



Washington State

Road Usage Charge Assessment

Final Report



vol. 1

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The Steering Committee Final Report of Findings—published as Volume 2 of this Final Report—is available to view or download at waroadusagecharge.org.



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All appendices—published as Volume 3 of this Final Report—are available to view or download at waroadusagecharge.org.



PREFACE

In 2012, the Washington State Legislature directed the Washington State Transportation Commission (WSTC) to “determine the feasibility of transitioning from the gas tax to a road user assessment system of paying for transportation.”¹ The Legislature also directed a blue ribbon panel of public and private sector stakeholders (known as the WA RUC Steering Committee) be convened to help design and test a road usage charge (RUC) system in Washington. The resulting division of responsibilities for this RUC Assessment is:

- › The Steering Committee designs, tests, measures, and reports.
- › The WSTC guides, oversees, and makes recommendations.
- › The Legislature reviews, considers options, and decides.

In establishing the purpose and broad scope of this RUC Assessment, the Legislature directed the WSTC to investigate road usage charging as an option for eventually replacing the gas tax. Neither the WSTC nor the Legislature have taken the position that a RUC is the only funding alternative to replace the gas tax as the State’s primary method of funding public roadways, highways, bridges, and tunnels. However, road usage charging has been found to be one of the most promising revenue options if Washington wishes to continue funding roadways on a user-pays basis.

The Federal Highway Administration (FHWA) is also a sponsor and recipient of this report. The information contained in this report takes into account national-level interest in road usage charging. Therefore, the intended audience for this final report includes the US Department of Transportation, the US Congress, and other states that are considering road usage charging as a potential transportation revenue alternative to the gas tax.

The WSTC’s comprehensive RUC Assessment and Final Report are presented across three volumes of work:

- › **Volume 1:** Washington State RUC Assessment Final Report
- › **Volume 2:** WA RUC Steering Committee Pilot Project Report
- › **Volume 3:** Washington State RUC Assessment and Pilot Project Report Comprehensive Appendix



The Steering Committee

designs, tests, measures, and reports to WSTC



Steering Committee report to WSTC



The WSTC

guides, oversees, and makes recommendations



Final report to decision-makers



The Legislature

reviews, considers options, and decides

If time is short:

Read the Executive Summary on the next page (~15 minutes) & the WSTC Recommendations starting on page 62 (~15 minutes).

¹ Engrossed Substitute House Bill No. 2190, 62nd Legislature, 2012 Regular Session.





EXECUTIVE SUMMARY

The Washington State Transportation Commission (WSTC) recommends that the Legislature enact a per-mile road usage charge (RUC) now on a small number of vehicles, including alternative fuel vehicles and state-owned vehicles, as the first step in a 10- to 25-year transition away from gas taxes to fund the state highway system. With the gas tax already declining, adoption of cleaner and alternative fuel vehicles accelerating, and RUC systems and technologies ready for implementation, the State must act now to avoid a predictable transportation funding crisis later. Starting small and transitioning gradually affords the Legislature and state agencies time to make necessary system refinements and policy adjustments to a RUC system in a deliberate, controlled manner.



This recommendation and others follow seven years of in-depth investigation, extensive analysis, and a year-long pilot project all focused on determining if a RUC could replace the gas tax and bring sustainability to transportation funding long-term. The seven-year assessment included:

- › Analysis of future revenue prospects under the state's existing pay-by-the-gallon policy—the gas tax.
- › Development and analysis of several different approaches to per-mile RUC concepts.
- › Design of a RUC prototype system followed by large-scale field testing of RUC by over 2,000 drivers in Washington.
- › Evaluation of technical, policy, and public acceptance factors to gain insight into what must change for RUC to become a fair, sustainable, and acceptable replacement for the state's gas tax.

The analysis, testing, and evaluation revealed a pathway toward a gas tax replacement that is fiscally sustainable and fair. The WSTC's work also reveals possibilities for RUC policy and a RUC system that protects privacy, preserves equity, can be implemented at a reasonable cost of collection, and aligns with other important public policy priorities and objectives.

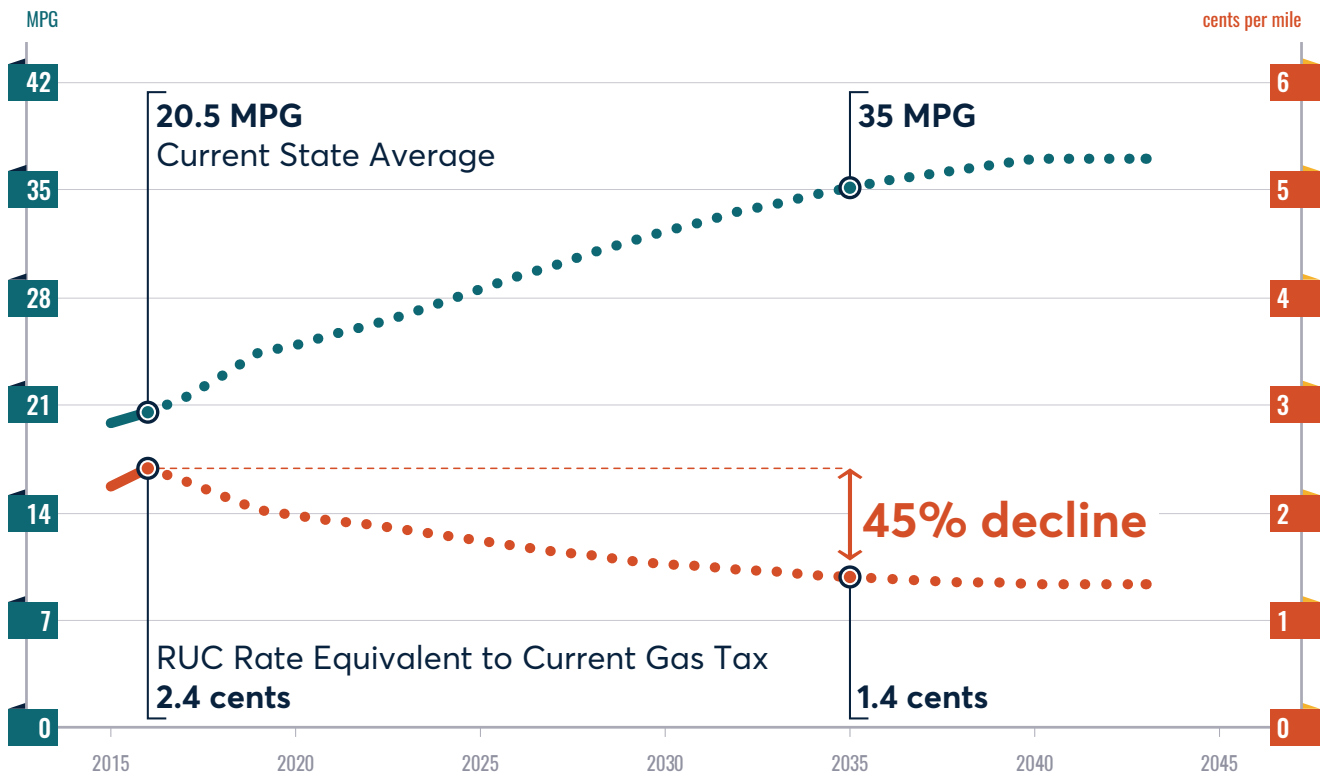
FUTURE PROSPECTS FOR THE GAS TAX ARE BLEAK

The gas tax, the primary source of revenue for the public roadway system for nearly a century, is declining as motorists opt to buy more efficient vehicles that consume less fuel—and pay less gas tax per mile. From fiscal year 2018 to 2019, gasoline consumption in Washington declined 2.1% despite an expected 1.5% increase in vehicle miles traveled.

To address funding needs, the Legislature has increased the gas tax three times since 2000, more than doubling the per-gallon rate. Meanwhile, the State has sold bonds pledging future gas tax revenues to fund major projects. Debt service payments on bonds and required gas tax distributions to local governments leave little remaining funding for regular roadway maintenance and preservation, let alone funding to invest in new projects outside of what is planned.

EXHIBIT ES.1

Gas Tax Revenues Decline With Vehicle Fuel Efficiency



Note: The state gas tax increased in 2015-2016.

A range of scenarios examined during the WSTC's RUC assessment projected a revenue decline of 45% on a per-mile-driven basis by 2040 at current gas tax rates (see Exhibit ES.1 at right). Keeping pace with existing funding levels would require the Legislature to increase the gas tax by 1.5 cents per gallon per year, every year. These increases might need to be even larger if alternative fuel vehicles such as plug-in electric cars are adopted faster than projected, or if oil prices unexpectedly spike driving consumers to more fuel-efficient cars, further eroding funding for highways, bridges, tunnels, and ferries.

The WSTC found that increasing the State's reliance on a dwindling revenue source creates several problems. It exacerbates inequities, shifting the burden of paying for the road system onto a shrinking number of motorists who

drive older vehicles with low MPG who are often unable to afford a newer, highly fuel-efficient vehicle. At the same time, it increasingly shifts the burden of paying for roads to rural drivers, who on average drive less fuel-efficient cars than urban residents and already pay an outsized share of gas taxes due to the distances they drive. Financially, it ties the hands of future legislatures to the revenue requirements of outstanding bonds, sold on the basis of increasing gas tax revenue, potentially locking in a spiral of increasing gas tax rates just to hold revenue levels constant.

1 2 3 4 5

Odometer
ReadingMileage
PermitPlug-in Device
(with GPS)Plug-in Device
(no GPS)Smartphone App
(MileMapper)

RUC CONCEPTS SHOW PROMISE & MATURITY

As part of the RUC assessment, the WSTC and a 29-member stakeholder-based Steering Committee devised and examined a range of concepts for charging vehicles per mile driven instead of taxing gasoline. Not all concepts require the use of GPS technology, and some require no technology. By experimenting with a range of mileage reporting approaches from no-tech to high-tech, several options were identified that merited further testing and development.

Manual RUC—No GPS Involved

The benefits of odometer-based RUC include simplicity and ultimate privacy protection for drivers, and low cost of implementation for the State.

- › **Odometer Reading:** Vehicle owners report their odometer mileage periodically to the State. Several approaches exist, from self-reporting at the time of vehicle registration renewal, to odometer mileage verification by an independent third party, to using a cell phone to send an odometer photo to verify mileage.
- › **Mileage Permit:** Allows drivers to pre-purchase distance licenses for a block of miles, with required periodic verification of their odometer mileage.

Automated RUC

The benefits of automated mileage reporting include increased ability to accurately apply RUC to in-state miles driven on public roads, simplicity and conveniences for drivers, and the possibility of private sector support services that can enhance the customer experience.

- › **Electronic Odometer Plug-In Device:** A device plugs into the vehicle's on-board diagnostic (OBD-II) port, available on most vehicles manufactured since 1996. The device counts miles and reports automatically via the cellular network to an accounting system for billing. Devices come both with and without GPS—those with

GPS can detect miles driven by jurisdiction, including off-road driving, allowing drivers to pay only for miles driven on-road within the taxing boundary (i.e., within the state). Both Oregon and Utah have utilized plug-in devices for the initial launch of their RUC programs.

- › **Smartphone App:** Given the popularity of smartphones, the WSTC sought to develop a method of measuring and reporting miles that relies exclusively on a smartphone device. In partnership with students at the University of Washington, a prototype app called the MileMapper for smartphones, was developed and tested in the pilot. Conceptually, such an approach is possible and offers tremendous benefits over the plug-in device method. Costs are lower, the user experience is simpler, and users have even more control over their privacy. However, some practical gaps remain, including how to associate a device to a specific vehicle, avoiding fraud, and determining miles when the smartphone has no signal or the phone is not present.

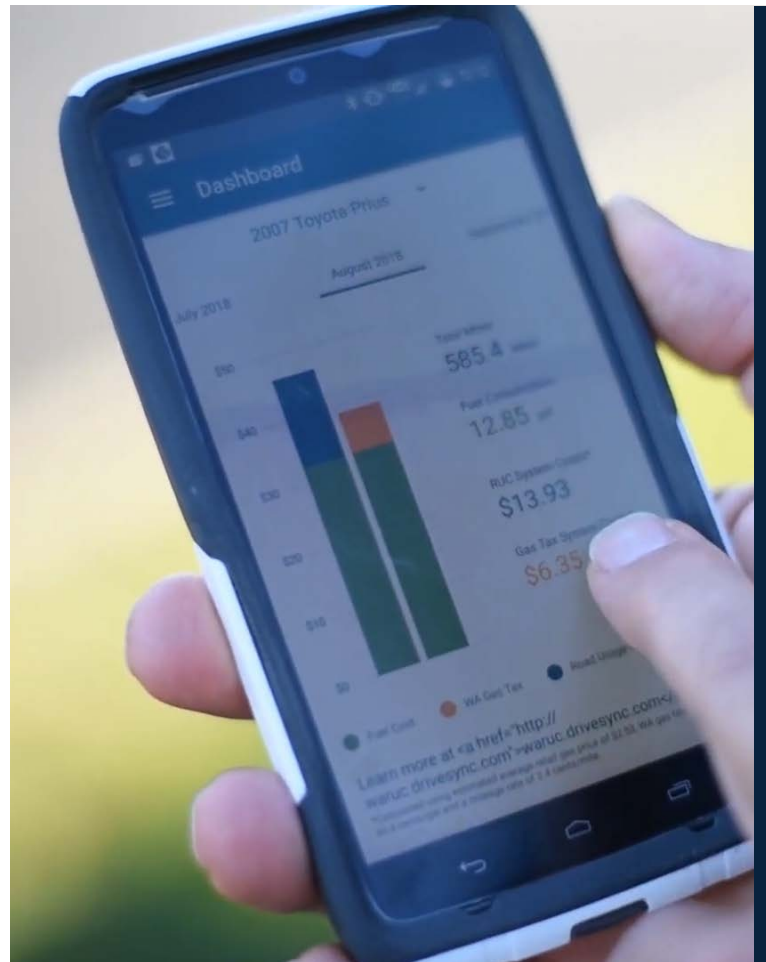
In addition to the above concepts, the WSTC recognized the value of offering motorists the choice of paying a relatively high flat fee for their road usage, to avoid reporting miles altogether. Called the Time Permit, this approach substitutes a vehicle-based registration surcharge for a mileage-based charge for vehicle owners who prefer, for whatever reason, not to report or pay by distance driven. Making such an option available further reduces privacy concerns while protecting or even enhancing overall RUC system revenue.

SUCCESSFUL PILOT TESTING OF RUC PROVIDES A PATHWAY FOR IMPLEMENTATION

In January 2018, a year-long RUC Pilot Project was launched, in which over 2,000 drivers from around the state, plus a small pool of drivers from neighboring states, volunteered, enrolled, and experienced a RUC system that was as close to a real system as possible. Insight and knowledge were gained both from the experience of setting up and operating a RUC prototype system, and from the robust feedback provided by volunteers through calls to the RUC help desk, online surveys, and focus groups across the state. Combined, the pilot experience, participant feedback, and lessons learned provide an informed pathway for the State of Washington to advance a live RUC system through a slow, phased-in approach.

The pilot offered participants a choice of how to report their mileage, ranging from high-tech options to low-tech (or no technology) options:

- › 56% chose the automated RUC plug-in device that automatically reports miles driven. Of these drivers, 37% chose the device with GPS capabilities, and 19% chose the device without GPS.
- › 28% chose the manual method of submitting their miles driven via the odometer read approach. Odometer mileage could be submitted in person at a local vehicle licensing office, or electronically by sending a photo of their odometer.
- › 14% chose to use the MileMapper Smartphone App. This beta app was available only for iPhone users and allowed the driver to toggle GPS on or off so that the driver had the choice to establish out of state miles which were exempt from RUC charges in the pilot.
- › Only 1% chose a Mileage Permit, an electronic permit issued when a driver pays for a block of miles (1,000, 5,000, and 10,000 mile permits were tested in the pilot).



RUC & GAS TAX CAN COEXIST WITHOUT DOUBLE TAXING DRIVERS

Because the State of Washington has over \$7 billion in outstanding or soon-to-be-issued highway construction bonds it has pledged to repay primarily from gas tax revenues, the State's gas tax must remain in place for at least 10 years, and likely longer (25 years). However, that does not mean a slow transition to a RUC system cannot begin in the meantime. A critical element of the RUC pilot was to design a system that could operate in parallel with the gas tax yet ensure that drivers only pay a gas tax or a RUC but not both. The pilot RUC system successfully credited drivers for gas taxes they paid at the pump resulting in a reduction of their RUC due. Essentially, the gas taxes paid at the pump were a pre-payment of their road usage charge.



Vehicles that consumed less fuel—high-MPG hybrid vehicles, for example—received a lower gas tax credit on their RUC invoice given that they didn't fuel up often, while lower-than-average MPG vehicles burned more fuel, paid more in gas taxes, and therefore received a larger credit. In some cases, drivers overpaid in gas taxes and their invoice thus reflected a RUC "credit." Through the use of invoices that conveyed new road usage charges were, drivers in the pilot experienced how a RUC system might impact them as compared to the current gas tax approach.

OUT OF STATE DRIVERS

Another complexity tested in the WA RUC pilot is how a road usage charge could be collected from out of state drivers, as well as how the State could reconcile RUC revenues when Washington residents drive in another state with a RUC. This situation is especially important for Washington, which shares an interconnected economic region with Oregon (Portland-Vancouver metropolitan region), which has a RUC program in place today. After conducting extensive research on interjurisdictional travel and a variety of RUC configurations, a RUC revenue reconciliation system, referred to in the pilot as the HUB, was designed and developed for testing with Oregon. The HUB acted as a financial clearinghouse for the states of Washington and Oregon and successfully processed the submittal of miles driven in each other's state and RUC payments (real money) collected from a small group of RUC pilot test drivers who traveled in each state. It also provided accounting functions and distributed RUC revenue back to each state in direct proportion to the miles driven in the jurisdiction, based upon each state's RUC rate and gas tax rates. The HUB was not only the first live test of an interoperable RUC system between two "RUC-enabled" states, but also the first such system to conduct transactions using real money rather than simulated payments.

PILOT PARTICIPANTS WEIGH IN

The most important discovery of the year-long live pilot test is how drivers felt about the WA RUC prototype system, and how they feel about RUC as a future replacement for the gas tax. Drivers from all over Washington weighed in with their views. Based on surveys administered before, during, and after the pilot:

- › **Drivers became more favorable towards a RUC throughout the year-long pilot**, with 68% of respondents preferring RUC over the gas tax or

preferring it equally to the gas tax and 71% of respondents supporting the implementation of RUC as a replacement to the gas tax.

- › **Drivers offered clear advice to elected officials: move forward with implementing a RUC.** Nine out of ten respondents support moving forward with a road usage charge or gradually phasing it in. 33% support a gradual transition over a 5- to 10-year period, and 28% advise moving forward to implement a RUC as soon as it is ready. Only 10% of respondents recommend taking no further action on a RUC system.

TOP CONCERNS RAISED BY DRIVERS

Although clearly supporting a transition to a RUC, drivers nonetheless voiced important concerns about RUC policy, the WA RUC system, and readiness for a fleet-wide shift to RUC.

Privacy remains drivers' top concern. Although surveys showed that they felt the 12-month pilot project adequately protected their privacy and data, participants remain worried about privacy protection in a future RUC system. For example, although the State did not collect any location information in the pilot, many participants feared it might do so in a live system.

Drivers' preference for simplicity in mileage reporting increased over the course of the 12-month pilot, ending as the second-most important acceptance factor, after privacy protection. Participants valued having a choice of mileage reporting methods, but also wanted to ensure any RUC system is simple to use.

Although the largest share of participants felt a RUC was a more fair method of funding roadways than the current gas tax, drivers frequently mentioned other aspects of equity that should be considered in a future system, beyond the user-pays principle. These other dimensions of equity included factoring in differences in vehicle weight so that heavier vehicles might pay more to use the roadways; vehicle emissions, where per-mile rates could be adjusted to reflect different air quality impacts among vehicles; and accounting for drivers' incomes and ability to pay.

EVALUATION OF RUC PILOT RESULTS REVEAL NEEDED REFINEMENTS

Based on the participant reactions and empirical study of the WA RUC prototype, several areas require ongoing development and refinement as part of a RUC system



launch. These include enhancing the technology and operational effectiveness of road usage charging, improving the customer experience, reducing the cost of collection, and understanding better the equity impacts. Many of these topics will be addressed in the WSTC's forthcoming Forward Drive project, subject to federal funding, in parallel with the development of a prospective small-scale RUC program for initial launch.

The pilot RUC operations worked well, with most participants enjoying a smooth experience. In a live system, several areas for improvement remain, including enforcement and cross-border travel:

- › Given its voluntary nature, the RUC pilot did not test enforcement, so a tabletop analysis of enforcement gaps and possible solutions was conducted instead.
- › Although the HUB facilitated simple, low-cost transactions between states, complications exist for detecting precise quantities of travel and fuel consumption by individual drivers, especially those who opt for non-location-based methods of mileage reporting. In the short-term, a RUC system can proceed without a solution for this issue, given the gas tax will remain in place. In the long term, however, as the number of vehicles in the program grows, especially with simultaneous growth in Oregon's RUC program, addressing cross-border RUC challenges will grow in importance.

Opportunities exist to further enhance the customer experience. These include enhancing existing mileage reporting methods like the smartphone app and developing new ones like utilizing in-vehicle telematics or altogether new approaches not yet known. By remaining open to evolution in transportation technologies and emerging business models, the State benefits from the ability to apply innovations to the RUC program as it slowly transitions away from the gas tax. In addition, design enhancements aimed at end users such as streamlining the enrollment experience and improving the clarity and readability of RUC invoices, offer opportunities to further increase customer satisfaction.

Perhaps one of the most important remaining areas for further research is reducing the cost of collecting a RUC. The gas tax costs less than 1% of revenue to collect and offers the most efficient method of collecting revenue that exists due to the large volume of taxable product and small number of taxpayers (fuel distributors). All transportation taxes and fees, including tolls, vehicle registration fees, and

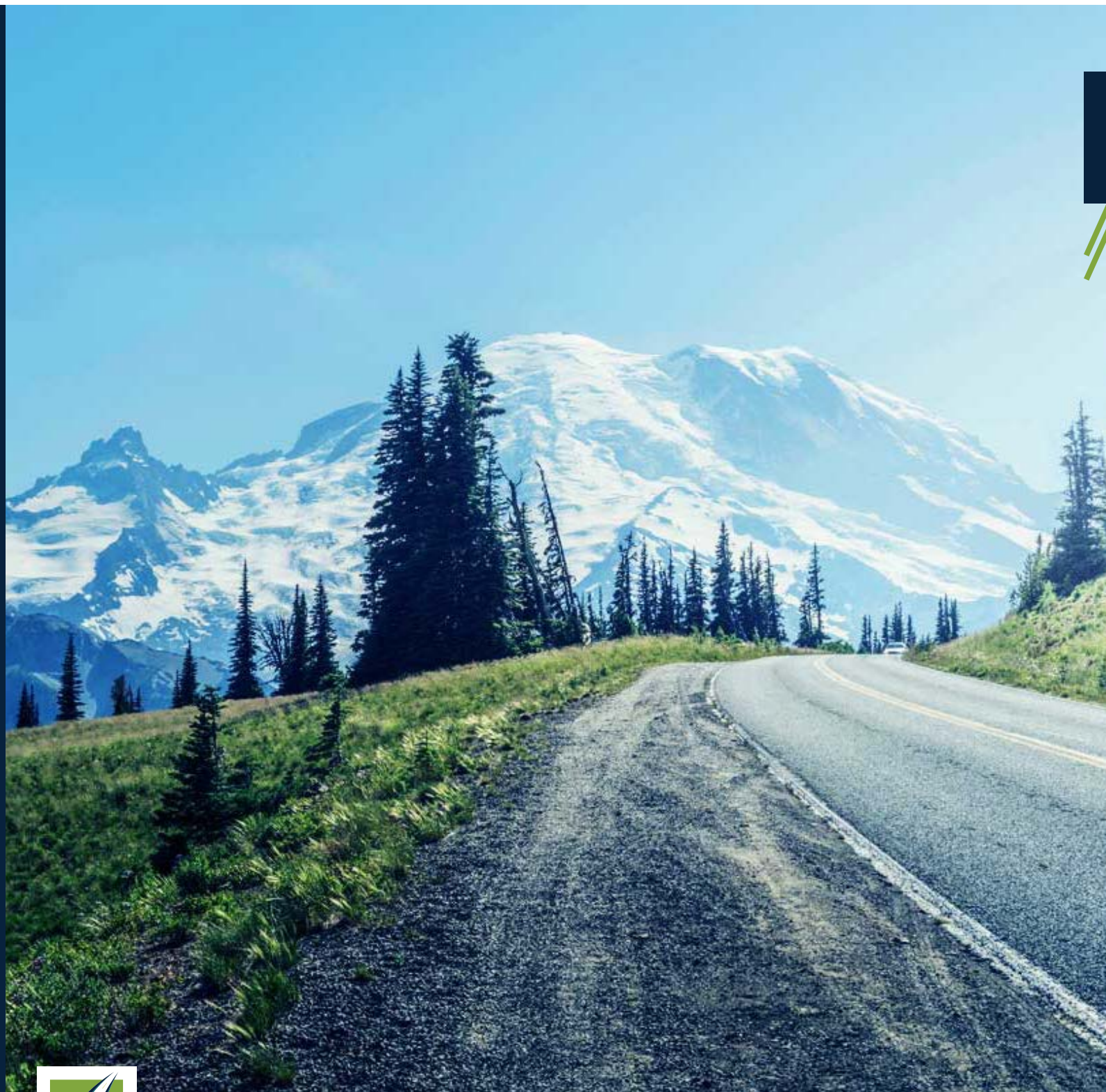
sales taxes, cost more to collect than the gas tax. For a RUC, one way of meeting the challenge of reducing collection costs is to work with other states to identify commonalities, target opportunities for increased efficiencies, and identify pathways to gain benefits from economies of scale.

The WSTC recognizes, based on stakeholder input and participant feedback, that a RUC will impact drivers in distinct and different ways depending on their individual circumstances. Beyond the financial impact of a RUC compared to the gas tax, the compliance requirements, including potentially interacting with technology, present unique challenges for some individuals. To better understand this issue, the WSTC will study the impacts and potential mitigation measures for rural/ high-mileage drivers, as well as individuals with low incomes, non-English speakers, and other vulnerable populations.

RESEARCH FINDINGS SUPPORT THE ENACTMENT OF A SMALL-SCALE RUC PROGRAM IN WASHINGTON

The WSTC finds that a number of desirable policy features for RUC exist, and a number of technical refinements remain to be made. This report offers a detailed look at this. To sum up seven years of work, the WSTC finds that RUC policy, public acceptance, and system capabilities are mature enough to implement a RUC system that will serve as a foundation for a larger-scale, new highway funding system in the future. Doing so now will help the State avoid a predictable, preventable, transportation revenue crisis later.

Specifically, the WSTC recommends that the Legislature enact RUC now on a small number of vehicles, less than 5% of the state's vehicle fleet, as the first step in a 10- to 25-year transition away from the gas tax to fund the state highway system. Important to the start of this transition, the WSTC recommends strong privacy and data protection statutes also be enacted now to ensure a firm foundation of protection is established from the start. While the initial launch of a small-scale RUC program proceeds, the WSTC further recommends addressing the remaining technical and policy issues identified through the preceding years of research, including further exploration of approaches to mileage collection, approaches to reducing cost of collection, conducting research on equity impacts of a RUC, and enhancing the customer experience. This research will allow the State to make continual refinements and improvements to the RUC program.





part 1

ROAD USAGE CHARGE AS A FUTURE REPLACEMENT FOR THE GAS TAX

After seven years of in-depth investigation, a Road Usage Charge (RUC) has proven capable of replacing Washington State's current gas tax to provide a more equitable and sustainable source of funding for Washington's network of public roads, bridges, tunnels, and ferries.

Transitioning to a RUC will be neither quick nor easy. The State's financial obligations to bondholders require the gas tax to remain in place for at least 10 years, likely much longer. Meanwhile, as vehicles become more fuel efficient and advanced technologies like plug-in electric and other alternative fuel vehicles increase, gas tax revenue per mile driven is expected to decrease from 2.4 cents per mile, as calculated in 2015, to approximately 1.3 cents per mile—a drop of 45% in per-mile revenue.

The WSTC believes the State of Washington must start a transition to a RUC now. This transition must occur gradually, so that RUC system improvements and policies can be refined before wide-scale implementation. This chapter introduces important milestones in Washington's transition to a RUC.

part 1 // contents

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1.1 INTRODUCTION

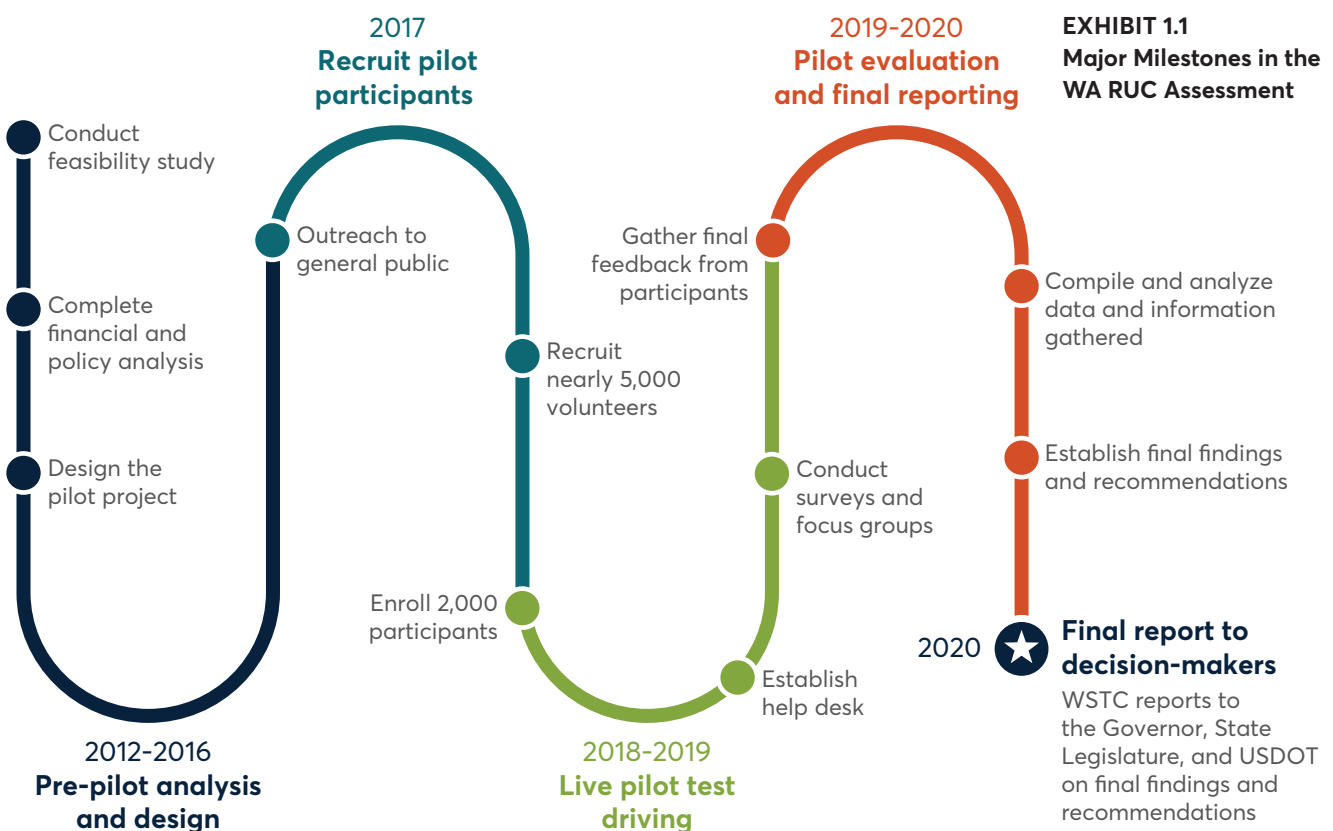
The Washington State Transportation Commission completed its legislatively directed mission to thoroughly assess the viability of a road usage charge as a potential replacement for Washington's gas tax. The assessment led to the determination that road usage charging is feasible, viable, and can provide long-term, sustainable funding for Washington's highway system.

For the past seven years, the Washington State Transportation Commission (WSTC) has investigated, tested, and evaluated a per-mile charge—referred to as a “road usage charge” (RUC)—as a potential replacement to the state gas tax. A 29-member Steering Committee comprised of various public and private stakeholders and interest groups drove the entire assessment.

In January 2013, the WSTC found a RUC to be a feasible state transportation funding method. Although technically feasible, questions remained whether a RUC could be crafted into an acceptable revenue tool from both a public policy and public acceptance standpoint.

From 2013 through 2014, the WSTC considered various operational approaches and policy issues related to implementing a RUC system in Washington. After extensive research and discussion, the Steering Committee developed and adopted several Guiding Principles, aimed at guiding the design, development, and testing of a RUC system.

In late 2014, a business case evaluation, including financial modeling and analysis, estimated the potential costs and revenues expected from a RUC system through 2040. This analysis showed that over the mid and longer run (i.e., 5 to 20 years), a RUC system designed in accordance with





the Guiding Principles would financially outperform the State of Washington's current gas tax system on a per-mile basis.

Throughout the WA RUC Assessment process, the WSTC and the Steering Committee developed a comprehensive list of legal, fiscal, operational, and policy issues that must be addressed before a RUC could be implemented as a replacement to the gas tax. While some questions were answered through further research, many of the unresolved issues could only be addressed by conducting a live test of a RUC system prototype and recording the results.

In 2015 and 2016, the WSTC and the Steering Committee focused on preparing for a statewide public demonstration (known as the WA RUC Pilot Project). The US Department of Transportation announced awards totaling \$8.3 million in federal funds for all stages of the WA RUC Pilot Project, which funded all necessary design and testing of the WA RUC prototype system, 12 months of live operations, evaluation, assessment of results, recommendations, and reporting. The results of the 12-month statewide pilot test are summarized in Part 2 of this Final Report.¹

This section (Part 1) of this Final Report highlights a RUC as a viable and important future replacement for the gas tax. Part 2 provides WSTC's detailed recommendations and analysis supporting those recommendations. Part 3 contains additional considerations and options the Legislature may wish to consider in crafting a RUC revenue collection system and policy.

¹ Full details of the live statewide pilot test are provided as Volume 2 of this Final Report, *WA RUC Steering Committee Pilot Project Final Report*, December 2019.

1.2 THE SITUATION: THE GAS TAX IS A DIMINISHING SOURCE OF FUNDING FOR PUBLIC ROADWAYS, BRIDGES, TUNNELS, & FERRIES

Gas tax revenues to support the public highway system are dependent on consumption of fuel. As vehicles become more fuel efficient or are increasingly powered by electricity, gas tax revenue per mile driven will decline, jeopardizing basic funding to operate and maintain the state's public roadways.

1.2.1 THE STATE GAS TAX IS THE MOST SIGNIFICANT SOURCE OF FUNDING FOR WASHINGTON'S ROADWAYS, BUT IT IS HIGHLY CONSTRAINED

The state motor vehicle fuel tax—commonly known as the gas tax—is the largest single source of funding to support the state's transportation budget, supplying approximately 46% of all state transportation revenue (see Exhibit 1.2). Cities and counties are also beneficiaries of the state gas tax, as 11 cents of the 49.4 cents per gallon tax is directly distributed for local roadways.

Even though the gas tax provides the largest share of public roadway funding in Washington, revenue to support ongoing maintenance, operations, preservation,

and safety programs are increasingly constrained. One source of constraint is the degree to which the state gas tax has been pledged for repayment of debt in the form of highway construction bonds. Beginning in 2002, the Legislature has financed the vast majority of critical highway infrastructure projects by raising the state gas tax in amounts sufficient to repay long term (25 year) debt. In 1991, 20% of gas tax revenue was needed to repay bonds. By 2002, debt service payments rose to 37% of all state gas tax revenue collected. Recent projections now show that by the year 2028, approximately 74% of the state's gas tax will be consumed by debt service payments. After making required debt service payments and distributions to local roadways, only 8 cents of the state's current 49.4 cent per gallon tax is available to preserve, maintain, and operate state highways, bridges, and ferries.

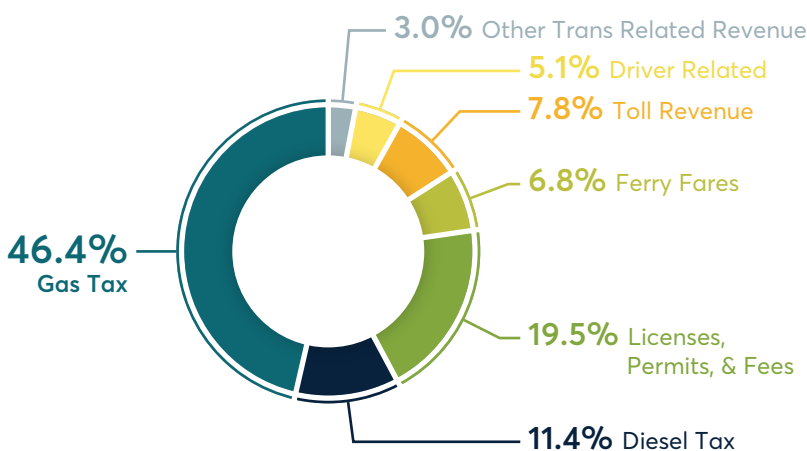


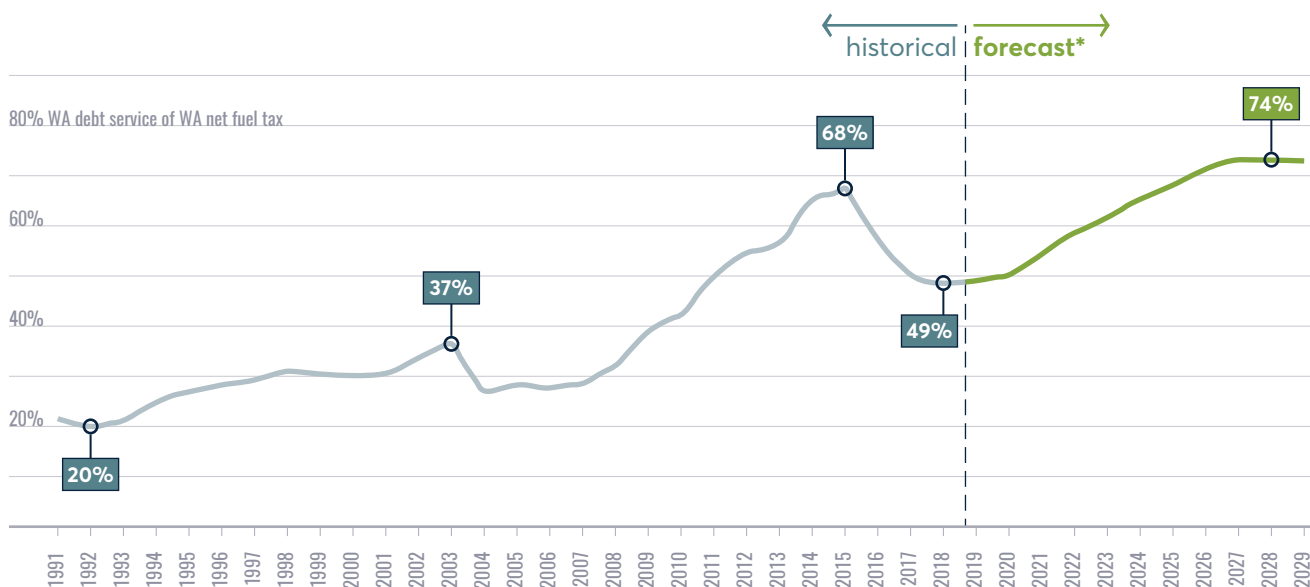
EXHIBIT 1.2
Revenue by Source, 2019–21
Biennium (\$6.263 Billion)

Source: Transportation Revenue Forecast Council, November 2019.

the situation: the gas tax is a diminishing source of funding for public roadways, bridges, tunnels, & ferries

EXHIBIT 1.3

How Much of WA State's Portion of the Motor Vehicle Fuel Tax (MVFT) Goes to Debt Payments



*Based on November 2018 forecast.

With gas tax revenues so tightly constrained, the State can ill-afford shortfalls in the amount the tax is expected to generate. When revenue collections fall short of the forecasted amounts, cash-based programs such as ongoing highway preservation, maintenance, operations, and safety will be most impacted, since revenue earmarked for the repayment of debt cannot be reduced.

1.2.2 IMPROVING VEHICLE FUEL ECONOMY & ALTERNATIVE FUEL SOURCES WILL RESULT IN A SIGNIFICANT DROP IN PER-MILE REVENUE FROM THE GAS TAX

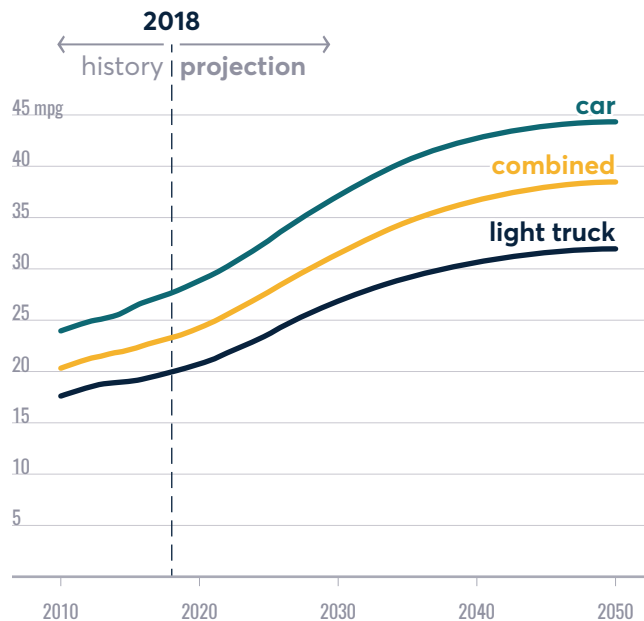
Historically, the gas tax has been a robust, stable source of revenue to fund public highways, bridges, tunnels, and Washington State Ferries. From the 1920s until the 1970s, passenger vehicles all consumed fuel at approximately the same rate, regardless of the vehicle make, model, or year. However, spurred by the 1973 oil crisis to improve vehicle fuel economy, the federal government enacted new federal Corporate Average Fuel Economy (CAFE) standards and automakers responded by increasing new vehicle miles per gallon (MPG) from 13.5 in 1975 to 27.5 MPG by 1985. After a flattening of fleet MPG from 1987 to 2004 (and in some years, a modest decline), light duty vehicle fuel economy again rose and has been increasing ever since. As of March 2019, fuel economy for the entire light duty fleet (both new and used vehicles) is at a record high, due in part to more aggressive fuel economy standards that were adopted at the federal level, as well as automakers' continued investments in advanced technology (such as stop-start engines, hybrid engines, continuous variable transmissions, etc.). This trend persists in spite of consumers purchasing record numbers of sport-utility vehicles and pick-ups each year. In its 2019 Energy Outlook, the US Energy Information Administration forecasts fuel efficiency improvement of 65% from 2018 to 2050 as newer, more fuel-efficient vehicles enter the market.

ELECTRICITY IS POSITIONED TO BECOME A MAJOR FUEL SOURCE FOR PASSENGER VEHICLES BY 2050

While fuel economy regulations and advanced vehicle technologies will continue to result in large fuel efficiency gains in gasoline vehicles, the mass market availability of plug-in electric vehicles has the greatest potential to disrupt the sustainability of the gas tax.

Although plug-in electric vehicles (PEVs) currently comprise only 2% of the vehicle fleet in Washington, numerous national and international forecasts show that PEVs will account for a significant portion of new vehicle sales and miles driven by 2050. Projections range from PEVs comprising 25% of new vehicles sold in 2050 (USEIA 2019 Energy Outlook), to 64% of all new vehicle sales by

EXHIBIT 1.4
Light-Duty Fuel Economy (Reference Case)



Source: Annual Energy Outlook 2019, US Energy Information Administration.

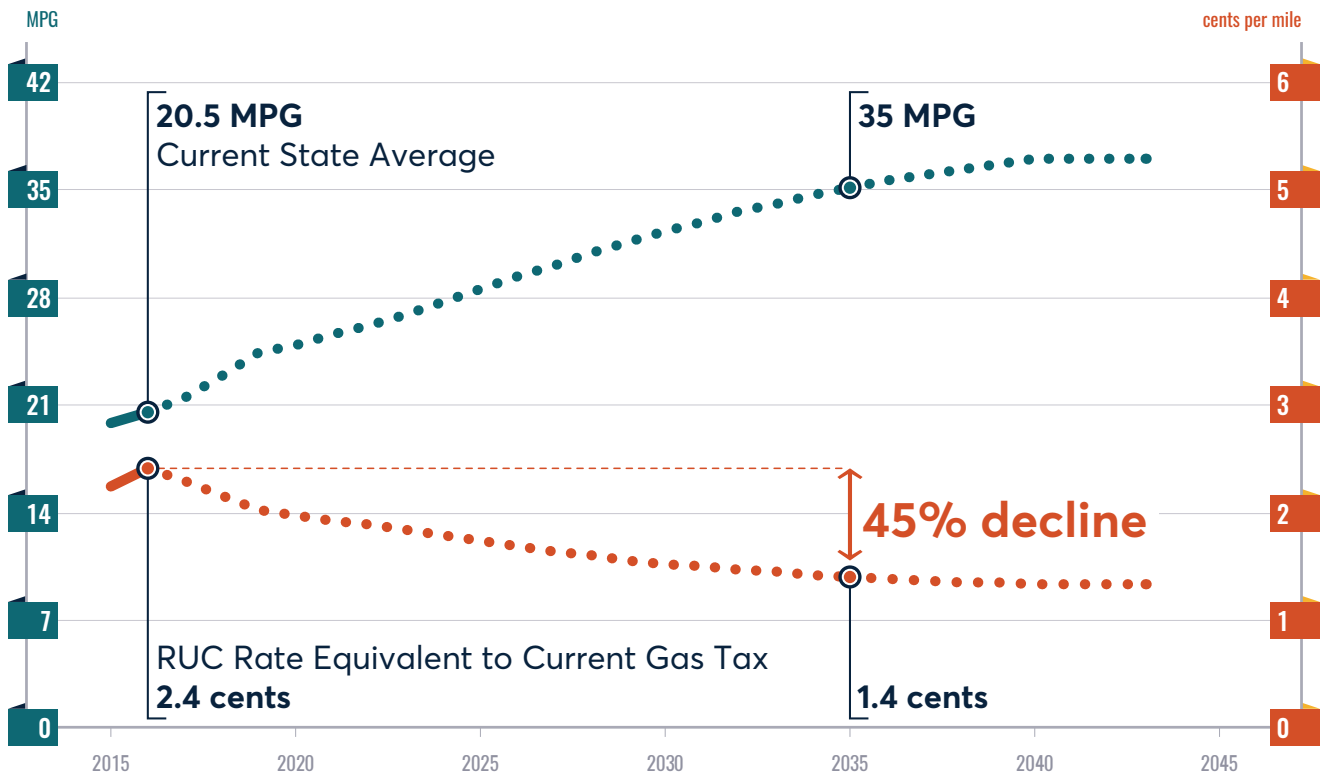


the situation: the gas tax is a diminishing source of funding for public roadways, bridges, tunnels, & ferries

8

EXHIBIT 1.5

Gas Tax Revenues Decline With Vehicle Fuel Efficiency



Note: The state gas tax increased in 2015-2016.

2040 (Bloomberg NEF). Energy companies Exxon and BP also project PEVs to become widespread; by 2040, BP projects 30% of all passenger miles driven will be in an electric vehicle.

Whether PEVs account for 25% or over 60% of the market share of new vehicle sales by 2040, the decline in gas tax collections in Washington and across the nation will be significant. Even when incorporating the most conservative assumptions, the shift to PEVs coupled with improving gasoline vehicle fuel economy is projected to result in a 45% reduction in state gas tax revenue per mile driven (see Exhibit 1.5).

1.2.3 RAISING THE GAS TAX TO COMPENSATE FOR REVENUE SHORTFALLS WILL ONLY EXACERBATE INEQUITIES AMONG DRIVERS

For 75 years, the vast majority of light duty (passenger) vehicles had similar fuel economy, so drivers paid similar rates for use of roadways, regardless of the make or model of car they drove. Gas tax revenue collected from drivers was not only a robust, reliable funding mechanism, it was also considered fair, at least from the standpoint that it reflected the user-fee principle that people should pay for what they use.

With vehicle fuel economy improvements since 2004, gas taxes paid by vehicle owners no longer reflect each vehicle's use of the roadways. Drivers who can afford newer, more fuel-efficient vehicles not only reap the financial benefit of lower fuel costs, they also receive an ancillary benefit of lower gas tax payments to support



the roadways. While it makes sense that owners of vehicles consuming less fuel have lower fuel expenses, it does not follow that fees collected for use of roadways should also decline, particularly when the owner's use of the roadway—miles traveled—remains unchanged or even increases. Yet this is the predicament caused by reliance on the gas tax to fund public roadways. The gas tax can no longer be considered a fair and sustainable funding method for roadways, especially as discrepancies increase among the amounts vehicle owners pay to drive the same mileage.

One suggestion to compensate for lower gas tax revenue collections is to raise the tax from its current price of 49.4 cents per gallon to a higher amount, with additional periodic increases to make up for future shortfalls. This approach would indeed be simpler and less costly to administer than other tax mechanisms, whether a flat vehicle fee, a RUC, or some other tax. However, as

Washington's vehicle fleet evolves and fuel efficiency increases, the tax burden of paying for our public roadways would disproportionately shift, causing acute impacts on those people who are least able to afford newer, fuel-efficient, or electric vehicles.

As an increasing proportion of public roadway system costs fall on a smaller number of people who drive average or below-average MPG vehicles, the erosion in roadway funding will continue, resulting in another round of gas tax increases to make up for steeper shortfalls. This gas tax "death spiral" will not only strain the ability to fund preservations, maintenance, and operations of our transportation system, but will disproportionately impact drivers with moderate and lower incomes with limited ability to purchase new, high-MPG, or electric vehicles.

1.3 A POTENTIAL SOLUTION: ROAD USAGE CHARGE

Beginning with Oregon and Minnesota around the turn of this century, numerous states and the Federal government have examined the prospect of a RUC as a possible revenue mechanism to replace the gas tax. Washington sought to understand public acceptance factors, policy features, and system design elements in its consideration of a RUC system serving as a possible way to pay for the State's roads and bridges in a future facing dwindling gas tax revenues.

1.3.1 RUC: PAY-BY-THE-MILE SYSTEM

Despite varying definitions from place to place, in Washington (as well as the rest of the United States), the term road usage charge (RUC) refers to distance-based charges. Other terminology that encompasses distance-based charging include vehicle miles traveled (VMT) fees, mileage-based user fees (MBUF), per-mile charges or fees, and mileage-based fees. These terms all describe the collection of revenue based on the total miles a vehicle travels on public roadways.

1.3.2 GENERAL BENEFITS OF RUC AS A FUNDING MECHANISM

A RUC is a direct user fee where motorists pay for roadways based on how much they "use" measured in distance driven. Direct user fees are a familiar and well-established method of paying for public utilities like water, natural gas, and electricity. Opinion surveys in Washington as well as throughout the US have shown that user-pay systems are the public's preferred approach to funding roadways.²

Another benefit of road usage charging as a direct user fee is that revenues could be used for maintaining and operating the entire roadway network, just as the gas tax provides today, preserving the direct correlation between the charge and use of revenue generated. In contrast to the gas tax, a RUC preserves fairness across road users whereby all share in the responsibility for the cost their usage creates, regardless of fuel efficiency. In contrast, tolls, another type of user fee, collect a fee for travel on a specific bridge, tunnel, or segment of roadway, with

the proceeds required to be reinvested only in that same facility. (Additional distinctions between road usage charging and tolling are discussed in Section 2.2.9 of this report, and Volume 2, Section 11.2).

In addition to preserving the user-pay approach to road funding, a RUC generates revenue that rises and falls with road usage, which means revenue tracks more closely with system costs. Aside from effects of inflation, a RUC serves as a durable method of collecting revenue to pay for the road system.

Finally, a RUC enables the State to lessen its reliance on consumption of fossil fuel to fund our transportation infrastructure, creating the possibility of sustainable, long-term funding for transportation that complements environmental policy objectives.

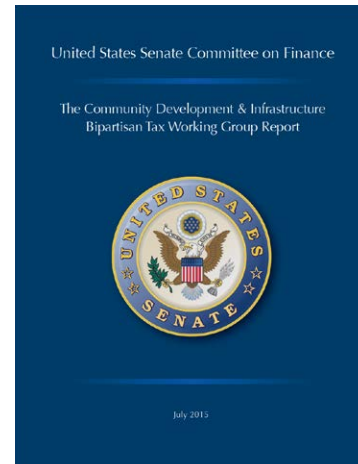
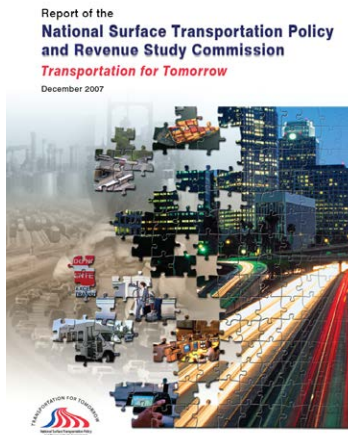
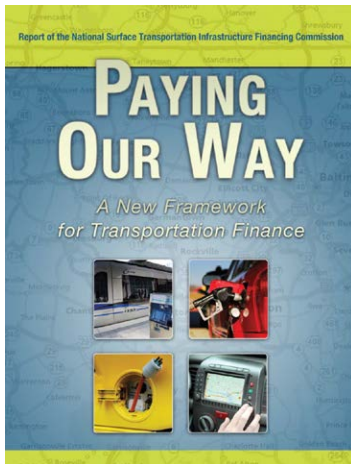
1.3.3 NATIONAL RECOMMENDATIONS TO TRANSITION TO A PER-MILE FEE SYSTEM

A consensus view of many transportation experts and economists is that a system of taxes on VMT is the leading alternative to fuel taxes as a source of funding for highways.³ Nationally, several transportation funding task forces, blue ribbon commissions, and select committees have recommended development of a RUC as a future replacement for the gas tax.

In their foundational report *Paying Our Way: A New Framework for Transportation Finance*, the congressionally-chartered National Surface Transportation Infrastructure Financing Commission found that a funding and financing framework that relies on direct forms of user-pays charges

² A random sample of 1,022 Americans from July 21-28, 2016 revealed that 69% support user fees to pay for roads. Transportation Mobility 2016, America THINKS national public opinion survey, HNTB Corporation, 2016.

³ *Alternative Approaches to Funding Highways*, Congressional Budget Office, March 2011, at page 14.



such as VMT fee systems were the “consensus choice for the future.” As a result, the Commission recommended:⁴

“The [National Infrastructure Finance] Commission’s extensive investigation into alternative funding approaches has proved to its satisfaction that a VMT-based system is the best available option for the next-generation federal revenue system...If implemented correctly, a VMT-based system would be most consistent with the Commission’s guiding principles for a new federal funding approach.”

Another congressionally appointed blue ribbon commission tasked with studying transportation policy and revenue solutions made similar findings and recommendations. In their recommendations, the National Surface Transportation Revenue and Policy Study Commission provided a blueprint for future Congressional action:⁵

“The motor fuel tax continues to be a viable revenue source for surface transportation at least through 2025. Thereafter, the most promising alternative revenue measure appears to be a vehicle miles traveled (VMT) fee, provided that substantial privacy and collection cost issues can be addressed. The next authorization bill should require a major national study to develop the specific mechanisms and strategies for transitioning to the VMT fee or another alternative to the motor fuel tax to fund surface transportation programs.”

In addition to these recommendations from national task forces and blue ribbon commissions, other bi-partisan Congressional committees and non-partisan federal agencies and offices have found mileage-based fees to be a viable or preferred replacement for the gas tax.

The US Senate Committee on Finance released their Bi-Partisan Tax Working Group report in July 2015.⁶ The consensus recommendation from the Committee was that in order to create revenue sustainability for long-term, testing of mileage-based fee systems should be undertaken immediately, given the expected long lead time required (up to a decade) to implement any mileage-based fee system. The Committee recommended that pilot programs be conducted both nationally and in states to provide information to lawmakers about the practicality and challenges of a vehicle miles traveled tax.

In 2018, the President’s Council of Economic Advisers explored road usage charges as a successor to the gas tax, citing the experience of Oregon and other states’ pilot programs as evidence of progress toward resolving administrative barriers to a usage-based funding mechanism that could “raise needed revenues in a sustainable way while providing the right signals regarding the value of consumption and supply.”

4 *Paying Our Way: A New Framework for Transportation Finance*, see Policy Recommendations, page 195.

5 *Transportation for Tomorrow*, Report of the National Surface Transportation Policy and Revenue Study Commission, December, 2007. Volume II, Chapter 5, page 37.

6 *The Community Development & Infrastructure Bipartisan Tax Working Group Report*, United States Senate Committee on Finance, July 2015.

Over 20 states in the US have explored a RUC as a revenue alternative to the gas tax. As shown in the map below, 16 states in the western US are either researching road usage charging, conducting a public demonstration or pilot project, or in the case of Utah and Oregon, implementing or operating legislatively-enacted RUC programs that are collecting tax revenue from drivers in their states in lieu of special registration fees and/or gas taxes.

In 2015, as part of the federal transportation reauthorization bill (Fixing America's Surface Transportation (FAST) Act), Congress created a new federal grant program to provide matching funds for states that are exploring user-fee mechanisms as potential replacements to the gas tax. The Surface Transportation System Funding Alternatives (STSFA) program appropriated \$95 million to serve as federal matching funds over a 5-year period. Several states (including Washington) have been awarded federal grants under this program to advance research, testing, and implementation of a RUC. Although the program is due to expire in 2020, it is widely expected that in the next transportation reauthorization act, Congress will renew and likely increase previous funding levels for this program, as state-level research and testing have demonstrated advances in the ability of RUC systems to provide revenue even in the near term (within 3 years).

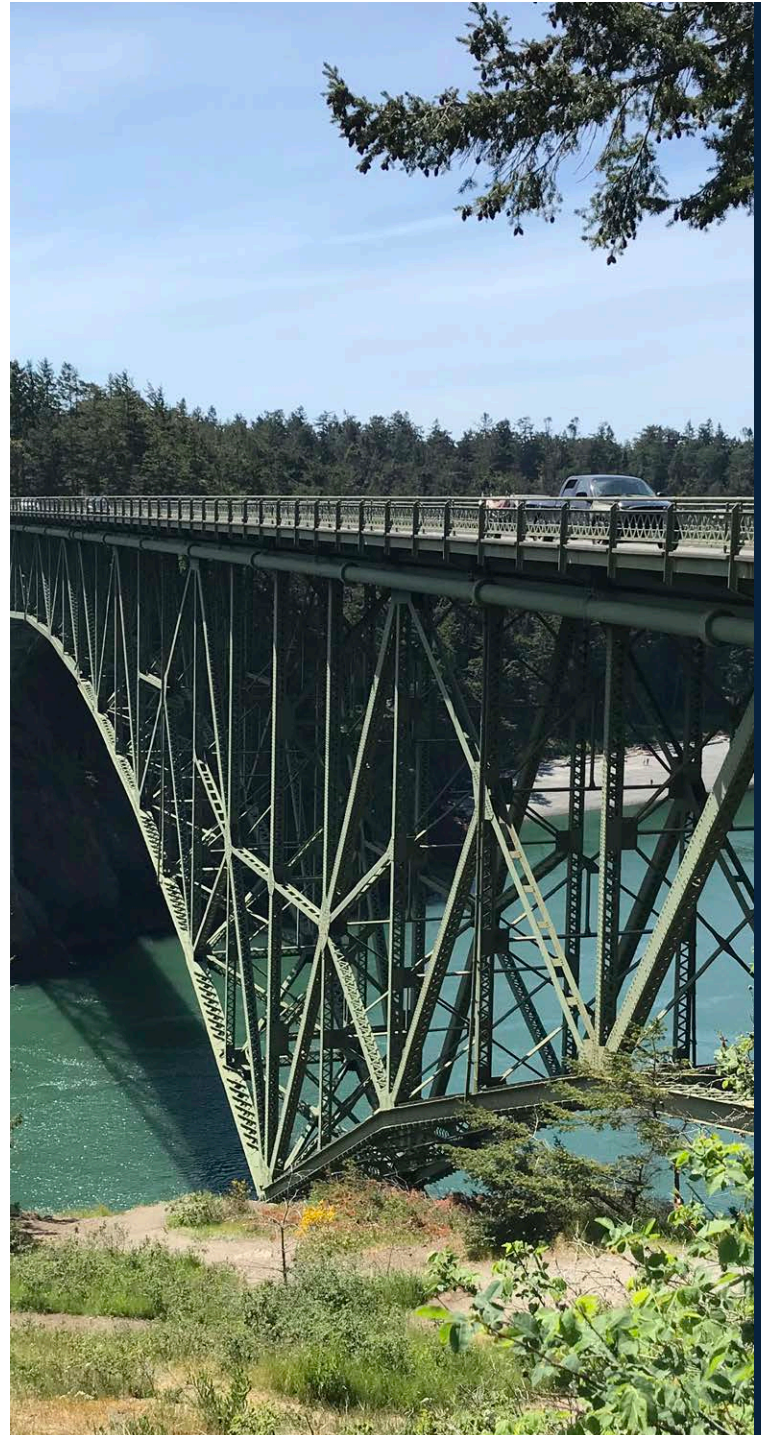
A map of the United States with states color-coded by region. The colors are: Dark Blue (OR, UT), Green (WA, CA, NV, CO, MN, HI), Teal (AZ, NM, TX, MT, WY, ND, SD, NE, KS, OK, WI, MI, IN, OH, KY, TN, MS, AL, GA, FL, SC, VA, WV, PA, NJ, DE), and Grey (ID, MT, ND, SD, IA, MO, IL, IN, OH, KY, TN, MS, AL, GA, FL, SC, VA, WV, PA, NY, VT, NH, ME, MA, CT, RI, MD, DC).

2 Enacted Programs 8 Pilots/Demonstrations 3 Planned Pilots 10 Research Only

1.3.5 CONNECTING WASHINGTON TASK FORCE: INVESTIGATE RUC AS A FUTURE REPLACEMENT TO THE GAS TAX

Washington's investigation of road usage charging originally stemmed from the State's own blue ribbon commission recommendations. In July 2011, Washington Governor Chris Gregoire convened the Connecting Washington Task Force to examine current and future transportation system funding needs in the state. In its final report, the Task Force recommended that the State of Washington begin planning the transition to more sustainable funding sources for transportation. The Task Force specifically recommended a direct user fee system based on miles traveled with rates based upon system use, similar to other public utilities.⁷

This recommendation echoed the position taken two years earlier by the Washington State Transportation Commission (WSTC) and its counterpart transportation commissions in Oregon and California. In 2009, the three state commissions jointly authored a letter urging Congress to support state exploration of mileage-based user fees as an alternative to a fuel tax. This letter also recommended that a west coast pilot of a RUC be conducted.⁸



⁷ Executive Summary, page 2, Connecting Washington: Strategic Transportation Investments to Strengthen Washington's Economy and Create Jobs, January 6, 2012. Accessed at: <https://www.digitalarchives.wa.gov/GovernorGregoire/priorities/transportation/connectwa.asp>

⁸ Letter to Senator Patty Murray from Washington, Oregon, and California Transportation Commissions, January 16, 2009.



1.4 TRANSITIONING FROM THE GAS TAX TO A ROAD USAGE CHARGE

The State of Washington should take action now to begin transitioning from the gas tax to a road usage charge. While a transition period may require 10 or more years, a gradual introduction of a RUC will allow continued improvements in mileage reporting systems while reducing potential adverse financial impacts to the state that could result from transitioning too quickly.

Above all, the Washington State Transportation Commission recommends that the Legislature act now to begin a transition to a road usage charge system. Revenue from the state's gas tax have already begun to decline, falling short of forecasts and revealing the effects of fuel economy improvements in the statewide fleet of passenger vehicles. From Fiscal Year 2018 to 2019, gasoline consumption declined 2.1% despite an expected 1.5% increase in vehicle miles traveled, representing 3.1% lower consumption than forecasted at the beginning of the year.

Washington is not alone in facing an erosion of gas tax revenue. Many other states are experiencing similar shortfalls. For example, in Virginia, between 2016 and 2018, vehicle miles traveled increased by 3.2%. However, over that same time period, gas tax revenue went down by 0.4%.

This trend is very likely to continue in the coming years. Since development, testing, and policy refinements to a road usage charge system require several years, the State should begin this transition now to prepare for the continued decline of gas tax revenue.

WSTC's overarching recommendation to transition to a RUC system is further discussed below but is contingent upon several additional recommendations about the pace of transition, the need for continued improvement and testing of mileage reporting methods, the need for enhancing privacy protections in a RUC system, the need to further examine potential disparate impacts among different groups of drivers and possible mitigation measures, and more. Part 2 of this report details the full set of WSTC recommendations.

1.4.1 TARGET: 10- TO 25-YEAR TRANSITION PERIOD

Several factors have led WSTC to target a period of 10 to 25 years to complete a full transition from the gas tax to a RUC system.

First, WSTC has recommended that a RUC fully replace the state's gas tax. This recommendation aligns with legislative intent in authorizing the WA RUC Assessment. However, an immediate or near-term repeal of the state gas tax is not legally possible, given the State has a large amount of outstanding bonds that must first be repaid from gas tax revenue that was pledged as the primary source of repayment (this issue is discussed in Section 2.2.7 and in Appendix A-9 of Volume 3 of this report).

Given this fact, the soonest possible date that a RUC could fully replace the state's gas tax would be 10 years from now (approximately 2030), while a longer transition period of up to 25 years may prove to be more fiscally prudent. The Legislature and the State Treasurer can be expected to closely monitor the state's financial situation, including the early returns from a smaller-scale RUC program that could launch much sooner than 10 years.

Second, a factor in the WSTC's recommendation for a gradual transition is the anticipated pace of fuel economy improvements in the state's passenger vehicle fleet, including the rate of consumer adoption of plug-in electric vehicles. In early 2015, the state's total fleet of passenger vehicles averaged 20.5 miles per gallon. By 2018, the vehicles participating in the WA RUC pilot project had an average MPG of 23.5, not including plug-in electric vehicles (which would have raised the average vehicle MPG in the pilot even higher). The rate of increase in fleet MPG will result in a proportionate decrease in gas tax collections per mile driven. Based on financial analysis conducted, by 2035, the state's gas tax revenue per mile driven is expected to decrease from 2.4 cents per mile as calculated in 2015 to approximately 1.3 cents per mile—a

drop of 45% in per-mile revenue. Therefore, the WSTC believes the State must begin the transition immediately, recognizing this transition must occur gradually, so that a RUC system can be ready for wide-scale implementation by 2030 if financial conditions and bond obligations allow.

A gradual transition to a RUC would also harmonize with recent legislative policy enactments aimed at accelerating the adoption of plug-in electric and other advanced-technology vehicles. In 2019 the Legislature enacted SHB 2042, which created a multi-faceted program of state financial incentives for the purchase of both new and used plug-in electric vehicles (PEVs); expanding existing PEV charging stations; and deploying other types of fueling infrastructure for advanced technology vehicles, such as hydrogen fuel cell vehicles. This clean vehicle technology incentive program is set to expire in 2025 – which happens to be the point at which numerous industry forecasts predict that PEVs will cost the same as comparable gas-burning vehicles, without the aid of purchase subsidies. Thus, 2025 may serve as an important milestone for measuring the progress of RUC development, testing, and early implementation on a smaller segment of the state's vehicle fleet.

As further described in Part 2 of this report, the WSTC recommends several areas of further research aimed at continuously evolving and improving upon the notion of a RUC system we have today, so as to support efficient, effective wide-scale implementation of a RUC as a full replacement to the gas tax.

Finally, a gradual transition to a RUC allows Washington to coordinate with RUC systems deployed in nearby states, including Oregon. Washington can incorporate advances made in other states to its developing system in

the next decade, ensuring greater ease-of-use for drivers and interoperability of revenue collection systems among the states.

1.4.2 SPECIFIC MILESTONES TO MEASURE PROGRESS IN A TRANSITION PERIOD

Specific milestones will assist lawmakers in measuring progress in transitioning to a RUC. The milestones suggested below take into account the pace of vehicle fleet MPG improvements, expected rate of consumer adoption of PEVs, timing of RUC development, testing and readiness for RUC expansion in Washington and nearby states, and the legal and financial feasibility of eliminating the gas tax as state highway construction bonds are paid off. The milestone years shown below illustrate a progressive implementation of a RUC; the Legislature can and should establish specific dates based on its own assessment and preferences.

MILESTONE 1: 2020

The most important step in transitioning to a RUC is the first one: getting started. WSTC recommends that the Legislature act now to begin what will likely be a long journey toward a future RUC system in Washington. This first step could direct preparations for implementation of a small start-up phase of road usage charging by a date certain as Oregon and Utah have done (e.g., Milestone 2, below). This could include continued research and development of a RUC system with a report-back on progress toward system readiness prior to launch.

MILESTONE 2: 2023

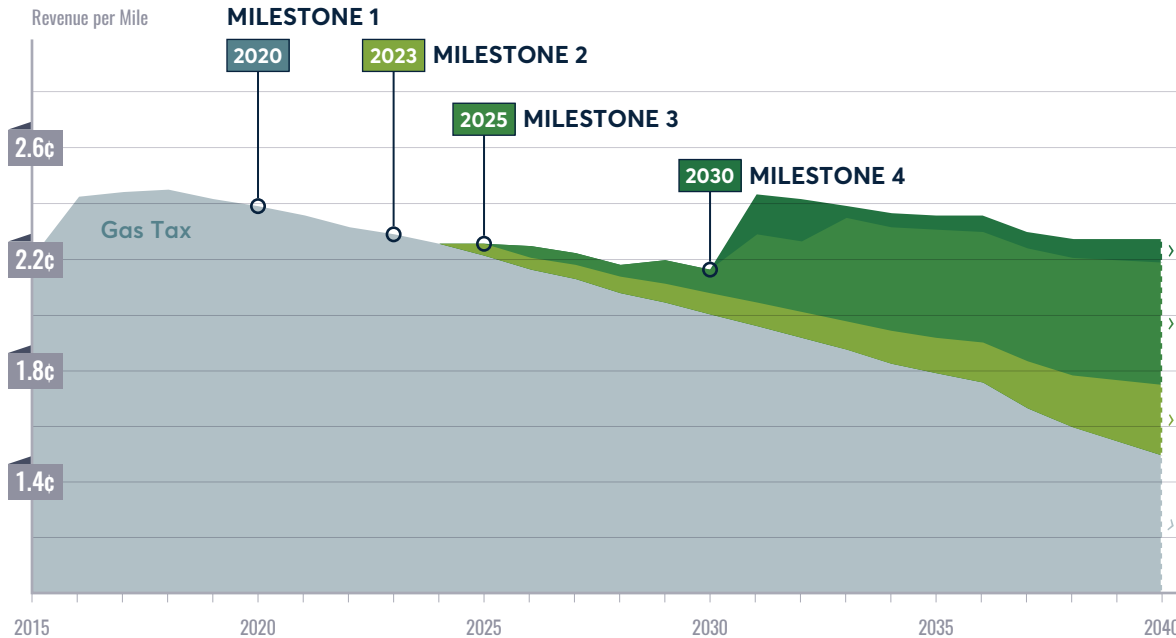
A narrowly-scoped introduction of a RUC allows the results of RUC research and system development to be introduced for a limited set of vehicles, at lower cost and financial risk to the state. WSTC recommends this small start-up phase include only PEVs and hybrids (which are currently required to pay additional registration fees), plus state government fleet vehicles.

MILESTONE 3: 2025

If the Legislature authorizes a gradual transition to a RUC in 2020, within five years (by 2025 in this example), the continued development, testing, and narrow deployment



EXHIBIT 1.7 Specific Milestones in a RUC Transition Period



Note: See Exhibit 2.31 in Part 2 for a more detailed version of this graphic.

of road usage charging will yield technical, operational, and policy advances that will enable the State to take another step by expanding road usage charging to a broader range of vehicles.

In 2025, the Legislature will also assess whether the state's current clean vehicle technology incentive program should be phased out (as current law provides), or whether continuation of some form of incentives are still necessary to spur greater consumer and industry adoption of advanced technology vehicles like PEVs. The State's review of its policy toward clean vehicle adoption aligns well with a simultaneous review of revenue impacts and possible RUC policy adjustments.

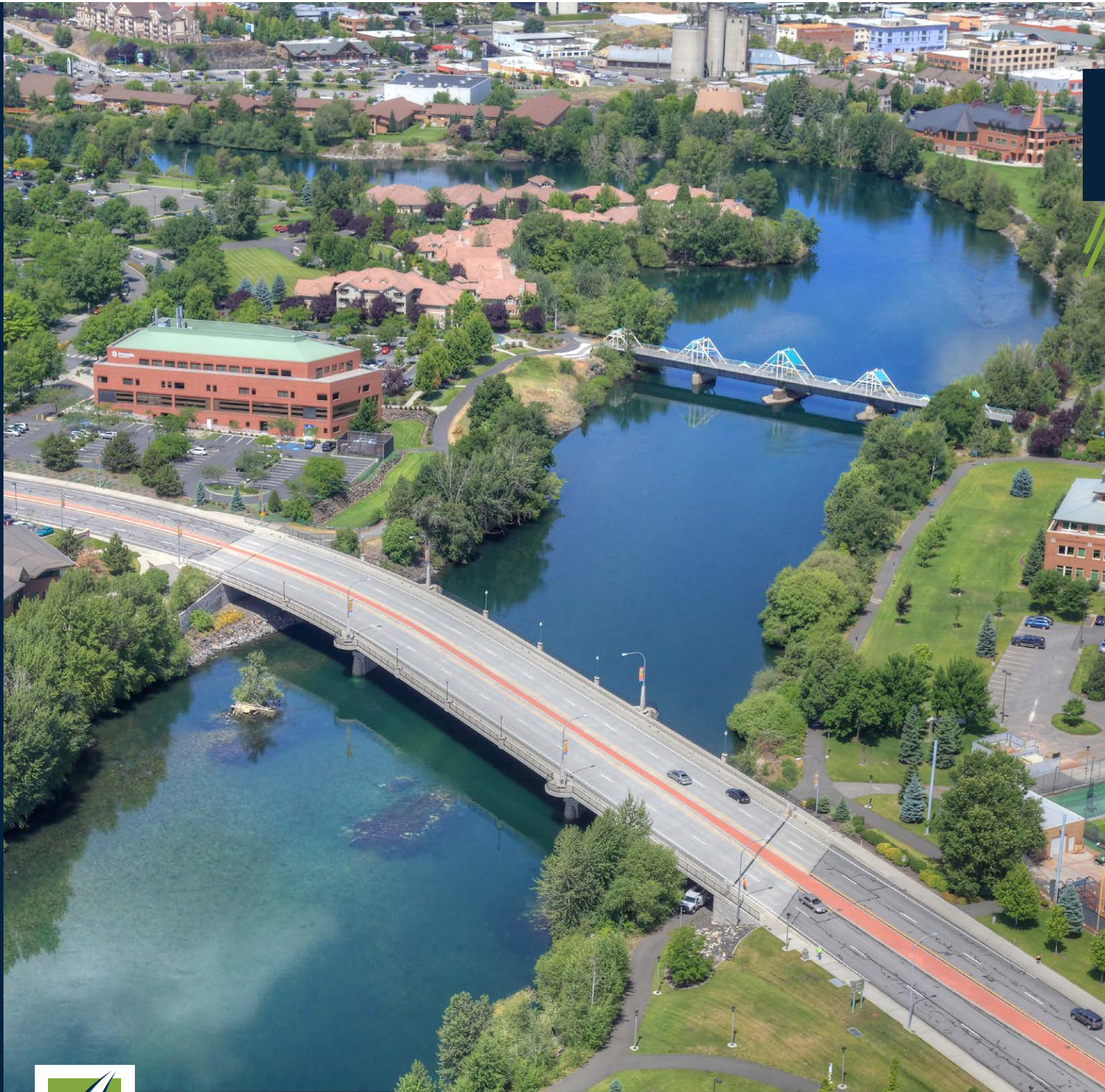
Leading up to 2025, the Legislature may enact legal protections for drivers' privacy in a RUC system—a critical foundation if road usage charging is to become acceptable to the motoring public.

By 2025, the Legislature could require that a RUC Readiness Assessment be conducted and presented for their consideration. Based on the results of that assessment, the Legislature would have better information to either refine the timeline or authorize expansion of road usage charging to a wider range of vehicles.

MILESTONE 4: 2030

Once the State has attained readiness to implement a RUC on a wider scale, the Legislature could identify a year by which all newly purchased vehicles would pay a RUC instead of the state's gas tax. This Model Year (MY) implementation approach has been cited by automotive manufacturers as a preferred method for implementing any future RUC system, as it does not require government agencies to correctly ascertain each vehicle's fuel source, propulsion method, MPG or MPGe rating, or other evaluation of a vehicle's characteristics to determine whether a given vehicle should pay a RUC or the gas tax.

The exact Model Year that would be chosen by the Legislature would likely depend on the results of the RUC Readiness Assessment provided as Milestone 3. The WSTC suggests that a Model Year transition occur no later than 2030, given the expected acceleration of the rate of erosion in the state's per-mile gas tax revenue. The year 2030 is also the earliest possible date when the state's outstanding gas tax bonds could be refinanced, allowing an easier tapering down and eventual repeal of the gas tax, and establishing a RUC as a full replacement.





part 2

FINDINGS & RECOMMENDATIONS

Early in its assessment of road usage charging, the WSTC recognized the importance of designing a system based on policy priorities rather than technology possibilities. To reinforce this, the WSTC adopted Guiding Principles to ensure sound public policy is reflected in a Washington RUC system.

Financial analysis, desktop models, and simulations provide useful but limited information. The most important source of information to determine RUC's acceptability as a replacement to the state gas tax are motorists' reactions and preferences based on direct experience. The WA RUC pilot project allowed over 2,000 drivers to experience a prototype RUC system for an entire year and offer their opinions on what works, what doesn't, and what must change before implementing RUC in the future.

After a year participating in the WA RUC Pilot, test drivers became more favorable towards a RUC—by the end of the pilot, 68% of respondents preferred RUC over or equally to the gas tax, while 19% preferred the gas tax.

Although the live pilot test results were promising, many important issues must be resolved before a RUC is ready to replace the state's gas tax. Protecting privacy, measuring and mitigating equity impacts, improving mileage reporting methods, and reducing administrative costs are all targets for WSTC's recommendations. These must be addressed before the State of Washington is prepared to undertake wide-scale implementation of a RUC system.

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2.1 FINDINGS FROM WSTC'S EARLY EXPLORATION OF RUC (2012–2017)

The WSTC's Final Report and Recommendations rest on an extensive body of research and analysis conducted prior to the live pilot test in 2018. This work answered fundamental questions about whether a RUC could be developed into a fair, effective revenue mechanism for Washington.

Washington's investigation of a road usage charge system formally began in late 2012. The next several years included a careful and deliberate evaluation of various aspects of a RUC, ranging from technical feasibility, to financial costs and benefits, to policy impacts of transitioning to a RUC. This early work served as a foundation for the eventual development of the statewide pilot test.

2.1.1 A PAY-PER-MILE SYSTEM IS A FEASIBLE REVENUE OPTION FOR WASHINGTON

In 2012, the Legislature passed a Supplemental Transportation budget that provided funding to the Washington State Transportation Commission (WSTC) "solely to determine the feasibility of transitioning from the gas tax to a road user assessment system of paying for transportation." The Legislature also provided funding to the Washington State Department of Transportation (WSDOT) "solely to carry out work related to assessing the operational feasibility of a road user assessment, including technology, agency administration, multistate and Federal standards, and other necessary elements."¹ Both efforts were conducted under the guidance of a legislatively-established 25-member Steering Committee (later expanded to 29 members).² The Committee:

- › Reviewed different approaches to charging for road usage, and developed a research program to investigate how a transition to a road usage charge might occur.
- › Identified policy issues that arise from switching from the gas tax to a RUC system in Washington.

- › Recommended a policy-driven design of a RUC system that could be deployed in a public demonstration.
- › Developed a plan to assess public perspectives and share information with the public on the current transportation funding system and options for a new system.
- › Assessed technology, agency administration, multistate and Federal standards, and other necessary elements of a RUC system for Washington.

STEERING COMMITTEE FINDING: RUC IS A FEASIBLE REVENUE ALTERNATIVE FOR WASHINGTON

The Steering Committee unanimously concluded—and the WSTC affirms in its report to the Legislature—that a road usage charge is a feasible revenue alternative for Washington. International road usage charge systems that are collecting revenue from motorists, as well as successful public demonstration projects in the US, illustrate numerous viable operational concepts and technologies for road usage charging that could be applied in Washington.

Regardless of how it is implemented, the Steering Committee recognized that road usage charging will not be perfect, but also noted that no tax mechanism is, including the current gas tax. All taxing policies involve tradeoffs between ideal policy objectives and how these objectives are operationalized. The Steering Committee's RUC Feasibility Assessment found that offering drivers choices for how to report miles and pay a RUC may resolve many of these difficult policy issues (e.g., driver privacy and public acceptance).

¹ Engrossed Substitute House Bill 2190, 62nd Legislature, 2012 Regular Session.

² The original Steering Committee had 25 members. Over the ensuing years the membership was gradually increased, topping out at 29 members in 2019.

22

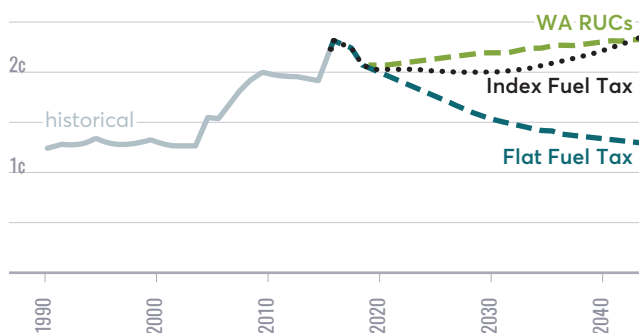
2.1.2 BUSINESS CASE EVALUATION: RUC WOULD BE MORE FINANCIALLY BENEFICIAL THAN THE STATE GAS TAX

In 2013, the Legislature and Governor directed the WSTC and its Steering Committee to determine if a business case could be made for road usage charging in Washington. The WSTC conducted financial analysis over the following six months, and subsequently updated it in 2016 pursuant to legislative direction. The business case evaluation considered both financial and non-financial aspects to provide policymakers with insights and to highlight potential tradeoffs between the diverse aspects of roadway funding policy.

A custom-built financial model captured the costs and revenues for road usage charges and gas taxes that reflected a range of forecast scenarios through 2040.

All of the road usage charge methods evaluated performed better financially than the gas tax. Despite higher costs to administer, increasing fleet fuel economy proved the determinative factor.

EXHIBIT 2.1
Costs & Revenues for RUCs & Gas Taxes



RUC ADMINISTRATION COSTS

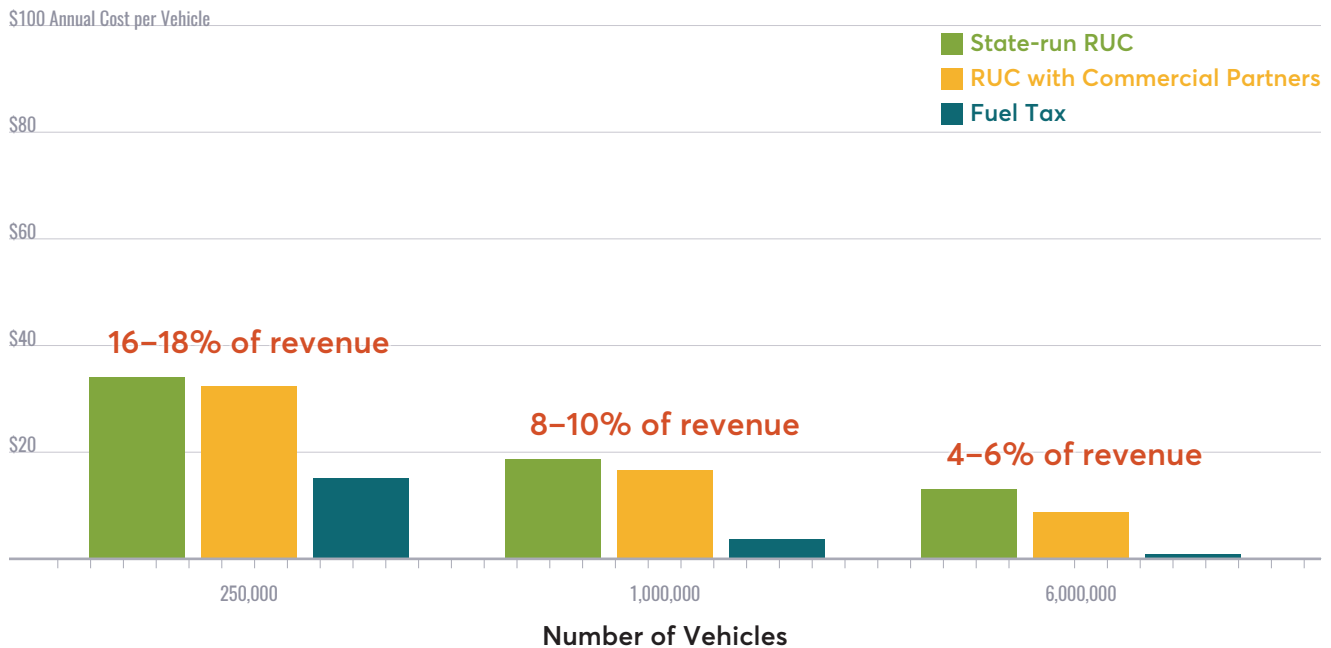
According to estimates, administering a road usage charge is costlier than administering a gas tax. The cost to collect the gas tax was estimated to be just under 1% of revenue.³ Meanwhile, estimated costs to administer a RUC using a Time Permit and Odometer Charge were approximately 7–8% of revenue. These approaches would generate the highest net revenue for the State. The Automated Distance Charge (e.g., using a plug-in mileage metering device) was calculated to cost 12–13% of revenue. Combining the Time Permit, Odometer Charge, and Automated Distance Charge resulted in costs of just under 10% of revenue. At scale, with over five million vehicles enrolled, an outsourced RUC program could achieve administrative costs of less than 10%, and in some scenarios as low as 4% (see Exhibit 2.2). For each mileage reporting method, the cost of collections included evasion losses and costs to recover unpaid bills. The gas tax collection costs do not include these items.

Due to the start-up costs and higher administrative costs of a RUC, a wholesale switch from gas tax to a RUC would result in lower net revenue in early years (up to eight years depending on the scenario). However, net RUC revenue was forecasted to increase each year and exceed gas tax revenue over the medium to long term—the total net present value of RUC through 2040 would exceed that of the gas tax by \$2 billion.

None of the sensitivity tests conducted changed the outcome that road usage charging would yield more net revenue over time for Washington than the State's gas tax.

³ See NCHRP Report 689, Cost of Alternative Revenue Generation Systems, Transportation Research Board (2011). Other estimates have put gas tax collections at 1% or in cases where fraud losses are included, 2%.

EXHIBIT 2.2 Annual Cost Per Vehicle Versus Number of Vehicles



VEHICLE FLEET FUEL ECONOMY FORECASTS

Among the forecast variables, fuel economy has the largest impact on the difference between RUC and gas tax revenue. The State's (implied) forecast for fuel efficiency, the most conservative analyzed, reached a fleet average of 27 MPG by 2040 and yielded a net present value for RUC at only \$1.0 billion higher than gas tax. Automotive and energy industry forecasts, including from IHS Global Insight and the US Energy Information Administration, predicted fleet higher fuel economy of 35–40 MPG by 2040, resulting in lower gas tax revenue, with net present value as much as \$4.2 billion lower than RUC.

Following development and adoption of the business case evaluation findings by the Steering Committee, the WSTC adopted and forwarded them to the Legislature.

guiding principles

- › **Transparency.** A RUC system should provide transparency in how the transportation system is paid for.
- › **Complementary policy objectives.** A RUC system should, to the extent possible, be aligned with Washington's energy, environmental, and congestion management goals.
- › **Cost-effectiveness.** The administration of a RUC system should be cost effective and cost efficient.
- › **Equity.** All road users should pay a fair share with a RUC.
- › **Privacy.** A RUC system should respect an individual's right to privacy.
- › **Data Security.** A RUC system should meet applicable standards for data security and access to data should be restricted to authorized people.
- › **Simplicity.** A RUC system should be simple, convenient, transparent to the user, and compliance should not create an undue burden.
- › **Accountability.** A RUC system should have clear assignment of responsibility and oversight and provide accurate reporting of usage and distribution of revenue collected.
- › **Enforcement.** A RUC system should be costly to evade and easy to enforce.
- › **System Flexibility.** A RUC system should be adaptive, open to competing vendors, and able to evolve over time.
- › **User Options.** Consumer choice should be considered wherever possible.
- › **Interoperability & Cooperation.** A RUC system should strive for interoperability with systems in other states, nationally, and internationally, as well as with other systems in Washington. Washington should proactively cooperate and collaborate with other entities that are also investigating RUC.
- › **Phasing.** Phasing should be considered in the deployment of a RUC system.

Note: Guiding Principles were adopted by the Steering Committee in their Phase 3 Final Report (page 16).

EXHIBIT 2.3
Comparison of a Fuel Tax With a Hypothetical Road Usage Charge—Calendar Year 2014

Comparison by Geography	Average Annual:				
	VTM (miles)	Fuel Consumed (gallons)	Fuel Tax Paid (\$, Current Law)	Road Usage Charge (\$, Hypothetical Scenario)	Impact of Change to Hypothetical Scenario (\$)
Rural	9,288	484	\$182	\$178	-\$4
Urban	8,611	436	\$163	\$165	+\$2

Note: Model data sources include June 2014 DOL VHS data, EPA fuel economy estimates for 1984–2014, 2011–13 WSDOT HPMS, and the 2009 NHTS. Source: Excerpt from Table 5, Appendix A-20.

2.1.3 WASHINGTON SHOULD ESTABLISH GUIDING PRINCIPLES FOR A FUTURE RUC SYSTEM

Since 2012, the WSTC and its Steering Committee have been steadfast in their position that sound public policy must establish the boundaries for technology—not the other way around.

To achieve the vision of sustainable and equitable transportation funding in Washington, the Steering Committee embarked on a deliberative process to develop guiding principles for the exploration of a RUC. At its June 2013 meeting, the Steering Committee unanimously adopted 13 Guiding Principles for how a RUC system should be developed. The WSTC affirmed these principles.

The Steering Committee referred to these Guiding Principles throughout its work, including in designing mileage reporting concepts, selecting evaluation measures for the pilot test, and assessing policy and system design alternatives for addressing unresolved questions.

These Guiding Principles have served as a common thread between the early RUC assessment (2012–2017) and the live WA RUC pilot test (2018–2019). They also served as the basis for the Steering Committee’s evaluation of the pilot test.

2.1.4 URBAN-RURAL ANALYSIS: RURAL DRIVERS MAY BE BETTER OFF UNDER RUC THAN THE GAS TAX

The 2014 Legislature directed the WSTC to undertake a study of the urban and rural financial and equity implications of a potential road usage charge system in

Washington.⁴ This study compared estimated annual payments for Washington’s personal light-duty vehicles, comparing annual fuel tax payments against estimated annual payments under a hypothetical road usage charge.

KEY FINDINGS

- › The average household-based light-duty vehicle fuel economy for June 2014 was estimated at 19.5 mpg.
- › Modeling indicates that rural drivers on average drive more miles per year than urban drivers; rural drivers consume more fuel per year than urban drivers; and rural drivers on average pay more in fuel taxes per year than urban drivers. See Exhibit 2.3 above.
- › Using calendar year 2014 data, the rural light duty vehicle drivers would have paid slightly less in RUC than they did in fuel taxes (about \$4 less per year). Meanwhile, urban light duty vehicle drivers would have paid slightly more in RUC than in fuel taxes (about \$2 more per year).
- › Modeling revealed a great range of potential impacts to drivers of vehicles based on vehicle characteristics. Drivers of highly fuel-efficient “hybrid” cars, for example, could be expected to pay more than two times as much as they would pay at the tested fuel tax rate (37.5 cents—Washington’s gas tax rate in 2014). On the other hand, drivers of older, less fuel-efficient pickup trucks could be expected to pay a third less in RUC than they pay under the current fuel tax rate.

The WSTC accepted the report. For more information on potential impacts of RUC on Rural and Urban drivers, see Appendix A-20 in Volume 3 of this report.

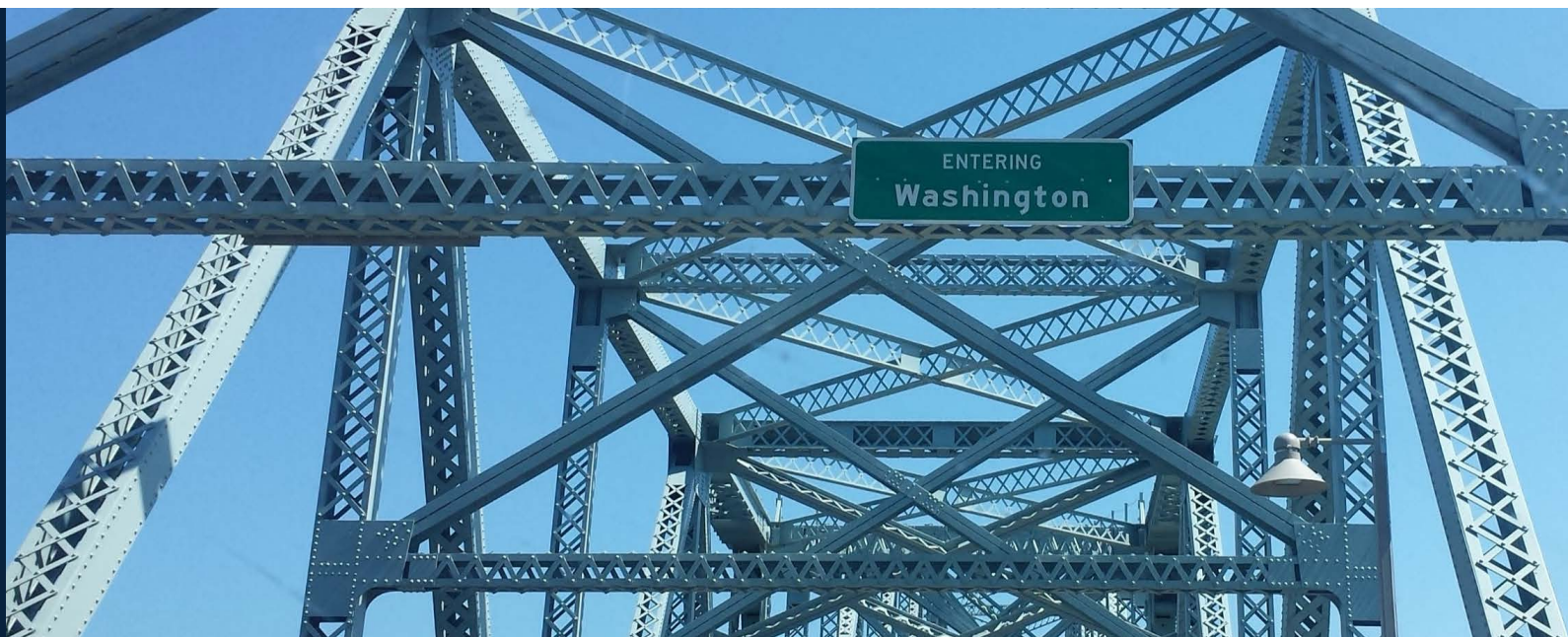
⁴ Engrossed Substitute Senate Bill 6001, Sec 205 (7), 63rd Legislature, 2014 Regular Session.

2.1.5 SEVERAL VIABLE OPTIONS FOR CHARGING DRIVERS TRAVELING BETWEEN STATES

In October 2014, the WSTC received the results of a study related to road usage charging and interjurisdictional travel conducted by the Western Road Usage Charge Consortium (RUC West).⁵ The study objective was to analyze approaches that jurisdictions (including Washington) could consider for charging motorists from other jurisdictions ("visitors") for road usage, alone and in cooperation with other jurisdictions.

The study considered two perspectives:

- › **Individual motorists**, including motorists adopting automated (e.g., in-vehicle devices) and manual (e.g., odometer readings or time permit) approaches to road usage charge reporting and payment.
- › **Jurisdictions**, which can adopt bilateral or multilateral approaches for data reporting, charge collection, and revenue reconciliation.



⁵ See Appendix A-22, Assessing Out of State Drivers in a Road Usage Charge System: Phase 2 Final Report, Western Road Usage Charge Consortium, December 19, 2016

INTERSTATE TRAVEL TO & FROM WASHINGTON

Visitor-generated Vehicle Miles Traveled (VMT) is estimated to be between 5% and 8.6% of total VMT in Washington. Short-distance local travel (between populated areas near borders) is estimated to be as much as 4% of all VMT in Washington (50-80% of all visitor generated VMT) due to significant local cross-border traffic between Vancouver, BC and Bellingham, WA, Portland, OR and Vancouver, WA, and numerous smaller cities and towns along the Washington/Idaho border. See Exhibit 2.4.

The list below briefly summarizes eight alternative policy approaches to capturing contributions from interjurisdictional travelers for use of the public roadways:

1. **No charge.** Visitors do not pay anything to the State of Washington for road usage.
2. **Shadow charge.** Visitors themselves do not pay anything directly to the State of Washington for road usage, but their home jurisdictions exchange funds to reflect differences in cross-border travel volumes and tax rates based on mutually agreed methodologies to measure or estimate cross-border travel.
3. **Charge based on fuel consumption.** The host jurisdiction (that is, the state where vehicle travel takes place) imposes a tax on fuel purchased by visitors, as is done today across North America. The tax may or may not also apply to residents.
4. **Charge based on time.** The host jurisdiction imposes a charge on visitors based on the amount of time they access the host roadway network.
5. **Charge based on distance.** The host jurisdiction imposes a charge on visitors based on the distance they travel on the host roadway network.
6. **Distance-based, with shadow charges.** The host jurisdiction imposes a distance-based charge on vehicles equipped with electronic distance- and location-reporting capabilities but uses shadow charging for vehicles that opt for manual or non-location-based distance reporting in their home jurisdictions.
7. **Distance-based and fuel-based, with or without shadow charges.** The host jurisdiction imposes a distance-based charge on vehicles equipped with electronic distance- and location-reporting capabilities (including fuel tax offsets) but uses fuel taxes for all other visitors.

EXHIBIT 2.4
Visitor-Generated Vehicle Miles Traveled



8. **Distance-based and time-based.** The host jurisdiction imposes a distance-based charge on vehicles equipped with electronic distance- and location-reporting capabilities (including fuel tax offsets) and time-based charging for all other visitors.

The Interjurisdictional Travel technical report (see Appendix A-21 in Volume 3 of this report) goes on to describe simplified operational concepts for each of these eight alternatives. Operational concepts describe the measurement, reporting, and revenue collection mechanisms that could be employed to implement each policy, focusing on the motorist's perspective (i.e., what are the reporting and payment options for individual motorists under each policy alternative?).

In addition, the technical report summarizes approaches for reporting and reconciling payments between (bilaterally) or among (multilaterally) jurisdictions. For multilateral reporting and reconciling, the report contrasts the "mesh" approach (a network of bilateral agreements among jurisdictions) and the "star" approach (a single, centralized hub which manages all reporting and reconciliation, with one connection to each jurisdiction). The technical report's analysis of the "star" configuration was further developed and successfully tested as the WA RUC HUB during the 2018-19 pilot project.

MOST RELEVANT FOR WASHINGTON'S SITUATION: RETAIN THE GAS TAX SYSTEM FOR OUT-OF-STATE TRAVELERS

Should Washington desire to charge visitors directly for road use, one ready-made option is the existing gas tax. Indeed, for reasons described in Section 11.1 of the Steering Committee's Pilot Project Final Report and Findings (published as Volume 2 of this report), having

a dual system that collects RUC from some vehicles, and the State's gas tax from others, will be necessary during the transitional period expected to take 10 to 25 years or possibly more.

Even after this long transition period, policymakers may still opt to retain the gas tax as a roadway payment mechanism for visitors, as there are numerous advantages to this approach. First, the policy and administration of the gas tax is familiar and straightforward. All states have existing bureaucracies dedicated to fuel tax collection, compliance, and accounting. Consequently, the marginal cost of this approach is zero. Secondly, it requires no action on the part of visitors, yet they still contribute something for their use of the roads, even if the contribution does not precisely match the level of usage, except for visitors whose vehicles do not consume taxable fuel (e.g., electric vehicles).

However, important drawbacks to this approach should be noted as well. The possibility exists for some visitors to pay little or no fuel tax—for example, by purchasing fuel in another state before traveling into Washington. However, this phenomenon occurs today without any apparent concern or remediation by states, likely due to an assumption of balanced revenues lost and gained. Secondly, for those visitors who do purchase fuel in Washington, the fuel tax does not capture revenue equitably from highly fuel-efficient vehicles. For example, a plug-in hybrid from Oregon that uses little or no fuel will likely pay no fuel tax in Washington. This phenomenon is the driving force behind much of the activity to examine road usage charging among western states.

2.1.6 "JUST RAISE THE GAS TAX" SCENARIO REQUIRES FREQUENT TAX INCREASES, EXACERBATING INEQUITIES AMONG DRIVERS

Early in its RUC Assessment, the WSTC calculated how much the State's gas tax would need to increase in order to achieve the same financial result—net revenue sustainability—as a road usage charge, over time.

The answer varies depending on:

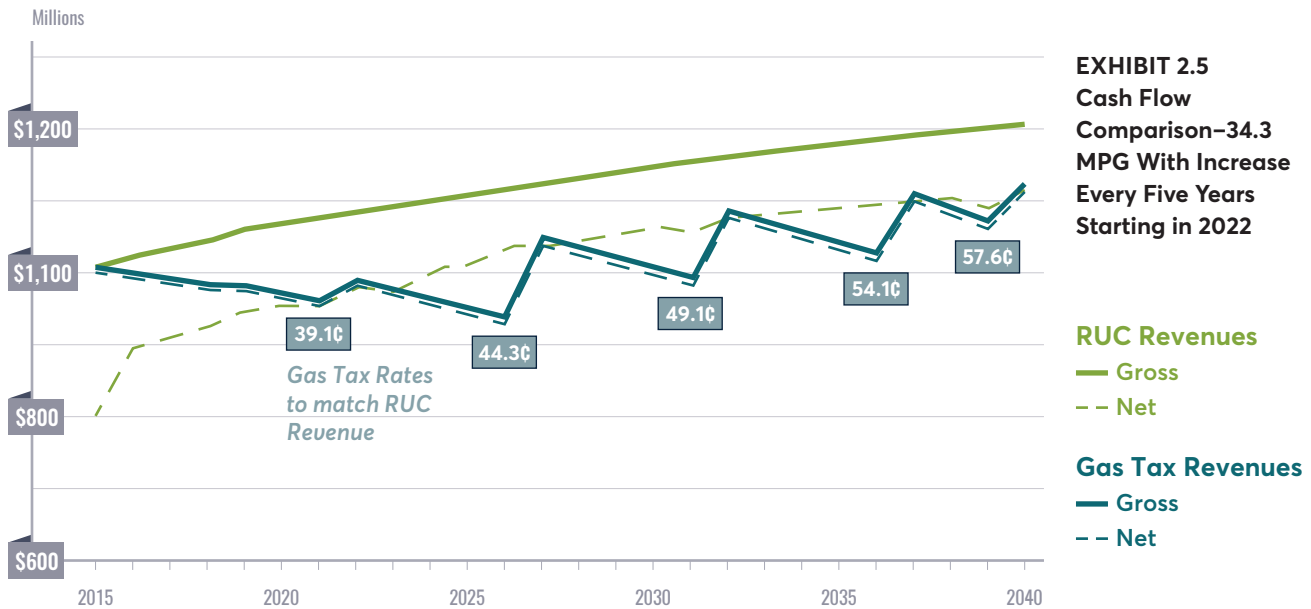
- › **The RUC mileage reporting approach selected for comparison.** A combination of options was selected:

Time Permit, Odometer Charge, and Automated Reporting via a plug-in device, since this combination had the highest cost of implementation and lowest present value of revenue.

- › **Fuel economy forecasts.** The same variants used in the Business Case Evaluation were applied: the implied State forecast and forecasts from IHS Global Insight, a major provider of data and projections in the transportation and energy sectors nationally, and the US Energy Information Administration.
- › How "same financial result," is defined and how it is achieved. Two approaches were considered:
 - Incremental gas tax increases every five years, starting in 2022, where the gas tax increase ranged from 9.0 cents per gallon by 2040 for the implied state fuel economy forecast by 2040 of 27.7 mpg, and 20.1 cents for the Global Insight forecast of 34.3 mpg.
 - A one-time increase in 2015 to achieve the same net present value by 2040, where the gas tax increase ranged from 2.0 cents for the implied state fuel economy forecast to 4.8 cents for the Global Insight forecast.

After further discussion, the WSTC highlighted the results of the analysis by illustrating how often (and in what amount) the gas tax would have to be raised to match the financial results of a RUC. The results, shown in Exhibit 2.5 reveal that a gas tax increase of about 1 cent per gallon per year, every year between 2019 and 2040, would keep pace with revenue generated by RUC at the same per-mile rate over the same time frame. As a result, fewer drivers would pay 20 cents more per gallon in gas taxes by 2040, despite reduced purchasing power due to inflation.

The reference year is 2015 (the first full year after the original analysis was conducted). After the first two years where RUC revenue is much lower due to the up-front investment to design, test, and implement a new RUC system, RUC begins to out-perform the current gas tax on a net revenue basis after five years. At that point, an incremental gas tax increase is needed to achieve the same present value result as a road usage charge. However, shortly thereafter the gas tax once again continues to erode due to improving vehicle fleet fuel economy, resulting in another required tax increase of about 5 more cents. As illustrated above, this pattern continues over the entire 25-year time horizon of the analysis.



2.1.7 EXEMPTING RUC MILEAGE REPORTS FROM PUBLIC DISCLOSURE NEEDED

A narrow issue related to protecting personal information in a RUC system was discovered during the early design and testing phase of the WA RUC Pilot system prototype: would mileage data reported by volunteers participating in the WA RUC pilot project be subject to public disclosure under state law?

After researching state statutes and case law, the conclusion was quickly drawn that because the WA RUC Pilot Project was being carried out by a private entity for research purposes only, any personal data reported (including vehicle mileage) would not be subject to disclosure under state law. This conclusion is only applicable to the WA RUC pilot project (i.e., a research project that simulates a future tax system).

Other “live revenue collection systems” have been enacted in Washington (for example, tolls) that included specific statutory provisions to safeguard drivers’ personal information used to collect the revenue. The Legislature has enacted laws that specifically protect the personal information of taxpayers (RCW 42.56.230), as well as

personally identifying information related to toll collection (RCW 47.56.795).

To date, the only state in the US with a live RUC program is Oregon (although Utah will launch its program in January 2020). In 2013, the Oregon Legislature enacted statutory privacy protections for the state’s per-mile road usage charge (ORS 319.915).

If a per-mile road usage charge system is enacted in Washington, statutory protections will be needed. RCW 42.56, Washington’s Public Records Act, allows for public disclosure of government-controlled public records unless otherwise exempt. Collecting taxes is a governmental function, even if performed by a private entity. Information needed to properly calculate a mileage tax would include personal information (name, address, vehicle ownership, etc.) as well as total miles traveled (driving data). Since this information is necessary to apply the proper charges and collect the tax, the information most likely constitutes a “public record” subject to disclosure under RCW 42.56 unless this personal information is made or deemed exempt from disclosure. Since the Legislature has exempted other taxpayer information from public disclosure, including detailed trip information for toll facility users, similar protections are recommended for any future RUC system that might be enacted in Washington.

2.2 WA RUC PILOT PROJECT DISCOVERIES & FINDINGS (2018–2019)

Washington conducted a year-long pilot project with over 2,000 drivers to test a prototype RUC system and provide their feedback, opinions and advice on what worked, what didn't work, and what would have to change for a RUC to be an acceptable replacement for the gas tax.

Full details of the WA RUC Pilot Project results and findings are published as Volume 2 of this report.⁶ The material in this section (2.2) provides a high-level summary of the main findings.

2.2.1 WHY CONDUCT A LIVE PUBLIC DEMONSTRATION OF RUC?

Recognizing an opportunity to advance Washingtonians' desire for public involvement and active participation in developing potential transportation solutions, the Steering Committee and the WSTC determined a large-scale public demonstration project was the best tool to gather public input on a potential RUC system. A pilot project offers a mix of drivers throughout the state the opportunity to directly experience a prototype RUC system, shedding light on which factors most impact public acceptance of RUC.

The 12-month pilot project also provided an opportunity to test administration of a RUC system. By monitoring the performance of the system and asking participants to periodically share their experience and opinions, the WSTC discovered additional operational and policy issues.

PRIMARY RUC PILOT PROJECT OBJECTIVES

- › **Gauge motorists' reactions and preferences** about a per-mile charge as an alternative to the gas tax, based on their direct experience with the WA RUC prototype.
- › **Measure and assess public acceptance factors** to understand what matters most to Washington drivers and what must change in a future RUC system.
- › **Test the WA RUC prototype under live operating conditions** to identify technical and operational issues that require further development and improvement.
- › Based on driving data, operational reports, and direct survey and focus group feedback from participants, **gather information so the Steering Committee and WSTC can make recommendations on a future RUC system** for Washington state.



⁶ See Washington State Road Usage Charge Assessment & Pilot Project Steering Committee Final Report of Findings, December 2019, published separately as Volume 2 of this report.

2.2.2 THE WA RUC PILOT PROJECT IN A NUTSHELL

The pilot project launched in February 2018 and continued until January 2019. Participants tested a mock pay-per-mile system to see how the system worked for them. Participants had opportunities throughout the pilot to provide feedback on their experience, so policymakers can better understand the implications and impacts of a road usage charge system.

Participants selected one of five mileage reporting options to record and report their mileage for roadway use. High-tech, low-tech, and no-tech options to report miles driven were tested during the pilot, ranging from self-reporting of a vehicle's odometer to using smartphones or in-vehicle technology.

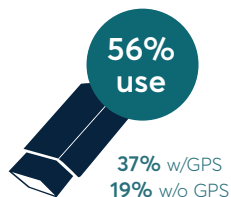
Participants could also choose from two private sector service providers that collected mileage data and helped test how third-party entities might partner with the State in a future RUC system.

EXHIBIT 2.6 Mileage Reporting Options Supported by Service Providers

Mileage Reporting Methods	DriveSync	emovis
Mileage Permit	✓ (VLO support)	✓
Odometer Reading	✓ (VLO support)	✓
Smartphone Mileage Meter	✓	○
Plug-in Device (with GPS)	✓	✓
Plug-in Device (no GPS)	✓	○

EXHIBIT 2.7 Participants' Choice of Mileage Reporting Methods

Plug-in Devices (with or without GPS)



- › Automated mileage meter with GPS and non-GPS options
- › Plugs into OBD-II ports in vehicles 1996 or newer
- › GPS-enabled devices automatically deduct out-of-state miles

Odometer Reading



- › Post-pay for miles reported quarterly
- › Report miles either electronically or in person

Smartphone App (MileMapper)



- › Records miles using a smartphone
- › Works with all vehicles
- › Navigational GPS can be turned on/off
- › Available only on iPhone iOS

Mileage Permit



- › Pre-select a block of miles (1,000, 5,000, 10,000)
- › Report odometer either electronically or in person every three months
- › Obtain additional miles as needed to keep mileage permit valid

2.2.3 ABOUT THE WA RUC PILOT PARTICIPANTS

Over 2,000 drivers from Washington participated in the year-long live pilot test of the WA RUC system. The goal of participant recruitment was to ensure the pilot participants represented the geographic, economic and social diversity of Washington. In addition, the pilot project included a high number of plug-in electric vehicles.⁷ As shown in the map, the percentage of participants in the pilot closely matched the population in five major regions. In addition, as shown in the bar chart, the proportion of rural drivers in the pilot was 28%, which exceeds the proportion of the state population in rural areas.

EXHIBIT 2.8
Geographic Representation
of the Enrolled WA RUC
Pilot Participant Pool

Note: The first number for each geographic area is the percentage of participants enrolled in WA RUC from that area; the number in parentheses is the percentage of state population that lives in that area.

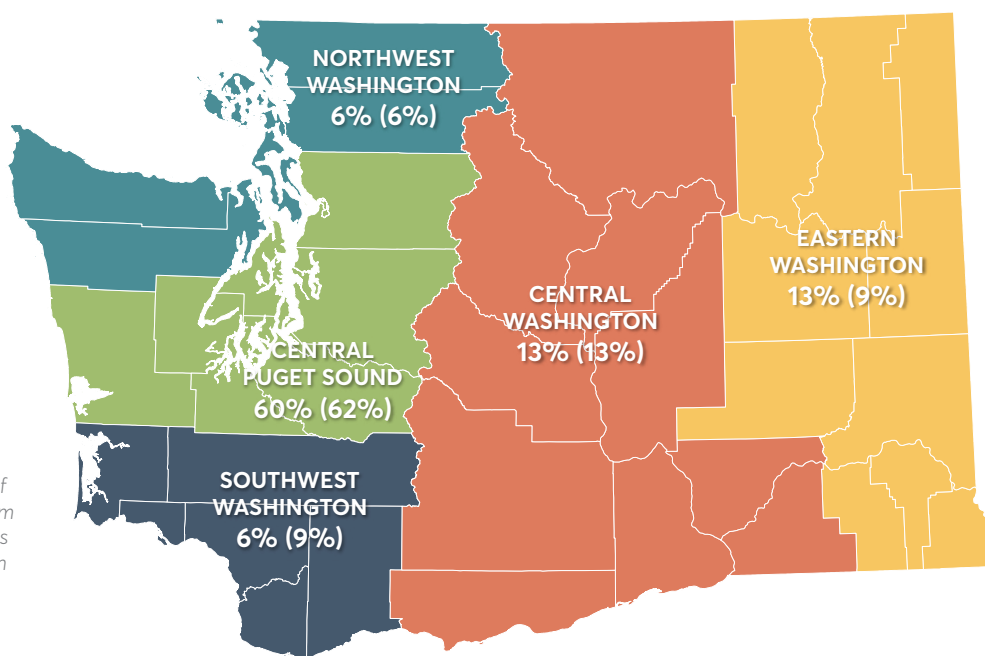
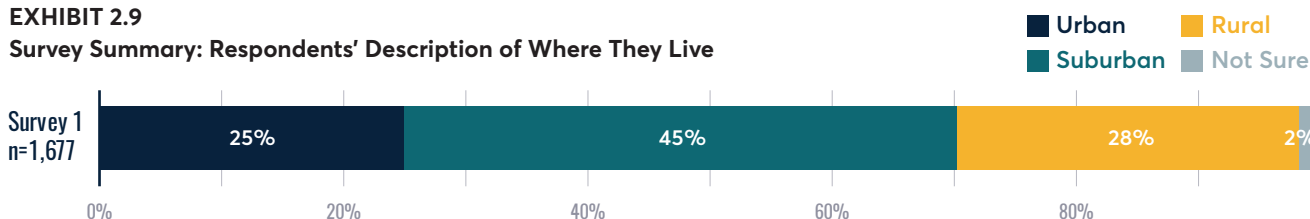


EXHIBIT 2.9
Survey Summary: Respondents' Description of Where They Live



⁷ The WA RUC pilot project enrolled over 400 plug-in electric vehicles to help test a RUC system. This represents an (intentional) over-sampling of 2-to-1.

As the tables below show, the enrolled participant pool was closely balanced particularly with regard to geography and gender, and less balanced with regard to identified race or ethnicity and household income.

EXHIBIT 2.10
Identified Gender of WA RUC Pilot Participants

	% of WA Population	% of WA RUC Participants	Difference
Male	50%	49%	-1%
Female	50%	49%	-1%
Prefer not to answer		1%	
Prefer to self-describe		0%	
Unknown		1%	

Source: American Community Survey, 2010–16 5-year estimates.

EXHIBIT 2.11
Identified Race or Ethnicity of WA RUC Pilot Participants

	% of WA Population	% of WA RUC Participants*	Difference
African-American	3%	2%	-1%
American Indian or Alaskan Native	1%	3%	2%
Asian (excl. Indian)	7%	5%	-2%
Caucasian or White	71%	85%	14%
Hispanic	12%	4%	-8%
Indian subcontinent	1%	1%	0%
Native Hawaiian or other Pacific Islander	1%	1%	0%
Other/None of the above		2%	
Prefer not to answer		3%	

Source: American Community Survey, 2010–16 5-year estimates

*As participants could select more than one option, the total equals more than 100%.

EXHIBIT 2.12
Household Income of WA RUC Pilot Participants

	% of WA Population	Household Income*	% of WA RUC Participants	Difference
Less than \$25K	12%	Less than \$30K	7%	-5%
\$25K–50K	1%	\$30K–60K	20%	1%
\$50K–100K	1%	\$60K–120K	43%	9%
\$100K–200K	1%	\$120K–200K	17%	-10%
More than \$200K		More than \$200K	6%	-2%
Prefer not to answer		Prefer not to answer	5%	-3%
		Unknown	1%	

Source: American Community Survey, 2010–16 5-year estimates

*Participant categories varied slightly from American Community Survey categories.

VEHICLE FUEL ECONOMY BY REGION

Participants in Northwest Washington enrolled more gas-powered fuel-efficient vehicles (i.e., hybrids) on average than participants in other regions of the state. Central Puget Sound and Northwest Washington participants had the highest proportion of enrolled Plug-in Electric Vehicles (PEVs) per participant.

EXHIBIT 2.13

Vehicle Fuel Economy, by Region in Washington

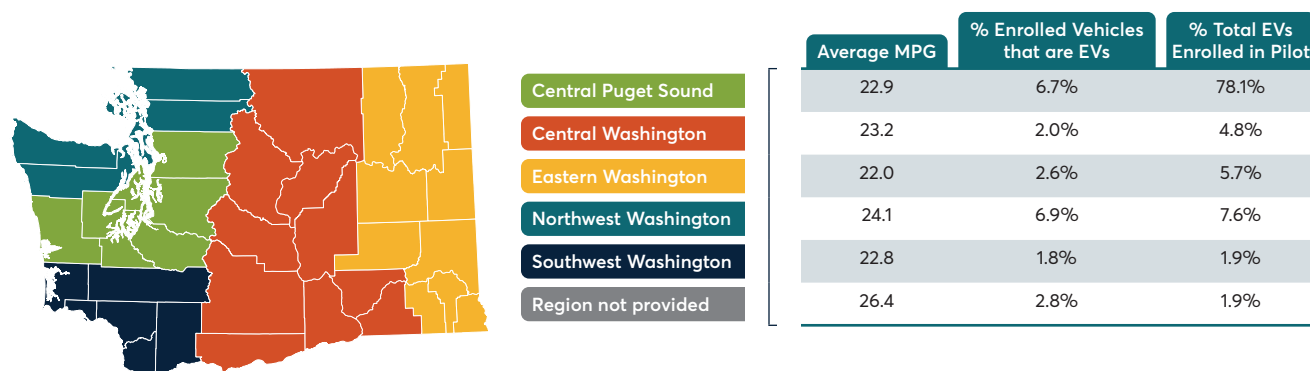


EXHIBIT 2.14

Pacific Northwest Region Participating Jurisdictions



RECRUITING DRIVERS FROM OREGON, IDAHO, & BRITISH COLUMBIA AS PILOT PARTICIPANTS

To explore the issues presented by a multijurisdictional RUC system, the WA RUC pilot project developed a system where miles could be reported, the appropriate tax rates applied, RUC charges collected, and resulting revenues distributed back to the jurisdictions where the miles were driven.

WA RUC sought to develop the nation's first accounting and reconciliation of real funds through a central clearinghouse (known as the "HUB") for distances driven and RUC paid across multiple jurisdictions. WA RUC and OReGO, Oregon's road usage charge program, collaborated in the recruitment and enrollment of participants residing in each state who drive regularly in the other state. Separately, the WA RUC project team collaborated with the Idaho Transportation Department and the City of Surrey, British Columbia to recruit and enroll participants from those jurisdictions to experience simulated charging and payments, as well as simulated reconciliation of funds across multiple jurisdictions through the HUB.

2.2.4 HOW IT WORKED: WA RUC FROM THE PARTICIPANT POINT OF VIEW

The basic policy reflected in the WA RUC system is that drivers would pay 2.5 cents per mile traveled as a road usage charge, rather than paying the state's 49.4 cent per gallon gas tax. However, since the gas tax is imposed on motor fuel at the wholesale level, there is no effective way to prevent the tax from being paid at the gas pump when drivers refuel their vehicles. To account for this, the WA RUC system (as well as live tax collection systems in operation in Oregon and Utah) issued credits to drivers for any gas tax previously paid. The credit was applied against the amount of RUC owed during the mileage reporting period, thereby greatly reducing drivers' RUC billing. In effect, the gas tax acted as a "pre-payment" mechanism for the RUC billing. While the State must maintain both the gas tax and a road usage charge system, drivers would owe one or the other—but never both.

The participant journey began with enrollment in the pilot in early 2018, followed by setting up mileage reporting methods. For the ensuing year, participants reported mileage according to their selected method, received and reviewed mock invoices, and completed surveys about their experience. At the conclusion of the pilot at the end of January 2019, participants closed their accounts, returned their devices (if had one), and completed a final survey.

Enrollment. Once invited to the pilot via email, volunteers followed a three-step process to enroll. First, they input their email address and a unique code assigned to them on the WA RUC project website. Next, they created their pilot account, including a unique username and password, and selected a service provider (either DriveSync by IMS or Emovis). Finally, they provided their vehicle information to the service provider and selected a mileage reporting method. Completing this enrollment process turned a volunteer into a participant.

Setting up mileage reporting. After enrolling, which established an account, each participant had to set up their chosen mileage reporting method. Those who selected Odometer Charge or Mileage Permit had to provide an odometer photo either by downloading an app to their smartphone and taking the image, or by visiting a vehicle licensing office where agents could assist them with the odometer photo process. Participants who opted for a plug-in device had to wait to receive the device in the mail, then plug it into their vehicle and download the

optional accompanying app to view their driving data in real time. Finally, those who selected the smartphone method had to download the special MileMapper app and take an initial odometer image.

Reporting mileage. Once configured, participants reported their miles regularly according to the requirements of their reporting method. Participants with plug-in devices were not required to take any further action, while those with all other methods had to submit odometer images once per quarter. Participants with the smartphone app could also opt to toggle the location-detection capability on and off at any time, while participants who selected a mileage permit could purchase a new one at any time.

Reviewing invoices. Following reporting periods, participants received mock invoices. Those on the plug-in device and MileMapper reporting method received invoices monthly, while those on the Odometer Charge and Mileage Permit method received invoices quarterly. Invoices, sent via email, included information about miles driven, miles driven (by jurisdiction, if a location-based method was chosen), gallons of fuel consumed, theoretical RUC owed, and gas tax paid.

Providing feedback. At three points during the pilot (after enrollment, at the mid-point, and at the conclusion), participants received via email a survey inviting them to answer questions and provide open-ended feedback about their experience and their views. The completion rate of the surveys remained high at over 75% for each one. A handful of participants, about 50, also participated in focus groups throughout the state at the pilot midpoint, to discuss their experiences and views more deeply in a group format with a professional facilitator.

Closing out. At the conclusion of the pilot, participants received instructions for closing their accounts, deleting apps from their phones, and returning the plug-in devices using pre-paid shipping labels. Upon successful completion of project milestones, including each survey and successful account close-out, participants received a gift card reward that increase in value from \$10 to \$40, and totaled \$100 for participants who successfully completed all milestones.



2.2.5 DRIVERS OFFERED INPUT THROUGHOUT THE WA RUC PILOT PROJECT

Throughout the full 12-month pilot period, test drivers responded to three different surveys—at the beginning, at the mid-point, and at the conclusion of the pilot project. Their experience testing a RUC system allowed them to form opinions and draw conclusions.

AFTER TESTING THE SYSTEM FOR A FULL YEAR, PARTICIPANT ACCEPTANCE OF RUC REACHES 68%

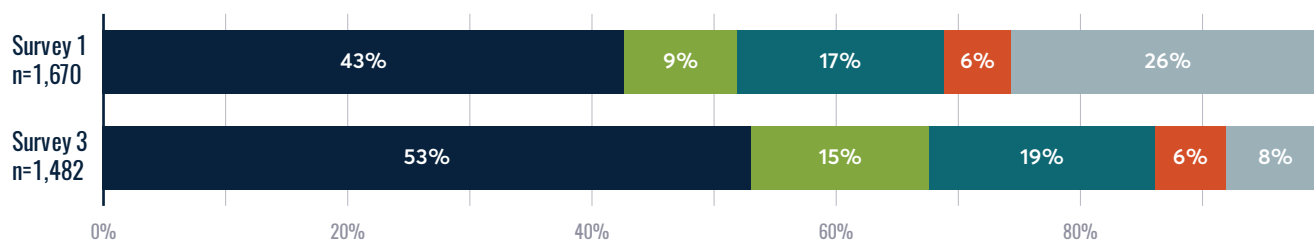
After a year participating in the WA RUC Pilot, drivers from all over Washington weighed in with their views on the system. Based on the results of surveys administered at different intervals in the project, test drivers became more favorable towards a RUC over the gas tax, with 68% of respondents preferring a RUC over the gas tax or preferring it equally to the gas tax by the end of the pilot, while 19% preferred the gas tax. Moreover, the number of undecided participants dropped from 26% at the beginning of the pilot to just 8% by the end. The year-long pilot appears to have provided most drivers with enough information to form opinions.

EXHIBIT 2.15

Survey Summary: Methods to Fund Transportation

Fairness aside, knowing what you know today, which method to fund transportation would you prefer?

- A road usage charge where you pay by the mile
- Equally prefer a RUC or gas tax
- A gas tax where you pay by the gallon of gas
- Don't prefer either a gas tax or RUC
- Not sure/need more information (please specify)



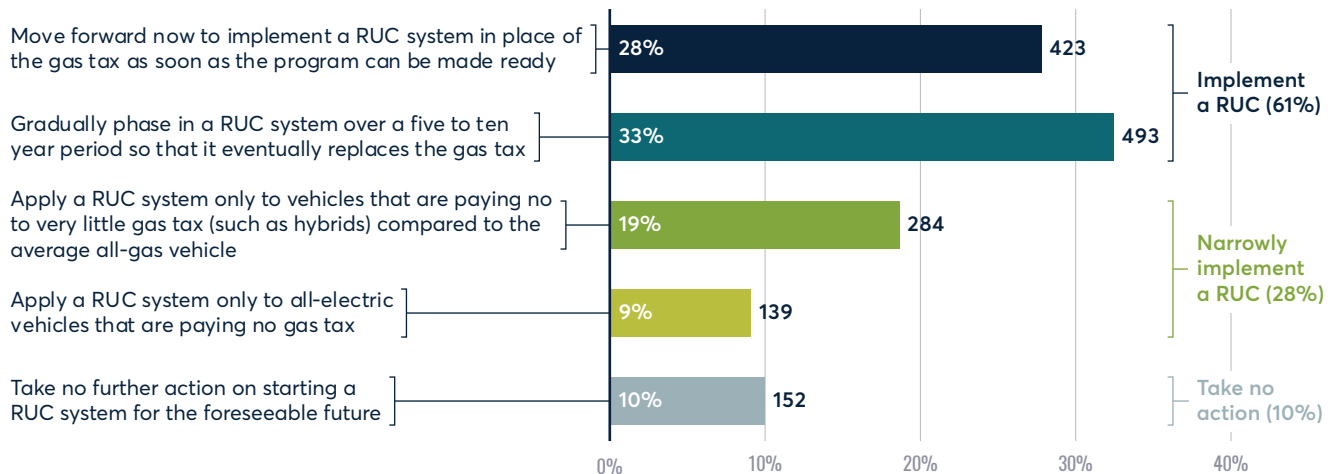
DRIVERS' ADVICE TO ELECTED OFFICIALS: MOVE FORWARD WITH IMPLEMENTING RUC

Nine out of ten respondents support moving forward with implementing a road usage charge or gradually phasing it in (Exhibit 2.16). One-third support a gradual phase-in and nearly 30% advise moving forward to implement a RUC as soon as it is ready. Only 10% of respondents recommend taking no further action on a RUC system.

EXHIBIT 2.16

Survey Summary: Advice for Elected Officials

Which of the following best represents your advice to elected officials as they consider the next steps in implementing a road usage charge system statewide?



ASIDE FROM HOW THEY FELT ABOUT RUC, DRIVERS OVERWHELMINGLY APPRECIATED THE OPPORTUNITY TO PARTICIPATE IN THE WA RUC "TEST DRIVE"

The public overwhelmingly appreciated the opportunity to participate in a RUC pilot before any decisions are made about whether or how to move forward with this revenue system in Washington. Ninety-one percent (91%) said they were satisfied or very satisfied with their overall pilot experience, regardless of how they felt about RUC as a future funding method.

2.2.6 PUBLIC ACCEPTANCE ISSUES & FACTORS

The live, 12-month long pilot project allowed drivers the opportunity to experience a pay-by-the-mile system and compare it to today's gas tax funding system. As a result, participants were uniquely qualified to offer their views on whether and how much they valued the ability to choose a mileage reporting method, what aspects of the WA RUC system they regarded as simple and easy (and which they regarded as complex and difficult), and how they regarded the transparency of the road usage charge compared to the gas tax. They also offered requirements, impressions, and suggestions for protecting privacy and preserving or achieving tax equity.

From the feedback on these varied topics emerged acceptance factors, or choices for detailing a road usage charge policy that make it more or less acceptable to drivers. Acceptance factors help to explain the gap between views of the general public (as assessed through public opinion surveys) and the views of those who experienced the prototype system.

RUC PILOT PARTICIPANTS VALIDATED THE GUIDING PRINCIPLES

Participants validated the Guiding Principles of the Steering Committee, with over half rating eight of the nine principles as "very important." Over 70% of participants consistently rated four principles as very important: privacy, simplicity, data security, and transparency.⁸

EXHIBIT 2.17

Survey Summary: Principles

How important to you are the following principles for a potential road usage charge system?

Principle	Definition	Survey 1	Survey 2	Survey 3	Change (1 to 3)
Privacy	My personal and driving information cannot be sold to any organization or shared with entities other than those directly administering a RUC system without my consent.	83%	90%	89%	6%
Simplicity	A RUC system is easy to participate in and not time-consuming to comply with.	70%	79%	78%	8%
Data Security	A RUC system provides the highest level of data security possible and drivers can obtain information that clearly outlines the security measures.	74%	77%	75%	1%
Transparency	Clear information is available on the rate and how it is set, as well as RUC system operations.	75%	74%	70%	-6%
Cost Effectiveness	A RUC system is efficient for the State of Washington to collect, administer, and enforce.	62%	67%	65%	3%
Equity	All drivers pay their fair share based on how much they use the roads regardless of vehicle type.	59%	60%	61%	2%
Enforcement	A RUC system is easy to enforce, and costly to evade.	51%	57%	58%	7%
User Options	A RUC system provides choices to drivers for how they report their miles.	43%	58%	52%	9%
Charging Out-of-State Drivers	Visitors to the state pay for their use of Washington roads.	32%	43%	39%	8%

Note: Principles were presented in random order when participants took the survey.

⁸ Four Guiding Principles that related to directives for enactment and administration by government—for example, harmonize RUC with other public policy objectives, and develop a transitional period to phase in RUC—were not ranked in the participant surveys.

PRIVACY REMAINS THE TOP CONCERN FOR RUC PILOT PARTICIPANTS

Privacy was rated the most important guiding principle across all surveys; however, evaluating privacy protection was difficult.

When discussing privacy, participants typically noted concerns about location and movements being tracked and the amount of information collected under a RUC system. Survey respondents frequently linked privacy to data security (wanting to ensure their private information cannot be breached).

The following information was collected for the pilot: name, address, self-reported demographic information, vehicle identification number, vehicle make/model and year, miles driven per month, mileage reporting method, and contact information. The majority (83%) felt they were asked to provide the right amount of information, and 5% felt they were asked to provide too much.

It is important to note that in a live RUC system (as opposed to the pilot, which was conducted only for research purposes), personal demographic information would not be needed or requested. In fact, the only new data needed for RUC (beyond what the Department of Licensing already collects for vehicle licensing and registration services) is the total mileage driven during the reporting period. All other information needed to process a RUC invoice is already collected and maintained as part of the Department of Licensing's database of registered vehicles. Nonetheless, some drivers may consider the mileage information used to calculate RUC owed as sensitive information that requires protection from disclosure.

Legal Protections for Privacy in a RUC System are Needed

In order to advance RUC, laws must be enacted to protect privacy in a RUC system technologically and legally. While technology-based protections can prove effective, drivers may not have confidence that the technology deployed cannot be hacked or otherwise left unprotected. Legal protections of sensitive information, combined with rights for RUC payers, can offer additional assurance that the privacy of drivers will be protected or that penalties would be imposed in the event of a breach.

General legal protections for privacy in the US are uncommon. Few general privacy protections exist at the federal level, except as implied in the US Constitution and

applied on a case-by-case basis, but never in the context of a RUC system. General privacy laws were passed recently in California (2018) and Washington (2019) but these laws have minimal application to information collected in a RUC system. The only specific statutory protection of information gathered in a RUC system was passed in Oregon for its OReGO program (2013).

A Model Privacy Policy for RUC Systems in the United States

As part of the WA RUC pilot project, a Model Privacy Policy for Road Usage Charging was developed through analysis of applicable legal approaches to privacy protection in the European Union's General Data Protection Regulation, the California Consumer Privacy Act of 2018, and the Oregon Road Usage Charge Program's statutory privacy protection provision.⁹

The model RUC privacy policy proposes establishment of a legal obligation to protect from disclosure any personal information used to collect a road usage charge. The model privacy policy defines personal information as information or data that identifies, relates to, or describes a person or entity that is obtained or developed in the course of reporting mileage by a vehicle subject to a road usage charge or for providing administrative services for collection of a road usage charge. Personal information is specifically not limited to location and mileage data.

The model privacy policy directs an authorized agency to ensure protection of the confidentiality of personal information. This agency will be the agency assigned responsibility for implementing and operating a RUC system in the authorizing legislation.

The obligation to protect personal information from disclosure falls to whomever holds this information, whether a private or government entity or person. There are some recipients of personal information who may receive personal information to the limited extent that the information is necessary to the recipient's function in collecting road usage charges. Such persons include the road usage charge payer, a financial institution, employees of the authorized agency, a service provider, a contractor for a service provider, an entity expressly approved to receive the information by the road usage charge payer, or a police officer pursuant to a valid court order based on probable cause. Express approval

⁹ See Appendix A-6, section 5, page 33 for the full Model Privacy Policy for Road Usage Charging.

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means active approval by a road usage charge payer that identifies the entity with which the personal information will be shared. Express approval once given, may be freely withdrawn.

The authorized agency or service provider that accesses or provides access to personal information must maintain a record of that access. The access control log must note the date, time, and purpose of access, the data elements used to query the database, and the person accessing the personal information.

Most importantly, the model privacy policy sets forth extensive rights for the RUC payer, including the right to access personal information held by another, the right to inquire about personal information, the right to examine personal information, the right to rectify errors or inaccuracies within the personal information, and the right to erasure of data or information that is no longer needed for the collection of a RUC. The right to erasure provides that deletion of data or information use must occur within 30 days after completion of payment processing, dispute resolution or a noncompliance investigation, whichever

is latest. The road usage charge payer may consent to longer retention and has the right to withdraw consent given at any time.

The policy confers upon the road usage charge payer the right to portability of the personal information to enable transfer from one service provider to another. Finally, the policy creates the right of nondiscrimination against a road usage charge payer for exercising these rights or refusing to grant express approval for transfer of personal information.

This model policy specifies that a service provider undertake several actions to facilitate compliance. A service provider must designate a personal information officer to enable contact by road usage charge payers and the authorized agency. The policy also requires that service providers adopt and publish an organizational usage and privacy policy and sets forth the subject matter content.

This policy directs the authorized agency to take certain actions, including adopting and publishing an organizational usage and privacy policy. The authorized agency shall also establish certification measures for service providers to demonstrate compliance with the requirements of the model RUC privacy policy.

This model policy requires service providers to implement appropriate technical and organizational measures to ensure a level of security appropriate to the risk of destruction, loss, alteration, or unauthorized disclosure of or access to personal information. The model policy prescribes issuance of notification in the event of a personal information breach and specifies the content for the notification.

To empower the provisions of the model privacy policy, the policy contains several remedies against actions or inactions by the authorized agencies, service providers, or others holding personal information. Such remedies include the right to effective judicial remedy, the right to compensation and liability, administrative fines, and civil actions for violation of security provisions.



SIMPLICITY RISES IN IMPORTANCE FOR DRIVERS THROUGHOUT THE YEAR-LONG PILOT TEST

Driver preference for simplicity in mileage reporting increased over the course of the 12-month pilot, ending as the second-most important acceptance factor after privacy protection.

The pilot sample provided a unique opportunity to assess simplicity as a guiding principle. At the outset, 70% ranked simplicity as "very important," the fourth most important guiding principle behind privacy, transparency, and data security. Among survey respondents, 69% identified simplicity as the primary reason they selected their mileage reporting method, by far the most important factor underscoring the importance of simplicity as a concept. By the second survey, 79% rated simplicity as "very important," ranking it the second most important principle, a place it held in the final survey.

Although participants rated simplicity highly across all mileage reporting methods, those who chose a plugin device tended to agree more strongly that it offered a "convenient" method for participating in the pilot (by the end of the pilot, over 80% "strongly agreed," and 98% "agreed" or "strongly agreed"), compared with other methods for which only about 50% "strongly agreed." Still, over 80% "agreed" or "strongly agreed" that non-

plug-in device methods were convenient. Plug-in device users were similarly more likely to agree strongly with the ease of accessing account information, ease of reviewing mileage data, and amount of time devoted to the pilot.

CONSUMER CHOICE IS KEY: ALLOWING DRIVERS TO CHOOSE THEIR MILEAGE REPORTING METHOD

As a RUC Steering Committee Guiding Principle, consumer choice featured strongly in the pilot design and evaluation efforts. Participants appreciated the ability to choose among mileage reporting methods and between two account managers. Within the context of a pilot, participants not only valued the concept of choice, they demonstrated it.

Beyond choice, providing multiple mileage reporting options helps address at least two other guiding principles: privacy and simplicity. That said, of the principles, choice ranked relatively low for pilot participants, with 43% ranking it as "very important" in the pre-pilot survey. Only "charging out-of-state drivers" ranked lower. By the final survey, 52% ranked choice as "very important," indicating that participants strongly value choice, but it still ranked eighth out of nine principles, ahead of charging out-of-state drivers.

EXHIBIT 2.18

Level of Effort & Time Required to Start Actively Reporting Mileage, by Mileage Reporting Method

Mileage Reporting > Methods (MRMs)	1 2 3 4 5				
	Mileage Permit	Odometer Charge	Smartphone App (MileMapper)	DriveSync Plug-in Device	Off-the-shelf Plug-in Device*
Enroll	○	○	○	○	○
Create Account	○	○	○	○	○
Enroll vehicle	○	○	○	○	◐
Set-up method	○	○	◐	●	●
Activate method	●	●	◐	○	●
Drive and Report Mileage	●	●	●	○	○

*Automatic™ brand commercial off-the-shelf plug-in device.

Effort/time required: ○ Low ◐ Medium ● High

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Participants displayed a collective preference for choice in their selection of mileage reporting methods, with 37% opting for a plug-in device with GPS, 19% for a plug-in device without GPS, 14% for a smartphone app, 28% for a manual odometer reading, and 1% for a mileage permit. The numbers reflect, at least within the sample of pilot participants, a strong sorting of mileage reporting method preferences, with most (69%) indicating they chose their personal method primarily for ease and convenience, and 11% for privacy reasons. Moreover, 69% of respondents indicated that five mileage reporting methods was "the right number of choices," with 29% indicating five was "too many choices."

Popular reasons for device selection included ease and convenience, privacy, accuracy, and technology (wanting to use technology or their vehicle/phone limiting the technology they could use). The distribution of device selection was consistent across urban, suburban, and rural geographic users.

TRANSPARENCY & UNDERSTANDING OF THE TRANSPORTATION FUNDING SYSTEM

While baseline public opinion polling revealed that Washingtonians have limited knowledge of transportation funding, by the pilot conclusion nearly three-quarters of participants said they had increased awareness of the roadway taxes they paid under the WA RUC system.

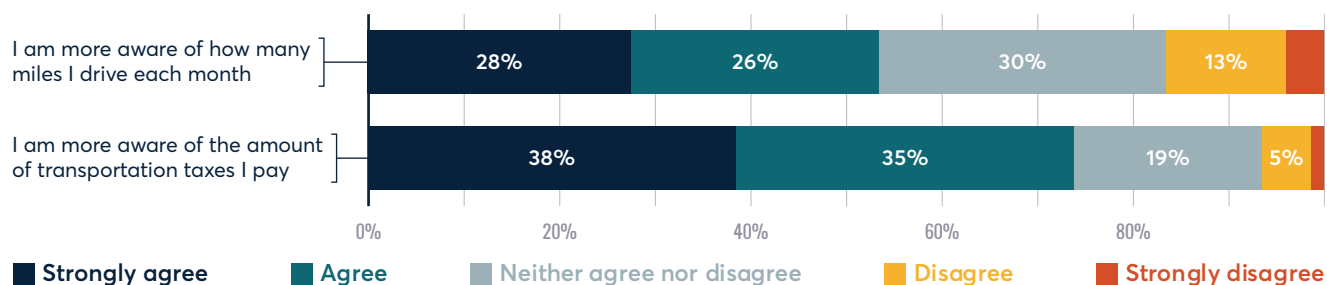
The RUC Steering Committee selected transparency as a guiding principle because of the inherent public value in increasing motorist awareness of the costs of driving. Statewide public opinion research conducted prior to the pilot revealed that few Washingtonians understand how transportation is funded, and pilot participant surveys reinforced that lack of awareness when fewer than 20% of participants could correctly estimate their gas tax due within 10% of the actual amount. At the outset, 75% of participants rated transparency "very important," ranking it as the second most important guiding principle. In the final survey, it fell to fourth most important, with 70% rating it as "very important." While a small change, transparency was the only guiding principle to lose intensity of support over the course of the three pilot surveys.

As for the impact of the pilot itself, at both the midpoint and end of the pilot, over half of participants agreed that the pilot made them more aware of how many miles they drive each month, and nearly three-quarters indicated increased awareness of the amount of transportation taxes they pay. Reflecting this increased understanding, 47% of participants stated that their understanding of what they pay in transportation taxes is "better with RUC than with a gas tax," while 9% indicated lower understanding "with RUC than with gas tax." This spread increased in the final survey with 53% indicating a better understanding with RUC and 6% a lower understanding.

EXHIBIT 2.19

Survey Summary: Driver Awareness

Based on your participation in the RUC pilot, please indicate your level of agreement with each of the following:



EQUITY: ALL DRIVERS PAY THEIR FAIR SHARE BASED ON HOW MUCH THEY USE THE ROADS, BUT OTHER DIMENSIONS OF EQUITY REMAIN UNEXPLORED

Although the largest share of participants felt a RUC was a more fair method of funding roadways than the gas tax, drivers frequently mentioned other aspects of equity that should be considered in a future transportation funding system, such as vehicle weight and emissions. More work is needed on this topic.

When defined as a Guiding Principle, the concept of equity for RUC implementation focused on drivers paying a fair share for their road usage based on how much they use—in other words, preserving the “user-pay” principle.

In pre-pilot surveys, 59% of participants rated equity as “very important,” placing it sixth among the nine principles. Its rating increased by two percentage points between the pre-pilot and post-pilot surveys, not enough to change its relative importance. When asked which approach they thought was more fair for funding roads between RUC and the gas tax, 44% chose RUC, 8% chose the gas tax, and 13% said both are equally fair. Rural participants were less likely to choose RUC and more likely to choose the gas tax. Urban and suburban participants were equally likely to choose RUC. These figures did not appreciably change over the course of the pilot.

Even before explicitly introducing socioeconomic equity concerns, the WSTC, the Steering Committee, and participants all recognized the challenge of assessing the equitability of a tax. The final survey offered participants an opportunity to share their thoughts on the meaning and value of equity.

The dimension of equity that stood out most in the open-ended comments was the notion of “paying for use,” with 39% of respondents alluding to that definition of fairness, and over 80% citing similar concepts such as paying for road impact, damage, and upkeep; paying for distance traveled; paying your share; or paying for benefits received from the roads.

Other dimensions of fairness raised by participants included tax treatment by vehicle type, with most respondents preferring that all vehicles pay for road usage based on their impacts, regardless of fuel type. One impact specifically cited by over 100 survey respondents was vehicle weight. Smaller numbers of respondents (fewer than 100 each) raised concerns about income, geographic, and environmental equity.

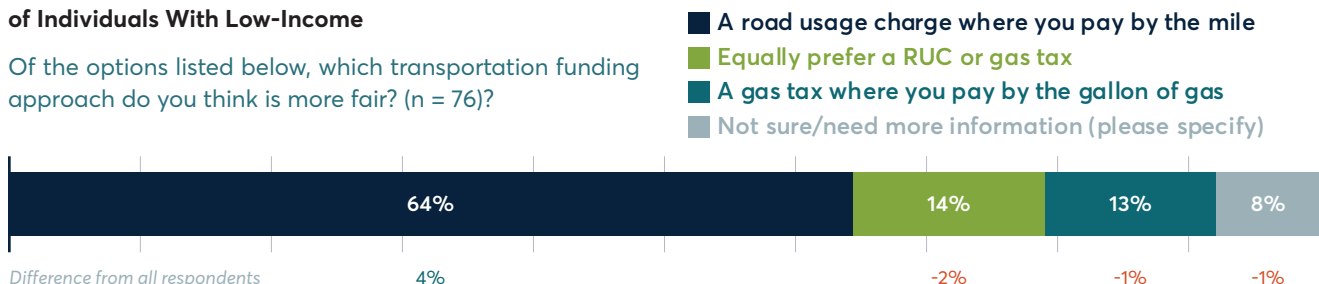
Although they acknowledge numerous dimensions of equity and reveal wide variation in views across those dimensions, broad agreement among pilot participants exists around the user-pay dimension of equity and the superior performance of RUC along that dimension.

Despite the pilot evaluation’s focus on the user-pay dimension, the WSTC and the WA RUC Steering

EXHIBIT 2.20

Survey Summary: Funding Preferences of Individuals With Low-Income

Of the options listed below, which transportation funding approach do you think is more fair? (n = 76)?



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Committee recognize that equity encompasses other important dimensions, ranging from potential disparate impacts to populations with low incomes, to whether all state drivers should be responsible for contributing to high-cost transportation facilities that primarily serve a single transportation corridor. The Legislature specifically directed the WSTC to recommend “necessary next steps to consider impacts [of RUC] to communities of color, low-income households, vulnerable populations, and displaced communities.” Future RUC work, as directed by the Legislature, will include deeper analysis of the impacts of a RUC on vulnerable communities.¹⁰

Literature on infrastructure funding and service delivery identifies more than 25 definitions of equity.¹¹ Increasingly, equity implies proportionality of impacts, often with a focus on communities of color, low income households, and other vulnerable populations. The pilot yielded scarce information to examine dimensions of equity beyond the user-pay dimension. Data from the pilot allowed limited observation of vehicle characteristics and driving behavior by income level of participants, but with little confidence in the applicability of the results to a broader population.

National data sources provide better information on these characteristics. They indicate that average vehicle age decreases with income, while miles driven increases with income. For example, the lowest income households (less than \$10,000 per year) own vehicles with an average age of 19.1 years and drive about 8,000 miles per year, while the highest income households (over \$200,000 per year) own vehicles with an average age of 10.5 years and drive nearly 25,000 miles per year.¹² These data suggest a syllogism that lower income households, although they drive less, tend to own older vehicles, and since fuel efficiency declines with vehicle age, lower income households pay more per mile than higher income households in gas tax.

The WSTC’s future work on this topic, as directed by the Legislature, will test the validity of the syllogism and explore dimensions of equity beyond income. The aim is to better understand the possible impacts of replacing the gas tax with a RUC on communities of concern.

¹⁰ See Section 1(a) of ESHB 1160, Chapter 416, laws of 2019, which is a legislative proviso directing further research work by the WSTC on equity impacts.

¹¹ Rosenbloom, S. 2009. The Equity Implications of Financing the Nation’s Surface Transportation System. TR News, No. 261, March–April, pp. 3–9.

¹² Federal Highway Administration, 2017 National Household Travel Survey (NHTS); BERK, 2019.

2.2.7 LEGAL & POLICY-RELATED ISSUES

Many of the complications related to transitioning from the gas tax to a RUC system are legal and policy issues, which must be closely examined separate from the pilot project and are not affected by the results of the driving test. The Steering Committee documented these issues since 2012 and has completed its analysis. The WSTC accepted the analysis and findings of the Steering Committee as part of its deliberations on RUC policy recommendations

Many issues examined by the Steering Committee strictly represent policy decisions: What are the roles of different governmental entities in a RUC system? Which vehicles (or drivers) should be entitled to a refund or be exempt from a RUC? Can a RUC system design account for other policies of public importance?

Some issues are financial and policy in nature but come with legal constraints or requirements. For example, whether RUC revenue should be restricted to highway purposes is a policy issue, but the available options are affected by the Constitution of the State of Washington, state statutes, bond resolutions, and contract law. Whether and how to collect a RUC from out-of-state drivers represents a policy choice, but the available options are constrained by the Commerce Clause of the US Constitution. These and other complex policy issues are summarized in this part.

USE OF RUC REVENUE

One of the most important issues for policymakers to decide is how a RUC will be structured and how its revenue will be spent. If a RUC is intended to replace the existing state gas tax, will RUC revenue be used only for highway-related purposes, as is the case with the state gas tax today? Or, if implemented as a new revenue source, will expenditure of RUC revenue be expanded to include funding for other transportation-related projects, programs, and services? Because of the State Constitution and existing transportation bond authorizations, the specific structure and implementation of the RUC need to be carefully considered, and the related impacts, especially for the State’s debt limit, fully understood. This issue is fully examined in Chapter 9 of the Steering Committee’s Final Report of Findings (Volume 2 of this report), and in Appendix A-9 (Volume 3 of this report).

In their Final Report to the WSTC, the Steering Committee settled on the following conclusion: beginning with the

original authorization for the RUC Assessment in 2012, the Legislature specifically directed an examination of RUC's potential as a like-kind replacement for the state's gas tax. The Legislature did not direct the WSTC or the Steering Committee to consider broader uses of the revenue beyond how gas tax revenues are used today. Therefore, the Steering Committee's analysis and testing was limited to a RUC's potential to replicate the features of the current state gas tax. The Steering Committee took no position on other potential uses of RUC revenue.

The Steering Committee specifically examined the important features of the state gas tax, and how a RUC could be designed to most closely mimic those characteristics. The most salient characteristics of the gas tax are:

1. The state gas tax can only be expended for highway purposes, as that term is used in the Washington State Constitution Article II, Section 40;
2. Bonds supported by a pledge of the gas tax are not subject to the state's constitutional debt limit under Article VIII, Section 1 of the Washington state Constitution;
3. Gas tax refunds are provided to, or for the benefit of, persons using fuel off public highways; and
4. Certain drivers or motor fuel-burning activities are exempt from the gas tax.

To most closely replicate the characteristics of the gas tax it would eventually replace, a RUC would need to be designed, implemented, and the proceeds expended subject to Amendment 18 of the State Constitution. This would require the revenue to be used for highway purpose expenditures only and placed into a special trust fund (the Motor Vehicle Fund), where it would be segregated from other state revenue.

RUC REVENUE TO SUPPORT BORROWING

Shifting from today's transportation funding system that relies primarily on the gas tax to pay for public roadways to a RUC system will be neither easy nor quick. The State's legal obligations to repay outstanding bonds from gas tax revenue take precedence and constrain options for transitioning to a RUC.

A RUC cannot fully replace the state's gas tax until all outstanding bonds that pledged the gas tax revenues have been paid off or restructured. The soonest this could

happen would be in 10 years, provided the State Treasurer is able to refinance (or "call due") outstanding gas tax bonds at a cost that makes sense for the State. The longer time horizon is 25 years from the date the last gas tax-pledged bond is sold to investors. While the State's reliance on the gas tax can be reduced within the 25 years, a RUC (or other sources) must still provide sufficient revenues to meet transportation spending needs.

The Steering Committee determined, and the WSTC concurred, that for a RUC to most closely mimic the characteristics of the gas tax it would eventually replace, the most financially advantageous structure would be to design and implement it as a mileage-based vehicle license fee, in conformance with both Art. II, Section 40 (Amendment 18), and Art. VIII, Section 1 of the Washington State Constitution (allowing revenue to be bonded without outside of the State of Washington's debt limit). This approach is consistent with the advice of the Office of the State Treasurer in 2014 and 2018. This approach is also compatible with the Connecting Washington and I-405/SR 167 Express Toll Lane bond authorizations, which pledge both the gas tax and vehicle license fees to repay debt service on the bonds.



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COLLECTING RUC FROM OUT-OF-STATE DRIVERS

The pilot demonstrated that multi-state road usage charging is feasible. Visitors to Washington can report and pay for miles driven under a RUC system just as Washington residents can. The WA RUC pilot demonstrated the technical viability of these approaches, including participants from Idaho, Oregon, and British Columbia. A time permit could also be made available to visitors.

Beyond technical viability, if Washington applies a RUC to out-of-state vehicles, it also must consider operational, enforcement, and constitutional constraints. These three constraints are discussed in detail in Section 9.3 of the Steering Committee Final Report (Volume 2 of this report).

One advantage to maintaining the state's gas tax during a transition period is that it leaves in place the current method for collecting money from out-of-state drivers that use Washington's roadways. Until a RUC is more widely adopted throughout the Pacific Northwest region, the most cost-effective way to collect roadway taxes from out-of-state drivers is for them to continue to pay the gas tax.

EXEMPTIONS & REFUNDS

Most taxes and fees contain exemptions and allow for refunds for a variety of reasons. These include constitutional or statutory requirements, lack of nexus between the tax or fee purpose and the entity or activity being taxed, and other policy considerations. For example, Washington's fuel tax exemption and refund provisions cover all three reasons.

For a RUC system, exemptions and refunds fall into two broad categories: vehicles and miles. There are two ways to avoid taxing certain vehicles or certain miles. One way is to define vehicles and miles subject to road usage charging to include only those of interest and exclude all others. For example, subjecting all light-duty vehicles to a RUC would necessarily exclude heavy-duty vehicles without requiring an explicit exemption. The second way is to define a set of exemptions or refund allowances to exclude specific vehicles or miles from a RUC, from among the universe of subject vehicles and miles.

In order to most closely mirror the gas tax characteristics, a RUC should be applied to the same classes (and uses) of vehicles that are required to pay the gas tax.

EXHIBIT 2.21**Vehicle Exemption Recommendations**

Class of Vehicle	Recommendation	Reason
Foreign diplomatic and consular mission vehicles	Exempt	Align with fuel tax statute 82.38.080(2)(b)
Out of state (<45 days in state)	Do not subject	No clear precedent; can include or exempt later (will pay fuel tax in the meantime)
Diesel transit vehicles	Do not subject	Align with fuel tax statute 82.38.080(1)(g)
Publicly owned diesel construction, firefighting vehicles	Do not subject	Align with fuel tax statute 82.38.080(1)(a)–(b)

EXHIBIT 2.22**Mileage Exemption Recommendations**

Class of Mileage	Recommendation	Reason
Off road miles driven by farm vehicles, vehicle operated exclusively in natural recreation areas, and vehicles operated exclusively in state parks by the Parks and Recreation c\ Commission	Exempt	Align with fuel tax statute 82.38.180(1)(a)
Out of state	Do not subject	No nexus

COMPLEMENTARY POLICY OBJECTIVES

A clear advantage offered by a RUC is the ability for government to customize transportation tax policy across three different dimensions: characteristics of the vehicle owner, characteristics of the vehicle, and vehicle use. This allows a RUC to align with other public policy objectives.

Early on in the Steering Committee's RUC assessment work, the Committee discussed how best to thoroughly assess a new method of funding transportation—a road usage charge—that would provide better financial sustainability for the public roadway network, while at the same time recognizing the challenges and changes underway in society that will shape how people travel in the future. Myriad issues related to the transportation system were mentioned: stormwater runoff, air quality, greenhouse gas emissions, petroleum dependence, economic inequality, divergent transportation needs between urban and rural residents, travel time reliability, effects on small businesses, and many others. The main question became, how can a RUC be assessed against each of these concerns or policy objectives, when there is lack of consensus among policymakers about what the issues are, their relative importance, and their potential impact?

Given the WSTC and Steering Committee's strict interpretation of their legislative charge, rather than developing an extensive work plan to analyze how a RUC might impact a wide range of policy concerns, the Committee decided on a single measure. Road usage charging should be evaluated, tested, and analyzed to determine whether it is a more robust and flexible revenue mechanism than the gas tax which serves (or is at least compatible with) many other transportation-related policies or issues.

For example, if the issue is how a per-mile charge system might support or be compatible with state policy goals to reduce greenhouse gas emissions,¹³ the primary question is whether a RUC is more capable of accounting for public policies related to GHG emissions than the current gas tax, rather than specifically how RUC might impact that issue.

Because the WA RUC system creates a direct linkage between the vehicle owner, the vehicle's characteristics, and payment in direct proportion to actual use, a RUC is more capable of being tailored to reflect other public policies or priorities than the gas tax. Although the Steering Committee took no position on whether a RUC

should reflect other public policies beyond providing sustainable roadway funding, the Committee found that a RUC system is flexible enough to be tailored across three dimensions:

- › **Characteristics of the vehicle owner.** Example: RUC could apply a different per-mile rate based on where the owner resides, perhaps to reflect the higher or lower cost of roadway infrastructure in certain parts of the state.
- › **Characteristics of the vehicle.** Example: a small surcharge could be applied to "gas guzzlers," similar to federal policy regarding low-MPG passenger vehicles.
- › **How the vehicle is used.** Example: different rates could be applied to ride-share vehicles.

Based on the 12-month live pilot test results, participants often commented that a future WA RUC system should account for other factors besides vehicle distance traveled. Similar feedback was documented from people not participating in the pilot who nonetheless shared their comments through email or phone calls. One of the most frequent comments heard was that a future RUC system should account for vehicle weight—either because larger, heavier vehicles tend to have higher emissions, or because heavier vehicles impact the roads more than lighter vehicles.¹⁴

SYSTEM FLEXIBILITY

The guiding principle of system flexibility was defined as follows: "A RUC system should be adaptive, open to competing vendors, and able to evolve over time." Flexibility supports several other guiding principles, including user options and cost-effectiveness. As stated before, although pilot participants selected user options as a "very important" principle, it ranked low relative to other priorities. Participants also expressed interest in efficient administration, but with limited ability to gauge administrative costs. Nonetheless, the WA RUC pilot demonstrated system flexibility and allowed the Steering Committee to observe several approaches for building a flexible system in the future.

¹³ See RCW 70.235.020.

¹⁴ Within the class of vehicles that were tested (light duty vehicles, those under 10,000 lbs.), the relative differences in emissions and the measurable impact to roadways between a vehicle weighing 4,000 lbs. compared to 6,000 lbs. is negligible or non-existent. However, there was a prevalent belief among Washington residents that vehicles weighing more should pay more. The Steering Committee makes no finding on this issue, other than to note how important Washingtonians feel this is.

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The WA RUC prototype system proved flexible enough to allow a range of consumer choice in how miles would be reported and among RUC service providers. It was also able to accommodate market competition and new technologies for RUC services.

The flexibility demonstrated in the WA RUC pilot makes available to the State numerous approaches for deploying a live RUC system in a way that preserves future flexibility. One interesting example is the idea of starting a RUC program with odometer charging. This approach could encompass reporting odometer readings periodically to a licensing agent and/or self-reporting (through a mobile application), as the pilot did. This approach leaves open the possibility of adding automated approaches in the future. It could even allow motorists to choose other technology approaches to mileage reporting if they wish, at their own cost, while providing guidelines for the eventual formal integration of such methods into the system.

INSTITUTIONAL ROLES IN ADMINISTERING A RUC SYSTEM

In order to advance a RUC, the Legislature must establish a governance structure that enables efficient, effective and transparent implementation and operation of a RUC program. Based upon guidance from the Steering Committee, several overarching features have been identified for institutional design of a RUC system, along with principles for their execution, and finally several alternatives for achieving accountability.

It was determined that a RUC program can be delivered by existing state agencies. Specifically, the Department of Licensing (DOL) offers the broadest set of appropriate

existing functions and capabilities to undertake RUC operations (customer-facing and vendor-facing activities). The WSTC, WSDOT, and Office of State Treasurer can each provide supporting functions:

- › The WSTC conducts independent evaluation of road usage charging in support of its policy and performance advice to the Legislature and support for system design (including knowledge transfer to DOL).
- › WSDOT supports revenue forecasting and technical support for operations.
- › The Office of State Treasurer receives revenue forecasts and supports funds handling.

Three scenarios for achieving accountability in the structuring of a RUC program were identified. In the first scenario, each of the involved agencies (DOL, WSTC, WSDOT, and Office of State Treasurer) reports individually to the Legislature. In the second scenario, DOL reports to the Legislature on operations, while the WSTC reports independently on policy and other recommendations based on its ongoing RUC evaluation. In the third scenario, the Legislature designates an agency as the RUC Authority, which has sole responsibility for reporting. Regardless of the approach taken, the Legislature enjoys clear lines of reporting on RUC functions and obligations, accountability ultimately to lawmakers, and confidence in agency capabilities and resources to deliver the program. For more detailed information on these alternative approaches, including their advantages and disadvantages, refer to Appendix A-11.

OVERSIGHT & ACCOUNTABILITY

The public expects a RUC system to operate smoothly, with mileage charges that are accurate and clear, and RUC payments that are properly processed. If glitches or errors are discovered, drivers want to know who will take prompt corrective action to address these issues.

There are two ways to consider accountability:

- › The first is at the operational level, where drivers want confidence in how mileage is reported, the resulting charges, and accurate processing of payments.
- › The second is from a governance perspective, where policymakers and, by extension, the public, desire assurance that the implementation of a RUC remains consistent with the policy direction given to the implementing agency.



Related to accountability at the operational level, 81% of pilot project participants agreed that the prototype accurately reported mileage and the resulting (simulated) RUC charges. In post-pilot analysis the reporting of mileage between participating US states and Canada was successful, and the collection and processing of "real money" payments between volunteer drivers in Washington and Oregon was accurate.

Related to accountability from a governance perspective, the pilot project did not offer a sufficient basis for measuring whether (or how) a RUC system would be accountable from this perspective. In lieu of testing governance of a WA RUC system, a wide range of administrative and oversight configurations was reviewed and assessed. These options, described in the preceding section, are also reflected in the Organizational Design work, described in more detail in Appendix A-11 in Volume 3 of this report.

The issues most salient to determining the preferred governance structure include:

- › Who will determine the scope and pace of implementing RUC?
- › Which agency will be responsible for implementation, and who will oversee the implementation?
- › Who is responsible for setting and adjusting per-mile rates, and establishing other policies such as refunds or credits?
- › Who will measure how the system is performing from both an operational and a policy perspective?

2.2.8 RUC COST OF COLLECTION & NET REVENUE POTENTIAL

The WA RUC Pilot project collected drivers' reactions to a potential RUC system and what must change in the future. However, the pilot did not yield insights from participants about the potential costs and revenues of a RUC system. Instead, detailed financial analysis provided information about the comparative costs and revenues of various RUC scenarios. The functions and associated costs of a RUC system depend on many policy variables such as the number of vehicles required to pay a RUC and the number and type of mileage reporting options available.

Revenues likewise depend on factors such as the per-mile rate and number of vehicles enrolled. The financial analysis concluded that, generally, while holding the per-mile and per-gallon tax rates constant, collecting a RUC costs more than collecting the gas tax, but yields more

revenue in the long-term. The fundamental question for the Legislature is whether switching from the gas tax to a RUC will be worth the higher cost of collections, given that RUC can yield more highway revenue for State at the same tax rate as today's gas tax.

PILOT PROJECT LIMITATIONS IN UNDERSTANDING LIKELY RUC SYSTEM COSTS

While a large public demonstration of a RUC system is an unmatched tool for gaining insight into how drivers react to a per-mile system and for identifying what must change in the future, a demonstration is not useful for determining the likely range of costs and revenues of a fully-deployed RUC system. Detailed financial analysis is required to begin addressing this issue.

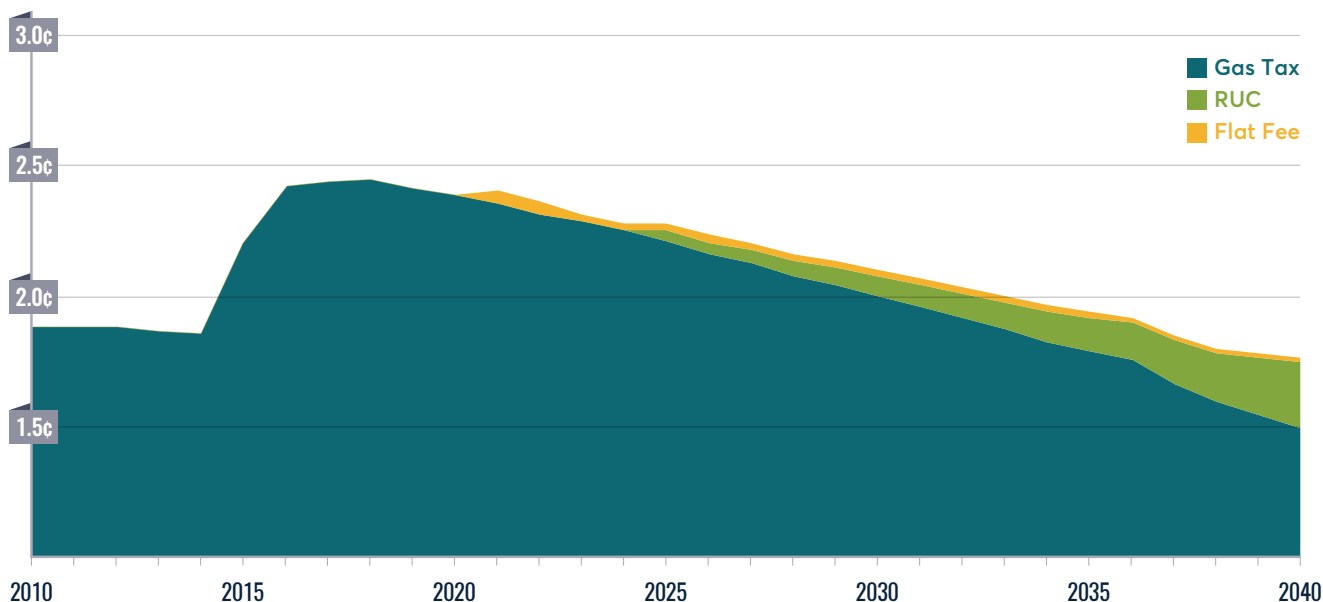
There are two perspectives to consider related to RUC financial issues: needs and expectations of the driving public and needs and expectations of the State of Washington. The driving public may be most concerned about personal cost impacts of a RUC compared to the gas tax, how the revenue will be spent, and whether the taxes will be transparent and fully accounted for. While these are important concerns for all, state government may be additionally concerned about whether the revenue will be sufficient for its intended purpose, if it will be stable with low volatility in revenue collection, and predictable so that the State can count on the revenue stream to fund future transportation system needs.

COST EFFECTIVENESS

Cost-effectiveness considers both the ability of a RUC to generate revenue and the cost to collect it. Under all scenarios examined, when holding RUC and gas tax rates constant, RUC generates more revenue, but is costlier to collect than the gas tax. RUC revenue depends on the number of vehicles subject to it, the per-mile rate, and the number of miles driven, while cost to collect depends primarily on the number of subject vehicles and the methods drivers use to report mileage. The precise cost will depend on a range of policy choices but, in general, the unit cost of collecting a RUC declines as the number of subject vehicles increases.

The first factor to consider in assessing RUC cost effectiveness is ability to generate revenue. This factor faces one key constraint: a RUC cannot replace gas taxes all at once. The gas tax must remain in place to service outstanding gas tax bonds. Moreover, as a practical

EXHIBIT 2.23 Introducing RUC for Electric Vehicles Only



matter, a large portion of the Washington vehicle fleet contributes substantial revenue through the gas tax and will do so for years to come as the vehicle fleet gradually turns over. This reliance on an existing, understood revenue mechanism makes the prospect of switching entirely to a RUC system too risky while some system design and operational aspects remain untested.

Given this constraint, a range of scenarios was examined in which only a portion of the vehicle fleet transitions from paying gas taxes to paying a RUC, rather than transitioning the entire fleet at once. Three scenarios illustrated here include: (1) introducing a RUC only for electric vehicles (in lieu of the electric vehicle registration surcharge) in 2023, (2) introducing a RUC gradually by MPG rating over the course of a decade, to include all vehicles over 20 MPG,¹⁵ and (3) introducing a RUC for all new vehicles in 2025. Each of these scenarios are illustrated here.

The results of the revenue analysis are presented on a per mile-driven basis. For example, at 49.4 cents per gallon and a fleet average of 20 MPG, the gas tax currently generates 2.4 cents per mile driven across all vehicles. By 2040, with

a fleet approaching 30 MPG, the gas tax will generate about 1.6 cents per mile driven. If VMT increases over time, both gas tax and RUC will increase; likewise, if VMT declines, both gas tax and RUC will decline by a similar amount. Considering revenue on a per-mile basis removes the inherent uncertainty of total VMT forecasts from the analysis of revenue effectiveness, whether gas tax or a RUC.

Exhibit 2.23, Exhibit 2.24, and Exhibit 2.25 illustrate revenue per mile driven from three sources: gas tax, electric vehicle surcharge (labeled “flat fee”), and RUC. Note that the gas tax component does not change across the three scenarios, since we assume it continues to be collected in all scenarios. All three scenarios assume a cost of collection of 10% of RUC revenue generated.

Under all scenarios, the gas tax would remain in place. Subject vehicles would pre-pay their RUC through the gas tax mechanism, then pay the any remaining obligation through the RUC mechanism. In addition to allowing gas tax collections to continue servicing outstanding bonds, this approach reduces the cost of collection (since subject vehicles pay only a portion through the RUC mechanism) and reduces the risk and cost of revenue loss through evasion, since subject vehicles would continue to pay most RUC through the gas tax mechanism.

¹⁵ Scenario two anticipates that in the next decade the vast majority of new vehicles will receive an MPG rating above 20, making it impractical to plan for introduction of RUC on vehicles below that threshold after 2030.

EXHIBIT 2.24

Introducing RUC Gradually by Vehicle MPG Rating From 50+ MPG to 30+ MPG Over the Course of a Decade

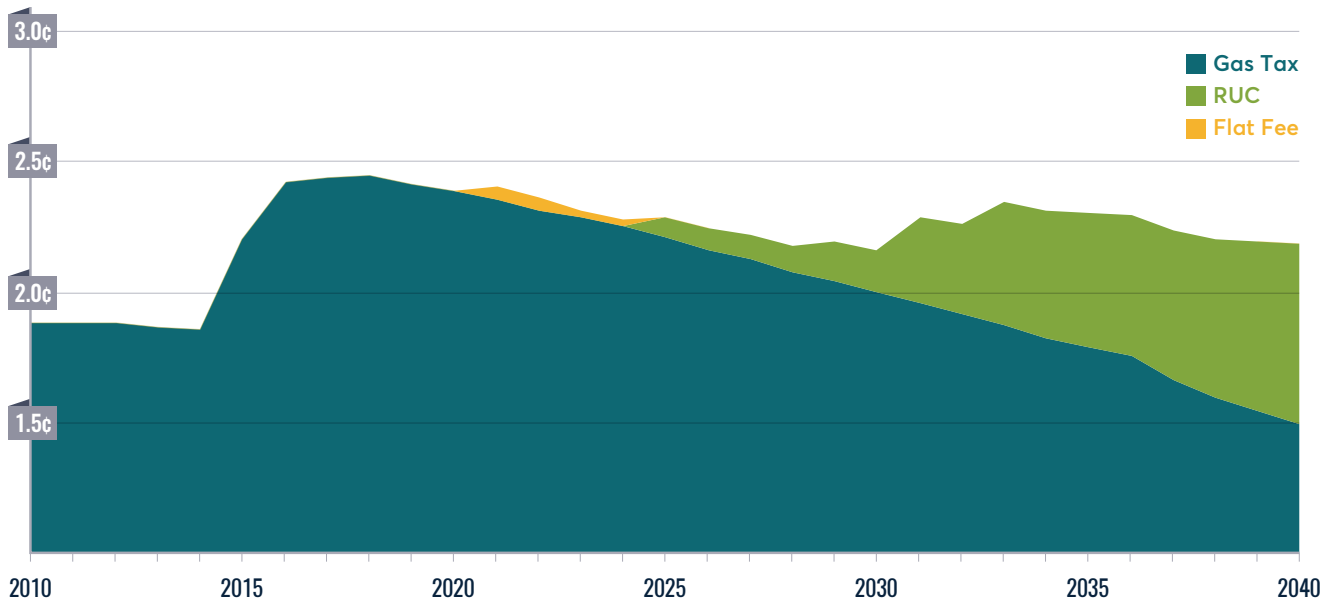
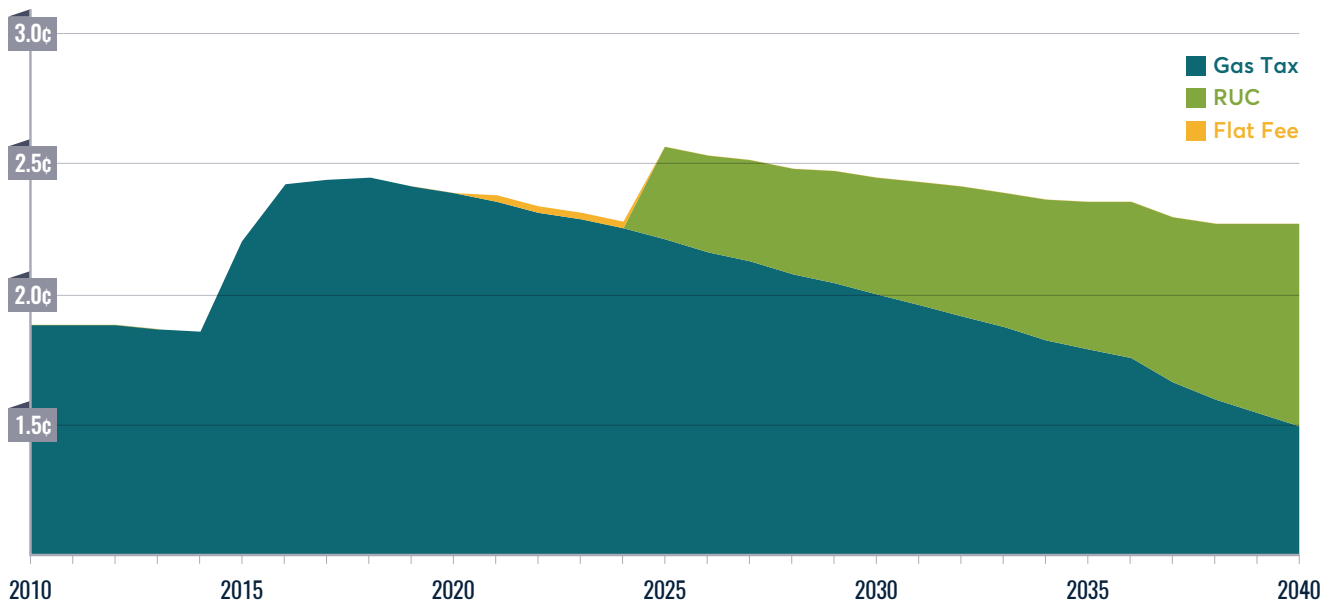


EXHIBIT 2.25

Introducing RUC for All New Vehicles Sold in 2025 & Later



Two key factors underlie the net revenue potential for RUC: (1) number of subject vehicles, with an increasing number of vehicles reducing the unit cost of collecting RUC, and (2) methods of mileage reporting, with high technology methods of reporting costing more to collect in the short term and less in the long term. A purely or largely manual method of reporting mileage, with self-reporting or odometer photo-based reporting, could be operated for a relatively low cost of collection in the near term, with costs in the same range as registration fees.

Given the wide range of possible costs and the numerous policy variables that influence cost, the WSTC will seek to conduct further exploration of this topic with other states exploring or enacting RUC systems as part of future federally-funded research.

SETTING RUC RATES

Should the Legislature move forward with a RUC, it must decide how to set per-mile rates. Rate setting can be as straightforward as a political negotiation or as complex as an analytical process driven by revenue targets and forecasting of miles traveled. Regardless of the process, some principles and constraints are of value in the Legislature's consideration of this issue.

The WA RUC pilot project tested both pre- and post-pay approaches to RUC. There was also research done on a time permit approach which would charge drivers a flat for use of the roads.

Setting rates for time permits differs methodologically from per-mile rate setting, since a time permit offers an alternative for certain customers based on time instead of distance. A logical method for setting time permit rate(s) is to determine the mileage equivalent it should represent, then multiplying that by the per-mile rate. However, setting the permit rate too low (e.g., at the median mileage driven) opens the overall system to substantial unrealized revenue, since high-mileage drivers can elect time permits to save cost relative to their cost responsibility based on mileage driven.

The WSTC and Steering Committee offer two constraints for consideration by the Legislature in rate-setting:

- › Should the Legislature prefer to delegate rate-setting authority, it can only do so if a RUC is designated as a fee or charge, and not a tax.
- › The Legislature may face legal constraints if the RUC program applies to out-of-state vehicles. To avoid

running afoul of the federal Commerce Clause, the basis of rates and the relationship between fuel tax rates and RUC rates must be considered carefully. Specifically, as discussed in greater detail in Appendix A-10,¹⁶ RUC and gas tax rates must have rational basis and declared public purpose; RUC rates and fuel tax rates must not feature an unreasonable separation (in a way that could be deemed discriminatory to out-of-state drivers); and any credits, rebates, or offsets must be designed in a way that does not unreasonably restrict them to residents over out-of-state drivers.

Aside from these constraints, the Legislature enjoys broad discretion to develop a per-mile rate or rates to suit revenue and other policy objectives.

2.2.9 RUC OPERATIONAL ISSUES

The pilot provided insights on a range of operational issues that need to be resolved before implementation of a wide-scale RUC system, including coordinating customer service responses with other agencies, enhancing data security measures, developing effective RUC compliance and enforcement policies, and upgrading the State's information technology system.

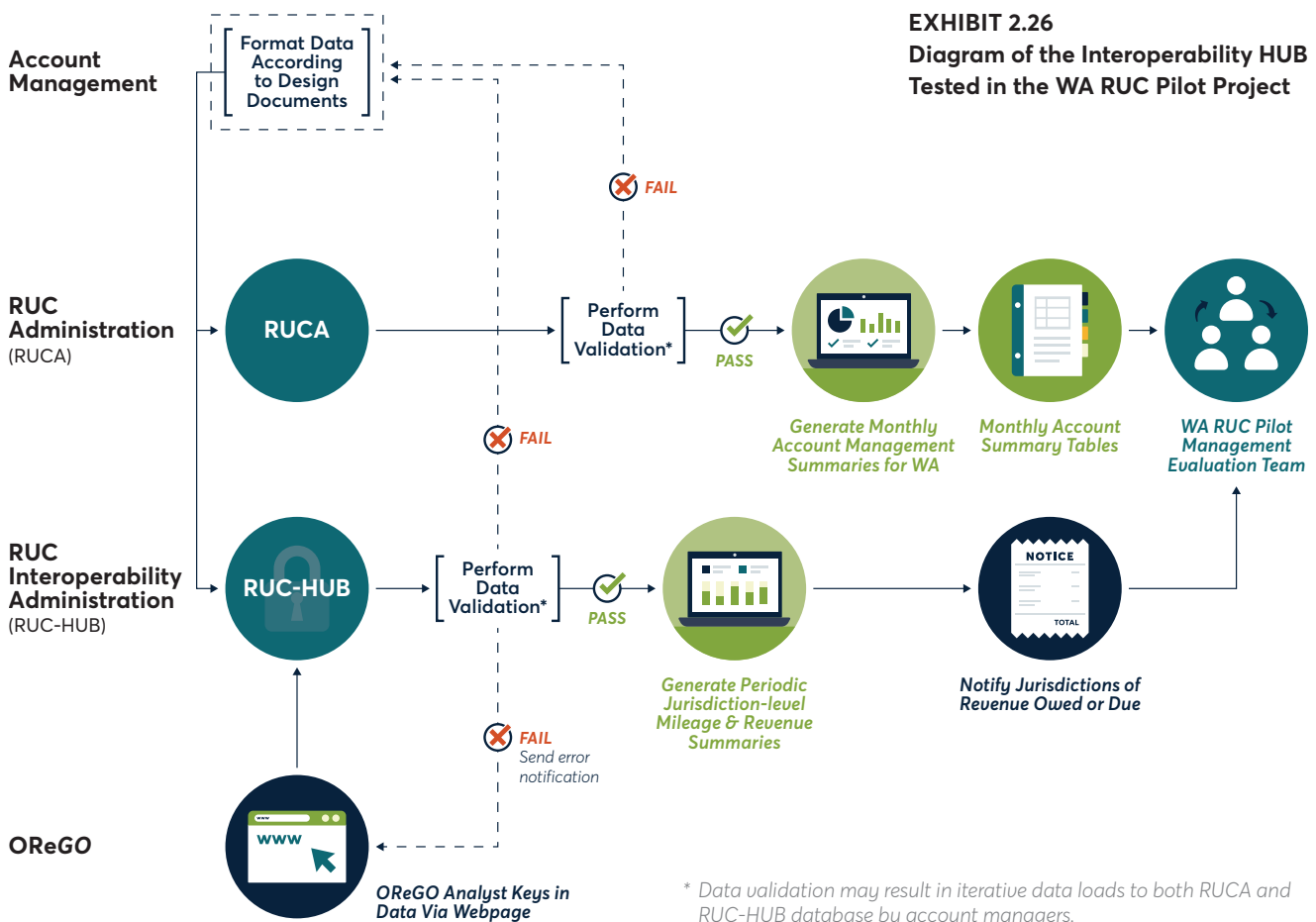
INTEROPERABILITY WITH OTHER STATES

The WA RUC Pilot demonstrated interoperability with neighboring jurisdictions through a RUC HUB. The HUB arrangement facilitates streamlined participation by multiple jurisdictions in a RUC program without requiring unilateral agreements with all other jurisdictions. By linking to the HUB, any jurisdiction can reconcile road usage charges owed to or due from it and all other connected jurisdictions via a single periodic transaction (e.g., monthly or quarterly) calculated and managed by the HUB entity. The International Fuel Tax Agreement (IFTA), which similarly reconciles fuel tax payments among 58 North American jurisdictions (US states and Canadian provinces) via a clearinghouse, based on miles and gallons reported by all subject vehicles operating across jurisdictional lines, offered a useful model for the HUB to follow. The pilot experience demonstrated the advantages

¹⁶ See WA RUC Steering Committee white paper, RUC and the Commerce Clause and other provisions of the United States Constitution, Appendix A-10, and Effects of the Commerce Clause on State-Level RUC Collections, presented at March 14, 2019 Washington State Road Usage Charge Steering Committee meeting.

of this approach to providing interoperable RUC payment and accounting in a multi-state situation.

Under a gas tax system, states avoid the challenge of reconciling revenue from out-of-state visitors for use of their roads. States could likewise choose to ignore the issue under a RUC program, particularly western states where cross-state travel represents a small fraction of total miles traveled, and there is likely a reasonable balance of total VMT between states.¹⁷ But as other states enact RUC programs, and as RUC payers see their transportation taxes more explicitly in the form of RUC invoices, Washington could find value in working with other states to address miles driven across state borders in a seamless, interoperable fashion.



¹⁷ RUC West estimates out-of-state VMT in Washington at between 5 and 9%, according to the 2016 study, "Assessing Out-of-State Drivers in a Road Usage Charge System: Phase 2 Final Report."

Experience in the WA RUC Pilot confirmed the expected benefits of a RUC HUB:

- › It does not require numerous bilateral agreements between jurisdictions—the RUC HUB operated with one set of rules that would apply to all states using it to exchange interoperability information, yet it did not mandate that states have identical RUC policies, as Oregon’s RUC program differed in several ways from Washington’s.
- › It is independent of private sector RUC account managers/service providers—RUC data was sent by the states to the RUC HUB, thus allowing states to implement interoperability independently of their private sector account managers.



- › It has the capability to perform selected data management functions potentially reducing participating states' RUC administration costs—the RUC Hub avoids the State having to administer RUC for a set of out-of-state drivers, potentially reducing costs.

In addition, the RUC HUB could potentially serve as a single point for RUC data collection and accounting information for those states that choose to use the HUB in this manner. This approach would relieve each state from implementing a separate RUC data collection and accounting system, significantly reducing a state's RUC administration costs.

Interoperability with other jurisdictions worked efficiently and effectively when utilizing the HUB developed for the pilot, but it is important to resolve a range of issues, including the legal authority for collection and remittance of other states' RUC data, ownership and governance of the HUB itself, and the structure of the HUB entity.

During a RUC transition period, the simplest approach for Washington to deal with travel by out-of-state drivers is to keep the gas tax in place. Washington could also allow out-of-state drivers from states with a RUC system to opt in to multi-state reporting. The benefit of allowing motorists to opt in is that it provides Washington and neighboring states (Oregon, and potentially Utah, in the near term) the opportunity to build a live, multi-jurisdictional reconciliation HUB with little downside risk, given the low volumes of vehicles and low revenue stakes. The HUB could serve eventually as a regional or national clearinghouse. In the longer term, participating states could begin requiring vehicles subject to road usage charging from neighboring states to participate.

COORDINATION OF RUC & TOLLING ADMINISTRATION & CUSTOMER SERVICE

Given that Washington currently operates a tolling system with hundreds of thousands of customers, some level of coordination of customer service between the existing tolling system and a future, distinct RUC system is necessary to minimize confusion among drivers.

There are five ways in which the administration of a RUC system could be coordinated with a tolling system, ranging from having no coordination to offering a unified approach to customer service.

Findings on the five ways a RUC system can be coordinated with a tolling system are as follows:

- › **Do nothing**—requires no effort, but inconvenient for users.
- › **Collaborate**—requires minimal effort, improves user experience, and paves the way for greater collaboration.
- › **One bill**—Requires some effort. Could lead to confusion as users still pay for RUC and tolling separately, but potentially a worthwhile step toward greater collaboration.
- › **One account**—Requires more effort than one bill. Lower risk of customer confusion than one bill. May be challenging to start RUC service with this level of integration. May be challenging to achieve with multiple private service providers, as each would need to integrate separately.
- › **One service**—Requires greatest effort, but provides greatest user convenience. Challenging to start RUC service with this level of integration. Challenging to achieve with multiple CAMs, as each CAM would need to integrate separately.

EXHIBIT 2.27

Range of Options to Achieve Compatibility With Toll System

Do Nothing	Collaborate	One Bill	One Account	One Service
<ul style="list-style-type: none"> › Low risk, easy to implement › Little benefit to users › Could postpone compatibility and raise long-term costs 	<ul style="list-style-type: none"> › Open standards and procedures › Information sharing › Compatible objectives › Consistent information and mutually-informed customer support 	<ul style="list-style-type: none"> › One bill but separate accounts and payments › Risk of customer confusion and errors › Could be combined with elements of collaboration 	<ul style="list-style-type: none"> › Slight variation on one bill › Single account and registration › Same customer details for RUC and tolling 	<ul style="list-style-type: none"> › Payments deducted from same account › Requires back office reconciliation between RUC and tolling › More complex › Integrated service for customers

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It was concluded that at least minimal administrative compatibility be established between the RUC and tolling systems from the start of a RUC program, rather than introducing it later, to provide a better level of service to drivers, help avoid confusion, and avoid unnecessary operational challenges for both systems. This includes ensuring customer service of RUC and tolling systems remain mutually aware of one another and adopt protocols for transferring customers to reduce confusion. It also includes forward planning to identify plausible future steps toward greater compatibility that do not disrupt the independent purpose and operations of each system. Coordination among operating agencies, as suggested by the approach to RUC institutional design, can help accomplish this initial compatibility.



DATA SECURITY MEASURES

Data security is a vital element in all modern IT systems, and it is especially important in RUC systems as they utilize a range of important personally identifiable information, including personal vehicle information. Thus, the pilot project included strong industry standard levels of data security into all back-end systems.

However, due to limited budget and project purpose, a highly prescriptive set of requirements for mileage reporting device security was not pursued in the pilot project, as the associated costs could have limited the ability of vendors to respond to the procurement. Vendors are highly motivated to be secure, because they support the provision of tolling, usage-based insurance, and other consumer services—all businesses where any indication of insufficient security could do significant harm. For the RUC pilot, basic security requirements were met utilizing existing equipment and systems, and this coupled with the fact that the vendors are highly motivated to be secure, provided strong device security in the pilot.

The WA RUC Pilot included a range of data security measures conforming to modern IT standards for IT systems used in the pilot. Vendors provided strong security measures on all plug-in devices used in the program. Odometer image analysis also included strong security measures.

The MileMapper smartphone app was presented as a “Lab” or “beta” mileage reporting method, and while it included a range of security measures, it did not have two vital security measures that would need to be added in any future WA RUC system:

- › Verification that the phone is in the correct vehicle
- › Sophisticated GPS spoofing detection

Data security requires continuous vigilance and adaptation by entities who operate IT systems that contain private information of customers and constituents. In a live RUC system, such entities include state agencies that hold driver information (DOL) and the private vendors who provide mileage reporting data. Data security features used in the pilot serve as a useful starting point for the most up-to-date data security standards to design, implement, test, and maintain in a live system.

COMPLIANCE & ENFORCEMENT

The WA RUC pilot did not attempt to test compliance and enforcement since a voluntary activity offers little value for assessing the potential effectiveness of such measures. Instead, the pilot detected instances of noncompliance, attempted to diagnose the reasons, and encouraged voluntary compliance, for example by reminding participants via text, email, and phone to submit an odometer image or plug in a device.

Despite the limited ability to test enforcement in a pilot, deterring evasion and other forms of noncompliance in a RUC system is essential to its integrity. Similarly, when given the opportunity to provide feedback, some pilot participants expressed concern that enforcement was non-existent in the pilot, and emphasized that it must be resolved in a real system.

To supplement pilot noncompliance detection and voluntary compliance encouragement, a RUC avoidance tabletop exercise was conducted to determine all the ways motorists could avoid a RUC, including intentional evasion and unintentional negligence. This exercise involved RUC system design experts reviewing the WA RUC pilot design, performance, and compliance data, and identifying a comprehensive registry of methods that customers did or could use to evade or otherwise undermine the RUC system. Once cataloged, each method was analyzed to determine possible mitigation measures.

The RUC avoidance tabletop exercise determined a range of approaches to combating RUC avoidance. These approaches fell into three categories:

- › Policy/legal
- › Operational
- › Technology

Details on the results of the tabletop exercise can be found in the Steering Committee's Pilot Project Report, in Section 11.4 (published as Volume 2 of this report).

Two avoidance scenarios remain challenging to detect and prevent even with effective countermeasures in place:

- › The first is digital odometer rollback on vehicles never served by a licensed mechanic. Although significant penalties for odometer rollback exist in state and federal law, it still occurs, primarily for the benefit of higher vehicle resale values (which likely exceeds the benefit of avoiding RUC charges). Licensed mechanics report odometers, which the State can access through

services such as CarFAX, to determine whether an odometer has been rolled back, but if a car is never taken to a licensed mechanic, no such records will be available. The frequency of this scenario occurring is likely low, but worthy of monitoring. At least in the near term, it is addressed by continuing to collect the gas tax, which minimizes the financial losses to the State in instances of such fraud.

- › The second scenario involves a user having two identical vehicles (same year, make, and model) submitting odometer images from one another. Although difficult to detect, this scenario might be discovered through targeted audits and, in any, case, is likely to seldom occur.

STATE INFORMATION TECHNOLOGY NEEDS IN ORDER TO IMPLEMENT A RUC PROGRAM

The operational elements of a RUC program—RUC mileage data collection and enforcement mechanisms—will depend on and need to interact with the IT systems of the operating agency. The design of a RUC system must account for the IT systems impacts for the agency selected to implement the RUC program, starting with the capital costs (hardware and software upgrades) of the one-time change orders to update existing state IT systems.

DOL is the natural home to the operational elements of a RUC program for two primary reasons. First, DOL operates the vehicle registry database, which will be an important tool in any potential future RUC program, as it may be needed to determine the eligibility of vehicles for the program and check that all vehicles required to pay RUC have registered for the program. Second, DOL already supports and has experience with direct customer interaction (e.g., for registration renewals). Thus, DOL provided a high-level estimation of the state IT system enhancements needed in order to launch a RUC system. This topic is more fully detailed in an assessment conducted in conjunction with DOL (see Appendix A-12, Volume 3 of this report).

It is critical to gain an understanding of how DOL's DRIVES system (the agency's new IT system that supports driver and vehicle licensing-related activities and transactions) might accommodate a future RUC system. In particular, rough estimates were needed to indicate the degree of difficulty and the one-time capital costs (i.e., development costs) of enhancing the DRIVES system to allow for a RUC program. The one-time startup cost estimates reflected in



the assessment represent rough orders of magnitude, with a 50% margin of error. The estimates do not include any operational costs of a RUC program, nor do they include other IT system change management activities such as documenting system requirement specifications, testing, or other pre-launch costs.

Based on a series of assumptions and most likely implementation scenarios, the State Information Technology Needs Assessment concluded that while private service providers should be used to support automated mileage reporting methods that require the use of plug-in devices, DOL may be able to support the manual mileage reporting methods (time permit, odometer reading, and mileage permit) effectively, assuming sufficient funding is provided to support both the one-time capital costs as well as the on-going operational costs to administer RUC. A range of cost estimates can be found in Appendix A-12 in Volume 3 of this report.

The Steering Committee and the WSTC both recognized the limits of this IT needs assessment and agreed that further exploration into on-going cost impacts is needed. If a RUC system is authorized in the future, even basic parameters for a program—which type of vehicles might be subject to RUC, how miles are reported, how frequently billings occur, just for starters—will greatly affect the one-time capital costs in a start-up RUC system. However, an IT needs assessment cannot be made in the abstract—it can only be made with specific RUC program designs in mind.

USE OF PRIVATE SECTOR FIRMS TO DELIVER RUC SERVICES

A road usage charge system can be delivered in several ways. While it will always be necessary for a government agency to oversee a RUC program, a government agency, the private sector, or a combination of both have the ability to actually deliver the system's functions.

The high-level operational functions of a RUC system are:

- › Customer service and account management
- › Charge identification and processing
- › Compliance, enforcement, and audit
- › Maintenance and operation of the vehicle registry
- › Oversight of the system activities, including monitoring and reporting

Five different configurations of a RUC delivery system were analyzed. These configurations were assessed for administrative effectiveness, participant experience, operational experience, practical availability, flexibility, and policy alignment.

Whether to favor one of these three configurations over the others depends upon the nature of the preferred reporting method. A government agency can best deliver manual reporting. An open market of private-sector providers can best deliver automated reporting. For both manual and automated reporting, a combination of government agency and an open market of private-sector providers may be optimal.

EXHIBIT 2.28
Participating Vehicle Licensing
Offices in Washington State



EXHIBIT 2.29
 Transition Pathways

Preferred Mileage Reporting Mechanism	Preferred Final End State Configuration	Optimal Transition Pathway
Manual reporting	Government-only delivery.	Single, private-sector service provider operating under an open system adopted by government.
Automated reporting	Open commercial market for multiple private-sector providers.	Single entrant into open commercial market with an open system adopted at the beginning.
Both manual & automated reporting	Combination of government and open market for multiple private-sector providers.	Combination of government agency and single, private provider as first entrant into an open commercial market for multiple private-sector providers.

When operating at scale, the State should strive for an open market of private sector service providers, possibly with government agency delivery of manual methods. However, during a transitional period when the RUC system is relatively small, having a single private sector provider to support operations is likely the best approach. In the WA RUC pilot, Vehicle Licensing Offices (VLOs, which are private businesses authorized to act as “subagents” of DOL) provided a private option for collection of odometer data. This delivery model was tested and returned favorable results from both pilot participant as well as the VLOs that agreed to provide odometer reporting services during the year-long pilot.

For a RUC program, VLOs could facilitate manual reporting of miles traveled through manual or electronic means, statewide. This was demonstrated in the WA RUC pilot, at eight selected VLOs throughout the state. In the pilot, participants could drive to a participating VLO station and use VLO-provided photographic equipment (an iPhone equipped with special software) to capture and send an authenticated image of their vehicle’s odometer on that day. In a potential future road usage charge system, this process could involve the motorist paying a small fee to the VLO for this service. This process could also, in a potential future mandated RUC program, provide a way to institute enforcement of RUC payment during vehicle registration renewals.

2.3 WSTC RECOMMENDATIONS

The WSTC offers a total of 16 recommendations for legislative consideration. This section begins with a summary of how these individual recommendations interact to support the primary call to action: The State of Washington should begin now with a gradual and deliberate transition to a RUC system.

SUMMARY OF RECOMMENDATIONS: TRANSITIONING TO A ROAD USAGE CHARGE SYSTEM

[Citations to specific recommendation adopted by the WSTC in brackets—see Appendix A-24 in Volume 3 for a record of decisions taken at the December 17, 2019 WSTC meeting.]

The Legislature should begin a gradual transition to road usage charging in Washington, including an initial start-up phase to continue to inform and shape a long-term transition plan before there is broad, fleetwide adoption in the future [R1, R4]. Existing policy and oversight roles for the Legislature, the WSTC, and other agencies should remain in place throughout the transition period [R13].

A start-up phase should include vehicles that pay little or no gas tax: plug-in electric and hybrid vehicles, which currently pay flat annual fees regardless of miles driven [R14]. This will allow the State to continue to develop and test a RUC for at least five years before considering fleetwide implementation.

State-owned vehicles should be included in the start-up phase [R12] to help test:

- › New approaches to privacy protection [R11, R12]
- › RUC compliance and enforcement [R5]
- › Travel between states [R8]
- › Opportunities to reduce operational costs [R6, R7]
- › Improvements to the driver experience in transitioning away from the gas tax [R1]

KEY STATE POLICIES TO INCLUDE IN A RUC SYSTEM

- › Privacy protection measures specific to a RUC system should be enacted into law [R10].

- › RUC revenue expenditures should be restricted to highway-related purposes by making a RUC subject to the 18th Amendment of the Washington Constitution, as the gas tax is today [R15].
- › Programs that receive gas tax funding attributable to non-taxable, off-road activities should continue to receive funding for the full duration of the transition from the gas tax to RUC [R16].

CONTINUE RESEARCHING KEY TOPICS DURING THE TRANSITION PERIOD

As a slow transition to a RUC begins, research and exploration must continue to inform and evolve the RUC program so it can emerge as an efficient and reliable statewide program. To this end, the WSTC should carry forward the following areas of research:

- › Assess potential equity impacts of a RUC on communities of color, low income households, rural communities, vulnerable populations, and displaced communities and forward the results to the Legislature; see Section 205, Subsection (1)(a), ESHB 1160, 2019 Regular Session.
- › Meanwhile, as Washington develops and tests its RUC system for a small portion of the fleet, it should concurrently test new mileage reporting options, research various approaches to RUC rate-setting, and assess measures for maximizing compliance [R2, R4, R5].
- › In collaboration with other states, Washington should conduct additional research on how to reduce administrative and operational costs of RUC; how to apply RUC most efficiently for cross-border travel including, specifically, collaboration with Oregon; and how to enforce RUC by identifying compliance gaps and testing potential measures [R3, R7, R8, R9].

RUC TRANSITION

Recommendation: Begin a gradual transition to RUC.

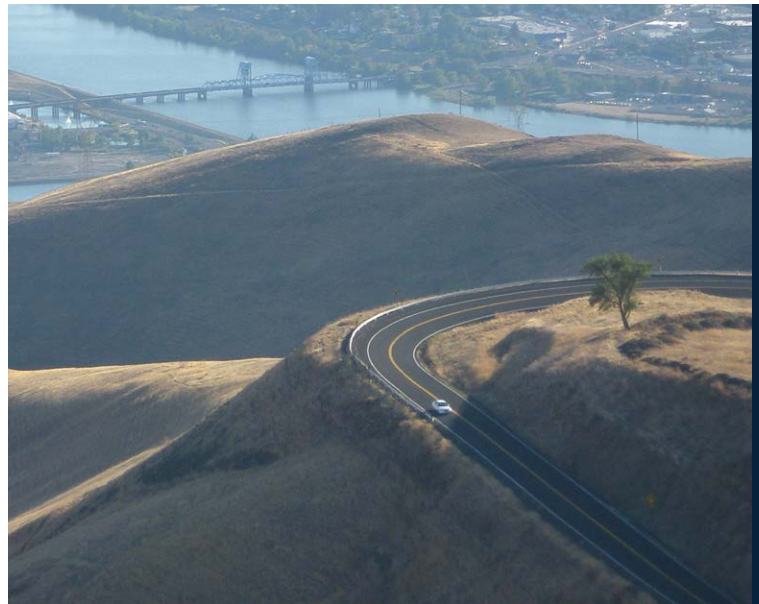
Implementation options should allow RUC to gradually scale up over time, offering drivers an opportunity to try the system and recommend further improvements while it is still in an early-implementation stage.

Above all, the WSTC recommends that the Legislature act now to begin a transition to a road usage charge system. Revenue from the state's gas tax has already begun to decline, falling short of forecasts and revealing the effects of fuel economy improvements in the statewide fleet of passenger vehicles. From fiscal year 2018 to 2019, gasoline consumption declined 2.1% despite an expected 1.5% increase in vehicle miles traveled, and representing 3.1% lower consumption than forecasted at the beginning of the year.

This trend is likely to continue. Since development, testing, and policy refinements to a road usage charge system require several years, the State should begin this transition now to prepare for the continued decline of gas tax revenue.

The WSTC's recommendation is bounded by the recognition that the WA RUC prototype system as tested, although successful as a pilot project, requires several improvements before the State can rely upon it to replace the current gas tax mechanism. The Steering Committee findings identified several areas that merit further testing and development. Improvements in ease-of-use (such as the frequency, timing and wording of odometer image reporting reminders; continued development of smartphone-based mileage reporting; improved design of invoices; and others detailed in the Steering Committee's Pilot Project Findings and Final Report) can take place during a gradual transition to a RUC. A gradual transition will also allow early RUC payers and system administrators to identify further administrative, operational, or policy improvements before wide-scale deployment.

Despite the gaps of the small prototype system, RUC shows promise to earn driver acceptance over the gas tax. After experiencing the WA RUC prototype system, pilot participants became more favorable towards a RUC throughout the year, with 68% of respondents preferring RUC over the gas tax or preferring it equally to the gas tax by the end of the pilot, an increase from 52% at the beginning of the pilot. Only 19% preferred the gas tax, up from 17% at the outset.



In October 2019, to continue needed research and per legislative direction, the WSTC submitted its *Forward Drive* grant proposal to the Federal Highway Administration (FHWA), with grant awards expected in the first quarter of 2020. The WSTC has proposed, among other things, to continue exploring improvements to existing methods of mileage reporting, such as in-person mileage verification services and an improved smartphone app for RUC mileage reporting, as well as new methods. An appropriately-paced transition to RUC dovetails with the *Forward Drive* initiative to improve the WA RUC prototype system as results from the research can feed into the design and launch of an initial start-up phase of RUC.

[Recommendation 1 adopted by the WSTC, see Appendix A-24 in Volume 3 of this Final Report]

RUC TRANSITION

Recommendation: A start-up phase of RUC should include a limited number of vehicles to facilitate further testing and system improvements.

An initial start-up stage of RUC should include a limited set of passenger vehicles so that testing and improvements can be made in a more controlled environment.



While the WA RUC Pilot test demonstrated that the State can deploy an acceptable method of paying per mile to fund public roadways in Washington, the need for considerable knowledge growth remains before the State can rely on RUC as a comprehensive replacement for the state's gas tax.

An initial start-up phase of a RUC system in Washington should be limited to a small number of vehicles—less than 5% of the state's vehicle fleet—so that the State can continue to explore and make necessary improvements. Intentionally limiting the number of vehicles in the start-up phase will help limit the cost of operating the new system as well as reduce the potential for revenue leakage from vehicles that would begin paying RUC in lieu of the gas tax or special registration fees.

Part 1 of this report provides a comprehensive overview of how Washington might transition to RUC. The recommendation on page 66 provides additional

transition details and identifies factors for legislative consideration in a transition plan. However, the starting point for both of these is the WSTC's recommendation to proceed with a limited-scale start-up phase of RUC as the logical and critical next step for funding Washington's public roadways. After more than seven years of research, development, testing, and evaluating, Washington is now ready to deploy, in a manner that allows continuous improvement.

When asked to provide their advice to elected officials as they consider next steps in implementing a road usage charge system statewide, 89% of pilot participants recommended implementing a RUC, with the largest share of those respondents (33%) advising a gradual phase-in over five to ten years.

[Recommendation 4 adopted by the WSTC, see Appendix A-24 in Volume 3 of this Final Report]

RUC TRANSITION

Recommendation: State agency vehicles should be included in an initial RUC start-up phase to allow continued testing, especially for privacy measures.

State agency vehicles make ideal test vehicles, as they represent a diverse vehicle fleet owned, managed and used by public employees to conduct official state business throughout Washington.

The recommendation on page 66 details elements of a possible transition from the gas tax to RUC, including which vehicles the WSTC recommends including in an initial start-up stage of RUC. Government vehicles have unique characteristics that make them especially beneficial for inclusion in an early transition:

- › The state government fleet comprises a wide variety of vehicle types, ranging from low-MPG pickup trucks, to average MPG passenger sedans, to high-MPG hybrids and, increasingly, plug-in electric and alternative fuel vehicles.
- › State government vehicles are not exempt from the state gas tax—they pay the same rate as all other drivers in Washington. These fleet vehicles will need the same gas tax payment crediting system as will other gas-powered vehicles that someday may transition from the gas tax to RUC.
- › Individual drivers of government fleet vehicles have fewer privacy expectations when using a publicly-owned vehicle. In fact, mileage driven is already recorded by fleet managers.
- › State government fleet vehicles are positioned at offices throughout Washington, providing an ideal opportunity to learn more about regional variances in the effects of RUC, especially related to cross-border travel between Vancouver, WA and Portland, OR.
- › State government fleet vehicles are typically professionally managed by a central agency (or division within an agency). A centrally-managed vehicle fleet—including the policies and procedures used to allocate fleet vehicle driving costs back to specific personnel or offices, closely resembles how other private vehicle fleets are managed (for example, rental car fleets).

The WSTC recommends inclusion of state agency fleet vehicles in an early start-up stage of RUC to gain knowledge in the following areas:

- › The diversity of the vehicle fleet will expose the WA RUC system to different use cases and challenges that have to be resolved before a RUC could be extended beyond an initial start-up stage.
- › These vehicles are ideally situated to test different privacy protection approaches.
- › State vehicles located near borders with Oregon, Idaho, and British Columbia can be expected to make a meaningful number of trips during the year to neighboring jurisdictions. The ability to examine the use patterns and test new and improved mileage reporting methods for vehicles engaged in frequent interstate travel is a valuable development and testing opportunity, without exposing plug-in electric, hybrid, or other vehicles participating in a live RUC program to growing pains as the State researches and develops WA RUC system improvements.

[Recommendation 12 adopted by the WSTC, see Appendix A-24 in Volume 3 of this Final Report]

RUC TRANSITION

Recommendation: Transition scenarios provided for legislative consideration.

There are many ways an initial RUC transition could commence, while ensuring knowledge growth and experience continue as the State works its way to a future broad-scale, fleetwide RUC system.

When asked to provide advice to elected officials as they consider the next steps in implementing a road usage charge system statewide, a large majority of pilot project participants (89%) favored some form of RUC implementation, although opinions varied on how quickly a transition should happen.

Of those who recommended implementing a RUC, 61% said move forward either immediately, or phase in over a 5 to 10 year period; 28% said move forward but apply a RUC more narrowly, such as requiring high-mileage vehicles like hybrids and/or plug-in electric vehicles to pay; and 10% said take no further action on RUC.¹⁸

For practical and legal reasons related to already-issued gas tax bonds, the State must continue to collect the gas tax for at least 10 to 25 years, regardless of the transition approach to introducing a RUC. In addition, the WA RUC prototype system requires further exploration and improvements in mileage reporting methods, RUC compliance and enforcement, reducing administrative cost of collections, and establishing a track record of privacy protection and data security. For these reasons, the WSTC recommends coinciding a broader implementation of RUC with further developments and proof of readiness for wider implementation.

During a transition period, the gas tax would stay in place. The gas tax provides a simple way to collect money from out-of-state drivers who use Washington's roadways, and provides an effective back-stop to evasion attempts.

A scalable RUC transition approach that:

- › Reflects the input from pilot project participants for a RUC implementation time frame and what vehicles should initially be subject to it.
- › Ensures the continued development and testing of a RUC system before wide-scale implementation.
- › Complements the timing and duration of the WSTC's *Forward Drive* project (pending federal funding), which

aims to improve and advance the WA RUC prototype system.

- › Utilizes the availability of state government fleet vehicles for inclusion in an initial start-up stage for RUC.

If the Legislature so directs, a detailed plan for implementing RUC in Washington should be the next step, and can be provided as part of the WSTC's *Forward Drive* project, if funded.

WSTC'S RECOMMENDED TRANSITION APPROACH & LEGISLATIVE OPTIONS FOR FUTURE RUC PHASES

High-level Transition Recommendations

- › Begin a gradual, narrow transition to RUC now—full implementation could take 10–25 years.
- › Small start-up phase to include vehicles that pay little or no gas tax (PEVs and hybrids) and state agency vehicles.
- › Continue research and testing before and during this start-up phase, including:
 - Assessing potential equity impacts of RUC and identifying possible mitigation.
 - Identifying performance and efficiency measures that can be tested during the start-up phase.
 - Exploring new mileage reporting methods.
 - Identifying ways to improve RUC operations, increase compliance, reduce administrative costs, and accurately determine and efficiently manage cross-border travel challenges

Major Elements of a RUC Transition

While the three transition approaches illustrated in Exhibit 2.30 can be incremental and build upon each other in "phases," the Legislature could choose to move forward with any one of them independent of the others.

Exhibit 2.31 illustrates how a gradual, staged transition to a RUC can stabilize transportation revenues over time.

¹⁸ See Chapter 7 of the WA RUC Steering Committee Pilot Project Final Report and Findings, published as Volume 2 of this report.

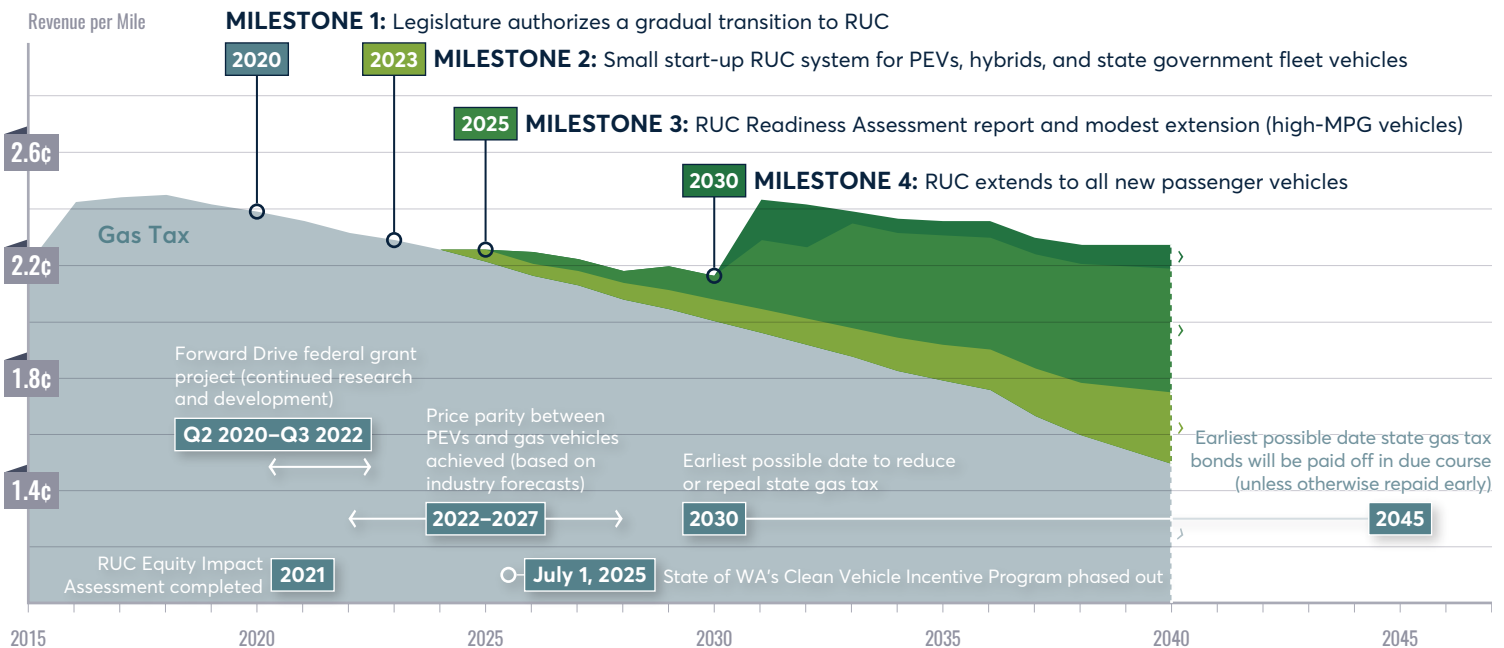
EXHIBIT 2.30

Major Elements of a RUC Transition

	Phase 1 (WSTC Recommendation)	Phase 2	Phase 3
Phase-in period	Start-up phase: within 5 years › Target: ready by 2023	Add to start-up phase: › Partial fleet (high-MPG vehicles) 5–10 years	Add to Scenario B: › Fleet-wide (new vehicles MY 2030 or later)
Subject vehicles	PEVs, hybrids, and state agency fleet	Add to start-up phase: › High-MPG vehicles	Add to Scenario B: › Model Year 2030 or later
Per-mile rates	No higher than gas tax paid by average driver	No higher than gas tax paid by average driver	Revenue neutral to the state
Mileage reporting options	› Time permit › Odometer reporting › Optional plug-in device reporting Continue testing other methods	› Time permit › Odometer reporting › Automated plug-in device › Smartphone reporting Continue testing other methods	› Time permit › Odometer reporting › Automated plug-in device › Smartphone reporting › Other certified methods

EXHIBIT 2.31

Specific Milestones in a RUC Transition Period



Each of the four milestones mark the beginning of a new stage in the transition, with an incremental increase in the number of vehicles that would shift over to a RUC system. This transition scenario accounts for other important activities, trends and timelines that are relevant to the pace of transition, including completing the *Forward Drive* project, forecasted purchase price parity between electric

vehicles and conventional gas-powered vehicles, time span for refinancing or repayment of state transportation bonds, and more.

[Recommendation 14 adopted by the WSTC, see Appendix A-24 in Volume 3 of this Final Report]

RUC TRANSITION

Recommendation: Keep existing policy and oversight roles for RUC in place.

During a transitional period while the gas tax remains in place, current policy-setting and oversight roles between the Legislature, the WSTC and other agencies, and the private sector should remain in place.



After extensive organizational assessment and evaluation, the conclusion was reached that Washington can deliver and operate a RUC system without creating a new agency for that purpose. The WSTC recommends the following governance structure during a transition period, as long as the gas tax is collected:

- › The Department of Licensing (DOL) should:
 - Serve as the operating agency, carrying out the state RUC program.
 - Work with private sector service providers as needed and authorized by the Legislature.
 - Collaborate with the WSTC in carrying out the RUC program.

- › The WSTC should:
 - Continue RUC research and explorations per legislative direction and pending federal funding for the *Forward Drive* proposal, and provide periodic updates to the Legislature.
 - Work closely with DOL, transfer knowledge and collaborate on an ongoing basis, serving as an oversight body and a public forum for the creation and advancement of a RUC program for Washington.
 - Lead the public outreach and education effort on a RUC throughout the transition period, to ensure transparency and public understanding, and provide the public with a consistent forum where they can register comments, concerns and ideas as the program evolves and advances.
 - In partnership with DOL, provide periodic updates to the Legislature on the RUC program's progress and performance.

The Steering Committee's Organizational Design white paper provides more detail on the various governance configuration options reviewed.¹⁹

The Legislature may want to segregate system operations from policy oversight functions, similar to toll project operations and oversight. During a transitional period while the gas tax remains in place, the WSTC recommends that roles for WA RUC system development remain comparable to how a RUC has been investigated and tested since 2012, with the Legislature providing overall policy direction and parameters; the WSTC providing policy oversight and evaluation and reporting back to the Legislature; and private vendors providing support services to implement a RUC. New to this arrangement, DOL has a significantly elevated role in deploying and administering a RUC system.

[Recommendation 13 adopted by the WSTC, see Appendix A-24 in Volume 3 of this Final Report]

¹⁹ See Appendix A-11 in Volume 3 of this Final Report.

RUC POLICIES

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Recommendation: Expenditures of RUC revenue should be made subject to the 18th Amendment of the Washington State Constitution (restricted to highway purposes).

To most closely replicate the features of the gas tax it would eventually replace, RUC should be designed, implemented and the proceeds expended subject to the 18th Amendment.



The Steering Committee and the WSTC examined RUC as a potential replacement for the gas tax, consistent with original direction from the Legislature to assess its feasibility and suitability.

The Steering Committee took no official position on other potential uses of RUC revenue, beyond expenditure for highway-related purposes (i.e., the same spending uses as the gas tax). The Committee's work and findings centered on how a RUC could be designed, implemented, and expended in ways to most closely resemble the gas tax it would replace.

The WSTC, however, is affirmatively recommending that RUC revenue should be expended only for highway-related purposes to be consistent with the 18th Amendment of the Washington State Constitution. There are important fiscal, legal, and policy implications of reducing or repealing the state's gas tax and replacing it with RUC. The Legislature can structure this new revenue source in a manner that places RUC revenue under the 18th Amendment provisions such that it most closely replicates the gas tax's advantages as a funding mechanism. The advantages of doing so include the ability to repay billions in outstanding state-issued bonds and maintain the ability to reliably utilize RUC revenues in the future to finance critical

transportation infrastructure improvements without negatively impacting other projects, programs and services that are funded by the State's general revenue (and therefore subject to limitations on debt issuance). For more detail on different legal approaches to making RUC revenue subject to Amendment 18, see Appendix A-8 in Volume 3 of this Final Report.

After sharing preliminary RUC recommendations with the public through email, website, and during public meetings, the WSTC received feedback both in favor of and against this recommendation, with many advocating not to limit RUC expenditures to highway-related purposes because other modes of transportation are in serious need of revenue and state funding assistance. The WSTC supports additional state funding for transportation-related projects, programs and priorities that require a more flexible revenue source. To this end, as a separate initiative outside of the WA RUC Assessment, the WSTC has already recommended that a new, dedicated, and sustainable revenue source be identified to fund multi-modal transportation needs, public transportation, and passenger ferry service.

[Recommendation 15 adopted by the WSTC, see Appendix A-24 in Volume 3 of this Final Report]

Recommendation: The Legislature should enact laws that protect personal privacy in a RUC program.

While operational policies and technology solutions can enhance driver privacy, only the Legislature can enact laws to protect how information is used in a RUC system.



Privacy remained the top concern for participants in the WA RUC pilot project, even though they felt the privacy of their information during the pilot was appropriately protected. At the beginning of the year-long pilot, 83% of drivers ranked privacy as their top concern. At the mid-point and end of the pilot, the importance of privacy grew to 90% for pilot test drivers.

In their findings, the WA RUC Steering Committee identified gaps in the legal protections for personal privacy in a RUC system. For example, current Washington state law does not specifically exempt RUC mileage data from public disclosure. The Steering Committee considered model privacy policy provisions that could be incorporated into any RUC enabling legislation in Washington or even in other states.

The WSTC recommends several privacy-by-design methods that were tested in the WA RUC Pilot Project. These include:

- › Programmatic policies that allow motorists choices in how their mileage is reported.

- › Stringent technology requirements, such as requiring plug-in mileage devices without GPS capabilities be offered to drivers.
- › Software requirements that ensure driving data is inaccessible to unauthorized parties and is destroyed immediately after the RUC billing cycle.

While these protective system design features are important and useful, only the Legislature can enact privacy measures that carry the force of law. The WSTC recommends that at minimum, RUC mileage data should be granted similar privacy protections that currently exist for the State's tolling program where information related to roadway use and payments are exempt from public disclosure. The WSTC further recommends that the Legislature consider the Model Privacy Policy provisions developed during this WA RUC Assessment and include them in a future RUC program. See Appendix A-6 in Volume 3 of this Final Report for the detailed Model Privacy Policy.

[Recommendation 10 adopted by the WSTC, see Appendix A-24 in Volume 3 of this Final Report]

RUC POLICIES

Recommendation: Programs that receive funding from off-road activities should continue receiving the same share of funding during a transition period to a RUC.

Current programs that receive gas tax refunds attributable to non-highway activities should continue receiving their same share of funding during the transition period to a RUC (expected to be at least 10–25 years), since the state gas tax will remain in place during this transition.

In its Pilot Project Final Report and Findings, the Steering Committee found that some vehicles (such as those used exclusively on state park roads) and other gas-powered motorized equipment (snowmobiles, powerboats, lawn mowers, etc.) pay gas taxes even though these activities are conducted entirely off public highways of the state. As such, current state law allows taxpayers to submit a request for reimbursement of some of these gas taxes from the Washington State Department of Licensing.

While some taxpayers submit requests for gas tax refunds, the vast majority of the revenues collected from these off-road activities remain unclaimed. To ensure that those taxpayers receive some form of remuneration or benefit from paying the gas tax for off-road activities, the Legislature created special accounts in the state treasury that receive estimated revenue from these tax-exempt activities. The revenue in these accounts in turn provide funding for projects, programs or services deemed to benefit persons engaged in non-highway activities, such as public docks and boat launches, snowmobile and off-road vehicle trails, and maintenance of roadways solely within state park lands.

Since the underlying premise for this funding is that gas taxes were not legally owed in the first place, the question arises: in a future RUC system, where drivers pay directly for the roadway they use (instead of based on the amount of gasoline vehicles burn - a surrogate for roadway use), will funding still exist to support these outdoor recreation-related programs if there is no longer a need to issue gas tax refunds? Some advocates have voiced opposition on the basis that in a future RUC system, gas tax refunds may become obsolete, which in turn negates an important source of revenue for these non-highway programs.

A full transition to a RUC system in Washington is expected to take 10 to 25 years, and potentially longer. During this transition period, the gas tax must remain in place (although drivers would owe either a RUC or the gas tax, but not both). As long as the gas tax remains in place,



taxes will be collected for activities that are off-highway, and refunds and constitutional appropriations to these non-highway purposes should continue to be available. The WSTC recommends that during this 10 to 25 year transition period, programs that receive funding from off-road activities should continue receiving the same share they have relied upon for years or in some cases, decades.

Once a full transition to RUC is complete and the gas tax repealed, the Legislature will have to decide whether and how to continue funding these outdoor recreational programs, projects and activities. Since this scenario is likely several decades away, policymakers will have ample opportunity to consider replacement sources of funding.

[Recommendation 16 adopted by the WSTC, see Appendix A-24 in Volume 3 of this Final Report]

RUC POLICIES

Recommendation: Test different approaches to per-mile rates for RUC.

Conduct additional research (alone or in collaboration with other states) on differential RUC rates based on driver, vehicle, or infrastructure characteristics. An initial flat RUC rate should be established for the start-up phase of a RUC program

The WSTC recognizes that setting rates remains the Legislature's prerogative, unless otherwise delegated as has been done for toll rates and ferry fares. However, there remains a question around what might be relevant and important to policymakers in deciding the appropriate per-mile rate.

Early in the RUC Assessment, the Steering Committee reviewed numerous factors available for calculating a per-mile rate that not only reflect roadway funding requirements, but other issues related to the transportation system, such as air quality, greenhouse gas emissions, petroleum dependence, economic inequality, divergent transportation needs between urban and rural residents, and more. Rather than attempting to forge consensus around a multi-dimensional model for RUC rate-setting, the Steering Committee assessed the ability of a RUC mechanism to respond to a wide array of policy objectives. Because it creates a direct linkage between the vehicle,

the vehicle owner, and payment in direct proportion to actual road use, a RUC system is more capable of operating in harmony with other public policy objectives or priorities than the gas tax. Specifically, a RUC system offers flexibility to tailor across three dimensions:

- › Characteristics of the vehicle owner. Example: RUC could apply a different per-mile rate based on where the owner resides, perhaps to reflect the higher or lower cost of roadway infrastructure in certain parts of the state.
- › Characteristics of the vehicle. Example: a small surcharge could be applied to "gas guzzlers."
- › How the vehicle is used. Example: different rates could be applied to ride-share vehicles.

Based on the 12-month live pilot test results, participants often commented that a future WA RUC system should account for other factors besides vehicle distance traveled. Others not participating in the pilot offered similar feedback through email and phone calls. Among the most frequent comments, constituents suggested that a future RUC system account for vehicle weight—either because larger, heavier vehicles tend emit more pollutants, or because heavier vehicles occupy more road space and impact pavements more than lighter vehicles. Citing fairness, they questioned why the pilot test rate lacked such factors.

The WSTC recommends that an initial flat RUC rate be established for purposes of advancing an initial start-up phase of a RUC program. Meanwhile, research should continue around possible approaches and impacts of establishing future RUC rates that are multi-dimensional according to various factors and a RUC rate-setting model should be developed to test a variety of scenarios. This can be accomplished as part of the *Forward Drive* project (pending federal funding), and in collaboration with the other states implementing RUC and exploring this same issue.

[Recommendation 2 adopted by the WSTC, see Appendix A-24 in Volume 3 of this Final Report]



CONTINUE REFINING

Recommendation: New approaches to privacy protection should be tested during the initial start-up stage of a RUC system.

Operational policies, technology, software, administrative policies—and even legal provisions to enhance privacy—can be tested and improved during an initial start-up stage of a RUC system.

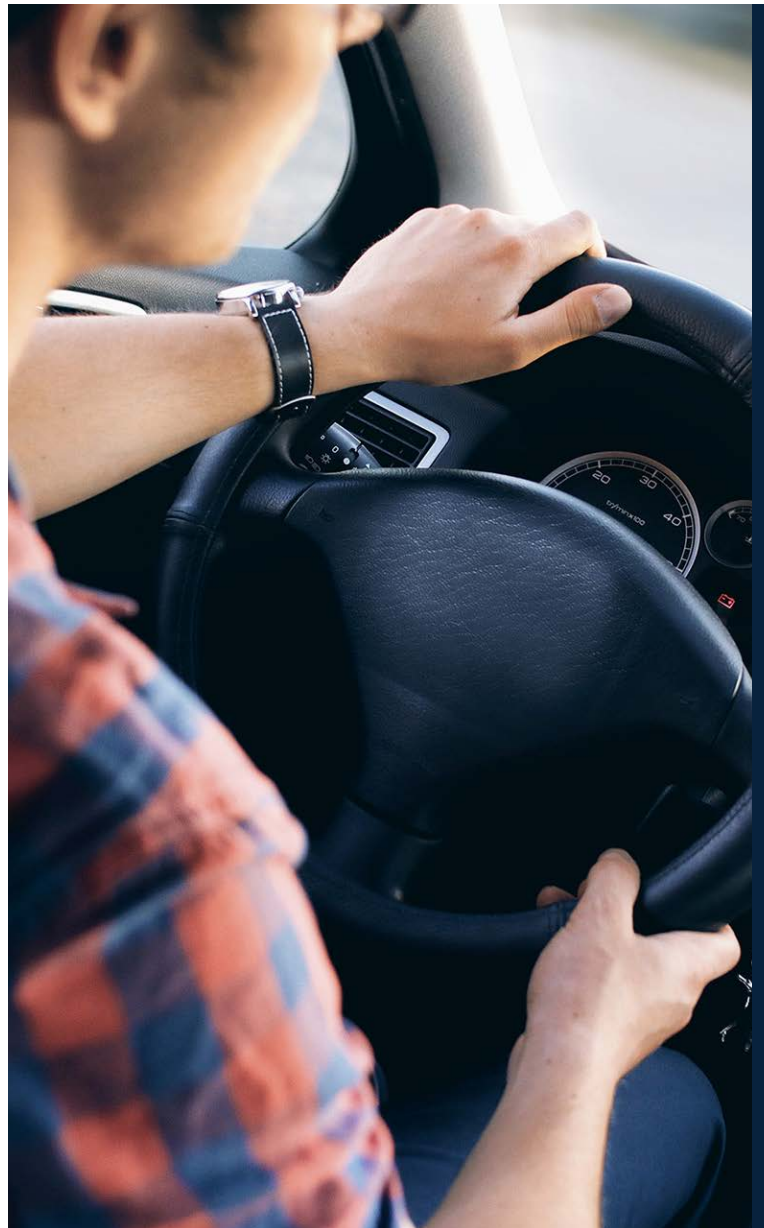
The pilot project collected the following information from participants: name, address, vehicle identification number, vehicle make/model and year, miles driven per month, mileage reporting method, contact information (email and phone number), and self-reported demographic information (used only for pilot evaluation purposes; such information may not be needed in a RUC system). The majority (83%) of participants felt they were asked to provide the just right amount of information, and 5% felt they were asked to provide too much.

That said, pilot participants noted concerns about tracking their location and movements. Survey respondents frequently linked privacy to data security (wanting to ensure their private information cannot be breached).

Aside from demographics and monthly mileage data, all the information collected in the pilot is already maintained by the Department of Licensing (DOL) in the vehicle registry database and protected under DOL's regulations and state law. Thus, the only new information that must be reported in a RUC system is the number of miles driven during the reporting period. Any additional information would be collected only at the option of the motorist.

Questions remain about how best to protect information. How will information remain secure? Who has access to the data? How much control will motorists have in sharing their data and information? Who will oversee requests for driver data, and will that oversight be effective? How and when will mileage data be destroyed?

In the pilot project, data security measures were developed and deployed to protect sensitive information of participants. These and other important privacy and data security measures can be identified, and additional protections developed during an early start-up phase of RUC. The WSTC recommends continued development and testing of privacy and data security measures during this initial transition towards a broad-scale RUC system. This will enable continued improvements well before the State transitions a wider range of vehicles from the gas tax to a RUC.



[Recommendation 11 adopted by the WSTC, see Appendix A-24 in Volume 3 of this Final Report]

CONTINUE REFINING

Recommendation: Work with other states to probe RUC compliance gaps.

Conduct research in collaboration with other states implementing RUC to understand compliance gaps, develop potential enforcement measures, and improve the integrity of RUC systems.

The WA RUC pilot did not test enforcement, since a voluntary activity offers little reason to assess the effectiveness of such measures. Instead, the pilot detected instances of noncompliance, attempted to diagnose the reasons, and encouraged voluntary compliance, for example by reminding noncompliant participants via text, email, and phone to report mileage by submitting an odometer image or plugging in a device. Despite the limited ability to test enforcement measures in a pilot, identifying ways to deter evasion and other forms of noncompliance in a RUC system is very important.

To supplement the limited insights gathered during the pilot test, a RUC avoidance tabletop exercise was conducted to determine the ways motorists could avoid a RUC, including intentional evasion and unintentional negligence. The exercise yielded numerous approaches for minimizing RUC avoidance and maximizing compliance.

One important element of a RUC program to minimize or negate incentives for drivers to cheat is that the state's gas tax must still be collected during the transition to RUC. Drivers that owe RUC will have already pre-paid some (or in some cases, all) of their RUC. The pilot successfully demonstrated that gas taxes paid at the pump could be credited back to a driver's RUC bill. There is much less financial incentive for a driver to evade paying their RUC bill when they realize they have already paid, for example, 90% of their RUC through gas taxes collected at the pump.

When asked to rank the importance of RUC being "easy to enforce, and costly to evade," participants elevated the ranking from the beginning of the test period to the end, from 51% to 58% saying "very important." This implies that, based on their direct experience with the

prototype, drivers became more aware of the importance of an enforceable RUC system. Similarly, when given the opportunity to provide feedback in focus groups and open-ended survey questions, many pilot participants pointed out the absence of enforcement in the pilot and emphasized its importance in a real system.

While the pilot observations and the tabletop exercise proved useful for discovering gaps as well as countermeasures to encourage and enforce mileage reporting and RUC payment, more work remains before a RUC can be widely-deployed as a replacement for the state's gas tax. Therefore, the WSTC recommends conducting more research to understand compliance gaps and develop potential enforcement measures for a future RUC system in Washington. This research should be done in collaboration with other states that have (or will soon be) implementing live RUC systems, including Oregon and Utah. In the meantime, several mechanisms exist to encourage or enforce RUC on a limited deployment of plug-in electric and hybrid vehicles, via registration surcharges.

[Recommendation 3 adopted by the WSTC, see Appendix A-24 in Volume 3 of this Final Report]



CONTINUE REFINING

Recommendation: Compliance and enforcement must be tested in a RUC start-up phase.

As RUC expands to more vehicles over time, the revenue stakes grow, as does the importance of compliance and enforcement. The details of compliance and enforcement mechanisms must be determined in an initial start-up stage of a RUC system.

The WSTC's recommendation to test compliance and enforcement during a start-up stage of a RUC system dovetails with the recommendation on page 74 (work with other states to research compliance and enforcement), and the recommendation on page 64 (limit the number of vehicles participating in the initial RUC start-up stage). During the start-up phase, the revenue stakes for a RUC system are low. With only a limited number of vehicles which otherwise pay little or no gas tax, noncompliance and gaps in enforcement do not threaten to undermine revenue collection. However, as the system grows to include more vehicles, the revenue stakes grow higher, as does the importance of robust, tested methods of encouraging and enforcing compliance.

The only way to test the effectiveness of a compliance regimen for mileage reporting is to deploy a live RUC system that requires drivers to report mileage and pay any charges owed with real money—not just simulated payments. Deploying a live RUC system will reveal gaps in enforcement and allow the State to test various approaches to gain RUC reporting and payment compliance. The Steering Committee's Pilot Project Report recommended three different approaches to encourage compliance:

- › **Policy/legal approaches.** Example: requiring RUC to be paid in advance of travel (or, by crediting gas taxes paid, RUC is paid concurrent with miles driven);
- › **Operational approaches.** Example: Flag certain behaviors for audit.
- › **Technology approaches.** Example: Always store the most recent odometer reading in a DOL database.

More information on the various approaches identified for testing during an early start-up phase can be found in the Volume 2 of this Final Report (Steering Committee's Final Report of Findings), Section 11.4.

Together with information learned from collaborating with Oregon and Utah (both states have now implemented live RUC systems for a limited portion of their respective fleets), Washington can develop, customize and test its own strategies and techniques for helping drivers remain compliant.

[Recommendation 5 adopted by the WSTC, see Appendix A-24 in Volume 3 of this Final Report]



CONTINUE REFINING

Recommendation: Border-area testing of RUC must be conducted.

During continued development of RUC, special focus must be given to cross-border and interoperability issues. Specific, detailed testing of border-area issues should be carried out as part of an initial start-up stage of RUC, as indicated in the *Forward Drive* federal grant proposal. In addition, new-and-improved mileage reporting methods are needed for more effective reporting of RUC mileage for frequent cross-border travelers.

The interconnection between Washington and other states (especially in the greater Portland-Vancouver metropolitan area) presents unique challenges to implementing a RUC system that collects and remits appropriate amounts to the proper taxing jurisdictions. A RUC West study estimated visitor-generated vehicle miles traveled (VMT) in Washington between 5–8.6% of total VMT. Short-distance local travel (between populated areas near borders) is estimated to be as much as 4% of all VMT in Washington (50–80% of all visitor generated VMT) due to significant local cross-border traffic between Vancouver, BC and Bellingham, WA; Portland, OR and Vancouver, WA; and several smaller cities and towns along the Washington/Idaho border.²⁰

Steering Committee members observed the possibility of gas tax arbitrage for Washington resident drivers who purchase fuel in Oregon (where the gas tax rate is 36 cents per gallon), but are credited for payments made based on Washington's higher gas tax rate of 49.4 cents per gallon. The net result is the driver's RUC bill receives a higher credit than they deserve, since they paid the cheaper Oregon gas tax.

This situation is perfectly legal and, in fact, happens every day among Washington motorists who frequently purchase gas in Oregon. Today, the State of Washington receives no gas tax revenue from these resident motorists, so even if this gas tax arbitrage opportunity is unaddressed in a WA RUC program, the State is no worse off financially than today. However, RUC presents the ability to recapture roadway revenues for miles driven in Washington, unlike the gas tax.

Gas tax arbitrage is but one issue related to border-area (or short-range) commuters between states. Further research and development of cross-border RUC methods are needed. Increased testing of Mileage Reporting Methods, as included in the *Forward Drive* federal grant proposal, with special focus on cross-border and interoperability issues must occur. In addition to technology solutions, the State should consider policies that might discourage or negate any financial incentive for Washington residents to purchase fuel in Oregon solely to avoid their RUC payment (although WSTC acknowledges there are other legitimate reasons to shop around for fuel, and those ought not be discouraged).

[Recommendation 8 adopted by the WSTC, see Appendix A-24 in Volume 3 of this Final Report]



²⁰ See Section 2.1.5 of this Final Report for further details.

CONTINUE REFINING

Recommendation: Engage with Oregon's RUC program to explore bi-state solutions for frequent Washington-Oregon travelers.

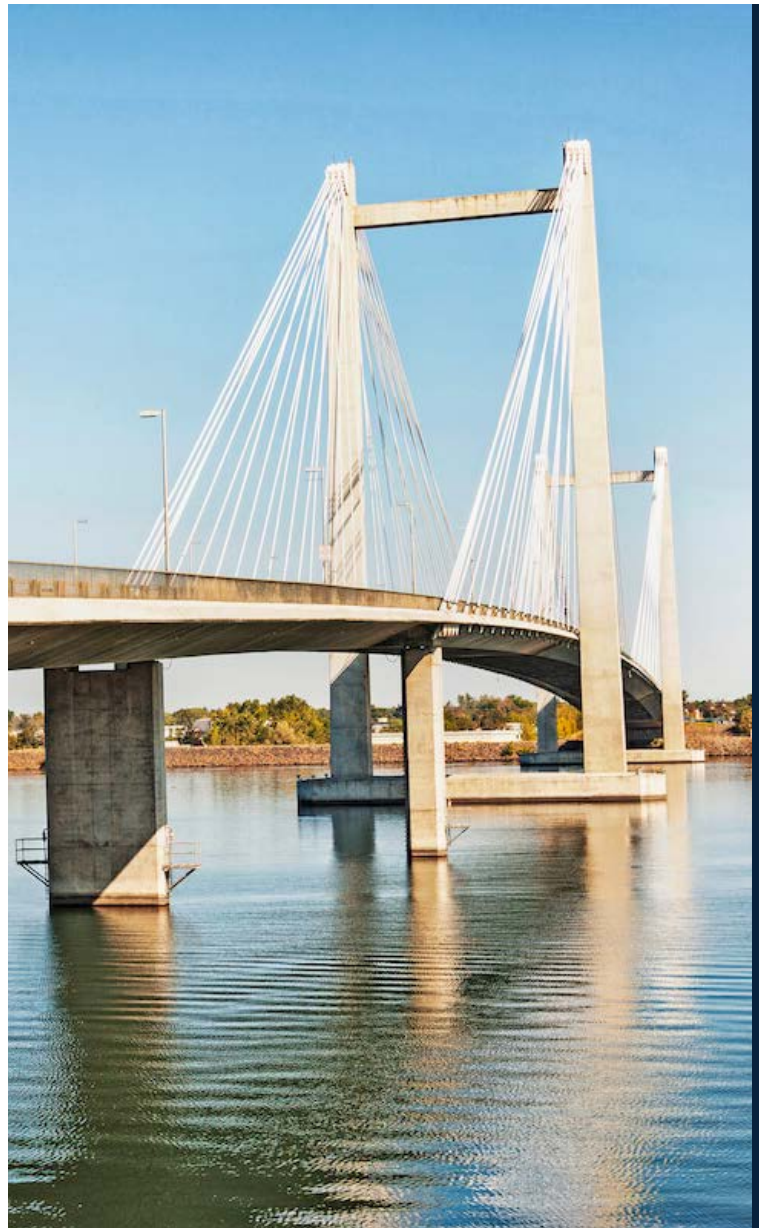
The State of Washington should engage with the Oregon Department of Transportation's OReGO program to explore bi-state RUC solutions for frequent Washington-Oregon travelers.

Specific to the issue of frequent interjurisdictional travel within the greater Portland-Vancouver metropolitan area, the Oregon Department of Transportation's OReGO road usage charge program shares an interest in developing easy, effective mileage reporting and payment mechanisms with Washington.

During the WA RUC Pilot Project, the WSTC and Oregon's OReGO program effectively collaborated and tested the WA RUC HUB, a specially designed RUC mileage reporting, accounting, and payment clearinghouse that helps facilitate transactions between states. The HUB was tested with participants from the OReGO program, and a small set of Washington pilot test participants, where drivers from both states received an integrated RUC invoice that showed mileage driven by jurisdiction and the corresponding RUC charges for each state. Drivers then paid their RUC invoices with real money (as opposed to a simulation with no money exchanged). This demonstration of the HUB was successful, and the approach should be further developed and improved, especially between Oregon (with a live RUC program already in effect) and Washington.

For further detail about the RUC HUB tested during the Pilot Project, see Section 11.1 of the Steering Committee's Pilot Project Final Report and Findings, published as Volume 2 of this report.

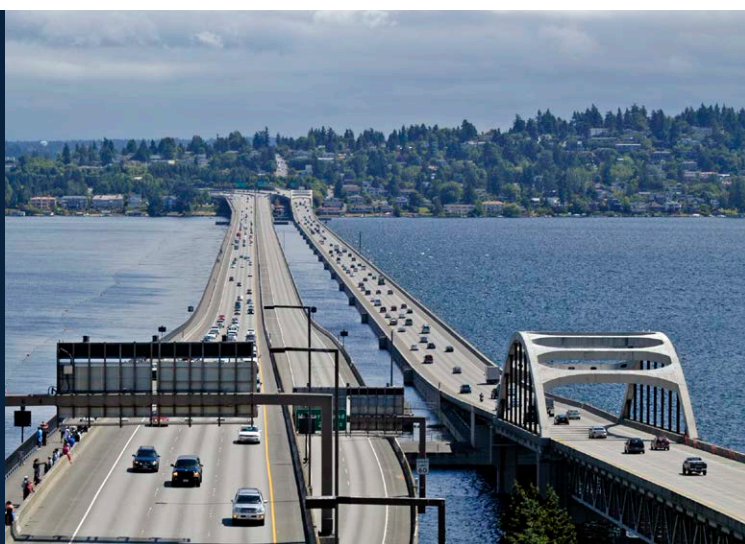
[Recommendation 9 adopted by the WSTC, see Appendix A-24 in Volume 3 of this Final Report]



CONTINUE REFINING

Recommendation: Leverage existing delivery mechanisms—including public-private partnerships—for cost-effective delivery of RUC services.

Further improvements are needed in mileage reporting methods that were tested in the WA RUC Pilot. In addition, new and potentially simpler methods of mileage reporting should be explored. Where possible, services already provided by the private sector should be leveraged to provide greater cost-effectiveness to the WA RUC system.



Although encouraging, the results of the WA RUC Pilot Project revealed areas for improvement in the mileage reporting methods offered to drivers. For example, in considering ease-of-use, the Steering Committee found:

- › The frequency, timing, and wording of odometer image reporting reminders must be optimized to improve the participant experience while maximizing compliance.
- › As the RUC invoice or statement is a vital communication tool, its design warrants further attention and improvement.²¹

As described in the Steering Committee's report (see Volume 2, Chapters 3 and 11), vulnerabilities exist with certain RUC mileage reporting methods. Technical, operational, and legal measures must be in place to deter fraudulent mileage reporting before RUC can be widely deployed as a replacement for the state's gas tax. More

development and testing is needed for smartphone-based mileage reporting methods to reduce the possibility of fraudulent out-of-state mileage deductions. These and other areas of improvement are needed in the mileage reporting approaches demonstrated in the pilot project.

The State should consider tapping capabilities available in the private sector to bring greater operational and cost efficiency, faster development and deployment of technology, ease-of-use, and better customer support to the WA RUC system. The pilot project successfully partnered with eight local vehicle licensing offices (VLOs, or subagents, which are private businesses acting on behalf of the State to perform licensing-related activities) to help drivers submit their odometer mileage reports to the WA RUC system. This service could be expanded to include every subagent in the state that wishes to provide these services. Other similar public-private partnerships could be explored to improve mileage reporting technologies and services for a RUC. Potential partners could include AAA of Washington and automotive service retailers like Les Schwab or Jiffy Lube.

Beyond in-person mileage verification services, continually seeking opportunities to work with technology firms, research and innovation hubs, automotive manufacturers and their suppliers, and transportation-related services such as traffic data providers could yield improvements in existing mileage reporting methods or even new breakthroughs.

The WA RUC Pilot Project demonstrated success in working with private businesses and innovation hubs to develop new ways to report mileage. The State should build on that early success by continuing to develop these partnerships during the next phase of implementation, research, development, and testing.

[Recommendation 6 adopted by the WSTC, see Appendix A-24 in Volume 3 of this Final Report]

²¹ See generally Chapter 6, WA RUC Steering Committee's Pilot Project Final Report and Findings, December 2019.

CONTINUE REFINING

Recommendation: During an initial start-up stage, develop and deploy techniques to reduce RUC cost of collection.

The *Forward Drive* federal grant proposal includes work sessions with other RUC-implementing states to identify ways to reduce the cost of collection. An initial start-up stage of a RUC system can test cost reduction strategies on a limited set of vehicles. All approaches should be tested and, if proven effective, deployed in the WA RUC system.

One of the main benefits of the gas tax as a revenue mechanism is how inexpensive it is to collect. Some estimates reveal a cost of collection at 1% or less of total revenue (not including cost of enforcement and evasion). This makes the gas tax the least expensive transportation tax of all to collect: lower than tolls, county road taxes, vehicle licensing fees, any form of urban congestion pricing, rental car taxes, parking—and per-mile charges.²² The cost to collect the gas tax is also less than for other public utilities, including water, sewer, electricity, and garbage.

Cost *effectiveness*, however, considers not only the cost to collect the revenue, but also the ability of the tax, fee or charge to *generate* revenue at financially and politically sustainable rates. The purpose of a tax is not to see how cheaply it can be collected; the purpose is to generate sufficient revenue to fund public goods or services. While keeping collection costs as low as possible leaves more revenue to be spent, if the tax mechanism itself is no longer capable of producing sufficient funding, it can no longer be considered cost-effective. This is the situation that must be confronted with the gas tax: it is a low-cost way to raise revenue for public roadways, but yields will significantly diminish in the coming years, thereby forcing difficult and frequent tradeoffs about how much to increase the tax rate on an ever-decreasing tax base to make up for chronic shortfalls.

Under all scenarios examined, when holding RUC and gas tax rates constant, a RUC generates more revenue, but is costlier to collect than the gas tax. RUC revenue depends on the number of vehicles subject to it, the per-mile rate, and the number of miles driven, while cost to collect depends primarily on the number of subject

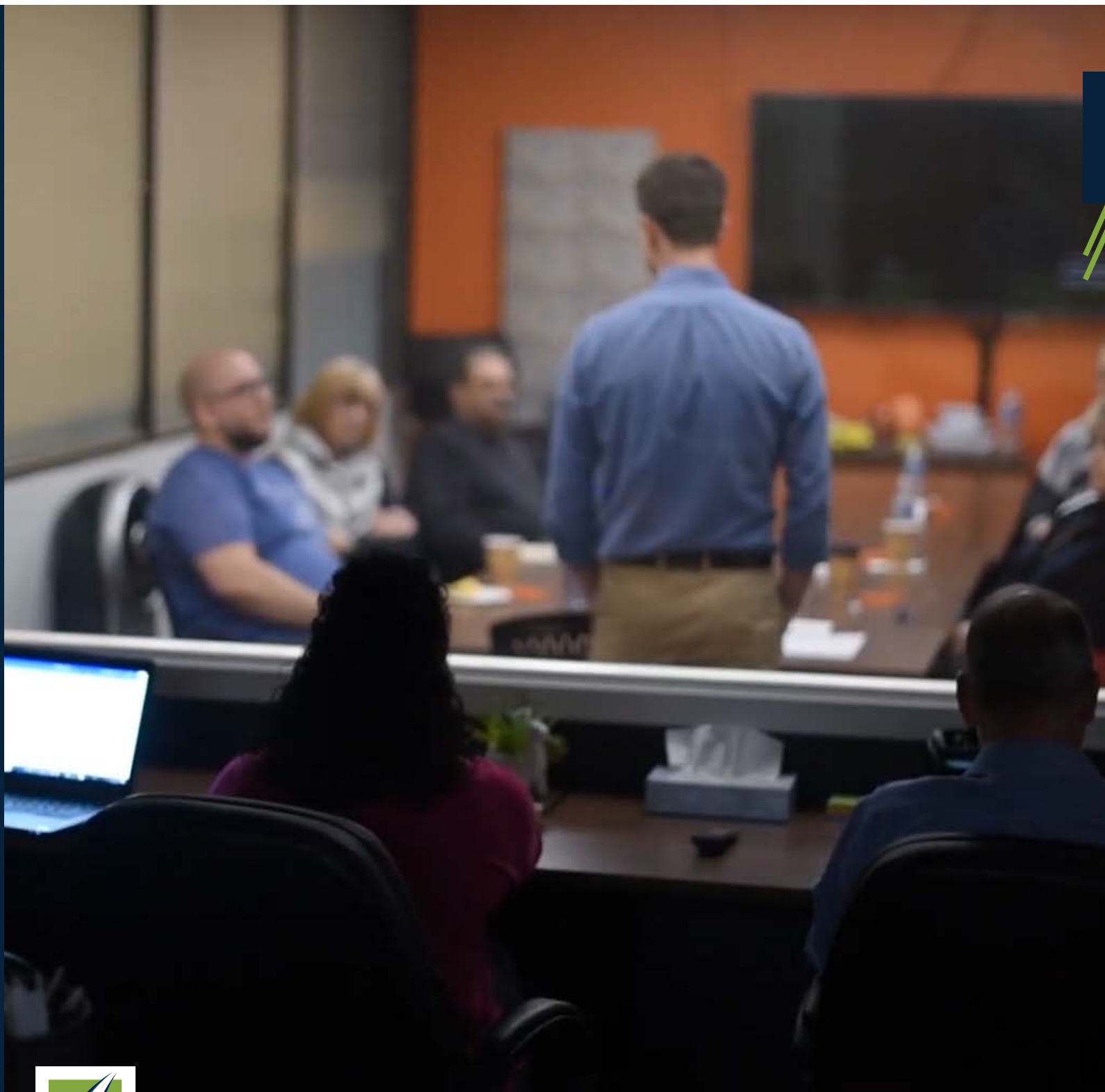
vehicles and the methods drivers use to report mileage. The precise cost will depend on a range of policy choices but, in general, the unit cost of collecting a RUC declines as the number of subject vehicles increases. Given the wide range of variables, it is not possible to precisely estimate what the cost of collection will be in a RUC system. Financial modeling conducted during the WA RUC Assessment indicated costs ranging from 4–18% of revenue, depending on the variables.

Open-ended responses to survey questions and focus group discussions revealed that many drivers are concerned about the potential complexity and cost of a RUC system that would apply to all registered vehicles in Washington. Collecting the gas tax is a long-standing method of revenue collection with low administrative overhead. Moving to a per-mile charge will require new reporting and payment systems, and participants had concerns about how this could be done most efficiently.

More work is needed to identify approaches and configurations of a RUC that could lower the cost of collections. WSTC's proposed *Forward Drive* project calls for intensive work sessions with Oregon and Utah to streamline RUC collection costs and find cost-sharing opportunities where appropriate. Coupled with WSTC's recommendation on page 78 to pursue RUC technology and service delivery through industry partnerships, numerous options can and should be developed and tested in the initial start-up phase of a limited scale RUC system.

[Recommendation 7 adopted by the WSTC, see Appendix A-24 in Volume 3 of this Final Report]

²² NCHRP Report 689, Cost of Alternative Revenue Generation Systems, Transportation Research Board, 2011.





part 3

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ADDITIONAL CONSIDERATIONS & OPTIONS

Equity and privacy are two of the most critical elements for a RUC system in Washington. Additional steps are underway to address both now

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3.1 ASSESSING POTENTIAL EQUITY IMPACTS OF RUC

Per legislative direction, WSTC will assess potential equity impacts of a RUC on communities of color, households with low income, vulnerable populations, and displaced communities.

Despite the pilot project evaluation's focus on the user-pay dimension of equity (see page 43 in Section 2.2.6 of this report for further information), WSTC recognizes that the concept of equity encompasses many other important dimensions, ranging from potential disparate impacts on populations with lower income to whether all state drivers should contribute to high-cost transportation facilities that primarily serve a single transportation corridor.

The Legislature specifically directed the WSTC to recommend "necessary next steps to consider impacts [of RUC] to communities of color, low-income households, vulnerable populations, and displaced communities." Future research work, as directed by the Washington Legislature, will include deeper analysis of the impacts of a RUC on vulnerable communities.¹

As part of its *Forward Drive* project submitted to the Federal Highways Administration (FHWA) for federal grant funding, WSTC has proposed to identify, model, and survey how a per-mile fee might disproportionately impact designated populations, including communities of color, households with low income, vulnerable populations, and displaced communities. Where measurable disparities are found, WSTC will develop potential mitigation measures and if feasible, conduct a limited scale "sub-test" of mitigation measures as a component of the broader WA RUC prototype demonstration that is proposed in the *Forward Drive* project.

The WSTC will:

- › Conduct detailed research and analysis on how a RUC compares to the existing transportation funding mechanisms (such as the gas tax or vehicle license fees) to identify any disparate impacts based on race or ethnicity, household income, disability, or other social or economic vulnerabilities.
- › Conduct focus groups, surveys, and interviews with individuals and groups representative of these different segments of society to more deeply understand challenges presented by a RUC, the range of potential impacts, and possible mitigation measures.
- › Identify legal, operational, financial, and policy options and measures capable of helping mitigate any identified disparate impacts of RUC.
- › Issue a WA RUC Equity Analysis and Mitigation Measures report that synthesizes all information gathered and provides options for the Legislature to consider before initiating any wide-scale implementation of a RUC system in Washington. To the extent that the identified mitigation measures are capable of testing, one or more will be incorporated as a "sub-test" (i.e., smaller-scale test conducted as one element of an overall larger RUC demonstration).

The ability to engage participants in this Equity Analysis research and potential testing will be enhanced if the *Forward Drive* project partners with King County Metro's proposed pilot project that will test income-based fare payment methods across public and private mobility services. WSTC has discussed this opportunity with King County Metro, and both parties see mutual benefit from collaboration.

Not all mitigation measures identified in research will be suitable for a live sub-test; some measures may be policy-oriented and not easily tested.

¹ See Section 1(a) of ESHB 1160, Chapter 416, laws of 2019, which is a legislative proviso directing further research work by the WSTC on equity impacts.

3.2 PROTECTING VEHICLE MILEAGE & LOCATIONAL DATA FROM PUBLIC DISCLOSURE

Legislative changes are needed to exempt data collected in a RUC program from public disclosure.



In their findings, the WA RUC Steering Committee identified gaps in the legal protections for personal privacy in a RUC system. For example, current Washington State law does not specifically exempt RUC mileage data from public disclosure. WSTC accepted this finding and recommends that the Legislature enact privacy measures that carry the force of law. More specifically, WSTC recommends that at minimum, RUC mileage data should be granted similar privacy protections that currently exist for the state's tolling program, where information related to roadway use and payments are exempt from public disclosure.

WSTC's recommended statutory exemption of RUC data from public disclosure is provided at right with new provisions shown in underline.

WSTC further recommends that the Legislature adopt Model Privacy Policy provisions developed during this WA RUC Assessment in any future RUC program authorized in Washington. (See Appendix A-9, published as Volume 3 of this Final Report, for the detailed Model Privacy Policy.)

Washington's Public Records Act RCW 42.56.330 Public Utilities & Transportation

The following information relating to public utilities and transportation is exempt from disclosure under this chapter:

- (1) Records filed with the utilities and transportation commission or attorney general under RCW 80.04.095 or 81.77.210 that a court has determined are confidential under RCW 80.04.095 or 81.77.210;
- (2) The addresses, telephone numbers, electronic contact information, and customer-specific utility usage and billing information in increments less than a billing cycle of the customers of a public utility contained in the records or lists held by the public utility of which they are customers, except that this information may be released to the division of child support or the agency or firm providing child support enforcement for another state under Title IV-D of the federal social security act, for the establishment, enforcement, or modification of a support order;
- (3) The names, residential addresses, residential telephone numbers, and other individually identifiable records held by an agency in relation to a vanpool, carpool, or other ride-sharing program or service. Participants' names, general locations, and point of contact may be disclosed to other persons who apply for ride-matching services and who need that information in order to identify potential riders or drivers with whom to share rides;
- (4) The personally identifying information of current or former participants or applicants in a paratransit or other transit service operated for the benefit of persons with disabilities or elderly persons;
- (5) The personally identifying information of persons who acquire and use transit passes or other fare payment media including, but not limited to, stored value smart cards and magnetic strip cards, except that an agency may disclose personally identifying information to a person, employer, educational institution, or other entity that is responsible, in whole or in part, for payment of the cost of acquiring or using a transit pass or other fare payment media for the purpose of preventing fraud. As used in this subsection, "personally identifying information" includes acquisition or use information pertaining to a specific, individual transit pass or fare payment media.
 - (a) Information regarding the acquisition or use of transit passes or fare payment media may be disclosed in aggregate form if the data does not contain any personally identifying information.
 - (b) Personally identifying information may be released to law enforcement agencies if the request is accompanied by a court order;
- (6) Any information obtained by governmental agencies that is collected by the use of a motor carrier intelligent transportation system or any comparable information equipment attached to a truck, tractor, or trailer; however, the information may be given to other governmental agencies or the owners of the truck, tractor, or trailer from which the information is obtained. As used in this subsection, "motor carrier" has the same definition as provided in RCW 81.80.010;
- (7) The personally identifying information of persons who acquire and use transponders or other technology to facilitate payment of tolls. This information may be disclosed in aggregate form as long as the data does not contain any personally identifying information. For these purposes aggregate data may include the census tract of the account holder as long as any individual personally identifying information is not released. Personally identifying information may be released to law enforcement agencies only for toll enforcement purposes. Personally identifying information may be released to law enforcement agencies for other purposes only if the request is accompanied by a court order;
- (8) The personally identifying information of persons who acquire and use a driver's license or identicard that includes a radio frequency identification chip or similar technology to facilitate border crossing. This information may be disclosed in aggregate form as long as the data does not contain any personally identifying information. Personally identifying information may be released to law enforcement agencies only for United States customs and border protection enforcement purposes. Personally identifying information may be released to law enforcement agencies for other purposes only if the request is accompanied by a court order; ~~and~~
- (9) The personally identifying information of persons who report their vehicle odometer mileage, including any vehicle location information, in relation to a road usage charge or similar mileage tax collected by or on behalf of the State of Washington. This information may be disclosed in aggregate form as long as the data does not contain any personally identifying information. Personally identifying information may be released to law enforcement agencies only for United States customs and border protection enforcement purposes. Personally identifying information may be released to law enforcement agencies for other purposes only if the request is accompanied by a court order; and

(9)(10) Personally identifying information included in safety complaints submitted under chapter 81.61 RCW.

Note: new provisions shown in underline.

WSTC Final Report for the Washington
State Road Usage Charge Assessment

January 2020

Volume 1

