



Appendix C: Road Usage Charge Transition Roadmap

January 2024

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PREFACE

Forward Drive was a research, development, demonstration, and public engagement effort of the Washington State Transportation Commission. The project sought to advance understanding of and implementation pathways for per-mile road usage charging (RUC) as an alternative to motor fuel taxes and alternative fuel vehicle registration surcharges. The project aimed to address several key issues for RUC including principally equity, user experience, and cost of collection. As reported in Volume 1, the project unfolded in several stages. A series of appendices contain more detailed results. These appendices are organized as explained and illustrated below.

Appendix A. Forward Drive began with research spanning several activities including financial analysis, equity outreach and analysis, user experience research, and cost of collection reduction workshops (Appendices A-1 through A-4, respectively). The purpose of the research was to explore the financial, equity, user experience, and cost impacts of RUC under a variety of deployment scenarios. This research informed the design of experience-based simulations and pilots of various elements of a RUC program.

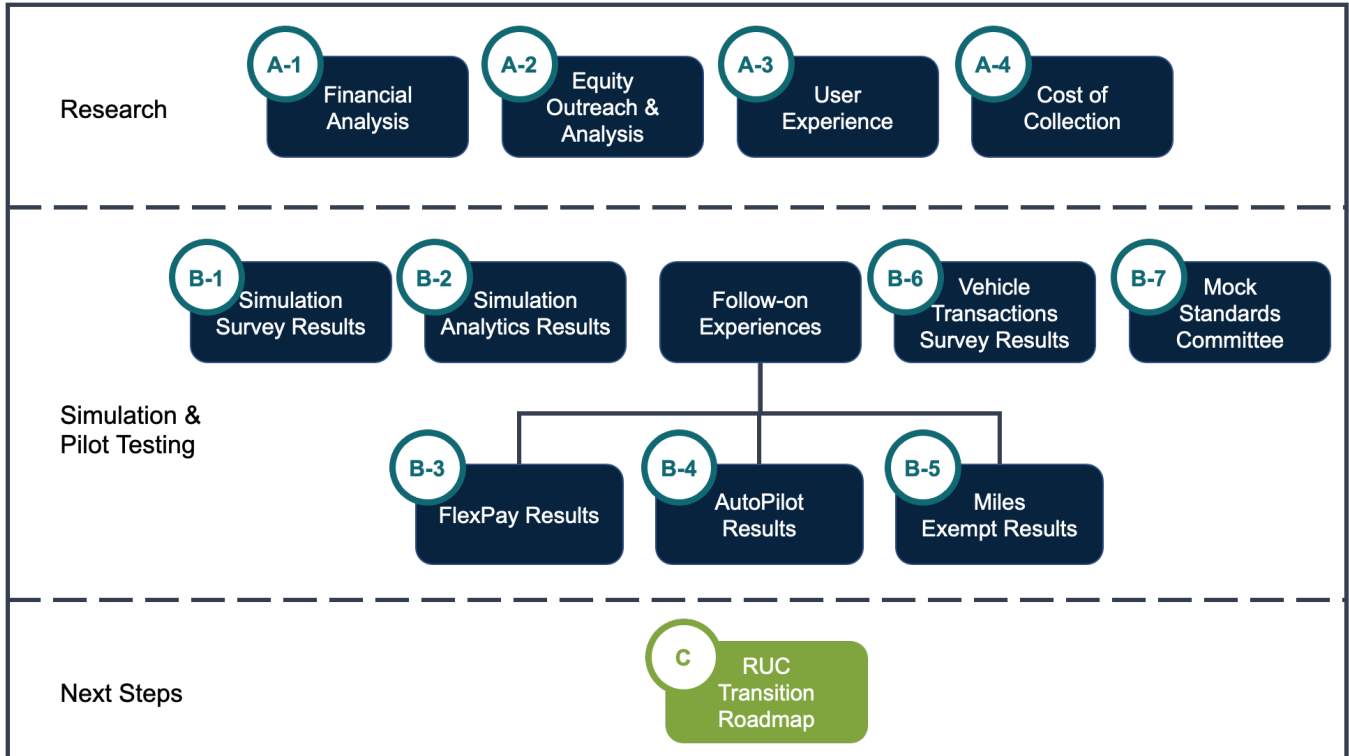
Appendix B. The research stage led directly to the design and development of simulations and pilots of RUC program elements spanning several areas to reflect the multiple objectives and research findings. The centerpiece of the simulation and pilot testing stage was an interactive simulation of RUC enrollment, reporting, and payment. As described in Volume 1, the simulation offered over 1,100 Washingtonians an opportunity to experience RUC in as little as a few minutes, followed by a survey about their preferences and opinions. The detailed results of the simulation survey and the measurements of the simulation itself are presented as separate reports (B-1 and B-2, respectively).

Within the simulation, participants could opt into one of three follow-on experiences, each designed to further test a specific feature of RUC of interest to Washington stakeholders and policymakers:

- FlexPay tested installment payments, allowing participants to pay their RUC over four payments instead of all at once (B-3).
- AutoPilot tested using native automaker telematics to report road usage as an alternative to self-reporting or other technology-based approaches to reporting (B-4).
- MilesExempt tested a self-reporting approach for claiming miles exempt from charges, such as off-road and out-of-state driving (B-5).

The simulation and pilot testing stage also included a statewide survey of Washingtonians' vehicle transactions designed to understand existing transactions and preferences and possibilities for how RUC reporting and payment could potentially be bundled with such transactions (B-6).

Lastly, the simulation and pilot testing stage included a mock standards committee of RUC experts from jurisdictions and industry. The committee simulated the process of creating standards for RUC to support cost reduction, enhanced user experiences, and multi-jurisdictional interoperability (B-7).



Appendix C details a transition roadmap for RUC in Washington drawing on the results of the research and simulation and pilot testing, as well as the updated recommendations regarding RUC implementation from the Commission to the Washington Legislature in 2022.

1.0 INTRODUCTION

This report reviews the range of choices and timeline for key policy questions that must be addressed for the initial enactment of a small-scale road usage charge (RUC) program and subsequent transition to a large-scale program. Based on input from the RUC Steering Committee, nine key policy questions frame the initial enactment and transition to RUC as summarized in the image below.

From experiences elsewhere, the transition from enactment to a large-scale RUC program is estimated to take at least approximately one decade. This transition can be divided into three phases:

- Phase 1:** The period immediately following enactment of the initial, small-scale RUC program. This period involves initial launch and operations of a small-scale program impacting several tens of thousands of vehicles.
- Phase 2:** Toward the middle of the decade, the program begins to scale to several hundreds of thousands of vehicles. During this time frame, as the program enrollment and revenues grow, so does the importance of program features such as exemptions, gas tax credits, enforcement, and use of revenue.
- Phase 3:** Toward the end of the decade, the program reaches maturity with easily over one million vehicles paying RUC and on a pathway toward all vehicles transitioning to RUC.

- What vehicles are subject to RUC?
- How is road usage reported?
- What is the RUC rate?
- How is participant privacy protected?
- What road usage is exempt from RUC and how?
- How are gas taxes handled?
- How are RUC revenues used?
- How is the program enforced?
- Multi-state cooperation

Figure 1 below illustrates these three phases along with the policy questions to address at each phase.

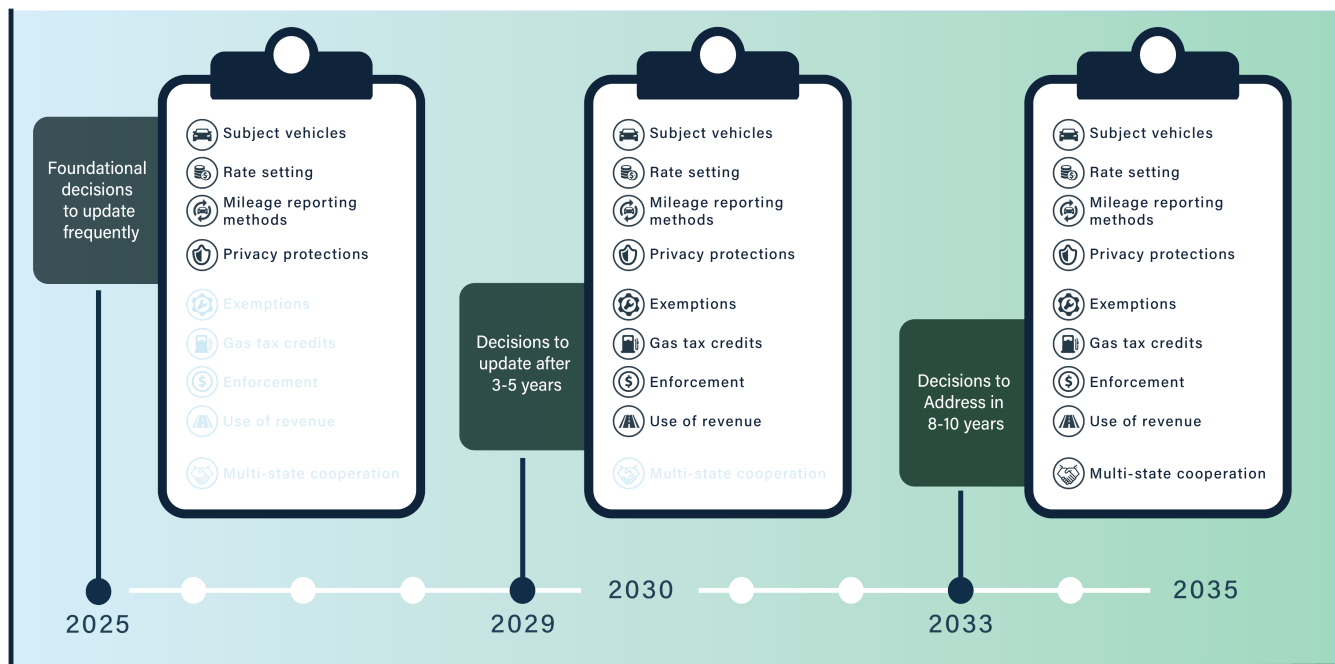


Figure 1: Prioritization of Policy Questions During the Decade of RUC Transition

2.0 KEY DECISIONS FOR INITIAL PROGRAM LAUNCH

Among the nine key policy questions, the most consequential single decision is which vehicles will be subject to RUC? The initial choice of subject vehicles determines the size of the program as measured in enrolled vehicles. This, in turn, will dictate the revenue potential, the size of the program administration and corresponding cost of operations, the amount of outreach and public communication to undertake, and the range of possible subsequent steps for expanding RUC to other vehicles.

2.1 Vehicle Subject to RUC

2.1.1 Is RUC Mandatory, Voluntary, or Optional?

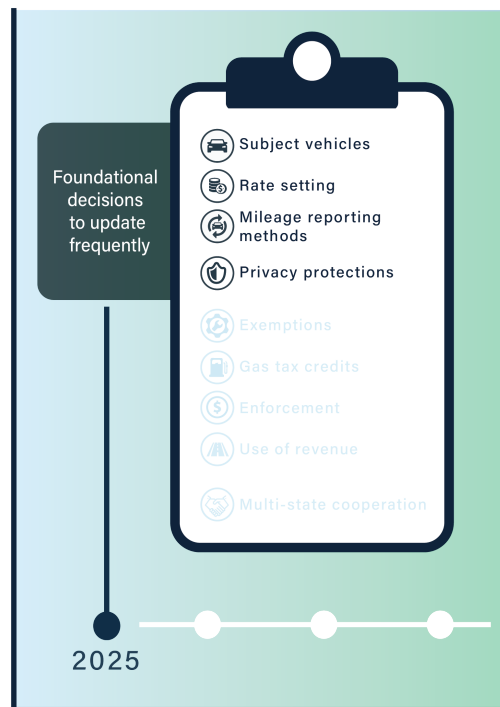
The first choice to make in establishing subject vehicles in a RUC program is whether vehicles will be required to enroll or not. There are three approaches to this question:

- **Mandatory.** In a mandatory program, subject vehicle are required to report and pay RUC. Currently New Zealand is the only jurisdiction globally where RUC is mandatory for light-duty vehicles (currently diesel cars and, starting April 1, 2024, EVs). Hawaii will become the first state in the U.S. to require RUC, when it becomes mandatory for EVs on July 1, 2028.

The benefits: Program administrators can more easily predict the volume of enrolled vehicles and, based on the characteristics of subject vehicles, how to manage the program. Program administrators may even identify subject vehicles in advance and conducted targeted outreach to provide vehicle owners with information about the program and answers to questions.

The downside: The possibility of having too many vehicles upon the initial program launch, resulting in high costs to prepare and potentially overwhelming DOL. New Zealand avoided this downside by applying the program to diesel vehicles at a time when there were few, which almost inadvertently allowed the program to grow gradually to the point where it is today, with over 800,000 light-duty vehicles paying RUC and poised to transition to the other 3 million vehicles.

- **Voluntary.** In a voluntary program, subject vehicles have the choice of whether to report and pay RUC, but there are no additional vehicle fees such as EV or hybrid surcharges that RUC replaces. Oregon's initial program was voluntary since the state did not have flat EV or fuel-efficient vehicle fees at the time. Several years after launch, the Legislature changed the program, adding new registration fees for vehicles over 40 MPG and EVs. Currently, the program remains voluntary for vehicles rated between 20 and 40 MPG.



The benefits: Voluntary programs tend to attract relatively small numbers of participants, usually the curious and civic-minded. Like a pilot test, a voluntary program allows the state to build experience and optimize program operations before scaling to larger numbers of vehicles.

The downside: While the voluntary approach is sufficient to establish a program, the revenues are not likely to outweigh the costs of administration during the voluntary period.

- **Optional.** In an “optional” program, subject vehicle owners have the option to pay RUC or pay a vehicle registration surcharge. In the active programs in Oregon and Virginia, EVs and vehicles rated above 40 MPG and 25 MPG, respectively, have the option of paying RUC or paying an annual registration surcharge. In Utah’s active program and Hawaii’s pending program (2025-2028), EVs have the option of paying RUC or paying a fixed annual surcharge. Utah, Hawaii, and Virginia also cap RUC at the amount of the flat fee.

The benefit: Optional programs strike a balance between under-enrollment in a voluntary program and the risk of overwhelming enrollment in a mandatory program. It also gives those vehicles initially subject to RUC the choice of whether to enroll, which makes the transition minimally disruptive, even allowing many early adopters to save money relative to flat registration fees.

The downside: Flat vehicle registration fees are often set at or below the average of what gasoline-powered vehicles pay in gas taxes in a year. This is the case in Washington. An optional RUC that is also capped at the amount of the flat fee sets expectations among motorists about the amount they will owe, when in the long run a RUC capped at the average amount can leave significant usage-based revenue uncollected, as much as 40 percent.



2.1.2 What Categories of Vehicles Are Included in a RUC Program?

The next decision is which categories of vehicles will be initially subject to (or eligible for, in the case of a voluntary program) RUC. This choice is consequential because it determines the size, cost, and revenue potential for the RUC program in its initial years. It also dictates the remaining choices for how to expand the program in time.

For example, if the initial choice is that all new vehicles must enroll in the RUC program, then the only vehicles eligible for future transition steps would be older vehicles, a portion of the fleet that grows smaller with each passing year. By contrast, if the initial choice is to limit eligible new vehicles to those with certain characteristics such as EVs, or vehicles above a specified MPG threshold, then more choices remain for how to expand the program in future years.

- **New vehicles.** This approach would apply RUC to all new vehicles after a certain prescribed year (e.g., Model Year 2028).

The benefit: A transition for new vehicles provides certainty for new vehicle buyers as to what to expect, especially if the state can communicate the new program in advance of launch. Given that new vehicles are more fuel-efficient, on average, than existing vehicles, and a growing proportion of new vehicles are EVs, PHEVs, and hybrids, new vehicles represent a large part of the revenue challenge that RUC aims to address.

The downside: If the initial RUC program is open to all new vehicles on a certain date, there is a possibility that the volumes could be overwhelming for DOL, given there are approximately 300,000 new vehicles sold in Washington each year, or approximately 800 per day.

Transitioning to RUC for all new vehicles may be a more appropriate step later in the maturation of the RUC program than at the outset.

- **MPG threshold.** This approach would apply RUC to those vehicles above a certain prescribed MPG rating. A variation of this approach would cover only *new* vehicles rated above a certain MPG threshold, which would have the effect of further limiting the size and complexity of initial program roll-out.

The benefit: This approach allows RUC to address the fundamental revenue challenge, which is that vehicles with fuel economy above the average of 20 MPG pay less for roads in gas taxes than vehicles below the average. An MPG threshold also allows the Legislature to limit the number of vehicles in the RUC program by setting a high threshold at first, then gradually lowering it as confidence in the system grows. Moreover, new vehicles are expected to grow in MPG over time (including a significant increase in the share of EVs among new vehicles), which allows the program to naturally grow in enrollment and sustain revenues as the fleet changes.

The downside: Determining the MPG rating for individual vehicles could be challenging. DOL would need to add MPG data to its system, a feature that currently lacks and would not be trivial to add. Moreover, regardless of the consistency of the EPA as a data source, individual consumers will experience on-road MPG that varies from official ratings, which could lead to customer complaints about fairness.

- **Electric Vehicles.** Under an EV transition, RUC would apply to EVs, but not PHEVs or hybrids. A variation of this approach would cover only new EVs, which would have the effect of further limiting the size and complexity of initial program roll-out.

The benefit: With the rapid increase in EV adoption over the past several years, and with Washington currently outpacing every state except California in EV market share among new vehicles sold, this approach addresses the long-term challenge that EVs represent for road funding. By giving EVs either the option to enroll in RUC in lieu of paying the flat fee (optional), or the requirement to enroll in RUC and eliminating the flat fee (mandatory), the Legislature can address the expected decline in revenue as electric-powered miles gradually displace gasoline-powered miles driven. Another advantage of this approach is that DOL already identifies EVs for the existing flat fee.

The downside: Starting with EVs leaves highly fuel-efficient internal combustion engine vehicles out of the RUC program, which does not address revenue losses associated with those vehicles. This may be acceptable for initial launch designed for program establishment with a manageably-sized segment of the fleet.

- **PHEVs and/or hybrid vehicles.** PHEVs and hybrid vehicles are often considered for inclusion in an initial RUC program. Under this approach, vehicles would be subject to RUC based on their engine type.

The benefit: PHEVs and hybrids represent portions of the vehicle fleet that contribute less in gas taxes overall. Moreover, DOL can identify PHEVs and hybrid vehicles since it already does so for the flat vehicle fees they must pay.

The downside: PHEVs and hybrids represent a wide range of fuel economies. As defined in Washington law, PHEVs have fuel economy ratings from 18 to 127 MPGe, while hybrid vehicles have ratings from 11 to 59 MPG. Applying a RUC to these classes of vehicles could be complicated on the margins, especially for vehicles that already contribute significantly through

fuel taxes. Utah initially included both PHEVs and hybrid vehicles alongside EVs in its road usage charge program, but later eliminated them to focus on EVs.

The initial choice of subject vehicles from the above choices sets the stage for the longer transition to a full-scale RUC program over a decade. Figure 2 illustrates the range of program size in 2027 under five initial subject vehicle scenarios

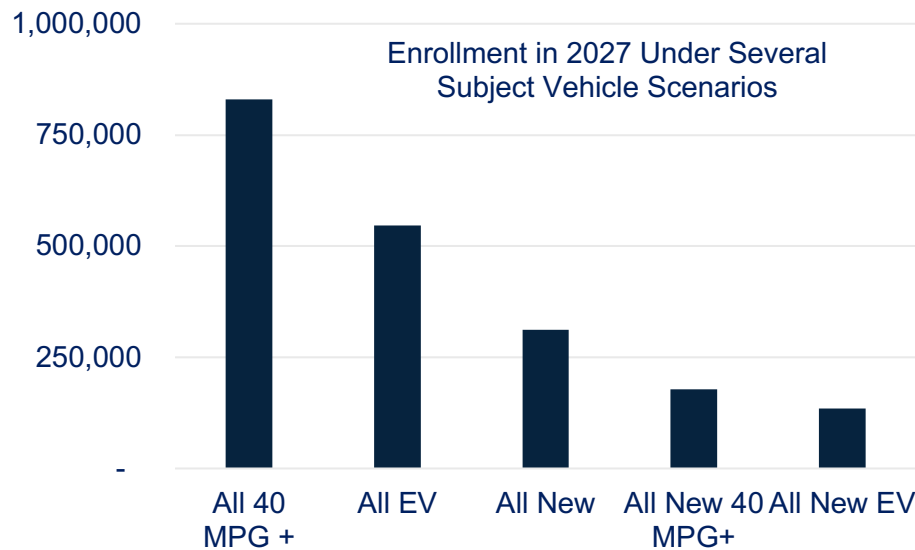


Figure 2: Approximate Number of Vehicles Subject to RUC in 2027 Under Various Transition Approaches

Some key observations:

- Should the Legislature start with a mandatory program on all vehicles rated 40 MPG or higher (including all EVs), the number of vehicles subject to RUC in 2027 would be approximately 800,000.
- By contrast, starting with only new EVs in 2027, the number of vehicles enrolled in 2027 would be just over 100,000 (assuming EV adoption rates of 43 percent in 2027 per the ZEV targets from California adopted by Washington, out of total new sales of just over 300,000 vehicles).
- The other scenarios—including all EVs (new and old), all new vehicles, and all new vehicles rated 40 MPG and higher—have first-year enrollments that range from just over 150,00 to just over 500,000. These values correspond to an average daily enrollment of between approximately 350 and 2,300 vehicles. For comparison, DOL and subagents processed just over 22,000 vehicle registration-related per day transactions in Fiscal Year 2023, meaning RUC transactions under these scenarios would represent between 1.5 and 10 percent of transactions in the first year of a program if launched in 2027.
- By making any of these scenarios optional instead of mandatory, the number of RUC transactions could be reduced to a fraction of the totals seen under the mandatory scenarios. Experience from other states reveals an adoption rate of less than 10 percent of eligible vehicles when RUC is optional, but these rates could be higher if the program is communicated to the public as a cost reduction opportunity as compared to paying a flat fee.

Figure 3 illustrates the enrollment pace under the various scenarios discussed.

- Waiting to start a RUC program until after 2027 will result in a larger volume of subject vehicles for the program’s first year.
- If the program is mandatory, the number of vehicles enrolled will grow relatively quickly through 2035.
- Should Washington meet the growth in EV adoption called for by the 100 percent new sales target in 2035, enrollment in RUC would range from just over two to just over three million vehicles by 2035.

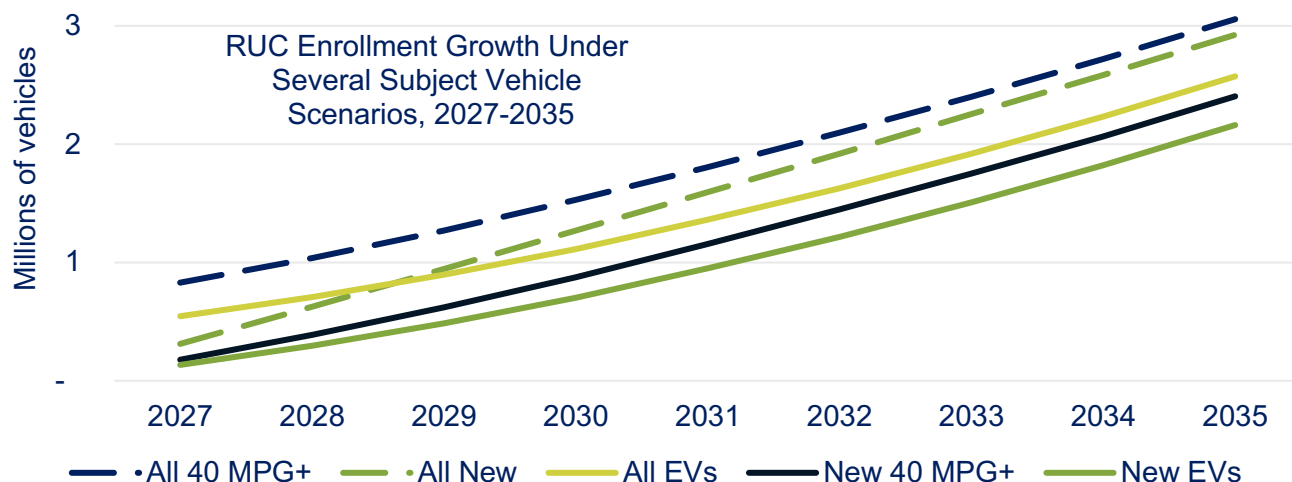


Figure 3: Approximate Number of Vehicles Enrolled in RUC, 2027-2035

The key to initial decision making will be to ensure that the program is kept *small* enough to mitigate risks, including financial risks, associated with a speedier enrollment rate.

The initial decisions will also dictate the range of choices for future changes in eligibility. Under all the examples reviewed in this section, the RUC program grows to over two million vehicles by 2035, and in one case to over three million vehicles. The remainder of the fleet would naturally turnover, with the majority entering the RUC program in the ensuing decade, and a small minority of older vehicles continuing with the gas tax for another decade or two after that. Once the program reaches such a large scale, the Legislature could choose to apply RUC to those remaining vehicles at a future date retroactively, moving the model year for RUC eligibility backward in time in stages, such as several model years per calendar year (e.g., Model Years 2023 through 2027 become subject to RUC beginning in 2035). Monitoring of enrollment, revenues, and administrative costs can inform the decision on whether and how to extend RUC to additional vehicles regularly during the decade following initial enactment.

2.2 Rate Setting

The initial RUC program must feature a base per-mile rate. With just thousands or perhaps tens of thousands of vehicles, the relative magnitude of revenues at stake in an initial, small-scale program is

modest. The consequences of rate setting grow over time as the program and its revenue generating capacity grow. That said, the initial RUC program involves questions of principle for how to set the initial rate. Choices include:

- **Revenue-neutrality with the gas tax.** This approach requires calculating a revenue-neutral rate based on what the average internal combustion engine vehicle pays in gas taxes. This is the approach the Commission has studied at the Legislature’s direction since 2013, with the resulting rate of approximately 2.5 cents per mile.
- **Revenue target.** This approach requires calculating a rate based on meeting a specified revenue target.

Once an initial rate is established, the Legislature can revisit rates periodically or assign authority for rate refinements to an independent agency such as the Commission, as has been the case for ferry fares and tolls. Especially in the early years, as the program’s performance is monitored and results including revenue and cost of collection are revealed, the need and opportunity for rate updates will increase.

In addition to the base rate, several rate factors are possible for a RUC program as researched over the past several years by the Commission. The initial program can launch with none or a few of these factors, noting most decisions will need to be revisited as the RUC program matures.

- **Cap on RUC owed.** The Legislature could enact a cap on RUC owed to limit the impact on individual motorists during the initial years of a transition. As Hawaii, Virginia, and Utah have done, the cap could be equal to the EV registration surcharge, currently \$225 in Washington.
- **Standard mileage exemptions.** *Forward Drive* tested a “standard exemption” for the first time in the 2023 RUC pilot, using 200 miles as the amount based on initial testing with a small group of volunteer participants in user-experience research. The notion of the standard exemption serves to provide drivers with a base discount for assumed miles driven out of state or off public roads.

The standard exemption proved popular, with 80 percent of participants electing it over an automated method of recording exemptions or a manual method of claiming exemptions. A higher standard exemption reduces revenue but also reduces the cost as the percentage of participants who opt for more costly automated mileage reporting methods and manual mileage exemption claims declines. A lower standard exemption has the opposite effect. The precise level of a standard exemption could be established early at a relatively low level and adjusted frequently to balance the foregone revenue with the cost of administration.

- **Discounts for miles driven above a threshold.** Rather than capping RUC at a certain amount, the per mile rate could be discounted for miles driven above a specified threshold each year. This effectively reduces the marginal cost of driving for those vehicles driven the greatest number of miles. The benefit of this approach is that it recognizes concerns of rural residents, professional drivers, and others who fall into categories perceived to drive the greatest number of miles. The drawback of this approach is that it rewards those deriving the greatest benefit from the road network, with the balance of responsibility falling on others who drive less.
- **Income-qualified rate discounts, caps, or exemptions.** Research from *Forward Drive* found that offering some sort of concession to motorists based on their income was generally welcomed, both by those who might qualify for such concessions and those who would not. Merely offering discounts, caps on charges, or exempt miles based on income has a “halo

effect” which causes others to perceive the program more fairly, even if they do not personally benefit. As with discounts for miles driven above a certain threshold, this approach could lead to cross-subsidies, in this case with relatively higher-income motorists covering some costs on behalf of lower-income motorists.

- **Rate discounts based on vehicle weight, emissions class, MPG, or other factors.** RUC introduces the possibility of varying the per-mile rate based explicitly on vehicle characteristics, a prospect that does not exist with fuel taxes. Examples of vehicle factors that can serve as the basis for a rate adjustment include vehicle weight, emissions class, MPG, size, or any other characteristic that can be measured or categorized. The benefit of such rate factors is to attempt to address competing policy priorities. The drawback is that such rate factors lead to cross-subsidization, as is the case with discounts for high-mileage and/or low-income drivers.
- **Rate escalators such as inflation or gas taxes.** The fuel tax has been raised frequently since its inception at one cent per gallon a century ago. The primary driver of rate increases has been highway cost inflation. Since the fuel tax is an excise tax, revenues do not rise and fall with increasing costs; rather, they rise and fall strictly with increasing or decreasing fuel consumption.

Likewise, RUC is effectively an excise tax on miles driven, meaning the mechanism of a per-mile charge by itself will not automatically account for the increasing cost of driving one mile. To address this mismatch, the Legislature could choose to index the per-mile RUC rate to an inflation index, such as the highway construction cost index. Alternatively, the Legislature could tie the RUC rate to the fuel tax rate, as Oregon has done, where the RUC rate in cents per mile is equal to five percent of the fuel tax rate in cents per gallon. For example, if the fuel tax is 40 cents per gallon, the RUC rate is two cents per mile. If the fuel tax increases to 60 cents per gallon, the RUC rate increases to three cents per mile. The advantage of this approach is to address the impacts of cost inflation through automatic rate-setting. The drawback of this approach is that it removes the influence and role of the Legislature in making rate adjustments.

Each of these rate adjustment factors can be added in time. However, the implications for both revenue collected and cost of administration grow significantly as the size of the program grows and as rate adjustments grow more complex. In addition, multiple rate adjustment factors can undermine and cloud understanding and agreement around the fundamental purpose of RUC, which is to generate sustainable funding. There is a risk of creating constituencies at conflict over how much they pay relative to one another.

There will likely be a need to revisit rate factors frequently during the first decade of program operations. These are opportunities to restate and revisit the foundational purpose of and the basis for RUC rates, while studying the impacts of any changes in rates on revenues, distribution of costs paid by various user groups, and costs of administering any proposed changes. Examples of refinements include:

- If the program starts with an annual cap, gradually increase the cap as EV adoption and program enrollment grow.
- As caps are phased out, introduce rate discounts for high-mileage drivers above a certain threshold.
- As enrollment extends to older vehicles more likely to have low-income owners, introduce an income-based rate discount or mileage exemption.

- As Washington nears 100% ZEV sales, reduce or remove introductory ZEV discounts.



2.3 Methods of Road Usage Reporting and Payments

The Commission's RUC research has generated numerous findings related to methods of road usage reporting. The key choices available for initial enactment of a program are discussed below.

- **Self-declaration of odometer readings.** This method involves vehicle owners reporting the number of miles driven by providing their odometer readings periodically either online or to vehicle registration agents. In the *Forward Drive* pilot, self-declared odometer readings were tested through an online simulation. Close to 90 percent of participants preferred this method of reporting. The advantage of this approach is that it represents a low-cost launch method that most Washingtonians seemed to accept in testing. The disadvantages stem primarily from concerns expressed in testing about trusting others to report accurately and honestly. In addition, some participants expressing interest in the ability to claim exemptions for miles driven off public roads in Washington. These results suggest that self-declaration of odometer readings could serve as a significant part of a solution for mileage reporting if implemented along with other features to address trust and exemptions.
- **Odometer image reporting.** To provide a more accuracy and certainty to odometer-based RUC, this approach asks vehicle owners to share a photo of their odometer through a smartphone application or via text message. Odometer image reporting was tested in the 2018-2019 Washington RUC pilot. Although participants who chose the method found it easy to use, compliance was more challenging than other, more automated methods. Participants required reminders to upload their odometer images periodically, and a substantial minority regularly forgot. As a variation on this reporting method, the *Forward Drive* pilot included odometer image reporting within the simulation as an approach for enforcing accurate, honest reporting of odometer mileage. The advantage of this approach is that, when incorporated into self-reporting, it improved trust in the system significantly among pilot participants. In addition, odometer image reporting is relatively low-cost, especially if used only to spot check a portion of the total pool of RUC-paying vehicle owners, adding less than 1 percent of revenue per year to administer. The disadvantage of this approach is that it requires some technology integration with DOL, and it requires vehicle owners to take additional steps when registering their vehicles.
- **Automated reporting via plug-in devices, smartphone apps, or in-vehicle telematics.** As newer vehicles with advanced technology enroll in the program, the possibility for vehicle-based reporting utilizing on-board telematics becomes more likely, offering an opportunity for customers to opt in to lower-cost methods of automated reporting compared to plug-in devices.
- **Combinations of the above.** Providing customers with choices has been a long-standing principle of the RUC Steering Committee. Odometer declaration can provide a viable, efficient, simple starting point for implementing RUC in the near term, but introducing additional, viable, cost-efficient methods at the start or over time preserves choice.

In addition to determining the methods of mileage reporting, two aspects of payments must be decided initially.

- **Is RUC pre-pay or post-pay?** Legally, RUC can be enacted as a requirement to pay in advance (e.g., a flat fee or estimated amount) as a condition of registration, with the amount owed reconciled based on actual distance traveled the following year. Another alternative is to make RUC owed at the end of a reporting period based on actual distance traveled, as a pre-

condition for registration renewal. The legal construction of RUC as a pre-pay or post-pay requirement (or both, under varying individual circumstances such as what mileage reporting method is chosen) has operational implications that make it important to address properly at the start, to avoid costly system changes later.

- **Are installment payments available?** *Forward Drive* tested installment payments as an option for RUC and found them marginally helpful, primarily for low-income motorists. However, the threshold for finding installment payments useful was relatively high, even among low-income participants, at around \$100. The amount of RUC owed after accounting for gas tax credits was quite low by comparison, about \$30 on average. Installment payments may not be critical to establish at the start of a RUC program, but as taxes and fees paid at vehicle registration increase over time, and as the number of RUC-eligible vehicles grows over time, the importance of an installment payment option likewise grows.

2.4 Privacy Protection

Privacy protection continues as a top concern for a RUC program among participants. Even though an odometer-based program would not require any vehicle location reporting, it is helpful for program enactment to establish privacy protection provisions both for the initial program as well as for any contemplated future evolutions of the program. The Commission's prior RUC research includes a model privacy policy and statutory language for enactment of an initial RUC program, including a menu of choices for each key privacy protection provision. Two key features of an initial program are:

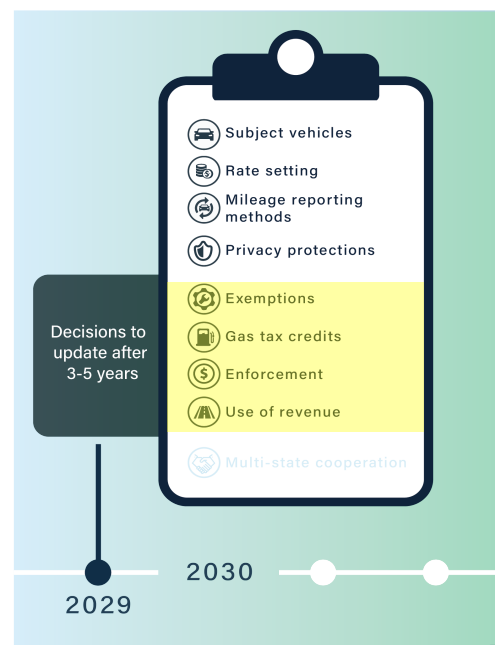
- Requiring that the state provide at least one mileage reporting choice that does not require any location data.
- Limiting the use of the data collected in a RUC program to program purposes and including provisions for destruction of data and penalties for its misuse.

Many of the other provisions contained in the Commission's model privacy protection policy can be included in an initial program, in anticipation of future changes in how data are collected and managed, to provide solid foundational protections. Over time, these provisions should be regularly revisited to ensure relevance to the program and sufficient protection of customer data, including any requirements for data security of state agencies and third parties involved in collecting and storing customer data.

3.0 FUTURE DECISIONS

After the initial launch of a small-scale RUC program, four additional decisions will need to be made as the program matures and expands: exemptions, gas tax credits, enforcement, and use of revenues.

By contrast with the “subject vehicles” question, which shrinks in importance over time, the importance of these four questions grows over time. The reason is that, as the program evolves and grows over time to include more and different types of vehicles, the relevance and applicability of gas tax credits to the vehicles in the program grows. Likewise, as the number of enrolled vehicles grows, the probability of requests for automated exemptions for certain types of road uses from customers is likely to increase. And as revenues grow, so do the need for enforcement and agreement of sustainable, long-term revenues uses.



3.1 Exemptions for Miles Driven

Two questions arise related to exemptions for miles driven in a RUC program.

- Which miles are exempt from RUC?
- How should motorists be able to claim exemptions?

Exempt miles. Washington law does not exempt Washington motorists from paying tax on motor fuel consumed in vehicles that are required to be registered in Washington, even if that fuel is consumed while driving a vehicle out of state or off road. Instead, the Legislature directs a proportion of fuel tax receipts to off-road purposes including the outdoor recreation vehicle fund, the snowmobile fund, the marine fund, and the aeronautics fund. Similarly, the Legislature could choose to mimic the fuel tax statutes and not offer any exemptions for miles driven off public roads in Washington. However, pilot testing in 2018-2019 and again in 2022-2023 assumed that any miles driven off public roads in Washington could be exempt from RUC. This includes miles driven out of state and miles driven off road altogether.

Methods of exempting miles vary as described below.

- **Standard exemptions** offer vehicle owners the opportunity to exempt a flat number of miles rather than keeping records (paper or electronic) of their exempt miles.
- **Manual exemptions** require vehicle owners to keep records of their off-road miles in a manner satisfactory to the state. The rules for such record-keeping could be delegated to the administering agency and likely would follow similar rules for claiming fuel tax refunds for uses other than motor vehicles such as agriculture and landscaping equipment.
- **Automated exemptions** require the use of technology that measures eligible exempt miles driven and automatically deducts them from the total miles reported for RUC. Such technology must be certified by the state.

Findings from *Forward Drive* demonstrated the popularity and utility of offering a standard exemption for miles driven off road or out of state as a means of improving customer perceptions of fairness and reducing costs of administration. *Forward Drive* also demonstrated that a manual exemption claim process is feasible, albeit administratively cumbersome. Few participants chose to participate in the manual claims test, and even fewer chose to follow through with making monthly claims.

The Legislature could enact a standard exemption at the start along with a manual exemption option, but revisit both over time based on program performance. For example, if set low initially, the level of the standard exemption may need to increase over time if data reveal that the administrative cost savings outweigh the revenues lost under a higher exemption level. Alternatively, as lower-cost technology options become available to measure exempt driving more accurately with appropriate privacy protections in place, motorists may increasingly opt for automated reporting in lieu of standard exemptions. This trend may support reducing or eventually phasing out standard exemptions.

3.2 Gas Tax Credits

As a long-term replacement for the gas tax, a RUC program will need to issue credits for gas taxes paid by motorists at the pump, as was tested in the Commission's pilots. The Legislature faces choices for whether and how to handle such credits as described below.

For gas tax credits that are less than RUC due, the credit could be applied toward the RUC owed, leaving a smaller RUC balance. This is the approach tested successfully in pilot testing in 2018-2019 and again in 2022-2023.

For gas tax credits that are greater than RUC due, the options are not as simple. Here, the Legislature has choices:

- **No refunds.** Following the approaches taken by Oregon and Virginia, the refund question can be avoided by not allowing vehicles below average fuel economy to enroll in the RUC program. This means such vehicles would continue to pay gas tax and not RUC. The benefit of this approach is to simplify administration by avoiding the costly, complex process of issuing cash refunds to numerous vehicle owners. The drawback to this approach is that motorists who pay more in gas taxes than they pay in RUC could see their inability to participate in RUC as unfair.
- **Cash refunds.** To address the fairness challenge, the Legislature could opt to make cash refunds available to motorists who claim it under a RUC program. However, this is likely to be costly and complex to administer.
- **Income-qualified cash refunds.** To narrow the number of refund claims, the Legislature could impose qualifying criteria such as claimants falling below a certain income threshold. This would have the dual benefit of making refunds available to those most in need while reducing the volume of claims and corresponding cost of administration. Nevertheless, this is likely to be costly and complex to administer, if not moreso than cash refunds for all.
- **Apply credits toward other vehicle fees.** To avoid the cost of administering cash refunds, the Legislature could require application of gas tax credits in excess of RUC owed to other vehicle-related fees such as registration renewal. The drawback of such a policy is the difficulty of administering it, as it would require creation of customer account management approaches and systems that currently do not exist at DOL.
- **Income-qualified credit toward other vehicle fees.** As with cash refunds, the ability to port gas tax refunds as credits toward vehicle fees could come with an income qualification.

The Commission's research has highlighted the practicality of maintaining the gas tax for at least as long as outstanding motor vehicle fuel tax bonds, if not longer. In addition to servicing debt, the gas tax serves as pre-payment toward RUC, which reduces the amount owners of internal combustion engine vehicles owe in RUC, reduces the cost of collecting RUC, and limits the motivation and impact of any customer attempts at evading RUC. Administering credits of gas taxes toward RUC is a relatively straightforward policy to administer, in the case that the credits are less than the RUC due, as two pilot tests have shown.

However, once RUC extends to vehicles who pay more in gas taxes than they pay in RUC, the question arises of whether and how to address potential "over payment" of gas taxes relative to RUC owed. This question will need to be revisited when the Legislature decides to include vehicles with below state average fuel economy in the RUC program.

3.3 Enforcement

For a voluntary RUC program, enforcement is not required. Vehicle owners who fail to participate simply unenroll and revert to their normal vehicle registration process and fees. In a mandatory program, however, some degree of enforcement is necessary. As *Forward Drive* research showed, in the early years of a transition to RUC, the top strategy for enforcement is to encourage voluntary compliance through strong user experience design and customer communications. Other strategies include preserving flat vehicle fees (for EVs, PHEVs, and hybrids) and gas taxes (for internal combustion engine vehicles) as backstops against non-payment or under-reporting.

Still, some degree of enforcement will be required for those vehicle owners who willfully choose not to report and pay RUC or inadvertently neglect to report and pay RUC. Choices include:

- For motorists who do not report miles driven, impose a **flat fee**. The amount of the fee could start equal to the flat fee option currently imposed on EVs and increase over time.
- For motorists who under-report their miles driven, a higher **penalty rate** per mile could apply for the miles failed to report.
- For motorists who fail to pay, **cancelled registration** could be imposed in a manner similar to failure to pay other vehicle fees.
- Motorists who commit fraud could be referred to relevant, comparable sections of criminal code.

In the early years, with relatively less revenue at stake, compliance can be measured, and the effectiveness of the various techniques monitored. As enrollment and revenues grow toward the middle and end of the transition decade, the Legislature can revisit whether the program merits new or more stringent tools for encouraging and maintaining compliance.

3.4 Use of Revenues

The spectrum of possible uses for RUC revenue has been discussed in prior stages of RUC research. At a high level, choices include restricting RUC revenue to highway purposes (consistent with the constitutional provisions governing use of the gas tax), transportation purposes (a broader use than gas taxes), or highway maintenance and preservation (consistent with the use of gas taxes but narrowed to specific uses called out by the Legislature). In any of these cases, it will be important to consider options for how to maintain funding levels for current off-road recipients of gas tax and vehicle fee revenues, including the possibility of re-creating the methodology used under the gas tax of directing a

small portion of RUC revenue to such uses (under the assumption that some miles for which RUC was paid were not miles driven on public highways in Washington).

As the state RUC program grows through the transition period, monitoring RUC revenue collection levels and determining the distribution of those revenues will need to be addressed with each budget cycle, including consideration of such factors as city and county formula distributions, tribal distributions, and off-road account recipients. As the RUC program grows, the stakes for revenue distribution grow. As a result, the decision made at the outset is likely to be revisited during the decade of transition.

4.0 EVOLVING THE RUC PROGRAM OVER TIME



4.1 Multi-State Cooperation

Five states have enacted RUC programs as of 2023. By the end of the first decade of a RUC program in Washington, it is expected that many more states will have live programs, with some of them likewise approaching maturity with several hundred thousand if not millions of vehicles. As these RUC programs grow across the country, the need to fully address interstate travel and expand multi-state cooperation grows. Collaborative research presents opportunities to reduce operational costs, improve the user experience, and harmonize operational concepts across state lines.

Completing this multi-state research within the first decade can position Washington for harmonization of its RUC policy and program with those of neighboring states. For example, further work remains on establishing national RUC standards in collaboration with other states which will enable the lowering of overall administrative costs and bring greater efficiency. Standards can improve enforcement across borders as well as the seamlessness of interstate travel under multi-state RUC programs. In addition, concepts for administering multi-state RUC require additional research and testing.

5.0 PERSPECTIVE: RUC TRANSITION EXPERIENCES ELSEWHERE

Other states and countries have approached RUC for light-duty vehicles as a gradual transition rather than a sudden shift: “turning a dial rather than flipping a switch.” While a sudden shift to RUC is possible, it carries significant financial, operational, and public acceptance risks. Lawmakers and program administrators in other states and countries have therefore opted for a measured approach, starting with small-scale programs and ensuring stable, scalable, cost-efficient operations before applying RUC to greater numbers of vehicles. This gradual approach has taken several forms as illustrated in the examples below.



New Zealand implemented RUC in the late 1970s on all vehicles not powered by taxed motor fuels and on all vehicles above 3.5 metric tons (approximately 8,000 pounds). Among motor fuels, New Zealand taxes only gasoline, so RUC applies to diesel and electric vehicles (EVs). The government enacted a RUC exemption for EVs in 2009 which expires for light-duty EVs in April 2024, at which time they will begin to pay RUC. The heavy-duty EV exemption expires one year later. Light-duty diesel vehicles, which do not pay fuel taxes, have been paying RUC in New Zealand for over four decades. Diesel cars have grown in popularity sharply in New Zealand over the past several decades, and they now represent approximately 20% of the light-duty fleet. As a result, the population of light-duty vehicles in New Zealand’s RUC program has gradually grown from a handful at enactment in the late 1970s to over 800,000 as of 2023. With the EV exemption expiring in 2024, the proportion of light-duty vehicles paying RUC will increase further to 22 percent. The New Zealand RUC program offers customers the ability to purchase pre-paid distance in 1,000-km increments, with paper licenses affixed to the car windshield used for enforcement, including via inspections at annual safety checks. Although most light-duty vehicle owners opt for paper distance licenses, they may also choose from a range of certified private offerors of electronic distance reporting in the commercial market. As of late 2023, the incoming government has expressed its intention to begin transitioning gasoline vehicles (the remaining 78% of the light-duty fleet) to RUC and is likely to examine the need for enhanced technology and compliance to support this final and larger-scale step in New Zealand’s RUC transition.



Oregon became the first jurisdiction outside New Zealand to implement RUC on light-duty vehicles in 2013. The program started as purely voluntary and attracted just over 1,000 participants. The Oregon legislature has enacted several provisions to make the RUC program a more attractive revenue option for motorists and policymakers alike. First, the state imposed a flat registration surcharge on EVs. Second, the state imposed a flat registration surcharge on internal combustion engine vehicles rated above 40 miles per gallon (MPG). Third, Oregon barred vehicles below 20 MPG from enrolling in the program, as those vehicles were already paying more in state gas taxes than RUC owed, and the state found it costly to process refund checks. Participants who enroll in Oregon’s RUC program earn gas tax credits and are exempt from annual vehicle registration surcharges. Instead, they pay per mile (currently 1.9 cents per mile). There are currently just under 1,000 vehicles enrolled in Oregon’s program. Oregon maintains an open market for administration of its RUC program by certified third-party commercial account managers (CAMs). There

are currently two certified CAMs active in Oregon. The state also maintains one option called the Oregon account manager (OAM) for those customers who prefer to transact with the state directly. Further expansion of Oregon’s RUC program requires additional legislation either to make enrollment mandatory for some vehicles or to change the per-mile rates and flat fee amounts to encourage higher levels of participation. The Legislature has previously debated bills that would make the program mandatory for new vehicles above a certain MPG threshold beginning with model year 2027.



Utah enacted its road usage charging program in 2018 on EVs, hybrid vehicles, and plug-in hybrid electric vehicles (PHEVs), later amending it to exclude hybrids and PHEVs. Utah collects annual registration surcharges on all three of these vehicle types, and the road usage charge program was created as an alternative for vehicle owners to pay in lieu of flat fees. Those who enroll pay per mile with an annual cap equal to the amount of the annual surcharge for their vehicle type. To encourage more enrollment of EVs, Utah recently raised the amount of the flat registration fee and lowered the per-mile rate. At the same time, to reduce operational costs, Utah is in the process of transitioning from plug-in devices to odometer images as the basis for mileage reporting, with in-vehicle telematics continuing as an option for some vehicles. At present, there are approximately 4,000 vehicles enrolled in Utah’s program. The Utah legislature has indicated 2031 as a target date for transition of all light-duty vehicles from fuel tax to road usage charging.



Virginia enacted its RUC program in 2020 and went live in 2021. Like Oregon, any vehicle rated above a certain MPG may enroll (currently 25 MPG). Also, like Oregon and Utah, Virginia motorists may choose between a flat annual fee and a per-mile fee. Unlike Oregon and Utah, however, Virginia’s per-mile rate varies with the MPG rating of the vehicle, designed to capture the increment of gas tax avoided. Vehicles with higher MPGs pay a higher per-mile rate; as a result, Virginia’s program does not need to include credits for gas taxes. The RUC is capped at the flat fee, which also varies based on MPG and is based on the average gas tax paid by a vehicle traveling 85% of the state average 11,600 miles per year. There are currently over 20,000 vehicles enrolled in Virginia’s program.



Hawaii in 2023 became the fourth state to enact a RUC program in the U.S. The state currently collects a \$50 annual surcharge on EVs. The new law calls for EVs to be offered a choice between the \$50 surcharge and a RUC of less than one cent per mile, beginning in 2025. In 2028, the flat fee option will go away, and all EVs must pay RUC, which is currently capped at \$50. The legislation also calls on the Hawaii Department of Transportation (HDOT) to prepare a plan by the end of 2025 for transitioning all light-duty vehicles to RUC by 2033. By 2028, when RUC becomes mandatory for EVs, Hawaii expects approximately 20,000 EVs in the state.

In Washington, with close to seven million light-duty vehicles, successfully transitioning the vehicle fleet to a RUC program requires at least one decade. If RUC is enacted by 2025, this aligns with the timeframe for the state’s transition to 100 percent zero-emission vehicle (ZEV) sales by 2035. Based on the experiences of other states and countries, one decade is the approximate time frame required for a measured transition to RUC on most or all light-duty vehicles.