Executive summary

Metro Regional Congestion Pricing Study

July 2021

EXECUTIVE SUMMARY

What is this study?

The Metro Regional Congestion Pricing Study explored whether congestion pricing can benefit the Portland metropolitan region. Congestion pricing was identified as a high priority, high impact strategy in the 2018 Regional Transportation Plan (RTP). A range of scenarios testing different congestion pricing tools helped regional policymakers understand if pricing can help support the region's four transportation priorities set out in the RTP – climate, congestion, equity, and safety, congestion.

What was the project timeline?

This study took place over the course of approximately two years. The study included a review of existing conditions within the region, a definition of what scenarios would be considered, research of best practices and input from equity and congestion pricing experts, scenario analysis using Metro's regional travel demand model, the development of findings and the identification of next steps.

What pricing strategies did Metro explore?

Metro explored if and how four congestion pricing strategies could support the region's priorities . When implemented, each of the pricing strategies could vary by time of day, by area/facility, by types of drivers on the road and by income levels. The four congestion pricing strategies are outlined at right.

VEHICLE MILES TRAVELED FEE
Drivers pay a fee for every mile they travel

CORDON PRICING
Drivers pay to enter an area, like downtown Portland (and sometimes pay to drive within that area)

ROADWAY PRICING
Drivers pay a fee to drive on a particular road, bridge or highway

PARKING PRICING
Drivers pay to park in certain areas

Who was involved?

This study was led by Metro staff,[1] working closely with the Transportation Policy Alternatives Committee (TPAC), which was the study's technical advisory committee, the Joint Policy Advisory Committee on Transportation (JPACT), which provided policy direction, and Metro Council, which provided policy direction and overall project guidance. The City of Portland and TriMet were funding partners in the study, and project staff collaborated regularly with the City of Portland and ODOT to leverage and align parallel congestion pricing efforts.

Study methods and findings were reviewed by Metro's Committee on Racial Equity (CORE), the Oregon Department of Transportation's Equity and Mobility Advisory Committee (EMAC), the City of Portland's Pricing Options for Equitable Mobility (POEM) Task Force, and an international Expert Review Panel.[2]

How does this relate to Metro's partners' work?

Metro, ODOT, and the City of Portland are all working on projects that consider ways to price transportation to address challenges related to equity, climate change, congestion, and safety. Each agency makes decisions for different parts of our region's transportation system. Each has separate projects underway to help address issues specific to those geographies. The three agencies are coordinating their efforts to leverage each other's work, learn from one another and share findings. The findings and analysis in this report provide a foundational understanding of how congestion pricing could perform in the Portland region and also provides important best practices for designing a pricing program that apply throughout the region and state.

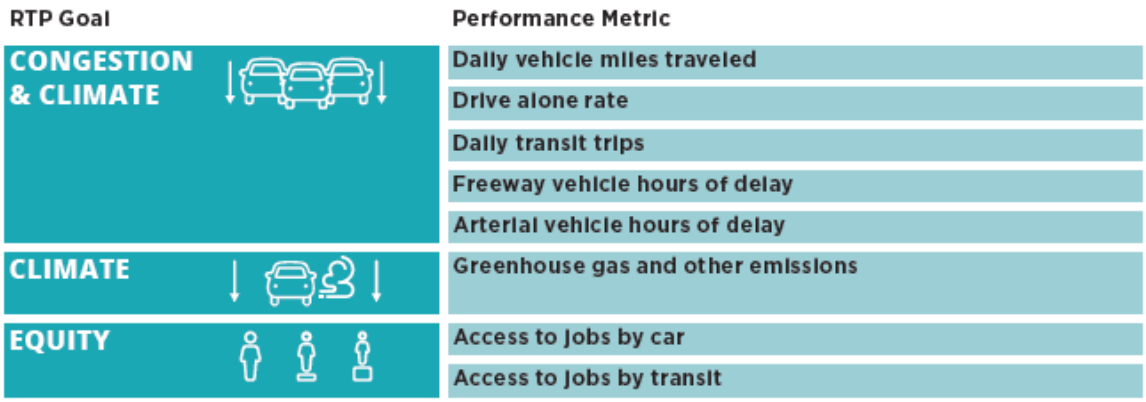
What are the takeaways from the Congestion Pricing Study?

Congestion pricing has the potential to help the greater Portland region meet the priorities outlined in the 2018 Regional Transportation Plan, including reducing congestion and improving mobility, reducing greenhouse gas emissions, and improving equity and safety outcomes. However, it depends how pricing is implemented in the region.

Metro used its travel demand model to conduct in-depth modeling and analysis to help regional policymakers understand the potential performance of different types of pricing tools (VMT, cordon, parking, and roadway). Each scenario was analyzed for how well it performed relative to the four regional priorities using performance metrics produced by the model.

[1] Metro hired a consultant team to support technical analysis and process for this work. The consultant team was led by Nelson\Nygaard and included Sam Schwartz Engineering, HNTB, Silicon Transportation Consultants, TransForm, Mariposa Planning Solutions and PKS International.

[2] Details on Expert Review Panel can be found here: https://www.oregonmetro.gov/sites/default/files/2021/04/07/congestion-pricing-expert-panel-flyer-20210407.pdf



Key findings from each scenario are described below.

VMT

Scenarios tested

Two scenarios were modeled with a per mileage fee, which was applied to all drivers for every mile driven on every street in the Metropolitan Planning Area. VMT B added a charge of $0.0685/mile, and VMT C added $0.132/mile.

Scenario results

VMT scenarios performed well on all metrics at a regional scale, largely because all driving trips would be charged. Total travel cost would be the highest among the pricing tools studied, but those costs would be the most widely distributed compared to other pricing options.

Equity spotlight

Some Equity Focus Areas experienced a combination of higher costs without significant improvement in jobs access. Mobility improved in much of the region and jobs access improved. There were also reductions in harmful emissions.

Future considerations

A VMT pricing program should consider whether drivers who would pay more have viable alternatives to driving, and could focus on investments (transit, pedestrian, or bicycling infrastructure) or provide discounts or caps on charges for groups that would be disproportionately impacted, either because of where they live or their ability to pay.

Cordon

Scenarios tested

A fee was applied to drivers entering into a specific area. Cordon A encompassed downtown Portland, South Waterfront, and parts of Northwest Portland. Cordon B included the entirety of Cordon A, as well as the Central Eastside Industrial District and the Lloyd District. Drivers who traveled through the cordon area, but remained on the freeways or highways, were not assessed a charge. The cordon charge was $5.63.

Scenario results

The cordons studied resulted in relatively high mode shift to transit, indicating that adding a charge for drivers in areas with good transit infrastructure could successfully shift travel modes. However, the diversion onto the nearby uncharged facilities that increased vehicle delay and decreased job access by auto would need to be explored in greater depth.

Equity spotlight

Areas inside the cordon boundary experienced lower costs and higher jobs access because of the decreasing traffic within the cordon as drivers avoided through trips and diverted to throughways and arterials adjacent to the corridor. This would be a direct benefit to communities of color and low-income households that live within the cordon boundaries (the area within the cordon is considered an Equity Focus Area). However, for those same populations outside of the cordon area, delay increased and job access for drivers decreased. Additionally, those who drove into the cordon paid higher costs, even if they would benefit from improved travel times within the cordon. Costs were low at a regional scale, but high for the individuals who entered the cordon.

Future considerations

Cordon design considerations could include expanding the cordon area to encompass more origins and destinations, pairing cordon pricing with roadway pricing on key facilities near the cordon, providing a time-of-day charge, or providing discounts or exemptions for groups that would be disproportionately impacted. Improvements to arterials near the cordon to speed transit (such as bus only lanes) could also be considered.

Parking

Scenarios tested

Increased parking charges were applied to all areas within the Metropolitan Planning Areas (MPA) boundaries that were assessed a parking charge in the 2018 RTP's 2040 Financially Constrained Scenario for both Parking A and Parking B scenarios. Parking A scenario marginally added the same parking costs; the Parking B scenario doubled the parking costs.

Scenario results

Overall, parking charging demonstrated positive results for all metrics at a regional level. The analysis shows that charging for parking could increase transit ridership – likely a direct result of charges generally being assessed in areas with good transit service and high employment. Charges were concentrated among fewer travelers compared to the VMT scenarios. While the total travel cost was low compared to other pricing scenarios, the cost to the individual drivers who parked was relatively high.

Equity spotlight

The parking scenarios showed very little change in jobs accessibility and costs throughout the region. The areas affected by parking charges have good transit service, so parking charges could be more easily avoided. Equity focus areas showed a smaller percent increase in jobs accessible by auto than non-equity focus areas.

Future considerations

The impacts to vulnerable populations should be carefully considered in a parking program, which could focus on discounts or caps on charges for key groups or revenue reinvestment to improve transit service.

Roadway

Scenarios tested

Roadway charges were applied to drivers on highways limited access highways within the MPA boundaries. Roadway A included a charge of $0.132/mile, while Roadway B included a charge of $0.264/mile.

Scenario results

The two Roadway scenarios had mixed results at a regional level, with a reduction in VMT and reduced delay on the charged roadways coupled with increased delay to nearby non-charged roadways. Burdens and benefits were not uniformly distributed and could disproportionately impact travelers that live on the outskirts of the region.

Equity spotlight

Areas further from tolled throughways tend to experience worse access to jobs by auto, which include some EFA areas. With fewer options of using the faster tolled roadways and competing with traffic on arterials that diverted from those tolled roadways, commuters here experienced somewhat slower travel by autos and transit.

Future considerations

A roadway pricing program should focus on the impacts to delay on the throughways charged as well as the impacts to nearby non-charged roadways. Impacts at a localized scale would need to be examined to understand if there were investments (such as transit, bike, or pedestrian improvements) that could improve overall performance. In addition, the travel costs should be assessed at a granular scale to understand the impact on vulnerable groups.

The analysis showed:

All four types of congestion pricing could help address congestion and climate priorities.

- All eight scenarios reduce the drive alone rate, vehicle miles traveled, and greenhouse gas emissions.
- All scenarios increase daily transit trips. (Roadway A has a minimal increase.).
- In fact, the projected improvements were comparable to modeled scenarios with much higher investment in new transportation projects.

Geographic distribution of benefits, impacts, and costs varied by scenario.

- Traffic diversion, travel time savings, and costs to travelers varied by location and by congestion pricing tool.
- Without changes, some scenarios would have disproportionate impacts on equity communities and key geographies.
- Geographic distributions of benefits and costs can inform where to focus investments and affordability strategies.
- In-depth analysis will be necessary to understand benefits (who and where) and costs (who and where) of any future projects.

There are tradeoffs for implementing pricing scenarios.

- Our current transportation funding system will not achieve Metro's climate and equity goals. The tax structure is regressive and focuses on auto infrastructure that reinforces inequity and results in high emissions.
- Overall regional transportation costs and individual traveler costs vary by scenario
- All eight scenarios increase the overall cost for travel for the region, but some scenarios spread the costs widely while others concentrate them on fewer travelers. Those that spread the costs also have the highest overall cost for travel in the region and the highest revenue potential
- Higher overall transportation costs equal higher revenue which can allow investment in improvements to address safety and equity concerns.

A summary of findings is described on the next page.

Table ES-1 Regional Congestion Pricing Study High-Level Findings

RTP Goal	Metrics	VMT B	VMT C	COR A	COR B	PARK A	PARK B	RD A	RD B
Congestion & Climate	Daily VMT								
	Drive Alone Rate								
	Daily Transit Trips								
	2HR Freeway VHD								
	2HR Arterial VHD								
Climate	Emissions								
Equity	Job Access (Auto)								
	Job Access (Transit)								
Total Regional Travel Cost		**Med-High**	**High**	**Med-Low**	**Med-Low**	**Low**	**Low**	**Med**	**Med**

Note: Dark blue indicates better alignment with regional goals when compared to the Base scenario

Legend	Daily VMT	Drive Alone Rate	Job Access (Auto)	Job Access (Transit	Daily Transit Trips	2HR Freeway VHD	2HR Arterial VHD	Emissions
Large Positive Change	-5% or more	-5% or more	10% or more	5% or more	10% or more	-10% or more	-10% or more	-5% or more
Moderate Positive Change	-2% to -5%	-2% to -5%	5% to 10%	2% to 5%	5% to 10%	-5% to -10%	-5% to -10%	-2% to -5%
Small Positive Change	-0.5% to -2%	-0.5% to -2%	1% to 5%	0.5% to 2%	1% to 5%	-1% to -5%	-1% to -5%	-0.5% to -2%
Minimal Change	0.5% to -0.5%	0.5% to -0.5%	1% to -1%	0.5% to -0.5%	1% to -1%	1% to -1%	1% to -1%	0.5% to -0.5%
Small Negative Change	0.5% to 2%	0.5% to 2%	-1% to -5%	-0.5% to -2%	-1% to -5%	1% to 5%	1% to 5%	0.5% to 2%
Moderate Negative Change	2% to 5%	2% to 5%	-5% to -10%	-2% to -5%	-5% to -10%	5% to 10%	5% to 10%	2% to 5%
Large Negative Change	5% or more	5% or more	-10% or more	-5% or more	-10% or more	10% or more	10% or more	5% or more

Note: "Positive" and "Negative" refer to progress toward regional goals, and not to numerical values (i.e., a reduction in VMT is "positive")

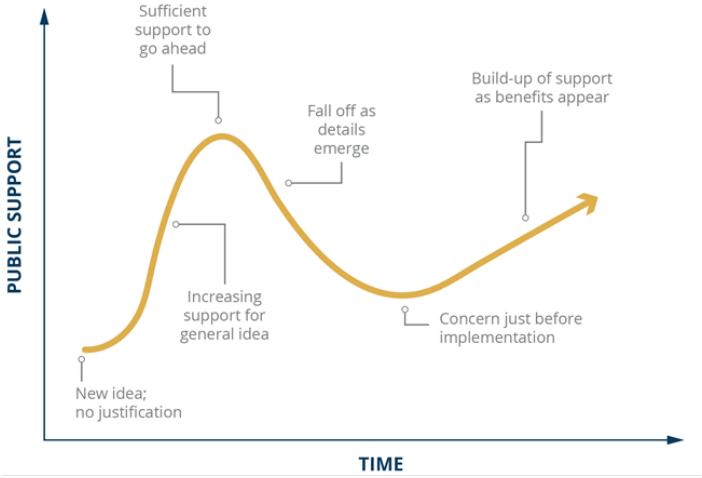
The results provided here ONLY show the effects of charging drivers under different scenarios; implementation of mitigations, discounts, or other changes to policies could result in changes to the performance of a scenario.

What are the implementation considerations?

There are many factors for the Portland metro region and its partners to consider as the region continues to explore the feasibility of implementing congestion pricing:

- Public acceptance: all pricing programs are likely to struggle with public acceptance. There is a common perception that pricing is likely to hurt transportation disadvantaged populations and that people will pay more for something without seeing a benefit. Case studies have shown acceptance grows after a pricing program is implemented, as shown in the figure below. A concerted public engagement and marketing effort would likely be needed to garner acceptance of a congestion pricing project or program.

Figure ES-1 Public Acceptance of Congestion Pricing Changes Over Time



- Parking pricing is the easiest of the tools to implement since it leverages existing infrastructure and processes to introduce congestion pricing.
- Cordon pricing can leverage state of the art tolling and enforcement technologies, making implementation moderately difficult to implement.
- Although roadway pricing can leverage many tolling methods, enforcement can be difficult. Also, tolling roadways that are not limited access could be cost prohibitive, reflecting why arterial tolling is not typically priced considered.
- A VMT program could build off of the OReGO pilot but a major implementation barrier is enforcement and mandating vehicles to participate.
- A pilot phase might make sense for the Portland region to trial one or more technologies before scaling up to a region-wide system.

How can Congestion Pricing address Equity?

Many people worry that congestion pricing will hurt those least able to pay. However, our current system is inequitable. Not only are transportation funding sources regressive, but spending is also focused on automobile infrastructure over other transportation modes, as shown in Figure ES-2 below. Gas tax rates are a fixed amount per gallon regardless of a driver's ability to pay, and motor vehicle fees in Oregon are not correlated to a motorist's income nor the value of the vehicle.

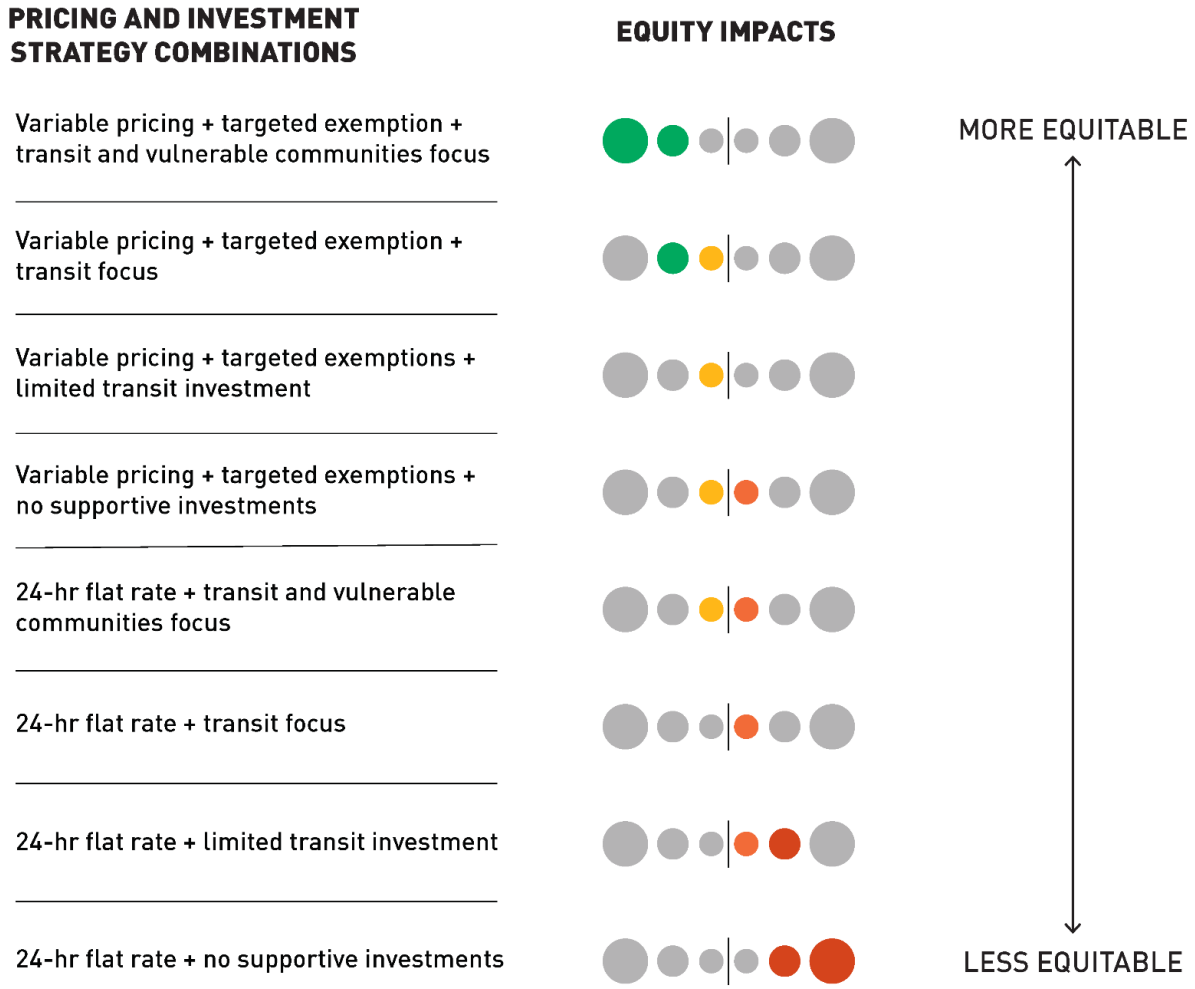
Figure ES-2 Inequities within Today's System

This focus favors those with more means and encourages driving. It reinforces inequity with spending focused on auto infrastructure. In addition, health impacts from high automobile reliance disproportionately harm Black, Indigenous, and People of Color (BIPOC) and low-income communities. Low-income people spend a much higher percentage of their income on transportation than high income earners. As it functions today, the current funding and spending structure will not help the region meet its urgent equity and climate goals.

Congestion pricing strategies have the potential to improve racial equity and benefit marginalized communities as well as all residents of the region. Congestion pricing tools have the potential to be more flexible than current funding in how funds are collected and what funds are spent on.

The biggest determinant of whether a congestion pricing program improves equity is how the program is designed-- how people are charged and how revenue from congestion pricing strategies is spent. A pricing program with the same charge can *improve* or *harm* equity depending on how it deals with affordability, the places it improves, and the type and locations of investments. An example of how this can be is shown as Figure ES-3 below.

Figure ES-3 Program Design Impact on Equity Outcomes



Building an Equitable Pricing Program

If carefully structured, congestion pricing can create a more fair and just transportation system, not just compared to the predominant revenue raising strategies used to pay for transportation today, but more directly to improve affordability, access, safety, and health of historically and currently excluded, impacted, and underserved communities. Congestion pricing programs and projects can improve equity outcomes by:

- Reducing harm and increasing benefits if agencies are willing to focus engagement on historically impacted residents and other stakeholders traditionally at a disadvantage and ensure they have a role in decision making at every step in the process.
- Revenue can be focused on equity outcomes. Revenues from congestion pricing can be invested in key neighborhoods or roadways, focused on transit, sidewalks, and bike lanes, or invested in senior and disabled services. Pricing benefits can be targeted to key locations where mobility improvements or air quality can be meaningfully improved.
- Affordability can be built into a program. Congestion pricing is more flexible than current funding sources. Exploring who pays and to what degree, and considering a

suite of affordability programs such as rebates or exemptions for low-income drivers, a "transportation wallet", or other investments that address affordability.

Figure ES-4 An Equity Framework for Road Pricing

Source: TransForm 2017

As part of the Congestion Pricing Study, Metro reached out to three groups with expertise in equity: Metro's CORE, the City of Portland's POEM Task Force, and ODOT's EMAC to discuss and receive feedback on the RCPS methods for assessing equity benefits and impacts.

These groups confirmed that there are concerns around congestion pricing disproportionately impacting those least able to pay. They agreed that any pricing program must have meaningful

engagement with community and equity groups early. Combining their feedback with equity experts in the field helped clarify the importance of engagement and the importance of a project conducting in depth technical analysis (including mapping) to help determine who benefits and who is impacted by a program.

Key findings from an equity perspective

While the Equity Focus Areas see an increase in percent change of jobs accessible by auto in six of the eight scenarios, they benefit less than non-equity focus areas across the board. Related to access to community places, each pricing scenario results in increased access for equity focus areas and non-equity focus areas. Equity focus areas benefit more than non-equity focus areas for accessibility by auto for the cordon scenarios and the roadway scenarios. When it comes to change in access to community places by transit, the benefit to non-equity focus areas exceeds the benefit to equity focus areas for all scenarios.

Key findings from an equity perspective:

- Go beyond a toolkit
- Connect analysis to further study
- Design scenarios to address barriers
- Inform expenditure framework
- Develop supportive programs
- Establish pre- and post-deployment monitoring

What are the recommendations?

Below are general recommended considerations for both policymakers and future project owners and operators, as well as specific recommendations that would apply to each group.

- Congestion pricing can be used to improve mobility and reduce emissions. This study demonstrated how these tools could work with the region's land use and transportation system.
- Define clear goals and outcomes from the beginning of a pricing program. The program priorities such as mobility, revenues, or equity should inform the program design and implementation strategies. Optimizing for one priority over another can lead to different outcomes.
- Recognize that benefits and impacts of pricing programs will vary across geographies. These variations should inform decisions about where a program should target investments and affordability strategies and in depth outreach.
- Carefully consider how the benefits and costs of congestion pricing impact different geographic and demographic groups. In particular, projects and programs need to conduct detailed analysis to show how to:
    - maximize benefits (mobility, shift to transit, less emissions, better access to jobs and community places, affordability, and safety) and

    - address negative impacts (diversion and related congestion on nearby routes, slowing of buses, potential safety issues, costs to low-income travelers, and equity issues).

- Congestion pricing can benefit communities that have been harmed in the past, providing meaningful equity benefits to the region. However, if not done thoughtfully, congestion pricing could harm BIPOC and low-income communities, compounding past injustices.
- Conversations around congestion pricing costs, revenues, and reinvestment decisions should happen at the local, regional, and when appropriate the state scale, depending on the distribution of benefits and impacts for the specific policy, project, or program being implemented.

Specifically For Policy Makers

- Congestion pricing has a strong potential to help the greater Portland region meet the priorities outlined in its 2018 Regional Transportation Plan, specifically addressing congestion and mobility; climate; equity; and safety.
    - Technical analysis showed that all four types of pricing analyzed improved performance in these categories;
    - Best practices research and input from experts showed there are tools for maximizing performance and addressing unintended consequences.
- Given the importance of pricing as a tool for the region's transportation system, policy makers should include pricing policy development and refinement as part of the next update of the Regional Transportation Plan in 2023, including consideration of other pricing programs being studied or implemented in the region.

Specifically For Future Project Owners/Operators

- The success of a specific project or program is largely based on **how** it is developed and implemented requiring detailed analysis, outreach, monitoring, and incorporation of best practices.
- Coordinate with other pricing programs, including analysis of cumulative impacts and consideration of shared payment technologies, to reduce user confusion and ensure success of a program.
- Conduct meaningful engagement and an extensive outreach campaign, including with those who would be most impacted by congestion pricing, to develop a project that works and will gain public and political acceptance.
- Build equity, safety, and affordability into the project definition so a holistic project that meets the need of the community is developed rather than adding "mitigations" later.
- Establish a process for ongoing monitoring of performance, in order to adjust and optimize a program once implemented.

What are the next steps?

Since its identification as a high priority, high impact strategy in the 2018 RTP, Metro staff and leaders endeavor to better understand how our region could use congestion pricing to manage traffic demand to meet climate goals without adversely impacting safety or equity. This study delineates the impacts pricing could have in helping the region:

- Reduce traffic congestion;
- Improve equity by reducing disparity;
- Enhance safety by getting to Vision Zero; and
- Support the climate by reducing greenhouse gas emissions.

The study's Expert Review Panel demonstrated that congestion pricing is effective in encouraging drivers to change their behavior (using more sustainable travel modes like transit, walking, or biking; driving less; and driving at different times) and reducing congestion and greenhouse gas emissions.

Leaders around the region and state should use the findings from this study to inform policies, including the development of the 2023 RTP and other transportation projects that may include congestion pricing in the future. We expect this study will inform the work of implementing agencies as they propose new congestion pricing projects at the local level.