Equity Analysis of WSDOT's Toll Program: Literature Review

WA-RD 931.2 Angela Kitali Sam Ricord Mark E. Hallenbeck July 2023

Images: WSDOT

Washington State Department of Transportation
Office of Research & Library Services

WSDOT Research Report

Research Report
Agreement T1461, Task 96
WSDOT Toll Equity

Equity Analysis of WSDOT's Toll Program

Literature Review

by

Angela Kitali
Assistant Professor
University of Washington Tacoma

Mark E. Hallenbeck
Director
Washington State Transportation Center

Sam Ricord
Research Assistant
University of Washington Seattle

Washington State Transportation Center (TRAC)
University of Washington, Box 359446
University Tower
4333 Brooklyn Ave NE
Seattle, Washington 98195-9446

Washington State Department of Transportation
Technical Monitor
Tyler Patterson

Prepared for
The State of Washington
Department of Transportation
Roger Millar, Secretary

July 2023

TECHNICAL REPORT STANDARD TITLE PAGE

1. REPORT NO.	2. GOVERNMENT ACCESSION NO.	3. RECIPIENT'S CATALOG NO.
WA-RD 931.2		

4. TITLE AND SUBTITLE	5. REPORT DATE
EQUITY ANALYSIS OF WSDOT'S TOLL PROGRAM: LITERATURE REVIEW	July 2023
	6. PERFORMING ORGANIZATION CODE
7. AUTHOR(S)	8. PERFORMING ORGANIZATION REPORT NO.
Angela Kitali, Mark. E. Hallenbeck, Sam Ricord.	
9. PERFORMING ORGANIZATION NAME AND ADDRESS Washington State Transportation Center (TRAC) University of Washington, Box 359446 University Tower; 4333 Brooklyn Ave NE Seattle, Washington 98195-9446	10. WORK UNIT NO.
	11. CONTRACT OR GRANT NO. Agreement T1461, Task 96
12. SPONSORING AGENCY NAME AND ADDRESS Research Office Washington State Department of Transportation Transportation Building, MS 47372 Olympia, Washington 98504-7372 Project Manager: Doug Brodin,360.705.7972	13. TYPE OF REPORT AND PERIOD COVERED Research Report
	14. SPONSORING AGENCY CODE

15. SUPPLEMENTARY NOTES

This study was conducted in cooperation with the U.S. Department of Transportation, Federal Highway Administration.

16. ABSTRACT:

The Washington State Department of Transportation (WSDOT) uses tolling to manage highway demand and fund megaprojects. Tolls can raise serious equity concerns, which have been voiced by the Washington State Legislature, the State Transportation Commission, and the WSDOT Secretary. This project aimed to provide insight into the equity of WSDOT's toll facilities, including a literature review of equity analyses that have been performed or that are being considered nationwide.

This literature review was part of a WSDOT study that examined the equity of its five toll roads: SR 16, SR 167, SR 520, I-405, and SR 99. The literature review examined income-based toll programs in the United States to identify best practices and lessons learned, resulting in insights and best practices from nine programs. Most programs started or are planned to start as pilots, allowing for modifications. When a low-income toll program is designed, it is crucial to balance the number of participants and benefits offered and to consider the transportation needs of other user groups. Ongoing engagement and effective communication with communities is crucial for program success. This study found that many programs use the Federal Poverty Level (FPL) as an eligibility criterion, but it is vital to set the income threshold based on local conditions and needs.

Overcoming enrollment barriers, i.e., language barriers, lack of technology access, and complicated application processes, is essential for enhancing the program. The cost of purchasing a transponder, the requirement for a minimum account balance, or automatic reloading thresholds can be barriers for low-income motorists. Overall, there is no universal approach to creating a low-income toll program, and agencies must weigh their priorities and the priorities of the communities they serve to determine the best options.

The companion report from this project describes who uses WSDOT's five toll facilities, the household incomes of those users, and how use by income differs across those facilities.

17. KEY WORDS	18. DISTRIBUTION STATEMENT
Equity, tolling, toll equity, low-income toll programs	No restrictions. This document is available to the public through the National Technical Information Service, Springfield, VA 22616

19. SECURITY CLASSIF. (of this report)	20. SECURITY CLASSIF. (of this page)	21. NO. OF PAGES	22. PRICE
None	None	70	

DISCLAIMER

The contents of this report reflect the views of the authors, who are responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the Washington State Department of Transportation or Federal Highway Administration. This report does not constitute a standard, specification, or regulation.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ACRONYMS/ABBREVIATIONS

AMI	Area median income
BAIFA	Bay Area Infrastructure Financing Authority
BATA	Bay Area Toll Authority
BVS	Benefit Verification System
CDOT	Colorado Department of Transportation
CHP+	Child Health Plan Plus
CICP	Colorado Indigent Care Program
DSHS	Department of Social and Health Services
DSSG	Data Science for Social Good
EBT	Electronic Benefits Transfer
EL	Express lane
ETL	Express toll lane
ERC	Elizabeth River Crossings
FPL	Federal Poverty Level
HOT	High occupancy toll
HOV	High occupancy vehicle
IDOR	Illinois Department of Revenue
ISTHA	Illinois State Toll Highway Authority
LAUSD	Los Angeles Unified School District
LEAP	Low-income Energy Assistance Program
MTC	Metropolitan Transportation Commission
NAACP	National Association for the Advancement of Colored People
ODOT	Oregon Department of Transportation
SCL	Sisters of Charity of Leavenworth
SDOT	Seattle Department of Transportation
SFCTA	San Francisco County Transportation Authority
SMCEL-JPA	San Mateo County Express Lanes Joint Powers Authority
SNAP	Supplemental Nutrition Assistance Program
SOV	Single occupancy vehicle
SR	State road
TIMMA	Treasure Island Mobility Management Agency
WSDOT	Washington State Department of Transportation

EXECUTIVE SUMMARY

The Washington State Department of Transportation (WSDOT) uses tolling to manage highway demand and fund megaprojects. Tolls can raise serious equity concerns, which have been voiced by the Washington State Legislature, the State Transportation Commission, and the WSDOT Secretary. This project aimed to provide insight into the equity of WSDOT's toll facilities, including a literature review of equity analyses that have been performed or that are being considered nationwide.

Determining the equity of road tolling and pricing requires an understanding of the types and dimensions of equity and is a crucial step in mitigating any unintended inequity consequences. There are two dimensions of equity in road pricing: process equity and outcome equity. *Process equity* refers to the fairness, inclusiveness, and transparency of the decision-making process. *Outcome equity* refers to the fairness of the impacts of road pricing, including the distribution of burdens and benefits and the effectiveness in achieving goals. Within outcome equity, there are three primary considerations: income equity, geographic equity, and modal equity. *Income equity* refers to treating individuals with different income levels fairly regarding the costs and benefits of tolled roads. *Geographic equity* refers to the fair distribution of benefits and burdens of tolled roads across different regions, and *modal equity* refers to fairness in allocating transportation resources and services among different modes of transportation.

This literature review is part of a WSDOT study that examined the equity of its five toll roads: SR 16, SR 167, SR 520, I-405, and SR 99. The literature review examined income-based toll programs in the United States (U.S.) to identify best practices and lessons learned, resulting in insights and best practices from nine programs (Table 1). Most programs started or are planned to start as pilots, allowing for modifications. When a low-income toll program is designed, it is crucial to balance the number of participants and benefits offered and to consider the transportation needs of other user groups. Ongoing engagement and effective communication with communities is crucial for program success. This study found that many programs use the Federal Poverty Level (FPL) as an eligibility criterion, but it is vital to set the income threshold based on local conditions and needs.

Overcoming enrollment barriers, i.e., language barriers, lack of technology access, and complicated application processes, is essential for enhancing the program. The cost of purchasing a transponder, the requirement for a minimum account balance, or automatic reloading thresholds

can be barriers for low-income motorists. Overall, there is no universal approach to creating a low-income toll program, and agencies must weigh their priorities and the priorities of the communities they serve to determine the best options.

Table 1: Summary of Low-Income Toll Program Features in the United States

Program	Benefits	Eligibility	Enrollment, Verification & Accessibility for Unbanked/Underbanked
LA Metro Low-Income Assistance Program • Operational since 2012 • Started with a one-year pilot	• $25 one-time payment • Waived monthly fee of $1 • Earn a $5 credit for taking 16 one-way transit trips during peak hours • Investment in neighborhood projects with net toll revenues	• Income: 200% FPL • Residence: Yes, LA County	• Enroll by phone or at a customer service center • Cash loading of transponder at customer center and all 7-11 stores through PayNearMe with a $1.99 transaction fee • Verify income and residency once at the customer service center
VDOT Toll Relief Program • Operational since 2016 • Started with a one-year pilot	• 50% discount on the first 10 weekly trips • No minimum balance is required for applicants	• Income: Individual annual income less than $50,000 • Residence: Yes, Portsmouth or Norfolk Cities	• Annual reapplication is required in person at customer service centers (one in each city) • Enrollment period is limited to 2.5 months • Users can reload with cash via a reload card with a $1.50 transaction fee
I-PASS Assist Program • Operational since 2016	• 50% off prepaid tolls • Free I-PASS transponder • $4 account opening balance instead of $10 • No deposit • Eligible for dismissal of past and future late fees • $20 gift card upon enrolment	• Income: 250% FPL (household income) • Residence: Yes, Illinois State	• Electronic application • Eligibility is verified annually
San Mateo 101 Express Lanes Community Transportation Benefits Program • Operational since 2022 • Starting with a one-year pilot	• $100 Transit card provided annually OR • $100 toll transponder provided one time • Enroll eligible users in regional low-income toll and transit programs	• Income: Less than or equal to 60% AMI • Residence: Yes, San Mateo County	• Online or in-person at eight San Mateo core service agencies • Application materials are available in English, Spanish, traditional Chinese, Vietnamese, and Filipino • Utilize MTCs verification system to reduce costs and minimize barriers to entry
GES Tolling Equity Program • Scheduled to commence in early 2023	• Switchable transponder • $100 toll credit in the first year • Free transit passes • GES community will use the net toll revenue in later years to offer toll credits, transit credits, or a combination	• Income: 200% FPL • Residence: Yes, GES residents	• In-person or online • Application materials available in English and Spanish • Pay as you go option through a BancPass App provided by Pluspass • Re-verification every two years from 2025
I-880 Express Lanes Toll Discount Program	• 50% reduction in the standard toll rate on I-880 ELs	• Income: 200% FPL (household income)	• Option to apply via computer, mobile phone, or paper

Program	Benefits	Eligibility	Enrollment, Verification & Accessibility for Unbanked/Underbanked
• Scheduled to start as an 18-month pilot program		• Residence: Yes, Bay Area	• Application materials will be available in English, Spanish, and traditional Chinese • Considering re-verification every two years
I-405 and SR 167 Express Toll Lanes (ETL) Low-income Toll Equity Program • Scheduled to start in 2024-2025 as a two- to-five-year pilot with evaluation and iteration on an annual basis	• Free switchable transponder • Toll credit of $48 (equal to the tolls paid by the average ETL user, use it or lose it) OR • 10 free trips per month • Reduce account minimums • Lower automated reload amounts • Modify the application of civil penalty fees	• Income: 200% FPL • Residence: Yes, Washington State	• Use DSHS BVS for enrollment • Applications materials will be available in multiple languages • Application materials will accommodate participants with disabilities • Cash reloading of toll accounts • Eliminate the requirement for stored cards
Treasure Island Toll and Affordability Program • Scheduled to commence in 2025 as a pilot program	• Current residents (pre-2020) are exempt from toll charges • 100% discount for future residents and non-residents earning <55% AMI • 50% discount for future residents and non-residents earning 55-120% AMI • 50% discounted transit pass for residents living in below-market-rate housing • Monthly subsidy to low-income and non-profit workers employed in Treasure Island	• Income: <55% AMI & 55-120% AMI (Not applicable for current residents (pre-2020)) • Residence: Yes, current residents of Treasure Island (not-applicable for future residents)	Not specified
Oregon I-205 and I-5 Toll Projects • Scheduled to commence in 2024	• Substantial toll discount and Smaller toll discount for households with income of 200-400% FPL	• Income: 200% FPL & 200-400% FPL • Residence: Not specified	• Not specified

Note: AMI = Area Median Income; BVS = Benefit Verification System; DSHS = Department of Social and Health Services; FPL = Federal Poverty Level; LA = Los Angeles; GES = Globeville and Elyria-Swansea; VDOT = Virginia Department of Transportation.

CHAPTER 1.
INTRODUCTION AND BACKGROUND

This literature review is part of a Washington State Department of Transportation (WSDOT) study that examined the equity of its five toll roads: SR 16, SR 167, SR 520, I-405, and SR 99. The literature review examined income-based toll programs in the United States (U.S.) to identify best practices and lessons learned, resulting in insights and best practices from nine programs. This project was intended to provide additional insight into the equity of WSDOT's toll facilities. The outcomes from this project will serve as the basis for evaluating the use of the facility and the implications of that use on the equity of toll facilities. This report synthesizes information about programs being performed or considered nationwide to improve the equity of toll facilities. Specific emphasis was placed on programs being used or considered to reduce inequitable impacts on vulnerable communities, the implementation and operational difficulties identified for those programs, and how they have been or are being addressed.

The WSDOT uses tolling to manage demand on Interstate 405 (I-405), State Road 167 (SR 167), SR 99, and SR 520 and to fund megaprojects such as the SR 16 Tacoma Narrows Bridge. Tolls impose a significant expense on roadway users, and while tolls are true "user fees," imposition of these fees can raise serious equity concerns. The Washington State Legislature, the State Transportation Commission, and the WSDOT Secretary have voiced this concern. Work by the University of Washington's (UW) Data Science for Social Good (DSSG) program for the WSDOT's Tolling Division provided excellent insight into the equity of the tolling program on I-405's Express Toll Lanes. However, the equity impacts of WSDOT's other facilities are little known. The companion report from this project describes who uses WSDOT's five toll facilities, the household incomes of those users, and how use by income differs across those facilities.

Critical Challenges of the 21st Century Highway System

During the past century, America's roadway developments have significantly increased the mobility of people and freight. Nonetheless, transportation investments and policies have created and exacerbated racial and social injustice (Hoffman et al. 2020). As part of the construction of the interstate highways in the 1950s and the continued expansion of the nation's freeway system outside of the interstate, disadvantaged populations have been forced to bear significant costs due to the emphasis on supporting sprawling land use practices and the resulting interest in moving cars and reducing congestion.

Transportation investments have also resulted in displacement and physical division of vulnerable communities, safety issues due to high-speed traffic, and lower property values due to the environmental impacts of large roadway facilities. Vulnerable groups have also suffered the most from the effects of poor air quality, with increased incidence of asthma and other ailments brought on by air pollution (Peseky 2018). Lower-income households also spend a much higher proportion of their income on transportation (Bay Area Infrastructure Financing Authority 2022; Plotnick et al. 2009). This trend is likely to worsen as gentrification in Washington state, particularly in the Puget Sound metropolitan region, results in low-income renters being forced out of walkable communities near public transportation (Seattle Department of Transportation 2019). Seattle in particular is among the top three cities in the United States (U.S.) experiencing rapid gentrification, following Washington, D.C., and Portland, Oregon (Balk 2019). As lower-income families are forced to rely on private vehicles for longer and more frequent trips, this displacement alone might limit access to opportunities and raise transportation costs (Cohen and Hoffman 2019) for this vulnerable population.

Traffic congestion is increasingly affecting transportation systems in the U.S., posing a substantial threat to the U.S. economy and the quality of life of millions of Americans (FHWA 2006). On average, Americans waste 99 hours a year in congestion. The 2019 cost of traffic congestion to Americans was estimated at approximately $88 billion, or an average of $1,377 per driver (INRIX 2020). The increase in congestion has added to the operational costs of most public transit systems. Despite substantial investments in public transportation over the past few decades, these investments have not achieved their intended results. Many U.S. public transit systems have seen a decrease in ridership and fare revenue as passengers opt for faster alternatives (Mobility Pricing Independent Commission 2018). However, it should be noted that, before the pandemic, bus usage was increasing in cities like Seattle that are attempting to provide buses with transit priority lanes (Cohen and Hoffman 2019) and other transit priority treatments.

Building our way out of congestion is an increasingly dim prospect—transportation agencies in the U.S. struggle with higher costs to operate and maintain aging roadway infrastructure. Adding highway lanes is also increasingly expensive, especially in developed areas (Henchman, 2013). Widening or building new roadways typically attracts more traffic and does not alleviate congestion. This is exemplified by the massive Katy Freeway in Houston, which saw

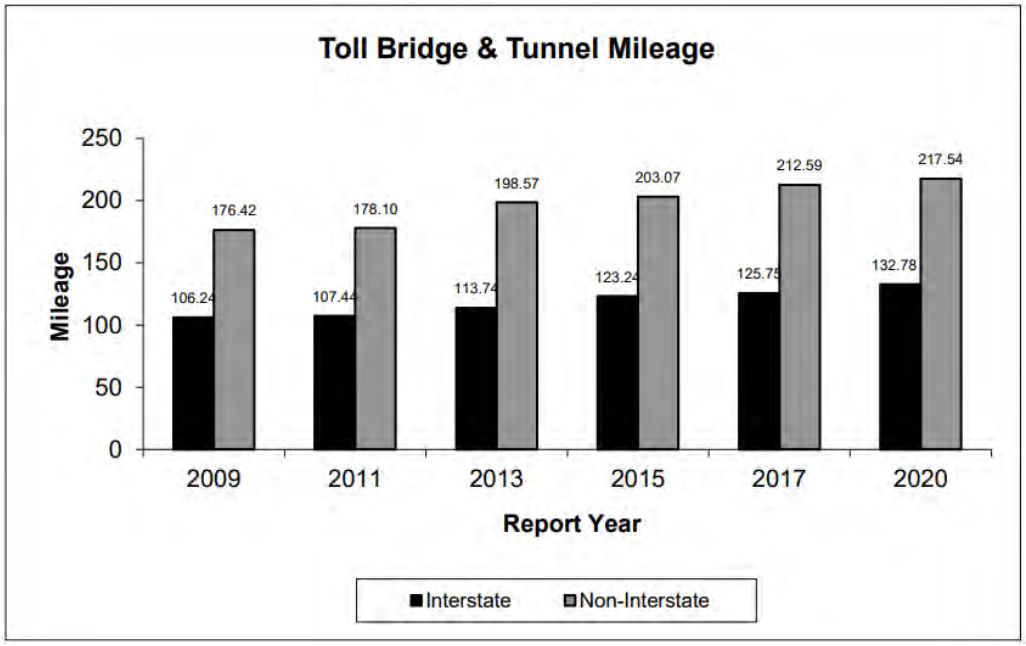
its congestion levels return to pre-expansion levels even after its expansion to 23 lanes (Cohen and Hoffman 2019).

Meanwhile, the country's historical reliance on gas taxes to fund our transportation system is unsustainable because of increasing vehicle fuel efficiency. It is also inequitable because many higher-income households are shifting to hybrid and electric vehicles, increasing the tax burden on lower-income households that cannot afford newer, fuel-efficient vehicles. Inequity is further exacerbated by the fact that many congestion relief projects are located in urban areas. While these projects may serve many daily users, they tend to be extremely expensive and are used by only a fraction of the population whose gas taxes are paying for them, even when the road in question serves a very high daily traffic volume. Notably, the U.S. federal excise tax was last increased in 1993 and currently stands at 18.4 cents per gallon for gasoline and 24.4 cents per gallon for diesel fuel. Meanwhile, inflation climbed by 93 percent between 1993 and 2022. The gas tax is not indexed to inflation (FHWA 2020).

Transportation plays a significant role in global warming and climate change. About 29 percent of greenhouse gas emitted in the U.S. comes from the transportation sector (EPA 2022). It continues to be the leading source of local air pollution, especially in urban areas and areas adjacent to freeways (Cohen and Hoffman 2019). In summary, transportation inequities, traffic congestion, declining transit ridership, growing maintenance costs, and the need to reduce greenhouse gas emissions are some critical challenges facing the highway transportation system in the U.S. Road tolling and pricing—which involve charging fees for the use of a roadway facility—are notable and increasingly popular strategies used by transportation agencies to address these challenges (Cohen and Hoffman 2019; FHWA 2008; King 2009).

Toll and Pricing Roads

Tolling and pricing involve charging fees for the use of a roadway facility. As of January 2020, more than 6,000 miles of roadways in the U.S. were tolled/priced (Figure 1). This is just under six percent of the nation's total road mileage (FHWA 2022a). Tolling generally entails charging drivers a fee each time they use a highway facility. These costs have traditionally been flat rates that may depend on the number of axles of the vehicle and the distance traveled but do not depend on the time of day (FHWA 2022b) or the operating conditions experienced in the facility.



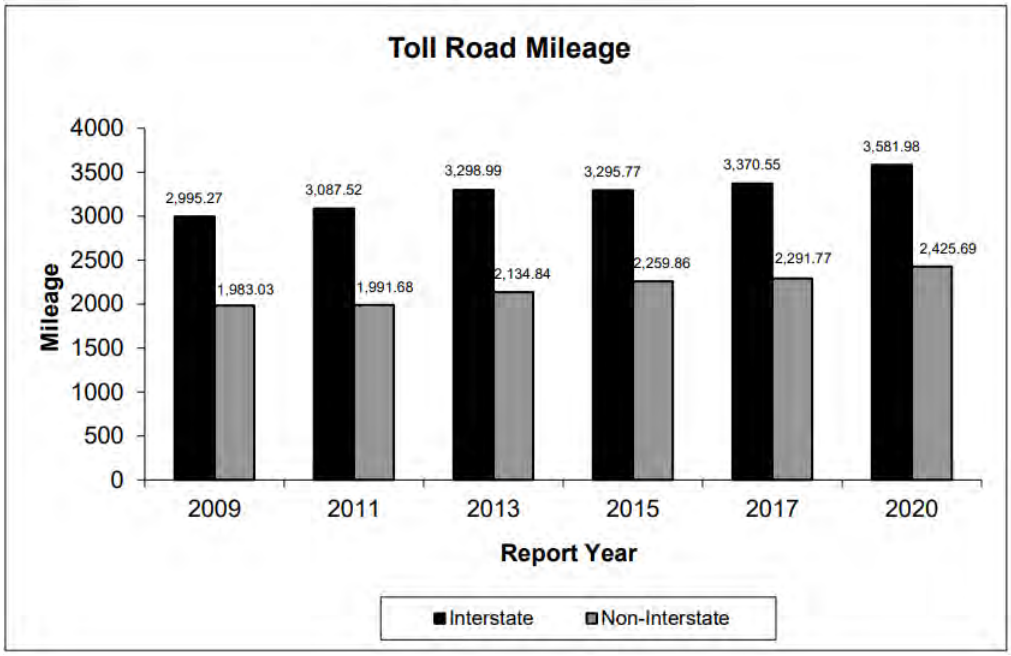


Figure 1. Toll Mileage Trends[1]

The revenue generated is used to cover operating and maintenance costs for the roadway and, in many cases, is the principal means of paying off the long-term debt used to finance the toll facility itself. In some cases, tolls are allowed to remain in place after the financing bonds have

[1] Source: (FHWA 2022a)

been paid off to supplement other state transportation revenues. When toll revenue is applied only to pay for the construction, maintenance, and repair of the roadway on which tolls are being paid, they are generally considered more equitable and economically efficient than other roadway improvement funding options in that non-users are not required to help pay for those road improvements (Metschies 2001).

One important variation in tolling is "pricing", which involves the imposition of fees or charges that change according to facility demand. With pricing, the toll rate structure can vary depending on some combination of the time, day of the week, or real-time traffic conditions, typically quantified by speed and volume. For both flat rate and variable tolls, the toll rate typically varies by vehicle type, where "vehicle type" is generally defined by the number of axles on the vehicle and any trailers the vehicle pulls. Pricing generates revenue, just like flat tolls do. Revenue from these fees can be:

- reinvested in paying off roadway construction bonds,
- used toward operating and maintaining the toll facilities,
- used for capacity expansion either in the corridor or elsewhere in the State,
- used to pay for added transportation supply in the tolled corridor, or
- used to pay for non-transportation mitigation for impacted communities.

Pricing also aims to lower external costs associated with congestion, the environment, or other costs incurred by road users (FHWA 2006, 2008, 2022b). Congestion pricing works by incentivizing residents to use the highway system more efficiently by opting to use alternative modes of transportation other than passenger cars, e.g., public transit and ridesharing, or by traveling during off-peak periods (Plotnick et al., 2009). According to economists, congestion pricing is the most practical and long-term method of reducing traffic congestion (FHWA 2006).

One of the common types of pricing strategies is priced managed lanes. These are operational travel lanes alongside an existing freeway where operational strategies are proactively implemented and managed using congestion pricing, vehicle eligibility, and access control—the three most effective management tools—thereby providing a higher level of mobility and better overall travel time reliability, especially during peak hours. Common types of priced managed lanes include express toll lanes (ETLs), high occupancy toll (HOT) lanes, truck-only toll (TOT) lanes, and bus-only toll lanes (Perez et al. 2012).

Cordon pricing is another common strategy where motorists are charged variable or fixed prices to drive within or into a defined zone, usually a city center. Some cordon tolls only apply during peak periods, such as weekdays (Victoria Transport Policy Institute 2019). The various tolling and pricing strategies are listed in Table 2, along with their objectives. Some contribute to revenue generation; some lessen peak-period congestion; some lessen overall traffic impacts, e.g., crash risks, congestion, pollution, road, and parking facility costs, etc., and some aid in accomplishing several goals at once.

Table 2: Tolling and Pricing Strategies[2]

Strategy	Description	Objectives
Road toll	A fixed fee (or fixed fee per mile) for driving on a particular road	Generate revenue
Congestion pricing	A fee that is higher under congested conditions than uncongested conditions, intended to shift some vehicle traffic to other routes, times, and modes	Reduce traffic congestion and generate revenue
Cordon pricing	Either variable or fixed charges to drive within or into a congested area within a defined zone.	Reduce congestion inside the cordon, raise revenue, decrease emissions
Area-wide charges	Per-mile charges on all roads within an area that may vary by the level of congestion	Reduce congestion

Road Pricing in Washington

Table 3 summarizes the five tolled facilities in Washington state as of 2022, including two bridges (SR 16 Tacoma Narrows Bridge and SR 520 Evergreen Point Floating Bridge), one tunnel (SR 99), one ETL (I-405), and one HOT lane (SR 167). The SR 16 Tacoma Narrows Bridge has a fixed toll, meaning the toll rate does not vary by time of day or day of the week. The state tolling authority, i.e., Washington State Transportation Commission (WSTC), changes the toll rates of the SR 16 Tacoma Narrows Bridge following the Tacoma Narrows Bridge toll rate-setting policy designed to ensure sufficient revenue is generated to pay for the construction bonds for the bridge.

[2] Source: (FHWA 2008b)

Table 3: Tolled Facilities in Washington

Toll Facility	Toll Start Date	Rate Structure	HOV Policy	Hours of Operation	Payment Method	Toll Exemptions
Bridges and Tunnels						
SR 16 Tacoma Narrows Bridge (Eastbound)	July 2007	• Fixed and do not vary by time of day or day of the week • Toll varies based on the number of axles on a vehicle • Toll rates are subject to change by the state tolling authority, i.e., WSTC, following the Tacoma Narrows Bridge toll rate-setting policy	2+ HOV lane without toll	24 hours, 7 days a week	• GoodToGo! Pass (cheapest) • Pay By Plate • Cash • Pay By Mail (most expensive)	• Transit/ridesharing • Private buses/school buses • On-duty emergency vehicles • In-service tow trucks • On-duty incident response/O&M vehicles
SR 520 Floating Bridge	December 2011	Toll rates vary by: • time of day, with lower rates on nights and weekends • toll rates vary by number of axles	3+ HOV lane without toll	24 hours, 7 days a week	• GoodToGo! Pass (cheapest) • Pay By Mail (most expensive)	• Transit/ridesharing • Private buses/school buses • On-duty emergency vehicles • In-service tow trucks • On-duty incident response/O&M vehicles
SR 99 tunnel	Opened in February 2019, with tolling beginning in November 2019	Toll rates vary by: • time of day, with lower rates on nights and weekends • toll rates vary by number of axles	No HOV lane. HOVs not exempt from tolls	24 hours, 7 days a week	• GoodToGo! Pass (cheapest) • Pay By Mail (most expensive)	• Transit/ridesharing • Private buses/school buses • On-duty emergency vehicles • In-service tow trucks • On-duty incident response/O&M vehicles

Toll Facility	Toll Start Date	Rate Structure	HOV Policy	Hours of Operation	Payment Method	Toll Exemptions
Priced Managed Lanes						
I-405 ETLs (HOT lane)	September 2015	• Toll varies based on real-time traffic conditions (speeds and volumes) and is adjusted automatically using an algorithm • Motorcycles and qualified carpools (number varies by time of day) can use the lanes for free with a Good To Go! pass • Facility is free for all users on weekends and at night	3+ HOVs are always exempt from tolls; 2+ HOVs are exempt 9 am-3 pm (requires GoodToGo! Flex Pass)	5 am-7 pm, weekdays	• GoodToGo! Pass • Pay By Mail (prevailing toll rate + $2 pay-by-mail charge)	• 3+ peak/ 2+ off-peak • Motorcycles • Transit/ridesharing • Private buses/school buses • On-duty emergency vehicles • In-service tow trucks • On-duty incident response/O&M vehicles
SR 167 HOT lanes	May 2008	• Toll varies based on real-time traffic conditions (speeds and volumes) and is adjusted automatically using an algorithm	2+ HOVs are exempt	5 am-7 pm, 7 days a week	• GoodToGo! Pass • Pay By Mail (prevailing toll rate + $2 pay-by-mail charge)	• 2+ • Motorcycles • Transit/ridesharing • Private buses/school buses • On-duty emergency vehicles • In-service tow trucks • On-duty incident response/O&M vehicles

Note: On-duty = vehicle operating in an official capacity; In-service = On-duty and responding to an incident.

The I-405 ETLs and SR 167 HOT lanes are dynamically tolled, meaning the price to travel in these lanes varies based on real-time traffic conditions and is adjusted automatically using an algorithm. Signs before each toll lane entry point inform the driver of the current rate. Drivers lock in the rate they will pay when they enter the ETLs, regardless of any rate changes which occur while they are in the lanes. For these dynamic tolling projects, WSTC sets the minimum and maximum toll rates, and then tolls vary automatically depending on traffic volumes and speeds being observed on the facility (Washington State Transportation Commission 2022).

The SR 520 bridge and SR 99 tunnel have variable, static time-of-day tolling, meaning that toll rates vary based on a set schedule by day of the week and time of day. On these facilities, tolls are the same every weekday at the same time of day. These tolls are designed to maximize both revenues and vehicle throughput while minimizing diversion to other routes.

In addition to the existing toll facilities listed in Table 3, projects are underway constructing three additional toll facilities: the SR 509 and SR 167 facilities included as part of the Gateway Program and the extension of the I-405 ETLs from Bellevue to Renton (Washington State Transportation Commission 2022). The primary goals for tolling on all three new facilities are a combination of traffic management and helping fund the corridor improvements.

The revenue expectations for the SR 509 and SR 167 expressway facilities include generating $180 million towards the Gateway Program construction costs, ongoing operations, maintenance costs, and traffic management (Washington State Transportation Commission 2022).

Fundamental Economic Principle of Road Pricing

Road tolling and pricing are founded on the *user-pay principle*, a fundamental economic concept based on the idea that when people have to pay for the total cost of the goods they consume, they use them more efficiently (Hoffman et al. 2020; Krol 2017). The costs of driving are not just reflected in construction and maintenance costs or what people pay in gas and income taxes; they also include costs of congestion, traffic incidents, pollution, and lower value of many properties adjacent to major highways, among other costs. These additional costs can be, but typically are not, reflected in the price of tolls or road user charges.

When road pricing reflects some or all of these costs, road users receive economic signals that cause behavioral changes, which can alter at least some of their trip making. They might (sometimes or frequently) select an alternative trip destination, change modes, change routes, or group their trips (Creger et al. 2018; FHWA 2008; Helsel 2017). Where road prices vary by time

of day or congestion level, drivers may shift some trips to off-peak hours to lower their cost, thus easing congestion levels on those facilities during peak travel periods. When a road's throughput can be lowered below volumes where congestion forms through any combination of these behaviors, even a modest decrease in traffic volume can result in a considerable reduction in delays for everyone using the facility (Cohen and Hoffman 2019).

In general, tolling and pricing strategies have the potential to help achieve transportation system goals. They can simultaneously lessen traffic during peak hours, make more efficient use of roadway infrastructure, and open a funding source that has the potential to provide more equitable, sustainable, and resilient transportation solutions. Implementing road pricing can reduce the amount of cross-subsidization that occurs between motorists, for example, limiting the subsidization of the high cost of supplying extra capacity during the peak periods by those who do not travel then (Victoria Transport Policy Institute 2019). Under current systems, users of less expensive roads may be required to contribute to the costs of more expensive roads. This cross-subsidization even includes non-motorists, as only about half of U.S. highway expenses are funded by motorist user fees. This figure is even lower on major metropolitan roads where construction costs are exceptionally high (Henchman 2013).

Road pricing can significantly increase the effectiveness of a transportation system suffering from extreme capacity limitations and overuse (Cohen and Hoffman 2019; Pesesky et al. 2018). Notably, the personal benefits of road tolling and pricing depend on various factors, including the availability and operational conditions of alternative travel options and the relative location of residential communities to employment opportunities (Krol 2017).

Despite the promising benefits, road tolling and pricing can lead to their own set of problems. Without a clear emphasis on social and racial equity from the early stages, their implementation can exacerbate already-existing imbalances in our transportation system and society at large (Cohen and Hoffman 2019; King 2009). It can put a further financial strain on low-income motorists when some are forced to leave transit-rich urban areas due to increasing housing costs and rely more on private vehicles (FHWA 2008; Seattle Department of Transportation 2019).

If the revenue raised by road pricing is used primarily to construct new roadways, pricing might then end up encouraging even more driving, causing an increase in emissions and climate pollution and reducing the ability to fund alternative modes of transportation. Drivers who do not have bank accounts or credit cards or cannot make sizeable deposits may not be able to set up toll

accounts—when road pricing is based on electronic tolling—a situation that could limit their usage of these facilities (Cohen and Hoffman 2019; FHWA 2008; Plotnick et al. 2009).

To examine these potential negative effects of tolling and pricing, the following chapter synthesizes published literature exploring equity concerns with road pricing.

CHAPTER 2.
ROAD PRICING AND TRANSPORTATION EQUITY

Equity refers to the concept of fairness and justice in the distribution of resources and opportunities. To be equitable, transportation systems must provide equitable access to affordable and reliable transportation options based on the requirements of the communities being served, particularly traditionally underserved populations. According to Cairns et al. (2003), equity and fairness issues in transportation exist when some communities:

- benefit more than others,
- disproportionally suffer from the negative impacts of the transportation system,
- pay relatively higher transportation taxes and fees in comparison to others, and
- are less represented than others in policy-making decisions.

To better assess the equity impacts of road tolling and pricing, it is essential to compare it with other roadway infrastructure financing methods (Cohen and Hoffman 2019; Giuliano 1994; Plotnick et al. 2009; Ungemah 2007). A century ago, publicly financed roads were perceived as unfair, as a small proportion of the population owned vehicles. Tolls were used extensively, especially following the construction of the first toll road in 1792. (Helsel 2017) Tolls for larger roads were common in the U.S. until the enactment of the Federal Aid Highway Act (which led to the construction of interstates) (FHWA n.d.). Ultimately, in the U.S., gas taxes prevailed as the primary method for financing roadway infrastructure construction and maintenance because gas taxes were considered a reasonable proxy for user fees. The thinking at the time was that the more one traveled by car, the more gasoline that would be consumed and, thus, the more taxes would be paid. Years later, the vast majority of the adult U.S. population drives a vehicle on a public road. As a result, public opinion now tends to view roads as a public good and not a service (Ungemah 2007).

As a result of the growing diversity in the types of vehicles and power sources for those vehicles, the fuel tax has become a poor proxy for road use. Vehicle miles traveled have outpaced the growth in fuel consumption because of increasing fuel efficiencies and the use of alternative-fuel vehicles (Puentes and Prince 2003). Additionally, congestion continues to worsen nationwide. Congestion results from an imbalance between supply (roadway capacity) and demand (traffic volume) (Ungemah 2007), which is commonly caused by the continued growth of urban vehicle travel combined with an inability to build roadway capacity in urban areas due to a lack of right-

of-way, the exceptionally high costs of urban roadway expansion, and public resistance to many roadway expansion projects.

Concerns from the public have increased as transportation agencies rely on road pricing to manage congestion and generate funds for constructing and maintaining roadways (Helsel, 2017). Road tolling and pricing redistribute benefits and burdens in different and more obvious ways than gas taxes, prompting a reevaluation of alternative funding mechanisms in order to determine what is a *fair* method of financing transportation infrastructure (Weinstein and Sciara 2004). One aspect of equity in road pricing is the question of who bears the burden of the fees. For example, when motorists must travel and must use tolled roadways, low-income individuals may be disproportionately affected by tolls or congestion charges, as they may have a more challenging time paying the fees. On the other hand, road pricing can also lead to more efficient use of roads, which may benefit low-income individuals by reducing the time and cost of commuting, and low-income motor vehicle drivers that do not use the tolled facility do not have to contribute to the toll payments.

Another aspect of equity in road pricing is the distribution of the benefits obtained from spending the revenue generated from those fees. For example, the revenue may be used to fund transportation projects that benefit certain communities or regions more than others. Overall, equity considerations are an essential part of the design and implementation of road pricing systems, both in terms of who pays and how those funds are spent. It is vital to ensure that the benefits and burdens of road pricing are distributed fairly among different groups of people. Plotnick et al. (2009) identified the following critical aspects to consider in order to understand the socioeconomic effects of road pricing:

- use of transportation facilities by low-income and wealthier households following the implementation of tolls or pricing,
- financial impact of a toll on low-income and high-income households,
- travel time savings for motorists who choose to use toll facilities, and
- additional travel time for motorists who choose to use alternative routes or switch to public transit and ridesharing options.

Understanding the dimensions, measures, and types of equity is the first step to determining whether road pricing is equitable. It is also a crucial step in devising ways to mitigate the unintended inequity consequences of road pricing.

Dimensions and Measures of Equity

There are two dimensions of equity: process equity and outcome equity (Levinson 2010). These dimensions have been adopted by several transportation agencies, including the Oregon Department of Transportation (ODOT) and Seattle Department of Transportation (SDOT), that are working to improve equity in their road toll and pricing facilities and projects (Hoffman et al. 2020; Seattle Department of Transportation 2019). Table 4 describes the measures of process equity and outcome equity.

Table 4: Key Measures of Process and Outcome Equity[3]

Dimension of Equity	Key Measure	Description
Process Equity	Full Participation	The communities and populations affected by the projects will have a significant influence on their development and implementation. Maintaining transparency and accountability on the part of the agency will be crucial to the success of the toll projects.
Outcome Equity	Affordability	The projects will investigate ways to increase the accessibility of the transportation network to impacted and underserved communities.
	Access to Opportunity	The toll projects will improve multimodal access to the region's various opportunities for traditionally excluded and marginalized communities.
	Community Health	The toll projects will consider external burdens of transportation systems, including air quality, noise, traffic safety, economic implications, and other potential effects on historically marginalized and underserved populations.

Process Equity

Process equity in road pricing refers to the fairness of the planning and decision-making process and the transparency of the policy (Levinson 2010). This includes ensuring that all stakeholders, including the underserved communities, have the opportunity to participate fully in the decision-making process—from design to post-implementation monitoring and evaluation—and that their concerns are considered (Hoffman et al. 2020).

It is important to gather input from vulnerable communities at the beginning of the project planning process to understand their needs and concerns related to equitable project outcomes and

[3] Source: (Hoffman et al. 2020)

to identify ways to measure the project's success. This input will help to ensure that the project meets the needs and addresses the concerns of these communities (Cohen and Hoffman 2019).

For instance, for newly built toll facilities, one of the primary equity concerns is typically the result of facility location choice, which more frequently impacts underserved population neighborhoods because of the lower cost of purchasing land in low-income areas and their lack of political power. In contrast, higher-income neighborhoods are more likely to be able to fund both legal and political challenges to the new facility, which results in more mitigation and, thus, lower impacts for their neighborhoods relative to what low-income neighborhoods receive. Promoting process equity ensures that all communities' voices are effectively heard and considered as project plans and mitigation are finalized. Process equity can involve a variety of steps, such as:

- ensuring that the decision-making process is open and transparent and that all stakeholders have access to information about the proposed road pricing system,
- providing opportunities for stakeholders to provide input and feedback on the proposed system through public meetings, online surveys, or other means,
- considering the needs and concerns of all stakeholders, and
- ensuring that the decision-making process is inclusive and that the voices of underrepresented groups are heard and taken into account (Cohen and Hoffman 2019).

Through process equity, transportation agencies can devise strategies to prevent underserved communities from bearing the brunt of any adverse effects the toll projects may have, either directly or indirectly (Cohen and Hoffman 2019; Taylor 2010).

Outcome Equity

Outcome equity refers to the fairness of the outcome or impacts of a policy or decision (Levinson 2010; Seattle Department of Transportation 2019). This can include issues such as the distribution of the burdens and benefits of the policy among different groups of people, the impact of the policy on different modes of transportation, and the overall effectiveness of the policy in achieving its intended goals (Cohen and Hoffman 2019).

Outcome equity has become a major political topic on projects involving introducing or converting existing non-tolled facilities into tolled facilities (Cohen and Hoffman 2019). Underserved communities relying on the free facility may be negatively affected by the cost of the new transportation charges (tolls) due to the inability to afford those tolls, which could impact their access to jobs, daycare, healthcare, and other critical activities. Land use decisions made under

one specific set of financial assumptions (the existence of a free road), which allows a specific set of travel movements at some expected set of time and dollar costs, may no longer be valid. The conversion of a "free" road to a toll facility puts these individuals at a disadvantage because they may not have sufficient disposable income to pay the new tolls. While they may gain travel time and possibly reliability advantages from the lower demand caused by that toll, they often cannot convert those time savings to dollars to pay those tolls. Moving to a new location to avoid the tolls also carries high costs, limiting their accessibility options (Plotnick et al. 2009).

In many cases, low- or limited-income populations tend to live close to major roadways, primarily due to the lower cost of residential land resulting from the noise and pollution impacts of those roads. These households are likely frequent users of the free roads. This means that alternatives to newly tolled facilities are likely to add travel time and associated travel costs, reducing their access to opportunities and further harming these groups. Toll facilities are also likely to increase diversion to adjacent non-tolled routes, which may pass through or close to vulnerable communities, increasing the impacts of air and noise pollution on those communities. Diverted traffic will likely create safety hazards, particularly for non-motorized road users, including pedestrians and bicyclists (Government Accountability Office, 2012).

Ensuring outcome equity in road pricing is important because it helps ensure the result of the pricing behavior is beneficial to all stakeholders and meets the project's intended goals in a fair and just manner. Outcome equity can be promoted in road pricing policy implementation in several ways. These can include:

- using a variety of metrics to assess the effectiveness and distribution of the policy or program, including measures of congestion, air quality, accessibility, and affordability,
- using a pricing structure that considers the different costs and benefits of different modes of transportation to ensure that the policy does not disproportionately affect any particular group,
- using toll revenue to fund transportation projects that benefit all stakeholders rather than just a select few, and
- monitoring the impacts of the policy over time to ensure that it is meeting its intended goals and to identify any unintended consequences that may need to be addressed.

Overall, promoting outcome equity in road pricing can help ensure that the policy is beneficial to all stakeholders and implemented fairly and effectively.

Types of Equity Considerations

Within *Outcome Equity*, there are three primary considerations related to the distribution of benefits and burdens of road pricing: income equity, geographic equity, and modal equity (FHWA 2008; Levinson 2010).

Income Equity

As shown in Table 5, income equity in road pricing refers to the idea that individuals with different income levels should be treated fairly regarding benefits and burdens generated by tolled/priced facilities. Previous studies identified income equity as the most frequent concern of road pricing (FHWA 2017; Weinstein and Sciara 2004).

One reason income equity may be particularly important in road pricing is that the costs of using tolled roads can be a significant burden for low-income individuals (FHWA 2017). If the fees for using the roads are too high, they may be unable to afford to drive on the tolled roads, which can limit their access to employment, education, and other opportunities. On the other hand, it is also essential to consider the potential benefits of road pricing for low-income individuals. For example, suppose road pricing leads to reduced congestion. In that case, it may make it easier and faster for low-income individuals to travel to work or other destinations, which could improve their quality of life.

The benefits of road pricing might not be distributed evenly across all users. For example, road pricing can restrict the options available to low-income motorists while expanding the possibilities available to high-income users (FHWA 2017). Wealthier motorists are likelier to remain on the road, pay the congestion price, and enjoy a faster trip. Middle- and upper-income drivers utilize the tolled and priced roadway facilities more frequently, even though people of all incomes use them (Cohen and Hoffman 2019). In contrast, if low-income motorists opt for alternative routes, modes, and less expensive times (e.g., off-peak hours), they can end up worse off (FHWA 2008) with respect to their quality of life or their access to opportunity.

Overall, it is essential to consider income equity when designing and implementing road pricing systems to ensure that the costs and benefits of using the roads are distributed fairly among different income groups. This can be achieved through various means, such as offering discounts or exemptions to low-income individuals or using a progressive pricing structure in which higher fees are charged to individuals with higher incomes.

Table 5: Types of Equity Outcomes[4]

Type of Equity	Key Measure
Income equity	• Do underserved communities suffer adverse effects? • Is a system that places the burden of travel-behavior change disproportionally on low-income individuals fair?
Geographic equity	• Do some areas of the region impacted by road pricing bear more burdens than others? • Will neighborhoods be impacted negatively by traffic diverting from tolled routes and/or affect the performance of alternative non-tolled roads?
Modal equity	• Is the public's perception of the promotion of multimodal transportation considered? • Does road pricing contradict the public's perception that multimodal transportation should be encouraged?

Helsel (2017) argued that congestion pricing likely worsens time poverty among low-income motorists by restricting low-income drivers from using priced facilities during off-peak hours. Time poverty should be considered in congestion pricing initiatives as a possible equity concern similar to income equity (Helsel 2017).

Geographic Equity

Geographic equity concerns arise where project benefits and burdens of road pricing have strong spatial patterns (Weinstein and Sciara 2004). Toll facilities may result in certain geographic regions being more negatively affected than others. For instance, traffic diversion from tolled routes could negatively impact certain neighborhoods, causing decreased safety, increased congestion, and air quality deterioration (Government Accountability Office 2012). However, the distribution of these impacts is a function of the available diversion routes as well as the location of the tolled facility itself.

In addition, toll revenues may be used to benefit certain areas more than others. One way to address geographic equity in road pricing is to use the toll revenue to fund projects in areas underserved by existing transportation infrastructure or to address specific transportation needs for those communities (Weinstein and Sciara 2004). It is also important to consider geographic equity when designing the fees for using the roads themselves. For example, suppose the fees are structured in a way that disproportionately affects residents of specific areas. In that case, adjusting the fees to ensure they are distributed fairly among different geographic areas may be necessary.

[4] Source: (FHWA 2008)

Modal Equity

Modal equity refers to the fairness and balance in allocating transportation resources and services among different modes of transportation, such as private vehicles, public transportation, and non-motorized transportation, e.g., bike, pedestrian, etc. One concern with road pricing is its potential to disproportionately affect lower-income individuals, who may rely more heavily on driving and have fewer alternative transportation options available (Weinstein and Sciara 2004). This is a growing concern in major urban areas, where urban growth pressure has resulted in the gentrification of transit-friendly older neighborhoods and pushed lower-income households to car-dependent neighborhoods in the outer suburbs, where land prices are lower.

Ensuring modal equity in road pricing policy involves considering the needs and circumstances of all groups of people and finding ways to minimize any negative impacts on disadvantaged communities. This may involve providing alternative transportation options, such as public transit or carpooling incentives. The use of revenue from road pricing to fund these and other transportation alternatives is one way to improve modal equity. This can help ensure that all community members have access to safe and reliable transportation options.

Is Road Tolling and Pricing Regressive?

Road pricing can be regressive, meaning it disproportionately affects lower-income individuals or groups—an undesirable feature from an equity perspective. The best way to determine whether road pricing is regressive is to compare it with traditional transportation fees and taxes, for instance, car registration fees, gas tax, and sales tax (Cohen and Hoffman 2019; Krol 2017; Plotnick et al. 2009).

It is widely recognized that traditional highway construction and maintenance funding methods are often regressive, meaning that low-income motorists pay a higher proportion of their income than wealthier motorists (Ecola and Light, 2009; FHWA, 2008; Seattle Department of Transportation, 2019). Under the current transportation finance system, low-income households spend a significantly higher percentage of household income on transportation than wealthier households (Frick et al. 1996; Plotnick et al. 2009). After food and housing, transportation is the third-largest budget item for low-income households (Bay Area Infrastructure Financing Authority 2022).

Motorists with lower incomes are often more likely to drive older, less fuel-efficient vehicles. This means they need to buy more fuel per mile driven and subsequently pay higher fuel

taxes per mile compared to those who own newer, more fuel-efficient models or alternative fuel vehicles that may be exempt from some transportation taxes, though sometimes this is not the case (FHWA 2008). Additionally, traditional taxes are inefficient because they give the perception that the use of roads is free, which can encourage excessive driving (Hamilton and Seattle Department of Transportation 2009).

Whether a toll is regressive overall depends on how much lower-income motorists drive on toll facilities, how much it costs to travel, the before-toll travel patterns, how much alternative routes would increase time for commuting and other trips, the availability and quality of alternative travel options, and how revenues are used (Burris et al. 2013; FHWA 2008; Giuliano 1994; Government Accountability Office 2012; King 2009; Litman 1996). Road pricing can be regressive if it disproportionately affects lower-income individuals. For example, suppose a flat toll is implemented on a road that lower-income individuals continue to heavily use. In that case, it could be considered regressive because it would take a more significant percentage of their income to pay the toll (Krol 2017; Safirova et al. 2005).

During a community engagement study conducted as part of the San Mateo US 101 Express Lanes equity study, some participants expressed concern about the distribution of costs and benefits associated with the project (San Mateo County Transportation Authority 2021). They were worried that the proposed benefits, such as reduced congestion, faster travel times, and more reliable trips, would mainly benefit wealthier households. In contrast, the negative impacts, like increased congestion on nearby roads, higher pollution levels, and higher travel costs, would disproportionately affect disadvantaged communities located near the freeway.

During the community engagement study, residents also raised concerns about accessing the new express lanes, citing barriers like cost, difficulty obtaining a toll transponder, difficulty making online payments, and language barriers as potential issues. The residents of Treasure Island expressed similar concerns about the financial feasibility of the proposed tolls for low-income motorists (Treasure Island Mobility Management Agency 2022). If a pricing mechanism is not designed to consider an individual's ability to pay, it could also be regressive (San Mateo County Transportation Authority 2021).

The International Transport Forum (2018) examined the social impacts of road pricing and found that congestion pricing is more expensive for those with lower incomes than those with higher incomes. Still, it is not necessarily more regressive than other road funding choices like fuel

or general taxes (International Transport Forum 2018; Krol 2017). Overall, road pricing can also be progressive if it is structured to charge a higher fee for those who use the road more or for more extended periods of time (Krol 2017).

Individuals value the option to decide whether or not to use toll lanes. A person's decision to use toll lanes can be influenced by various factors, including employment and gender, and is not solely determined by income level (Giuliano 1994). Research has demonstrated that lower-income individuals are disproportionately affected when denied good options (FHWA 2008). A low-income motorist may pay a toll to save time in certain situations, such as running late for work or needing to pick up a child from a daycare (FHWA 2017).

The regressivity of the tolls could potentially be offset by using revenues in ways that benefit all motorists, including low-income and other underserved populations (Levinson 2010; Plotnick et al. 2009). Policymakers could make road pricing more equitable by using toll revenues to improve alternative travel routes, expand and improve alternative travel modes (including public transit), and offset tolls by reducing regressive taxes and fees (FHWA 2008; Krol 2017; Victoria Transport Policy Institute 2019).

One way to address the regressivity of the tolls and promote geographic equity is by investing the road pricing revenue into public transit, as long as it effectively meets the travel needs of low-income travelers and those affected by the tolls. However, this can be a challenge in many low-income suburban areas where the existing land use patterns and road system layouts make it challenging to provide competitive transit services. In cases in which effects on low-income motorists are felt to be particularly severe, toll exemptions or toll rebates may be offered to eligible drivers, or other forms of monetary compensation may be offered, such as tax rebates that provide reimbursement for tolls paid or income supplements (FHWA 2008; Victoria Transport Policy Institute 2019).

Implementing road pricing can result in some individuals benefiting while others may be negatively affected (Gomez-Ibanez, 1992). According to this study, the following groups of people are likely to benefit when congestion pricing is introduced on an existing roadway:

(1) motorists who would drive with or without the toll but place a high value on time savings (for these individuals, the benefits of improved roadway operation outweigh the toll costs),

(2) high-occupancy vehicle (HOV) drivers or public transit users who continue to use the tolled lanes and benefit from improved conditions, and

(3) recipients of toll revenues, if they are distributed.

On the other hand, the study identified the following groups as likely to be negatively affected:

(1) motorists who would continue to drive on the road despite the toll because they do not have the flexibility to change their route,

(2) those who switch to a less convenient route to avoid the toll,

(3) those already using alternative routes who experience more congestion, and

(4) motorists who choose not to make the trip due to the toll.

Those who switch to HOV or transit to avoid the toll may either benefit or be negatively affected, depending on whether the time and money saved by switching modes exceed the inconvenience. This list shows that the progressivity of tolls can vary from one situation to another. Gomez-Ibanez (1992) suggests that high-income individuals are likely to be in the first group of winners. Low-income individuals are likely to be in groups 2 and 3 of winners as well as Group 2 of the losers. Middle-income individuals are likely to be in the first through third groups of losers.

Equity issues are often a concern when it comes to road pricing strategies. However, it is possible to design a system that addresses these concerns (Cohen and Hoffman 2019). The previous sections have described several strategies that can be used to mitigate inequity in road pricing, including the following:

- offering discounts or exemptions for low-income individuals or those who cannot afford to pay the tolls,
- implementing progressive pricing structures that charge higher fees for those who use the road more often or for more extended periods of time,
- using the revenue from tolls to fund transportation improvements or services that benefit disadvantaged communities,
- providing alternative transportation options, such as public transportation or carpool lanes, for those who cannot afford to pay tolls,
- regularly reviewing and adjusting the toll rates to ensure that they are fair and equitable, and
- engaging in public outreach and education efforts to ensure the community knows the tolls and any available discounts or exemptions.

The next chapter discusses the successful practices and lessons learned from current and planned toll programs based on income.

CHAPTER 3.
TOLL EQUITY PROGRAMS IN THE UNITED STATES

The literature review includes a case study analysis of existing and planned income-based toll programs in the U.S. to identify best practices and lessons learned. This information was gathered through interviews with tolling agencies that have or are in the process of implementing a toll equity program and a review of program websites, documents, and technical reports. Four existing programs were identified, i.e., (1) Los Angeles (LA) Metro Low-income Assistance Plan, (2) Virginia Department of Transportation Toll Relief Program, (3) I-PASS Assist Program in Illinois, and (4) San Mateo 101 Express Lanes Community Transportation Benefits Program. In addition, five proposed programs were also explored: (1) Globeville and Elyria-Swansea (GES) Tolling Equity Program in Colorado; (2) I-880 Express Lanes Toll Discount Program in California, (3) I-405 and SR 167 Express Toll Lanes Low-income Toll Equity Program in Washington, (4) Treasure Island Transportation Affordability Program, and (5) Oregon I-205 Low-income Toll Program. This study supplemented the research for the San Mateo 101 Express Lanes Community Transportation Benefits Program, GES Tolling Equity Program, and I-880 Express Lanes Toll Discount Program case studies with interviews of agency staff. The following chapter of the study provides insights and best practices from these nine programs.

Existing Income-Based Toll Programs

Los Angeles Metro Low-Income Assistance Plan

In 2012, LA Metro introduced the first Low-income Assistance Plan of its kind in the U.S. This was a result of state law SB 1422 (2008) and Federal Executive Order 12898, which required Metro to assess the impact of converting HOV lanes on LA's busiest highways (I-10 and I-110) to HOT lanes, conventionally referred to as *ExpressLanes*. This was LA's first-ever toll project (FHWA 2017).

Metro funds the program through toll revenue and promotes it through various means, including billboards, bus advertisements, videos at gas stations and McDonald's, online ads, community events, festivals, and transportation workshops. The program offers eligible participants a one-time credit of $25 that can be used to purchase a transponder or pay a toll deposit in advance (Metro ExpressLanes 2022a). This program also exempts participants from the $1 monthly account maintenance fee charged by FasTrak, the provider of electronic toll collection

and issuer of transponders for the Metro ExpressLanes. As of 2021, about 3 percent of the 500,000 FasTrak accounts used on the toll corridors (16,670) were enrolled in the program (Colorado Transportation Investment Office 2022; WSP 2022).

To be eligible for the program, individuals must be residents of LA County and have an income below 200 percent of the Federal Poverty Level (FPL). To confirm their eligibility, participants may show a recent pay stub, tax return, or proof of participation in programs such as MediCal, Lifeline, Public Benefit, Los Angeles Unified School District (LAUSD) Lunch Program, or Electronic Benefits Transfer (EBT) for Food Stamps (Metro ExpressLanes 2022a). Personal enrollment at a Metro *ExpressLanes* Service Center is highly encouraged. If enrolling over the phone, participants must submit proof of income and residency before their accounts can be activated (Colorado Transportation Investment Office 2022).

The low-income program offers options for residents without or with limited access to banking services to pay tolls through a cash/check account with manual payments. About 9.5 percent of all program accounts are cash/check accounts with manual replenishment, which can be reloaded at two Metro customer service centers or via PayNearMe at 7-11 stores (with a $1.99 fee per transaction). This requires a minimum pre-payment of $50 plus the transponder deposit and a minimum balance of $25 with subsequent manual payments of at least $50. On the other hand, debit/credit card accounts have a lower initial pre-payment of $40 with no transponder deposit required, a minimum balance of $10, and automatic replenishment of $40 when the minimum balance is reached. If the account owes more than $14.99, it will be canceled, and accounts that reach the minimum balance without replenishing will receive a 15-day reminder to do so.

In addition to the low-income assistance program, Metro has introduced the Transit Rewards Program for I-10 and I-110 HOT lane users (FHWA 2017; Metro ExpressLanes 2022b). By linking their transit card to their FasTrak account, riders can earn a $5 monthly toll credit for use on the Metro *ExpressLanes*. Initially, riders had to take 32 one-way trips during peak hours on designated bus services, but this requirement was reduced to 16 trips in 2019 (Colorado Transportation Investment Office 2022). As of June 2018, around 18,380 accounts had enrolled in the Transit Rewards Program, with an average annual payout of $20,000. LA Metro also utilizes the net earnings from the corridor to finance multimodal transportation initiatives in communities neighboring the toll facility (FHWA 2017).

A separate entity handles enrollment, eligibility verification, and administrative tasks. Once enrolled in the low-income assistance program, participants' accounts are not rechecked by Metro since the credit is a one-time incentive. However, in 2020, all program participants underwent an audit to confirm that they still reside in LA County (Colorado Transportation Investment Office 2022). Participants who were found to have moved out of the county lost their monthly fee waiver and eligibility for the Transit Reward Program.

The Low-income Assistance Program and Transit Rewards Program were introduced as a pilot from 2012 to 2013, then made permanent. The following performance measures were considered to evaluate the success of these programs in meeting public goals for low-income commuters:

- number of low-income commuters who signed up for a transponder,
- number of peak-period low-income users of HOT lanes (and percentage of overall HOT lane users),
- usage of HOT lane credits for low-income drivers (credit redemptions),
- mode choice of low-income drivers (carpool vs. SOV), compared with mode choice before the project was implemented,
- performance of transit service in the ELs corridors during the pilot period,
- general-purpose lane speeds during the pilot period,
- account balance problems of low-income commuters compared with non-low-income commuters,
- share of time savings by low-income *ExpressLanes* drivers in comparison with the share of tolls and transponder costs they pay,
- trends in the trip distance and trip time by low-income commuters compared with non-low-income commuters,
- toll revenue reinvestment.

LA Metro considered increasing the value of the toll credit provided to participants in 2020 due to low enrollment in the program, which is thought to be partially due to the low value of the benefits (WSP 2022).

Some key takeaways from this program include the following:

- the cost of purchasing a transponder can be a barrier for low-income motorists,

- income verification may not need to be done annually if the program already checks income,
- low benefit values can lead to low enrollment in the program, and
- toll revenues can be used for equity programs beyond providing credits and discounts.

Virginia Department of Transportation Toll Relief Program

The Elizabeth River Midtown and Downtown tunnels in Virginia connect the cities of Portsmouth and Norfolk. The tunnels were built through a Public-Private Partnership with Elizabeth River Crossings (ERC) LLC and opened in 2016, the same year the Toll Relief Program began. The program provides financial assistance to Norfolk and Portsmouth residents who live near the Elizabeth River tunnels, who were heavily impacted by the tolls for using the tunnels (Virginia Department of Transportation 2022).

The Virginia Department of Transportation (VDOT) administers the toll relief program, which was initially implemented as a year-long pilot before being fully implemented. Virginia and ERC reached a deal for a 20-year toll relief program where ERC annually provides $500,000 in funds—any unused budget rolls over (Virginia Department of Transportation 2022). VDOT is responsible for administering the program, which involves enrolling participants, verifying eligibility, and maintaining records. The program is promoted through social media, limited TV ads, and emailing existing participants to renew. The first year's administration costs were approximately $100,000, while annual costs in the following years ranged from $55,000 to $70,000 (Colorado Transportation Investment Office 2022). Administration costs make up approximately 15 percent of the program's total expenses. E-ZPass operates the toll accounts and electronic toll collection system.

The toll relief program offers a 50 percent discount on the first ten weekly trips for qualified participants (Virginia Department of Transportation 2022). Each one-way trip through the Elizabeth River Tunnels counts as one trip toward toll relief. Early on, the program was structured so that most of the benefits went to drivers who used the tunnels frequently, with eligible participants receiving a discount of $0.75 per trip after their eighth trip of the month (Johnson and Marshall 2018). About 2,000 to 3,000 households typically enroll in the program (about 1.5 percent of all users), with an average benefit of around $25 per month (Johnson and Marshall 2018; WSP 2022). In 2021, VDOT experienced a drop in enrollment due to the impact of COVID-19, resulting in only 1,500 low-income participants joining the program.

To participate in the program and receive toll relief, individuals must reside in either Portsmouth or Norfolk in Virginia, have a Virginia toll transponder (E-ZPass) account, and have an annual income of $50,000 or less. Initially, the program was only available to those with an annual income of $30,000, but this requirement has since been increased to $50,000 (Johnson and Marshall 2018; Virginia Department of Transportation 2022). VDOT also reduced the minimum balance required on the E-ZPass transponder to promote fairness from $35 to $20.

Acceptable proof of residency includes a driver's license, utility/telephone/cable bill, bank statement, property tax bill, mortgage or property ownership document, rental contract, or military documentation. Proof of income may be shown with a W-2 form, 1099-Misc, one month of pay stubs, IRS 1040 form, employer statement, or self-declaration of no income (Virginia Department of Transportation 2022).

To receive toll relief, participants must enroll and receive a toll relief number, which they must link to their E-ZPass transponder through the E-ZPass office. They can replenish their E-ZPass account online with a credit card, by phone, in person, or by mail at E-ZPass Customer Service Centers. Users can also reload with cash via a reload card with a $1.50 transaction fee (Colorado Transportation Investment Office 2022). Qualified members must reapply annually in person to maintain program eligibility. This on-site enrollment process allows the Customer Service team to assist with proper documentation and final setup of the E-ZPass accounts and ensures that residency and income information is handled securely (Virginia Department of Transportation 2022).

The enrollment period for the Toll Relief program is from December to mid-February, with the benefit year running from March 1 to February 28. The back office dedicates 2-3 employees to handle enrollment during this window. People can obtain information about the program via a toll-free VDOT number. Due to Portsmouth's significant military population, military personnel can enroll anytime if they are on deployment during the enrollment window.

An essential feature of this program is that it is managed by a steering committee made up of local stakeholders, including representatives from local businesses, local elected officials, local military bases, local college graduates, the Hispanic Chamber of Commerce, and the National Association for the Advancement of Colored People (NAACP) (Virginia Department of Transportation 2022).

The Steering Committee played a role in defining the program's vision, goals, and guidelines, as well as assisting with its launch and public rollout. With a diverse group of members, this steering committee allows the community to have ongoing input on the program's features and functions once it is launched (WSP 2022). VDOT sought consulting assistance for modeling, analyzing, and calculating the toll relief program's expenses, trips, and beneficiaries.

VDOT assesses the program based on the annual enrollment numbers and the amount of toll relief benefits distributed. A basic audit of program applicants is conducted and typically reveals only a few cases of fraudulent documentation each year. As a result, more in-depth audits are not considered necessary by VDOT.

One of the main insights from this program is the value of involving potential program users to understand their needs and preferences to establish a successful program. Establishing a steering committee of local stakeholders can also allow low-income individuals to have ongoing input on the program. This program also illustrates the importance of research in identifying the community that would most benefit from the low-income toll equity program. It is critical to collect necessary data and test scenarios to identify potential biases and address them.

Other key points include the following:

- minimum account balances and minimum thresholds for automatic reloading can be barriers for low-income individuals,
- a decision must be made between offering a small benefit to many people or a larger benefit to fewer people,
- a well-designed and easily accessible enrollment process is essential for increasing program enrollment and promoting equity,
- not all eligible toll facility users are likely to enroll in a low-income program; and
- income verification can be a significant burden for low-income toll programs.

I-PASS Assist Program

I-PASS Assist is a low-income toll program offered by the Illinois State Toll Highway Authority (ISTHA) from June 2021 for eligible low-income individuals in the State of Illinois. The I-PASS Assist program aims to make the use of the State’s toll road system more affordable and accessible for low-income individuals, enabling them to access job opportunities, healthcare, education, and other essential services more efficiently.

The I-PASS Assist program is designed to assist low-income households with the costs associated with obtaining and maintaining I-PASS accounts and mitigate the impact of transportation costs on them. Eligible participants receive free I-PASS transponders, a reduced account opening balance and replenishment value requirements of $4, and are eligible for dismissal of past and future late fees. Eligible individuals with passenger vehicles can get 50 percent off prepaid tolls. They also receive a $20 gift card upon enrollment. Table 6 compares the regular I-PASS program with the I-PASS Assist program in terms of costs and requirements.

To qualify, individuals must meet the following criteria: (1) be an Illinois State resident, (2) have a household income that does not exceed 250 percent of FPL, which translates to an annual income of $32,200 for an individual and $66,250 for a family of four (as of 2022), and (3) possess an I-PASS transponder account (Illinois Tollway n.d.).

The Illinois Tollway verifies the participant's income and determines their eligibility for the program using their State of Illinois Tax information submitted to the Illinois Department of Revenue (IDOR), including income and the number of exemptions claimed (to determine household size). Eligibility is verified annually after that (Illinois Tollway n.d.). The ISTHA has a website where people can find information about the program, the application process, and the income eligibility requirements. As of May 2022, over 5,000 I-PASS customers have joined the program (Clark 2022).

Table 6. Differences Between I-PASS And I-PASS Assist[5]

Criteria	I-PASS	I-PASS Assist
Minimum initial payment	$20 prepayment + $10 deposit	$4 prepayment + No deposit
Replenishment minimum	$10	$4
Enrollment incentive	None	$20 gift card
Invoice fees	$3 per unpaid toll	Eligible for dismissal

From this program, it can be inferred that the cost of purchasing a transponder can be a barrier for low-income motorists. Besides, minimum account balances, minimum thresholds for automatic reloading, and invoice fees can also be barriers for low-income individuals.

[5] Source: (Illinois Tollway, n.d.)

San Mateo 101 Express Lanes (ELs) Community Transportation Benefits Program

The 101 ELs Community Transportation Benefits program was created to meet the transportation needs of underserved communities along the ELs in San Mateo County. This choice-based program is sponsored and funded by the San Mateo County Express Lanes Joint Powers Authority (SMCEL-JPA), an agency responsible for decision-making regarding new ELs in San Mateo County. SMCEL-JPA adopted the toll equity program for the San Mateo 101 ELs in 2021 as a pilot and put it into effect in 2022 after the completion of the ELs construction. The toll equity program was created voluntarily by SMCEL-JPA, with no legal obligation to do so.

An equity study was conducted to inform the development of the program and included extensive community engagement, which was instrumental in identifying options. As a result of the study, two equity program options were recommended: a $50 preloaded transit card (Clipper Card) provided annually, or a $50 preloaded FasTrak toll transponder provided one time. FasTrak operates the toll accounts and electronic toll collection system of the San Mateo 101 ELs, like the LA Metro *ExpressLanes*. To qualify for the program, individuals must reside in San Mateo County and be at least 18 years old, in addition to earning less than a specified amount of income. It was also recommended that an income of less than 200 percent of FPL be used as an eligibility criterion (San Mateo County Transportation Authority 2021).

After reviewing the recommendations of the equity study, the project team returned to the community to gather more information. The additional discussion revealed that the suggested benefit of $50 was too low to be meaningful, so it was doubled to $100. The income threshold was also raised from 200 percent of FPL ($53,000 annual income for a family of four) to individual income at or below 60 percent of the county Area Median Income (AMI) ($83,640 as of 2022 and $78,300 for 2023), as the initially agreed threshold was too low. Besides the identified income threshold, eligibility for the program also includes those who qualify for a benefit from the San Mateo County Core Service Agency Network. In addition to this program, SMCEL-JPA will also help participants enroll in other discount programs, such as Clipper START (Bay Area low-income transit program) and FasTrak START (Bay Area low-income toll program) offered by the Metropolitan Transportation Center (MTC) to promote regional travel and reduce barriers.

During community engagement discussions, the project team identified eight partner organizations with strong connections to the underserved community (San Mateo County core service agencies) to assist with the program's administration, including the enrollment process.

SMCEL-JPA verifies income eligibility through paystubs, an employer letter, or a benefits letter, relying on existing regional systems. If none of these options are available, participants may self-declare their income with a Self-Declaration statement. The application materials are available in English, Spanish, Traditional Chinese, Vietnamese, and Filipino.

SMCEL-JPA has allocated $1 million for the first year of the program and set aside an annual amount of $600,000 from toll revenue for the program. Part of the funds will be used for awareness and enrollment campaigns. The program's success will be evaluated based on enrollment, benefits distribution, and cost management in its early years.

Some key points to consider from this program include the following:

- equity program development is a continuous process that requires ongoing input from the impacted community to ensure its success,
- including an evaluation process from the early stages of the equity program is important for collecting data and protecting user privacy,
- streamlining and making the enrollment process easily accessible can increase program reach,
- partnering with community-based organizations can increase program accessibility, and
- understanding operating and budget constraints are essential in choosing the most effective equity program.

Proposed Income-Based Toll Programs

Various states and local jurisdictions around the U.S. are actively considering implementing low-income toll programs, including the states of Washington, Oregon, and Colorado and the San Francisco/Oakland metropolitan region along with San Bernardino County in California.

Globeville and Elyria-Swansea (GES) Tolling Equity Program

The GES Tolling Equity Program was established by the Colorado Transportation Investment Office (CTIO)—a branch of the Colorado Department of Transportation (CDOT) responsible for financing and operating ELs—through a year-long process of consulting with various stakeholders. The GES Tolling Equity Program was established to fulfill the federal mandate of reducing the financial burden of accessing tolled ELs for low-income residents living

in the Denver metropolitan area's GES neighborhood along the route of the Central 70 project (Colorado Department of Transportation 2022). Average household incomes in the GES neighborhood are lower than those in other parts of the City and County of Denver (Colorado Transportation Investment Office 2022). The Central 70 ELs, a ten-mile stretch with a new tolled EL in both directions, opened for testing in 2022, and tolling will commence in early 2023 after a trial period.

CTIO took a thorough approach to find the most appropriate program for the community through consultations with stakeholders, including GES residents. The key factors considered when selecting the program included:

- its legibility (whether the program is easy to understand),
- the number of eligible households,
- its impact on the overall value of the neighborhood,
- the feasibility of implementing it within the existing administrative structure,
- the cost of implementation,
- the ongoing expenses, and
- its effect on EL performance.

Two public meetings were held in the GES community. CTIO, in collaboration with the NorthEast Transportation Connections (NETC) agency—a traffic demand management organization with close ties to the GES communities—conducted a public survey to gather information about community needs and travel patterns. The agency offered five $50 gift cards per week to encourage community participation over a six-week period. This incentive and promotion of the survey at community events resulted in 275 responses from the GES neighborhood. The survey revealed key insights:

- 55 percent do not have credit cards, and 30 percent do not have a bank account (*banking*),
- 84 percent use I-70 at least once a week (*before toll I-70 usage*),
- 83 percent do not have an ExpressToll tag (*toll tag*),
- 72 percent drive alone, 13 percent take the bus, and 4 percent use light rail (*travel mode*),
- 7 percent of respondents do not own a car and 25 percent have fewer vehicles than drivers in the household (*vehicle ownership*), and

- 27 percent would not take alternative modes and 26 percent would use public transit (*alternative travel mode*).

The survey findings and other community engagement activities were critical in defining the program elements, including eligibility, enrollment, benefits, verification, and accessibility.

The established Tolling Equity Program is open to residents of GES with a household income below 200 percent of FPL, approximately $60,000 for a four-person household in 2023. About 5,623 GES residents are eligible for the program, representing over half (53 percent) of all households in these communities (Colorado Department of Transportation, 2022). Households displaced from GES due to the Central 70 project and having a household income below 200 percent of FPL are also eligible for the program. CDOT holds a list of these displaced households (about 167 households). The participant re-verification will take place every two years starting in 2025.

In the first year, eligible participants will receive a switchable transponder and a $100 credit. NETC assists with enrollment and community outreach for the program. The program also offers free transit passes; eligible participants can receive both toll and transit credits. Up to 7,800 Regional Transportation District (RTD) transit passes will be available to the community in the first year. CTIO and NETC will work with local organizations to establish seven distribution centers where eligible residents can easily obtain the passes. The type of transit passes offered at each distribution center, such as monthly or local/regional ticket books, will be determined based on the community's needs. In the following years, additional funds will become available for the GES community to decide how they want to allocate the funds, either towards free transit passes or as a credit to the previously enrolled Tolling Equity ELs accounts, starting in 2024.

About 15 percent of the Central 70 ELs' net toll revenue, or $220,000 in the first year, will fund the benefits of the GES Tolling Equity Program. This allocation, higher than in other states, does not cover administrative and start-up costs. CDOT will finance these costs, estimated at $1 million over ten years, with funding from the existing Central 70 project contingency fund. A third-party vendor trusted by the community will manage the program, covering administrative tasks, including resident registration, marketing, and program evaluation. An advisory panel will oversee the program.

In order to confirm their income eligibility, program participants have several options, such as presenting a recent pay stub, tax return, or documentation proving their participation in

programs like Medicaid, Supplemental Nutrition Assistance Program (SNAP) Benefits, Low-income Energy Assistance Program (LEAP) Program, Free and Reduced School Lunch Program, 200 percent Tepeyac, 0 to 200 percent Sisters of Charity of Leavenworth (SCL) (all copay is free), 0 to 200 percent Child Health Plan Plus (CHP+) (Emergency Room Visit <$30, Physician <$5), 0 to 200 percent Denver Health (Every Range except I Range, to qualify Primary Doctor <$35), 0 to 200 percent Colorado Indigent Care Program (CICP) (Every Range except I Range, to qualify Primary Doctor <$35). Additionally, participants must provide proof of their residence which may include documents such as a license/state ID, a bill with their name and address, taxes, and a lease agreement. Furthermore, to be enrolled in the toll credit program, participants must verify their vehicles by submitting vehicle registration with the address they claim. Additionally, the vehicle must have two axles or fewer.

The GES Tolling Equity Program offers convenient payment options for residents without or with limited access to banking services through the BancPass App provided by PlusPass. The users can fund their accounts using credit, PayPal, or cash with a $2 convenience fee on each transaction if paying through a vendor (e.g., 7-Eleven) or $1 through the PlusPass website. Cash funders must refill their account in advance, incurring a reload fee of $2, based on a minimum reload of $15 and a maximum of $500. Users can reload their accounts using cash or debit at retailers or credit online or via the mobile app. The program offers several features to assist its users, such as automatic text reminders, the BancPass mobile app for account management, and customer service in Spanish and English.

The program is designed to ensure the participation of undocumented individuals in the program elements such as the Express Lanes Credit or Transit Passes is not impeded by their undocumented status. To this end, the program has implemented several measures, such as not storing information provided in person and not sharing electronically provided information with other government agencies. Additionally, any information collected will be discarded at the end of the enrollment window.

I-880 Express Lanes Toll Discount Program

MTC—an organization established in 1970 by the California Legislature to plan, coordinate and fund the transportation system in the Bay Area—is planning to establish a means-based toll discount program on I-880 ELs to increase accessibility for low-income drivers (Metropolitan Transportation Commission 2022). This pilot program is a response to feedback

received from policymakers, advocates, and the public during the evaluation phase of Plan Bay Area 2050, at meetings of the Commission and Policy Advisory Council's Equity & Access Subcommittee, and at public hearings held in 2019 and 2020 to amend the Bay Area Infrastructure Financing Authority (BAIFA) toll ordinance for I-880 ELs (Bay Area Infrastructure Financing Authority 2022). The I-880 ELs were opened to traffic in 2020 and consist of about 20 miles in the northbound direction and 25 miles in the southbound direction. The minimum toll is $0.50 per toll zone; the maximum toll is not limited by statute but is entirely based on traffic congestion (Bay Area Express Lanes 2019).

The program established eligibility criteria similar to those of the CLIPPER START program, a means-based transit discount program launched by MTC in the Summer of 2020. To qualify, individuals must provide proof of identity, proof of household income of 200 percent FPL or lower, and a mailing address in the Bay Area. They must also have an active toll transponder account (FasTrak account). Individuals who meet the qualifications can participate in the CLIPPER START program and the Express Lanes START program, which is the name chosen for the toll income program to maintain consistency in branding. The pilot program is set to run for 18 months with a potential cost of $3.6 million for development, launch, and maintenance (Bay Area Infrastructure Financing Authority 2022). Table 7 shows that eligible participants will receive a 50 percent reduction in the standard toll rate on I-880 ELs.

To launch the program, the MTC had to make modifications to (1) their existing contract with the EL’s Salesforce contractor for building an application management system; (2) with the FasTrack customer service center contractor for system changes to support the discount plan for pilot customers; and (3) with the Clipper START eligibility verifier for eligibility verification and customer support related to the application process. The agency also created new contracts (1) to gather and evaluate traffic data for the pilot evaluation; (2) for marketing and outreach services to increase awareness and enrollment; and (3) with four community-based organizations to assist with outreach and to serve as walk-in centers to support the enrollment process (Bay Area Infrastructure Financing Authority 2022).

Table 7. Toll Rates in I-880 Express Lanes[6]

I-880 Express Lanes	SOV	HOV (2 Occupants)	CAV	Clean Air Vehicle	HOV (3+ Occupants)
Standard Toll Rates	Full toll	50% off	50% off	50% off	No toll
Income-Qualified Toll Rates	50% off	75% off	75% off	75% off	No toll

Note: CAV = Connected and Automated Vehicle; SOV = Single Occupancy Vehicle; HOV2 = High Occupancy Vehicle.

The process of applying for the I-880 Express Lanes Toll Discount Program is expected to be simple and accessible, with the option to apply via computer, mobile phone, or paper. The application materials will be available in English, Spanish, and traditional Chinese. Upon approval of the pilot, the FasTrak Customer Service Center will activate the discount in the driver's account. All eligible household members will receive the discount automatically on future I-880 ELs trips. To fully receive the discount, drivers must use a FasTrak Flex toll tag set to match the number of people in the car. The monthly FasTrak statement will display the discount as a credit against the full toll cost for each I-880 ELs trip.

The survey results regarding the June 2022 Toll Facility Ordinance amendment showed that 56 percent of the approximately 1,700 respondents either supported or had no objections to the I-880 Express Lanes Means-Based Toll Discount Pilot (Bay Area Infrastructure Financing Authority 2022). Most support came from those who recognized the importance of improving access and affordability for equity reasons. However, opposition was also expressed due to reasons such as general opposition to tolling, the belief in treating everyone equally, concerns about potential fraud, and fears of impacts on express lanes performance and tolls.

MTC acknowledges that this pilot is intended as a way to address equity in ELs for low-income individuals. The concept of equity is different from the idea of everyone paying the same toll, regardless of income. The MTC's Equity Platform aims to provide historically marginalized groups, including low-income individuals and communities of color, with equal opportunities. The plan to evaluate the pilot has the potential to address public concerns about fraud, ELs performance, and tolls.

A thorough evaluation will be carried out during the first year of the program's implementation. As shown in Figure 2, the evaluation process will assess key aspects of the

[6] Source: (Gould n.d.)

program, including customer awareness and experience, affordability, access and mobility, administrative feasibility, financial viability, and express lanes performance. MTC will closely monitor the performance of the express lanes throughout the pilot and make adjustments as needed. After the evaluation, MTC will decide on the next steps to take.

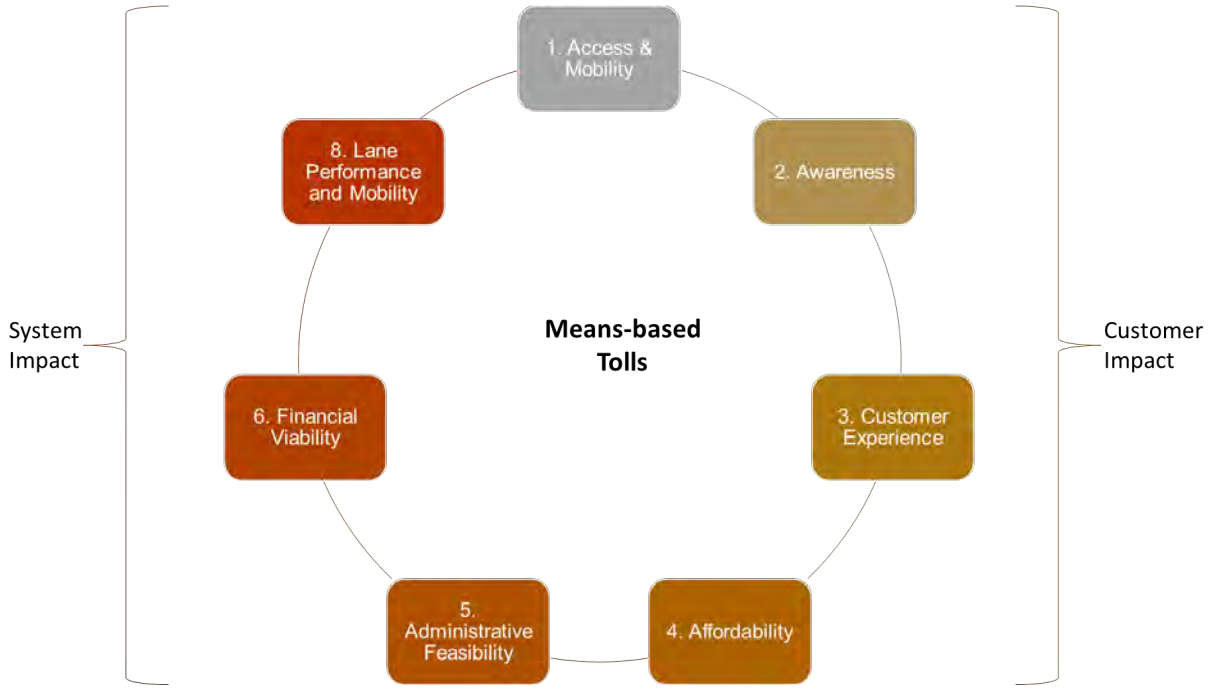


Figure 2. Desired Outcomes of the I-880 ELs Toll Income Program[7]

The I-880 Express Lanes Toll Discount Program is one of several initiatives that MTC is undertaking. With four EL operating agencies in the Bay Area, a major challenge for MTC will be to harmonize the rules of the regional low-income toll discount programs and increase awareness of the program. The Clipper START transit discount program offers discounts of 20 percent and 50 percent across different transit agencies in the region, which vary based on each agency's budget (Colorado Transportation Investment Office 2022). This lack of consistency could lead to low enrollment and confusion among users. Additionally, MTC will need to collaborate with FasTrak to promptly implement necessary policy changes to maximize the program's benefits for low-income participants.

[7] Source: (Gould, n.d.)

I-405 and SR 167 Express Toll Lanes (ETL) Low-Income Toll Equity Program

The Washington State Transportation Commission (WSTC) conducted a study about discounted tolls and other programs for low-income drivers on the I-405 and SR 167 ETLs at the request of the Washington State Legislature (WSP 2021). The study was required to consider the potential benefits, requirements, and drawbacks of such a program for low-income drivers, as well as the most cost-effective way to implement the program, given existing financial commitments, shared cost requirements, and technical requirements. The study also examined the implications of a low-income toll program on tolling policies, revenues, costs, operations, and enforcement, and the impact on tolled facilities based on the type of tolling implemented on a particular facility. These criteria were used to define a framework that considered user benefits, program practicality, and costs to inform the selection of the program. In addition to the defined metrics, the choice of program options also considered the feedback, knowledge, and preferences of stakeholders, decision-makers, and the community.

Two program options were selected based on the defined criteria (WSP 2021). Option 1 offers a toll credit equal to the average toll paid by an ETL user, which is around $48 per month. This option is flexible as it allows users to use the credit for either high-cost or multiple low-cost trips. Option 2 entails giving eligible users ten free ETL trips per month, encouraging them to utilize ETLs for infrequent high-value trips. Furthermore, a set of standard components were suggested for the low-income toll program, regardless of which option is chosen. These include:

- giving program participants a free transponder (GoodToGo! Flex Pass),
- creating an advisory panel of low-income and diverse community representatives to assess the pilot program,
- presenting program information visually when feasible,
- offering program materials in the main languages used in the area, and
- making sure there are accessible physical enrollment locations.

Eligible participants of the proposed low-income program are Washington residents with annual incomes at or below approximately 200 percent of FPL (WSP 2021). The State already has an online eligibility check system for state benefits, making it easier to verify income, i.e., the Washington State Department of Social and Health Services (DSHS) Benefits Verification System (BVS). The report recommended re-verifying program participants every two years to align with the biennial budget cycle of WSDOT.

The study suggested ways to enhance program access for low-income unbanked and underbanked users, i.e., offering more cost-effective cash reload options for toll accounts, reducing minimum account requirements and card-on-file mandates, and decreasing the automated reload amount.

The study's preliminary cost projections estimate the total cost of the program to be between $3-9 million, including expenses for back-office systems ($1-3 million), integration of the DSHS enrollment and verification tools ($0.5-2 million), customer service training and translation ($0-2 million), marketing and program advertising ($0.5-1.5 million), distribution of initial flex passes ($0.1-0.8 million), and other administrative expenses.

In general, the proposed low-income toll programs were selected because they:

- acknowledges the importance of simplicity for users and implementing agencies,
- reflects stakeholder and user feedback indicating that free trips are valuable for emergencies,
- allows for the possibility of not requiring transponders to have balances, credit, or debit cards, which can pose barriers for some users, and
- offers flexibility when benefits can be used, recognizing that individuals with low income have diverse mobility needs and are best positioned to understand their own needs.

The program was recommended to start as a two-to-five-year pilot with evaluation and iteration on an annual basis. A permanent program will be implemented if it is determined to be financially sustainable. The recommended timeline for the pilot program launch is 2024-2025.

Treasure Island Transportation Affordability Program

Tolls are being considered for access to Treasure Island, an artificial island in the San Francisco Bay, as part of a transportation program being proposed by the San Francisco County Transportation Authority (SFCTA). The tolls would be implemented to access 8,000 new residential units as well as commercial developments planned for construction on the island (San Francisco County Transportation Authority 2022). The tolls would be variable, based on the time of day (Table 8), and are expected to go into effect in 2025, pending program adoption and funding availability (Treasure Island Mobility Management Agency 2022).

The Treasure Island Mobility Management Agency (TIMMA) will be responsible for toll collection and enforcement but will contract with the Bay Area Toll Authority (BATA) to

administer accounts and operate the back-office systems (Treasure Island Mobility Management Agency 2022). These tolls would be in addition to existing tolls on the San Francisco-Oakland Bay bridge, which is the main access point to the island. The revenue generated from the tolls would be used to improve transportation and mobility options on the island, including reducing congestion, funding expanded transit and ferry services, shuttle services on the island, and improvements for biking and walking (San Francisco County Transportation Authority 2022).

Table 8: Proposed Toll Program in Treasure Island[8]

Period	Times	Toll (Directional)	All future low- and moderate-income households	Current (pre-2020) Treasure Island residents and all future very low-income households*
Weekday Peak	Weekdays: 5:00 am – 10:00 am 3:00 pm – 7:00 pm	$5.00	$2.50	Free
Weekday Off-Peak	Weekdays: 10:00 am – 3:00 pm	$2.50	$1.25	Free
Weekend	Weekends: 8:00 am – 8:00 pm	$2.50	$1.25	Free
No Toll	Weekdays: 7:00 pm – 5:00 am Weekends: 8:00 pm – 8:00 am	Free	Free	Free

Note: *Low-income employees of Treasure Island businesses/nonprofits are also fully subsidized.

TIMMA conducted outreach activities in the Treasure Island community—while working on the Treasure Island Transportation Implementation Plan—and learned of concerns that the future of the island would only cater to high-income residents and that the proposed toll could increase inequity. To address these concerns, TIMMA established a multi-component affordability program that will offer *Toll Exemption* for Current Residents (~1,800 people) and the *Base Toll and Discount Policy* that includes toll discounts for all future low-income travelers, regardless of the trip purpose. Current residents include leaseholders with a housing agreement on Treasure Island dated on or before November 19, 2019, that is still active when toll collection begins.

Through the *Toll Exemption* program, current residents will be exempt from the congestion toll for at least 4,000 units, at which time the exemption will be reassessed. When the program launches, TIMMA will provide free travel on and off the island for current residents who meet the eligibility criteria, including having a current lease for Treasure Island housing, proof of vehicle registration with a Treasure Island address, and a TIDA-issued parking permit. Eligible travelers

[8]Source: (San Francisco County Transportation Authority 2022)

and vehicles will be identified by an exempt FasTrak toll tag and/or a registered vehicle license plate. With license plates, only vehicles that have TIDA-permitted residential parking spaces will be eligible. The toll exemption will expire if any of the eligibility requirements are no longer met.

The *Base Toll and Discount* program is intended to increase accessibility for future low-income travelers. As shown in Table 8, the program would involve the implementation of toll discounts and exemptions for future Treasure Island residents (post-2020) and Bay area travelers who meet the income qualifications. Specifically, SFCTA is proposing a tiered benefit system, with a toll waiver for very low-income households (<55 percent AMI) and a 50 percent discount for low- and moderate-income households (50 percent to 120 percent AMI, respectively) (San Francisco County Transportation Authority 2022). The agency also evaluated program options with even more tiers of eligibility and benefits. The discount will be available to any Bay Area traveler who may obtain a FasTrak toll account. Travelers will register for the discount by providing proof of income when signing up for a FasTrak account. The discount policy is consistent with the direction of the Downtown San Francisco Congestion Pricing Study.

Businesses and non-profits expressed concerns about the impact of the toll on their ability to attract customers and employees, so TIMMA established a *Toll Affordability* Program for eligible not-for-profit employers and food distribution and service establishments. Approximately 15 employers qualify for the program based on their current leases. The amount of the flexible toll subsidy provided to each employer will be based on the number of full-time employees, with priority given to compensating low-income employees. The remaining balance can be used to compensate deliveries, vendors, and customers. Employers may choose to provide FasTrak toll tag accounts to their employees or others, and TIMMA will provide technical assistance in obtaining these accounts through the Bay Area Toll Authority. Participation in the program requires an operating agreement between the employer and TIMMA, including auditing compliance requirements. The program will be reviewed after 12 months for efficiency and effectiveness and will be revisited when the 4,000-unit milestone of the Development Project is achieved.

The program will also consider other forms of support for low-income residents, such as subsidies for transportation costs and discounted transit passes. For instance, Treasure Island residents living in below-market-rate housing will qualify for a transit pass that has been discounted by 50 percent. The possibility of providing a monthly subsidy to low-income and non-profit workers employed on the island through their employers to help cover the cost of

transportation to access their jobs is also being evaluated (San Francisco County Transportation Authority 2022).

The cost of the Toll and Affordability program is estimated to be $17.7 million over five years, with 20 percent of the cost being direct costs and the balance being forgone revenue due to exemptions and discounts. TIMMA is exploring funding options for the affordability program. This program and the evaluations of the effects of tolls on communities illustrate how the use of a combination of geographic eligibility and income thresholds specific to the local area can create an equitable program while still delivering significant enhancements in infrastructure and transit (WSP 2022).

Oregon I-205 Low-income Toll Program

The Oregon Department of Transportation (ODOT) is taking steps to ensure that low-income individuals can afford and have access to toll facilities. As part of its Toll Program development, ODOT is in the process of implementing a low-income toll program to start on the first day of tolling on the new I-205 toll facility, which is scheduled for the end of 2024. The Oregon Toll Program manages state-run toll projects and policies throughout the state. Currently, the Toll Program oversees three major toll projects: the I-205 Toll Project, the Regional Mobility Pricing Project, and the Interstate Bridge Replacement Program, which is being developed in partnership with the Washington State Department of Transportation (WSDOT). The proposed low-income toll program will offer discounts or exemptions to eligible low-income individuals and will be funded through the State's Connect Oregon grant program for transportation projects. This program will be a first-of-its-kind initiative in the State of Oregon and will be evaluated for its effectiveness and potential for expansion to other toll roads in the state.

A recent report, which aimed to develop a low-income toll program as part of the Oregon Toll Program, recommended providing a *substantial toll discount* for households with an income below 200 percent FPL (WSP 2022). This discount would help ease the financial burden of low-income individuals who struggle to pay for basic necessities, such as food, transportation, housing, clothing, and healthcare. The report also recommended a *smaller toll discount* for households with an income between 200 to 400 percent of the FPL as a way to alleviate the financial strain for those who still struggle to make ends meet, despite earning more than 200 percent of the FPL. The benefit would also address fluctuations in income in this bracket. Possible benefits could include credits, free trips, a percentage discount, tax credits, or full exemptions.

The study also recommended using a verification process that leverages existing programs and further explores self-certification to qualify for program enrollment or toll discounts. Qualification through existing low-income service programs or self-certification improves the ease of enrollment for applicants and can reduce the administrative cost burden of ODOT's enrollment process as well as lower ODOT's data privacy risk.

To fully establish the low-income toll program, several key tasks must be completed, including defining program components, creating an operational plan with staffing considerations, and aligning the low-income toll program with the overall Toll Program development. The following steps involve identifying specific benefits for low-income individuals and ensuring the program is fully operational before tolling begins. The income thresholds and discount options will be finalized through traffic and revenue studies, engagement, and research. The rules for enrollment, verification, interoperability, and enforcement will be established through the rulemaking and rate-setting process. The back-office system will be developed to operationalize the program, including the selected discount type and income thresholds, as well as enrollment and verification rules. This will inform the administration cost, viability, timing of the discount or credit, and implementation practices.

Summary

A thorough review of operational and proposed low-income toll programs was conducted nationwide to identify best practices and lessons learned. The research found four active and five planned programs in the U.S. Tables Table 9,Table 10, and Table 11 summarize the key information of each program, including an overview of the benefits, costs, funding sources, eligibility criteria, and enrollment. The following sections summarize the key features and lessons learned from the nine programs.

Program Approach

As can be inferred from Table 9, most of the researched low-income toll programs started or are planned to start as pilot projects, giving the program agency room to make changes and modifications before making it permanent. In this case, it is critical to establish program performance metrics and include an evaluation process from the beginning stages of the program implementation.

Table 9: Comparison of Program Benefits, Costs, and Funding

Program	Timeline	Program Benefits	Annual Costs and Funding
LA Metro Low-Income Assistance Program	• Operational since 2012, started with a one-year pilot	• $25 one-time payment • Waived monthly fee of $1 • Earn a $5 credit for taking 16 one-way transit trips during peak hours • Investment in neighborhood projects with net toll revenues	• $300,000 in benefits • $20,000 in benefits for the transit reward program • Revenue from express lane operations
VDOT Toll Relief Program	• Operational since 2016, started with a one-year pilot	• 50% discount on the first ten weekly trips • No minimum balance is required for applicants	• $500,000 in benefits from the P3 concessionaire • $55,000-$70,000 administration costs from VDOT
I-PASS Assist Program	• Operational since 2021	• 50% off prepaid tolls • Free I-PASS transponder • Reduced account opening balance (from $10 to $4) • No deposit • Eligible for dismissal of past and future late fees • $20 gift card upon enrolment	• Not specified
San Mateo 101 Express Lanes Community Transportation Benefits Program	• Operational since 2022, started as a pilot program	• $100 Transit card provided annually OR • $100 toll transponder provided one time • Enroll eligible users in regional low-income toll and transit programs	• Budgeted cost of $1 million in the first year and $600,000 annually in the subsequent years, paid from ELs revenues
GES Tolling Equity Program	• Scheduled to commence in early 2023	• Switchable transponder • $100 toll credit in the first year • Free transit passes • The GES community will use the net toll revenue in subsequent years to offer toll credits, transit credits, or a combination	• $220,000 in benefits paid from 15% of toll revenues • $100,000 cost for administering the program financed by CDOT with funding from the Central 70 project contingency fund
I-880 Express Lanes Toll Discount Program	• Scheduled to start as an 18-month pilot program	• 50% reduction in the standard toll rate on I-880 ELs	• $3.6 million for development, launch, and maintenance

Program	Timeline	Program Benefits	Annual Costs and Funding
I-405 and SR 167 ETL Low-income Toll Equity Program	• Scheduled to start in 2024-2025 as a two-to-five-year pilot with evaluation and iteration on an annual basis	• Free switchable transponder • Toll credit of $48 (equal to the tolls paid by the average ETL user, use it or lose it) OR • Ten free trips per month • Reduce account minimums • Lower automated reload amounts • Modify the application of civil penalty fees	• Preliminary estimated program cost is $3-9 million
Treasure Island Transportation Affordability Program	• Scheduled to commence in 2025 as a pilot program	• Current residents (pre-2020) are exempt from toll charges • 100% discount for future residents and non-residents earning <55% AMI • 50% discount for future residents and non-residents earning between 55% and 120% • 50% discounted transit pass for residents living in below-market-rate housing • Monthly subsidy to low-income and non-profit workers employed in Treasure Island	• Preliminary estimate of $17.7 million for five years
Oregon I-205 Low-income Toll Program	• Scheduled to commence in 2024	• Substantial toll discount for households with an income <200% FPL • Smaller toll discount for households with income of 200-400% FPL	• Connect Oregon grant program

Note: AMI = Area Median Income; ETL = Express Toll Lane; FPL = Federal Poverty Level; GES = Globeville and Elyria-Swansea; LA = Los Angeles; VDOT = Virginia Department of Transportation.

Balancing Participation and Benefits

When designing a low-income toll program, it is vital to consider a trade-off between the number of participants and the amount of benefit offered. The objective is to offer a valuable benefit to those eligible while making it accessible to as many people as possible. It is essential to consider the specific transportation needs of other user groups, such as seniors, people with disabilities, and immigrants with language barriers or without documentation. Additionally, it may be essential to consider alternative forms of discounts, such as a set number of free trips per month, an unlimited monthly pass, or income-tax credits for tolls, to increase program enrollment and effectiveness.

Toll Transponder Account

The cost of purchasing a transponder and the requirement for minimum account balances or automatic reloading thresholds can be a barrier for low-income motorists. As indicated in Table 9, several agencies have taken steps to address these barriers by offering free transponders and reducing or eliminating minimum account balances and/or automatic reloading thresholds.

Fair Penalty Processes for Low-Income Toll Program Users

Low-income toll programs have been offering support and resources for users who have difficulty making toll payments to minimize the potential negative impacts of fines and penalties. This includes providing education, multiple notices of account balances, and setting a maximum penalty amount. In addition, several program agencies have been considering equity implications when developing the process for penalties and taking steps to ensure that low-income users are not unfairly affected.

Continuous Community Engagement

Another critical factor for the success of a low-income toll equity program is ongoing engagement with the communities targeted by the low-income toll programs. Effective communication and engagement strategies, e.g., providing translations at community events, childcare services, meals, etc., are crucial to reach eligible residents and increase program participation. Input from potential program users can help understand their needs and preferences and lead to a successful program. To ensure a collaborative and informed decision-making process, several low-income toll programs have established steering committees comprising representatives from various stakeholders within their communities. These committees play a

crucial role in shaping the program from its inception through evaluation and continuous improvement.

Income Threshold

The review of the toll equity programs revealed that many of them use FPL as a criterion for determining eligibility for benefits (Table 10). While the FPL is a widely recognized standard across the nation, it may not accurately reflect the cost of living in a particular area or the expenses required for basic household needs. As a result, individuals who earn low or very low incomes compared to their local community may still fall above the FPL, even though they cannot afford the cost of living in their area. It is crucial to set the income threshold based on local conditions and needs to ensure that the intended population of beneficiaries can be eligible.

Streamlined Enrollment

Simplicity and ease of access are crucial factors in increasing program enrollment and promoting equity, as the application process can be a substantial barrier. Some agencies have turned to automatic enrollment through other programs to mitigate this issue, centralizing the application process and offering multiple options in various languages. A web form or app can be a convenient way to enroll, but it is essential to also provide alternative methods to accommodate diverse needs. Agencies are considering or have implemented in-person and online enrollment processes that accommodate individuals with disabilities, limited technology access or training, non-English speaking individuals, and those who live far from service centers.

To ensure that an applicant falls within the eligible income bracket, most agencies use methods such as obtaining proof of income, e.g., a W-2 form, confirming enrollment in a different low-income benefit program, or allowing self-certification of income. Income verification can be a significant cost for low-income toll programs. As such, several agencies have been utilizing existing systems to reduce implementation costs. However, this approach may restrict program flexibility.

Table 10: Comparison of Eligibility Criteria

Program	Eligibility			
	Income Eligibility Criteria	**Proof of Income**	**Residence Eligibility Criteria**	**Proof of Residence**
LA Metro Low-Income Assistance Program	• 200% FPL	Check stub, EBT card, Proof of free-reduced school lunch receipt	Yes, Los Angeles County	Photo ID
VDOT Toll Relief Program	• Individual annual income less than $50,000	W-2, 1099-MISC, One month of pay stubs, IRS 1040, Employer's statement, Self-declaration of no income	Yes, Portsmouth City or Norfolk City Counties	Driver's license, utility bill, bank account statement, property tax bill, proof of home ownership, or rental contract
I-PASS Assist Program	• 250% FPL (household income)	Social security number	Yes, Illinois State	Tax information
San Mateo 101 Express Lanes Community Transportation Benefits Program	• Less than or equal to 60% AMI or • Qualify for a benefit from the San Mateo County Core Service Agency Network	Paystubs, Letter from employer, Benefits letter, Self-declaration of no income	Yes, San Mateo County	Not specified
GES Tolling Equity Program	• 200% FPL (~$60,000 for a 4-person household in 2023)	• Income Qualifying Programs: Medicaid, SNAP Benefits, LEAP Program, Free and Reduced School Lunch Program, 200% Tepeyac, 0-200% SCL (all copay is free), 0-200% CHP+ (Emergency Room Visit <$30, Physician <$5), 0-200% Denver Health (Every Range except I Range, to qualify Primary Doctor <$35), 0-200% CICP (Every Range except I Range, to qualify Primary Doctor <$35) • Taxes • Pay Stubs-one month of pay stubs to be checked on https://cdphe.colorado.gov/federal-poverty-level-calculator	Yes, Globeville and Elyria-Swansea (GES) residents	License/state ID, Bill with Name and address on it, Taxes, Lease agreement

Program	Eligibility			
	Income Eligibility Criteria	**Proof of Income**	**Residence Eligibility Criteria**	**Proof of Residence**
I-880 Express Lanes Toll Discount Program	• 200% FPL (household income)	CalFresh/EBT card, Medi-cal card, Benefits eligibility verification document, Tax documents (most recent), Valid muni lifeline customer ID #	Yes, Bay Area	Driver license, State-issued ID, Passport, Permanent resident card (Green card), U.S. military ID, Matricular consular ID card, City ID card
I-405 and SR 167 ETL Low-income Toll Equity Program	• 200% FPL	Not specified	Yes, Washington State	Not specified
Treasure Island Transportation Affordability Program	Not applicable for current residents (pre-2020)	Not required	Yes, current residents of Treasure Island	Current lease for Treasure Island housing, Proof of vehicle registration with a Treasure Island address Proof of a TIDA-issued parking
	• <55% AMI • 55-120% AMI	Not specified	Future non-residents of Treasure Island and travelers	Not applicable
Oregon I-205 Low-income Toll Program	• 200% FPL • 200-400% FPL	Not specified	Not specified	Not specified

Note: CHP+ = Child Health Plan Plus; CICP = Colorado Indigent Care Program; EBT = Electronic Benefits Transfer; FPL = Federal Poverty Level; GES = Globeville and Elyria-Swansea; IRS = Internal Revenue Service; LEAP = Low-income Energy Assistance Program; SCL = Sisters of Charity of Leavenworth; SNAP = Supplemental Nutrition Assistance Program; VDOT = Virginia Department of Transportation.

Partnering with Community-Based Organizations

Partnering with community-based organizations can play a crucial role in increasing program accessibility and enrollment. Program participants emphasized the importance of working with organizations that have strong ties to the communities targeted by low-income toll programs and cross-marketing with similar programs to reach communities effectively.

Outreach and Education Campaign

Participants in various low-income toll programs have emphasized the importance of conducting an effective outreach and education campaign to increase program participation. Many people may not have the time or energy to actively seek out these programs, so it is crucial to ensure they are aware of the program and understand how it works.

Toll Payment Options

It can be inferred from the researched low-income toll programs that a significant number of low-income people are unbanked or underbanked. As such, agencies have been offering multiple payment options, including cash and pay-as-you-go options, to make low-income toll programs accessible to all (Table 11).

The main takeaway from the researched low-income toll programs is that there is no universal approach to creating a low-income toll program, and agencies must weigh their priorities and the priorities of the communities they serve to determine the best options.

Table 11: Comparison of Program Enrollment and Verification

Program	Enrollment	Accessibility for Unbanked/Underbanked	Applicant Reverification Process	Outreach & Promotion
LA Metro Low-Income Assistance Program	• Enroll by phone or at a customer service center	• Cash loading of transponder at customer center and all 7-11 stores through PayNearMe with a $1.99 transaction fee	• Verify income and residency once at the customer service center • Does not reverify	• Promotion through billboards, bus advertisements, videos at gas stations and McDonald's, online ads, community events, festivals, and transportation workshops
VDOT Toll Relief Program	• Annual reapplication is required in person at customer service centers (one in each town) • Enrollment period is limited to 2.5 months (military personnel exception)	• Users can reload with cash via a reload card with a $1.50 transaction fee	• Annual reapplication is required in person at customer service centers	• Promotion through social media, limited TV ads, and emailing existing participants to renew
I-PASS Assist Program	• Electronic application	• Not specified	• Eligibility is verified annually	• Not specified
San Mateo 101 Express Lanes Community Transportation Benefits Program	• Online or in-person at eight San Mateo core service agencies • Application materials are available in English, Spanish, Traditional Chinese, Vietnamese, and Filipino	• Not specified	• Utilize MTCs verification system to reduce costs and minimize barriers to entry	• Outreach through eight community partner organizations
GES Tolling Equity Program	• In-person or online • Application materials available in English and Spanish	• Pay as you go option through a BancPass App provided by Pluspass • Users can fund their accounts using credit, PayPal, or cash with a $2 convenience fee on each transaction if paying through a vendor (e.g., 7-Eleven) or $1 if paying through the PlusPass website. • Cash funders must refill their account in	• Re-verification every two years from 2025	• Outreach through NETC

Program	Enrollment	Accessibility for Unbanked/Underbanked	Applicant Reverification Process	Outreach & Promotion
		advance, incurring a reload fee of $2, based on a minimum reload of $15 and a maximum of $500.		
I-880 Express Lanes Toll Discount Program	• Option to apply via computer, mobile phone, or paper • Application materials will be available in English, Spanish, and traditional Chinese	• Not specified	• Considered re-verification every 2 years	• Outreach through community-based organizations • Hired a company to assist with marketing and outreach services
I-405 and SR 167 ETL Low-income Toll Equity Program	• Use DSHS BVS for enrollment • Applications materials will be available in multiple languages • Application materials will accommodate participants with disabilities	• Cash reloading of toll accounts • Eliminate requirement of stored cards	• Considering re-verification every two years (biennial budget)	• Not specified
Treasure Island Transportation Affordability Program	• Not specified	• Not specified	• Not specified	• Not specified
Oregon I-205 Low-income Toll Program	• Not specified	• Not specified	• Not specified	• Not specified

Note: BVS = Benefit Verification System; DSHS = Department of Social and Health Services; ETL = Express Toll Lane; GES = Globeville and Elyria-Swansea; LA = Los Angeles; MTC = Metropolitan Transportation Commission; NETC = Northeast Transportation Connections; VDOT = Virginia Department of Transportation.

REFERENCES

Balk, G. 2019. “The Seattle Times.” Seattle is the third most gentrifying U.S. city — but that might not be as bad as you think, study finds, 2019.

Bay Area Express Lanes. 2019. I-880 Express Lanes: HOV Lane Conversion.

Bay Area Infrastructure Financing Authority. 2022. I-880 Express Lanes Means-Based Toll Discount Pilot (Agenda Item 4d - 22-0894).

Burris, M., S. Lee, T. Geiselbrecht, R. Baker, and B. Weatherford. 2013. “Equity Evaluation of Sustainable Mileage-Based User Fee Scenarios.” Transportation Research Forum, 54 (1): 23–41.

Cairns, S., J. Greig, and M. Wachs. 2003. Environmental justice and transportation: a citizen’s handbook.

Clark, J. 2022. “Illinois Tollway to dismiss charges for low-income residents.” 2022.

Cohen, S., and A. Hoffman. 2019. Pricing roads, advancing equity: a report and toolkit to help communities advance a more equitable and affordable transportation system.

Colorado Department of Transportation. 2022. “Colorado Department of Transportation: Programs.” Globeville and Elyria-Swansea Tolling Equity Program https://www.codot.gov/programs/expresslanes/gestollingequity.

Colorado Transportation Investment Office. 2022. Central 70 Globeville and Elyria-Swansea (GES) Tolling Equity Program.

Creger, H., J. Espino, and A. S. Sanchez. 2018. Mobility equity framework: how to make transportation work for people.

Dutzik, T., B. Davis, and P. Baxandall. 2011. Do roads pay for themselves? Setting the record straight on transportation funding.

Ecola, L., and T. Light. 2009. Equity and congestion pricing: a review of the evidence. Santa Monica, CA: RAND Corporation.

EPA. 2022. “Carbon pollution from transportation | US EPA.” Accessed January 18, 2022. https://www.epa.gov/transportation-air-pollution-and-climate-change/carbon-pollution-transportation.

FHWA. 2006. Congestion pricing: a primer (FHWA-HOP-07-074). Washington, D.C.: Federal Highway Administration.

FHWA. 2008. Income-based equity impacts of congestion pricing (FHWA-HOP-08-040). Washington, D.C.: Federal Highway Administration.

FHWA. 2017. Impacts of congestion pricing on low-income populations (FHWA-HOP-17-019). Washington, D.C.: Federal Highway Administration.

FHWA. 2022a. Toll facilities in the United States. Washington, D.C.: Federal Highway Administration.

FHWA. 2022b. "21st century operations using 21st century technologies." Tolling and pricing program. Washington, D.C.: Federal Highway Administration.

FHWA. n.d. "Toll roads in the United States: history and current policy." https://www.fhwa.dot.gov/policyinformation/tollpage/documents/history.pdf.

Frick, K. T., S. Heminger, and H. Dittmar. 1996. "Bay bridge congestion-pricing project: lessons learned to date." Transportation Research Record: Journal of the Transportation Research Board, 1558 (1): 29–38. https://doi.org/10.1177/0361198196155800105.

Giuliano, G. 1994. Equity and fairness considerations of congestion pricing. 242. Vol. 2, 250-279 Washington, D.C.: National Academy Press.

Gould, P. n.d. I-880 Express lanes toll discount program pilot: Approval.

Government Accountability Office. 2012. Traffic congestion: Road pricing can help reduce congestion but equity concerns may grow (GAO-12-119).

Hamilton, B. A., and Seattle Department of Transportation. 2009. Seattle variable tolling study. Seattle, WA: Seattle Department of Transportation.

Helsel, J. W. 2017. "Getting to work on time: a proposed time-equitable tolling scheme." Austin, TX: University of Texas Austin.

Henchman, J. 2013. Gasoline Taxes and tolls pay for only a third of state & local road spending. Washington, D.C.: Tax Foundation National Press.

Hoffman, A., A. Ontiveros, C. Lepe, D. W. Rajee, and L. Parker. 2020. I-5 and I-205 Toll Projects: Toll Projects' Equity Framework. Oakland, CA: TransForm.

Illinois Tollway. n.d. "I-PASS Assist." Accessed January 15, 2023. https://www.illinoistollway.com/assist.

INRIX. 2020. 2019 Global Traffic Scorecard.

International Transport Forum. 2018. The Social Impacts of Road Pricing: Summary and Conclusions.

Johnson, G., and S. N. Marshall. 2018. "Toll relief."

King, D. A. 2009. Remediating Inequity in Transportation Finance.

Krol, R. 2017. How Congestion Pricing Influences Equity. Arlington, VA.

Levinson, D. 2010. “Equity Effects of Road Pricing: A Review.” Transp Rev, 30 (1): 33–57.

Litman, T. 1996. “Using Road Pricing Revenue: Economic Efficiency and Equity Considerations.” Transportation Research Record: Journal of the Transportation Research Board, 1558 (1): 24–28.

Metro ExpressLanes. 2022a. “Metro ExpressLanes.” Low-Income Assistance Plan. Accessed April 10, 2022. https://www.metroexpresslanes.net/offers-discounts/low-income-assistance/.

Metro ExpressLanes. 2022b. “Transit Rewards.” Accessed January 29, 2023. https://www.metroexpresslanes.net/offers-discounts/transit-rewards/.

Metropolitan Transportation Commission. 2022. Interstate 880 Express Lanes Toll Discount Pilot Fact Sheet.

Metschies, G. 2001. Adam Smith and the Principles of a Sustainable Road Policy.

Mobility Pricing Independent Commission. 2018. Metro Vancouver mobility pricing study: findings and recommendations for an effective, farsighted, and fair mobility pricing policy.

Perez, B. G., C. Fuhs, C. Gants, R. Giordano, and D. H. Ungemah. 2012. Priced managed lane guide (FHWA-HOP-13-007). Washington, D.C.: Federal Highway Administration.

Pesesky, L., D. Matherly, L. Lane, D. Aimen, D. Deka, A. W. Agrawal, B. Brown, and A. Morris. 2018. Assessing the Environmental Justice Effects of Toll Implementation or Rate Changes: Guidebook and Toolbox. Washington, D.C.: Transportation Research Board.

Plotnick, R., J. Romich, and J. Thacker. 2009. The impacts of tolling on low-income persons in the Puget Sound region. Olympia, Washington.

Puentes, R., and R. Prince. 2003. Fueling Transportation Finance: A Primer on the Gas Tax.

Safirova, E., K. Gillingham, W. Harrington, P. Nelson, and A. Lipman. 2005. “Choosing Congestion Pricing Policy.” Transportation Research Record: Journal of the Transportation Research Board, 1932 (1): 169–177.

San Francisco County Transportation Authority. 2022. Treasure Island Toll Details.

San Mateo County Transportation Authority. 2021. San Mateo US 101 Express Lanes Equity Study.

Seattle Department of Transportation. 2019. Seattle congestion pricing strategy. Seattle, WA: Seattle Department of Transportation.

Taylor, B. D. 2010. How Fair is Road Pricing? Evaluating Equity in Transportation Pricing and Finance. Washington, D.C.: Bipartisan Policy Center.

Treasure Island Mobility Management Agency. 2022. Treasure Island mobility management program implementation report 2021 update. Treasure Island. San Fransisco, CA: Treasure Island Mobility Management Agency.

Ungemah, D. 2007. "This Land is your Land, this Land is my Land." Transportation Research Record: Journal of the Transportation Research Board, 2013 (1): 13–20.

Victoria Transport Policy Institute. 2019. "Road pricing." Congestion pricing, value pricing, toll roads, and HOT lanes. Accessed December 6, 2022. https://www.vtpi.org/tdm/tdm35.htm#:~:text=%E2%80%9CCongestion%20pricing%E2%80%9D%20(also%20called,roadway%20facilities%20financed%20by%20tolls.

Virginia Department of Transportation. 2022. "Toll Relief: Elizabeth River Crossings." Accessed January 3, 2023. https://www.vdottollrelief.com/am-i-eligible/default.asp.

Washington State Transportation Commission. 2022. 2022 WSTC Tolling Report & Tacoma Narrows Bridge Loan Update. Olympia, WA.

Weinstein, A., and G.-C. Sciara. 2004. Assessing the equity implications of HOT lanes. San Jose, CA: Santa Clara Valley Transportation Authority.

WSP. 2021. Low income toll program study for I-405 & SR 167 express toll lanes. Olympia, WA.

WSP. 2022. Options to develop a low-income toll program and best practices for implementation. Portland, OR.

Title VI Notice to Public

It is the Washington State Department of Transportation's (WSDOT's) policy to assure that no person shall, on the grounds of race, color, or national origin, as provided by Title VI of the Civil Rights Act of 1964, be excluded from participation in, be denied the benefits of, or be otherwise discriminated against under any of its programs and activities. Any person who believes his/her Title VI protection has been violated, may file a complaint with WSDOT's Office of Equity and Civil Rights (OECR). For additional information regarding Title VI complaint procedures and/or information regarding our non-discrimination obligations, please contact OECR's Title VI Coordinator at (360) 705-7090.

Americans with Disabilities Act (ADA) Information

This material can be made available in an alternate format by emailing the Office of Equity and Civil Rights at wsdotada@wsdot.wa.gov or by calling toll free, 855-362-4ADA(4232). Persons who are deaf or hard of hearing may make a request by calling the Washington State Relay at 711.