. A primary goal of the Project is to raise revenue, providing the funds for ODOT to financially assist jurisdictions looking to address transportation related climate goals.

Climate Smart Strategy

The Metro Policy Advisory Committee (MPAC) and Joint Policy Advisory Committee on Transportation (JPACT) finalized their recommendation to the Metro Council on the CSS and supporting actions in December 2014. The Metro Council adopted the strategy and actions on Dec. 18, 2014.

Other Plans, Regulations, Legislature and Directives

- Clean Car Standards Program (ZEV1) (EQC adopted 2005)
- Clean Fuels Program (CFP1) (HB2186, 2009)
- Clean Electricity Standard (HB2021, 2021)
- Advanced Clean Truck (ACT) Rules (EQC adopted November 2021)
- Climate Protection Program (CPP) (EQC adopted December 2021)
- Clean Fuels Program Expansion (CFP2) (EQC expected adoption in 2022)
- Clean Car Standards Program Expansion (ZEV2) (DEQ expected to initiate rulemaking mid-2022)
- Every Mile Counts Program (2022)

Quality Control Record

Emily Wolf			
Date	**Document Status (Version)**	**Reviewer**	**Completed**
1/10/2022	Draft 1	Zoie Wesenberg	X
1/13/2022	Draft 2	Josh Channel	X
1/19/2022	Draft 2 revisions	Emily Wolff	X
1/27/2022	Draft 3	Josh Channel	X
2/11/2022	Draft 3	Rebecca Frohning	X
2/15/2022	Draft 3 revisions	Emily Wolff	X
2/23/2022	Draft 4	Josh Channel	X
3/09/2022	Draft to ODOT	Michael Holthoff, Natalie Liljenwall, Tara Weidner, Geoff Crook, Melanie Ware	X
3/14/2022	Revisions	Emily Wolff, Rebecca Frohning, Josh Channel	x
4/7/2022	ODOT Comments	Michael Holthoff, Natalie Liljenwall, Tara Weidner, Geoff Crook, Melanie Ware	X
4/14	Revisions	Emily Wolff	x
5/6/2022	Workshop final elements	Michel Holthoff, Tara Weidner, Josh Channell, Rebecca Frohning, Emily Wolff	x
6/1/2022	Revisions	Emily Wolff, Josh Channell, Olivia Cohn	x
7/1/2022	Sent for ODOT sign off	Michael Holthoff	