

Washington Road Usage Charge Assessment

2021 Annual Report

Submitted to
Governor Inslee and the Washington State Legislature



Washington State
Transportation Commission

January 13, 2022



WA RUC

Test Drive the Road Ahead

Executive Summary



In early 2020, the Washington State Transportation Commission recommended that the Legislature begin a gradual transition from taxation of motor fuels to per-mile road usage charging (RUC) as the preferred mechanism for funding state roads and bridges. Since that time, several trends in the automotive sector have spurred increased adoption of electric vehicles. These trends will accelerate the decline of the fuel tax, giving renewed importance to the Commission’s 2020 recommendations and ongoing research.

In 2019, the Legislature directed the Commission to seek federal funding to conduct additional research on RUC, including financial, equity, technology, and cost reduction analyses, leading to small-scale demonstrations or “mini-pilots” of enhanced approaches to RUC that build on the work of the 2017-2019 WA RUC pilot. In July 2020, the U.S. Department of Transportation awarded the Commission a federal grant to conduct this additional research and testing. The work, dubbed *Forward Drive*, began in October 2020.

The *Forward Drive* project focuses on addressing specific hurdles that remain for the advancement of RUC as a replacement for motor fuel taxes. Key hurdles that *Forward Drive* aims to address include understanding and addressing equity impacts of RUC relative to fuel taxes, improving user experiences, incorporating new technologies, and reducing costs through innovation and multi-state collaboration. The first phase of work, largely complete, provides insights that inform the policy design and implementation approach for a small-scale RUC system, and for a series of demonstration projects to take place in 2022.

Automotive Trends in 2022



Significant federal investment in EV purchase incentives and charging infrastructure



Re-establishment of stricter fuel economy standards



Reduced EV purchase price and increased model choices for consumers

EXECUTIVE SUMMARY

Research completed in 2021 includes the following.

- To anticipate accelerating declines in revenue, the Commission built a **revenue modeling tool capable of estimating long-term revenue impacts of vehicle fleet changes including accelerated electrification** as well as changes in driving due to emerging trends of teleworking, automation, and ridesharing.
- To assess equity impacts of RUC, the Commission conducted community engagement focused on historically underserved communities and a quantitative analysis of the impacts of RUC relative to the gas tax by income level. Analysis revealed that low-income drivers currently pay more per mile driven in gas taxes than higher-income households. **Low-income households would, on average, save under a RUC.**
- To expand the range of choices and possibilities for operating a RUC system, the Commission explored emerging technology and business applications with a focus on improving equity, ease of use, compliance, and cost-efficiency in RUC. This research led to discovery and development of **new methods of RUC to test in mini-pilots in 2022 ranging from self-reporting miles driven to allowing customers the choice to report miles directly from their vehicle's telematics platforms.**
- To reduce cost of collection, the Commission hosted a series of workshops with the Department of Licensing and staff from the Oregon and Utah RUC programs that **explored and devised approaches for collecting RUC more cost effectively.**

Based on these research activities, 10 mini-pilot concepts have been identified for small-scale testing in 2022. The Commission's *Forward Drive* research program will culminate with a report on the comprehensive results and findings of the research and testing in 2023. In addition, the Commission will produce a roadmap for how Washington can more fully transition from fuel taxes to RUC based on the findings of the research.



Introduction

In 2012, the Legislature directed the Washington State Transportation Commission to research RUC as a possible replacement for state fuel taxes. Since then, the Commission has convened and sustained a legislative and stakeholder Steering Committee of 30 members, determined the feasibility of RUC, conducted a business case analysis, developed operational concepts, and tested those concepts in a 2,000-vehicle, statewide, year-long pilot from 2018-2019. At the conclusion of 2019, a report was issued on the analysis and findings of the assessment and pilot test, and 16 recommendations were provided to the Legislature on how to advance RUC in Washington State.

In 2019, the Legislature directed the Commission to assess the potential impacts of a RUC on underserved communities, including communities of color, low-income households, vulnerable populations, and displaced communities. The Legislature further directed the Commission to seek federal funds to conduct additional research on financial impacts of new mobility trends, update RUC operational concepts, and consider the equity impacts of RUC. The Commission submitted its application to the U.S. Department of Transportation in Fall 2019.

In January 2020, while awaiting results of the grant application, the Commission issued RUC recommendations to the Legislature. **The Commission recommended, among other things, that the Legislature begin a gradual transition away from the gas tax, by authorizing a RUC program initially for electric, hybrid, and state-owned vehicles.** In addition, the Commission identified a range of areas for additional research, many of which were included in the Commission’s application for additional federal funding.

In July 2020, U.S. DOT awarded the full grant amount sought by the Commission for additional research. The remainder of this report summarizes the findings of the research conducted to date and next steps for 2022.

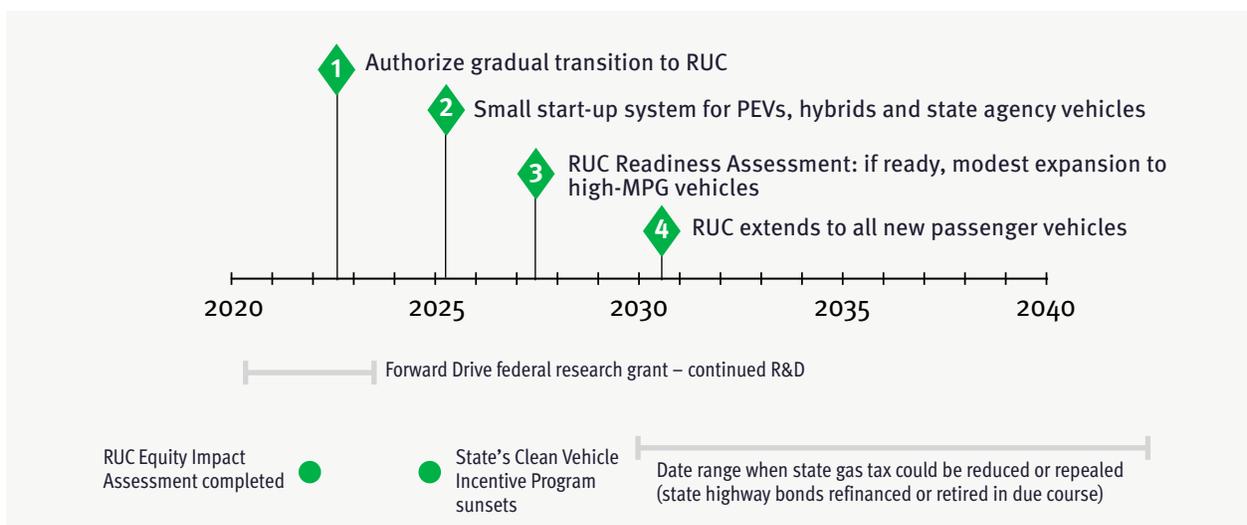


Figure 1: Example of a RUC transition based on Commission recommendation

Forward Drive Federal Research Program

The Commission applied for funding from the U.S. Federal Highway Administration (FHWA) in 2019 under the Surface Transportation System Funding Alternatives (STSFA) program, the same program that funded the 2017-2019 WA RUC pilot and subsequent analysis. The Commission was successful in securing the requested funding and the new *Forward Drive* research program was implemented in October 2020.

The *Forward Drive* research program comprises seven tasks. Each of these tasks is designed to probe and improve upon implementation challenges discovered during the prior assessment and pilot of RUC in Washington. The program tasks are intended to work together so that a full picture, with supporting conclusions, can be drawn at the end of the research. Tasks 1 through 4 involve separate areas of research, analysis and deliverables and can be conducted concurrently. Tasks 5, 6 and 7 are sequential and will be undertaken starting in 2022.

Task 1: Modeling the Revenue Impacts of Mobility Trends

The Commission recognized that new trends in mobility could impact demand for transportation, including increased electrification, automated driving, teleworking, and ridesharing. These trends will impact vehicle miles traveled (VMT) and fuel consumption, which will, in turn, impact future revenues available for the state transportation budget from user fees, like RUC and fuel taxes.

Because of the importance of fossil fuel consumption to state transportation funding today, and because of the importance of VMT for RUC, the Commission developed a scenario-driven, multi-dimensional revenue estimation tool capable of estimating near and longer-term fuel tax and RUC revenues in Washington, under varying scenarios.

By considering a combination of future scenarios for electrification, automation, ridesharing, and teleworking, the model highlights the range of likely future directions for fuel tax and RUC funding over a 30-year horizon (to 2050). There are 5 key scenarios that represent a broad array of future revenue possibilities:

| Scenario | Description |
|---|---|
|  Neutral | Represents a continuation of past growth and relatively more passive technology adoption |
|  Cruise Control | Represents a moderate increase of economic and travel growth and slightly faster adoption of autonomous vehicles compared to Neutral. |
|  Overdrive | Represents aggressive economic growth and high electrification and technology adoption. |
|  Shared Drive | A variant of Overdrive that represents higher adoption of shared mobility while still including aggressive economic growth. |
|  Low Gear | Represents slow growth among electric vehicles, autonomous vehicles, and shared mobility. |

This revenue modeling tool, which will inform the Commission's recommendations to the Legislature regarding the timing of a transition from fuel taxes to RUC, was designed with an intuitive user interface where the values of any parameter can be modified to easily test additional scenarios (see **Figure 2**).

Washington State Transportation Commission

Welcome to WARUC Scenario Analysis Program
 (Please select parameter values and click Apply Selections. Alternatively, click any Named Scenario)

VMT Growth: High

Fuel Type & Electrification: Bloomberg BNEF

Commute Shifts: 100% Increase

Pandemic Scenario: Return to Normal

E-Commerce Impact: 50%

RUC Transition Approach: MPG and/or Year

Gas Tax Scenario: No Change

RUC Rate (\$/mile): 0.024

Average Commute Length: 10

Apply Selections

Slide for Miles Per Gallon Transition: 25

Slide for Transition Year: 2020

NAMED SCENARIOS:

Neutral Cruise Control Over Drive

Shared Drive Low Gear

Figure 2: RUC Financial Model User Interface



Task 2: Equity Impacts and Mitigation Strategies

This task aims to examine potential impacts of transitioning from fuel taxes to a RUC on historically underserved communities. The task consists of two concurrent research activities:

1. **A financial analysis** was conducted which explored the likely impacts of a transition from the gas tax to RUC on households, by income and geography.
2. **An extensive outreach effort** is underway which, via direct consultation with historically underserved communities, is exploring their impressions, concerns, and preferences regarding a RUC.

FINANCIAL ANALYSIS

The financial analysis found that, on average, RUC would benefit low-income households. Currently, the amount paid in fuel tax per mile driven increases, on average, as income decreases. Low-income households tend to own older, less fuel-efficient cars, while higher-income households tend to own newer, more fuel-efficient cars. Under a RUC, assuming everyone pays the same per mile, low-income households would save on average per mile driven, whereas

higher-income households would pay more. **Table 1** summarizes how a RUC would impact vehicle owners by income level.

Table 1: RUC vs. Fuel Tax by Income Level

| Census tract average household income | Census tract average MPG | Fuel Tax per 10,000 miles driven | RUC per 10,000 miles driven | Difference |
|---------------------------------------|--------------------------|----------------------------------|-----------------------------|------------|
| Less than \$50k | 20.0 | \$247 | \$240 | ↓ \$7 |
| \$50-75k | 20.1 | \$246 | \$240 | ↓ \$6 |
| \$75-100k | 20.5 | \$241 | \$240 | ↓ \$1 |
| \$100-150k | 21.4 | \$231 | \$240 | ↑ \$9 |
| Over \$150k | 22.6 | \$219 | \$240 | ↑ \$21 |

In addition, the financial analysis revealed that hybrid and electric vehicles are owned overwhelmingly by higher income households. A RUC on such vehicles would reduce the reliance on gas taxes, which are borne disproportionately by lower-income households. **Figure 3** illustrates how EV and hybrid ownership increase with income in Washington.

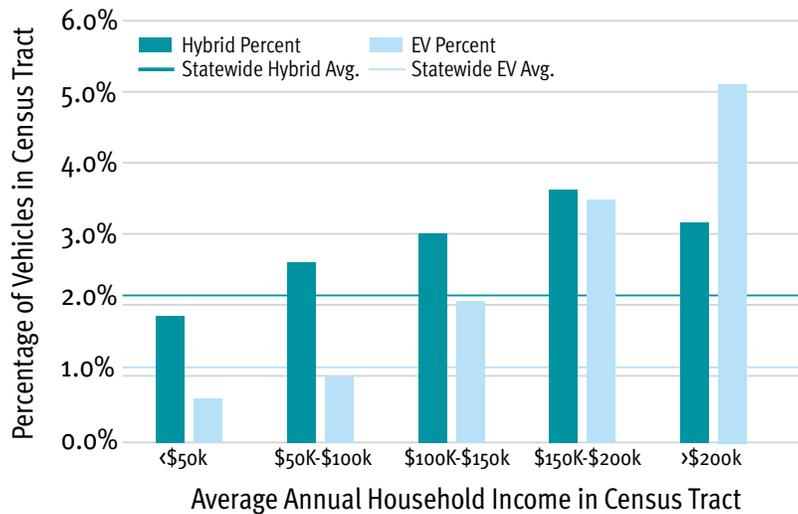


Figure 3: EV and Hybrid Ownership by Income in Washington.

Sources: Average household income: ACS 2019 5-year Estimate; Percent Hybrid (40-53 mpg)–WA Vehicle Registrations; Percent EV (54+ mpg) –WA Vehicle Registrations

At the same time, the financial analysis revealed that the total amount paid in fuel taxes (or RUC) by households is relatively small as a percentage of household expenditures. For households with incomes below \$30,000 per year, transportation accounts for roughly 40% of total household expenditures. Within that, fuel taxes account for 4% of transportation expenditures. **Figure 4** illustrates how this 40% breaks out, with fuel tax or RUC making up just 4% of total transportation costs, while close to 90% of the costs are other costs related to vehicle ownership.

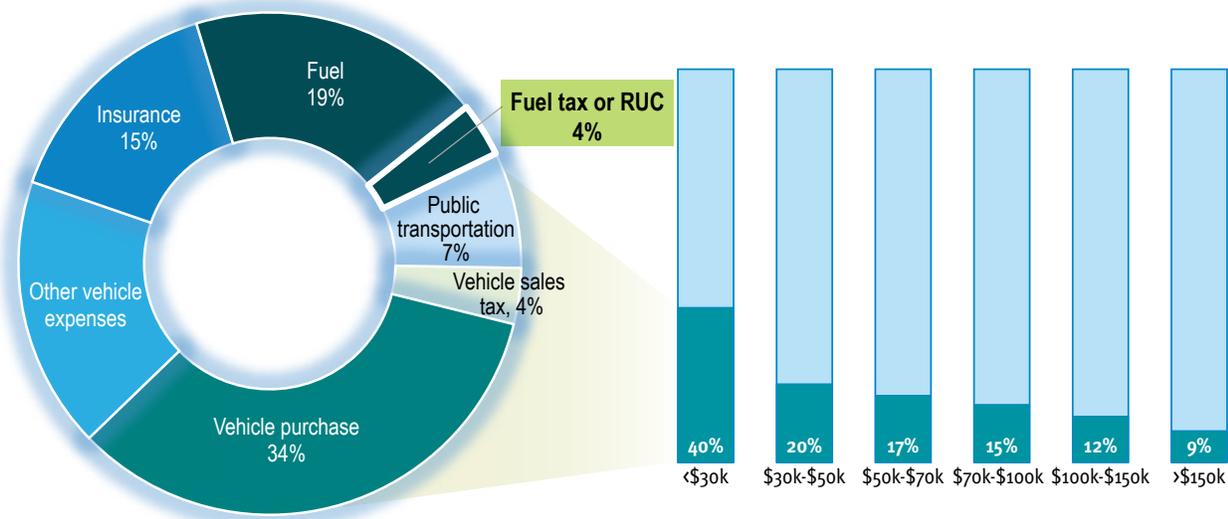


Figure 4: Breakdown of Transportation Costs for Low-Income Households

OUTREACH EFFORT

Stakeholder focus groups, interviews, and roundtable discussions are being held with organizations and groups representing low-income households, communities of color, and vulnerable and displaced populations. Some of the groups that participated in the discussions to date include the Bremerton chapter of the NAACP, Disability Rights Washington, and the Coalition of Immigrants, Refugees, and Communities of Color. Many of the participants are unfamiliar with how Washington roads are paid for, and unsure how much they pay in annual gas taxes. They also have expressed a range of impressions about RUC, similar to the reactions from focus groups conducted before and during the WA RUC pilot. Lower-income participants were not as amenable to RUC, however many participants viewed RUC more favorably once it was explained that it would be an alternative to the gas tax. While there was some concern about privacy regarding reporting devices on vehicles, other participants embraced the concept. Importantly, many of the participants welcomed the opportunity to participate in follow-up demonstration projects to learn more and provide feedback.



Task 3: RUC Innovation

The WA RUC statewide pilot conducted in 2018-2019 tested and advanced the range of possible mileage reporting methods for a RUC program by including a custom-built, GPS-optional smartphone application for measuring and reporting mileage. Additionally, the pilot demonstrated the effectiveness of offering drivers the option of visiting the various vehicle licensing subagent offices around the state, to support an option for in-person RUC reporting and payment. Based on findings of the 2018/19 WA RUC pilot and other RUC pilots around the U.S. and internationally, the Commission determined that a RUC system could benefit from continued exploration of mileage reporting technology enhancements and process improvements that advance equity and user friendliness for both low-tech (e.g., manual reporting) and high-tech (e.g., reporting based on in-vehicle telematics) options, while also reducing costs.

The Commission conducted additional research on emerging technologies and business models in the transportation, payments, utilities, and insurance sectors that could contribute to improvements in equity, access, the user experience, and reductions in the cost of administering RUC. Based on this research, the Commission identified “pain points” throughout the RUC process

(e.g., enrollment, reporting, payments) and identified a series of concepts that form the basis for further testing. Concepts include testing installment payment plans, targeted income-based discounts, and the use of automaker telematics as a choice for drivers that could result in a lower-cost, more user-friendly experience. The design process will be completed in Task 5.



Task 4: Reducing the Cost of Collection Workshop Series

RUC remains a more costly endeavor than the fuel tax, with collection costs closer to those seen for utilities and vehicle fees. The Commission has identified cost of collection as a top issue in need of improvement in a large-scale RUC program.

A series of work sessions was held with Commission staff, Department of Licensing staff, and staff from the RUC programs in Utah and Oregon. The purpose of the work sessions was to concentrate on specific aspects of RUC that are costly to administer, share lessons learned, and develop concepts, including multi-state collaboration opportunities, that can result in shared (and therefore reduced) costs.

The work sessions focused on three topics: customer service, enforcement, and procurement & certification. Several themes emerged, contributing to the mini-pilot concept development.

- **Customer service:** Investing in high-quality customer service can reduce costs of operations elsewhere in a RUC program by reducing confusion, complaints, and non-payment. Especially in early years of a program, customized support can offer explanations to customers of program requirements, help completing program requirements, and identification of improvements to reduce “pain points” as the program expands to more customers. Offering choices helps create a positive customer experience, from mileage reporting methods to payment methods, while “meeting customers where they are” can reduce the number of interactions they must have with the program.
- **Enforcement:** Enforcement can be costly, so the focus of an enforcement program is best placed on encouraging voluntary compliance to reduce the need for enforcement. This is best accomplished through a range of strategies and program features such as investment in customer-friendly design that makes voluntary compliance easy and seamless; use of clear, simple language to explain requirements; constructive work with initially non-compliant customers to encourage active participation without punishment; deployment of incentives that encourage active participation without undermining revenue; and building empathy through such features as grace periods and proactive communication.
- **Procurement and certification:** With participation of private sector providers of technology and accounting services at least somewhat likely for most RUC programs, and with numerous states poised to create programs, procurement is an opportunity for states to work together to design common elements of a RUC system that reduce the cost to states of procuring services and reduce costs to the private sector to respond to advertisements for state support. This could take the form of a multi-state boilerplate market contract for RUC system elements, multi-state framework for certification of vendors, and identification of existing external market standards to leverage such as banking, payment processing, insurance, and data security.



Task 5: Mini-Pilot Final Design and Planning

Based on the results of Tasks 1 through 4, and building on the lessons learned from the research thus far, 10 mini-pilots, prototype tests, simulations, and field research have been identified for

FORWARD DRIVE FEDERAL RESEARCH PROGRAM

testing in 2022, all of which address WA RUC System Guiding Principles such as equity, cost-effectiveness, and simplicity. The Commission will prepare a detailed phase-in plan for each of these activities in early 2022, along with technical documentation for elements to be tested. The 10 activities are:

- **Self-reporting, tab renewal-based RUC:** This will test how users can report miles and pay for RUC during the current process of annual tab renewals. This would represent the most basic option for how customers could choose to report and pay RUC.
- **Flexible payment plans:** This will test the accessibility, utility, and complexity of offering and administering options for paying RUC charges periodically such as monthly, quarterly, or annually.
- **Enhanced RUC options:** This will test consumer reaction to being presented with additional choices for how to report miles and pay RUC than those presented in the 2017-2019 WA RUC pilot. Example of additional choices include telematics-based mileage reporting, mobility app-based mileage reporting, and retail mileage reporting.
- **Vehicle telematics-based RUC:** This will test reporting miles driven using vehicle telematics for those customers who choose to do so. Not previously tested in Washington, telematics allow customers to enable direct, wireless reporting of odometer readings without the need for a device, smartphone, or self-reporting.
- **Manual mileage exemptions:** This will test techniques for accepting and validating exemption claims for miles driven out of state without requiring the use of automated GPS technology.
- **Targeted income-based discounts:** This will test a method for incorporating discounts into a RUC program based on vehicle owner income.
- **Alternative invoice designs:** This will test a range of visual representations of RUC invoices, across the various methods of reporting miles and paying for miles, from the manual tab-renewal approach to the vehicle telematics-based approach.
- **Unregistered vehicles:** Under a RUC system that relies, in part, on a vehicle registration database for mileage reporting and billing, unregistered vehicles that remain in use on public roads may represent a form of evasion, deliberate or otherwise. Field research will be conducted into the extent and duration of unregistered vehicles in Washington to improve understanding of the enforcement needs in a RUC program.
- **Vehicle transaction Opportunities:** Field research will be conducted into the range of vehicle-related transactions customers engage in over the course of an extended time period (e.g., dealership visits, mechanic visits, registration renewal) to identify those with the best utility to use for RUC mileage reporting and/or payment.
- **Mock standards committee:** Conduct a simulation of a RUC standards development process among multiple states that establishes common terminology, concepts, and data interoperability standards.

Once design and planning are completed, the Commission will begin recruiting participants (spring 2022), developing systems (spring and summer 2022), and launching the mini-pilots and field research activities (fall 2022).

Task 6: RUC Mini-Pilot Operations, Field Research, and Evaluation

Task 6 involves the launch, operations, and evaluation of each of the 10 mini-pilots, prototypes, simulations, and field research detailed in Task 5 above. Each of the ten activities will involve up to 200 volunteer participants, but fewer than 1,000 overall. To support this task, the Commission and project team will work with public and private entities. Testing will commence in mid-2022 and conclude in early 2023.

Task 7: Final Report and RUC Roadmap

Based on the results of all the prior tasks, the Commission will produce a final report which will have two main components:

1. A comprehensive narrative documenting the findings and conclusions from the initial research, mini-pilots and field research; and
2. A comprehensive roadmap for implementing RUC that offers practical policy and system development steps for transitioning more fully from motor fuel taxation to a RUC. The roadmap will feature a Washington-specific transition analysis as well as a generic discussion of transition issues relevant for other states and the U.S. Department of Transportation.



2021 *Forward Drive* Project Activities in Brief

Over the past 18 months, the Commission and project team created a detailed work plan for carrying out the seven tasks described above. Tasks 1 through 4 are nearing completion, noting the following accomplishments:

- **Developed a scenario-driven, multi-dimensional RUC revenue estimation tool** capable of estimating near and longer-term RUC and fuel tax revenue in Washington and tested several plausible scenarios.
- **Analyzed the likely financial impacts** of a transition from a gas tax to RUC on households by income and geography, and conducted a series of stakeholder focus groups, interviews, and roundtable discussions with community members from historically disadvantaged and underrepresented groups.
- **Performed a comprehensive research scan of existing and emerging technologies** and business models with possible relevance to RUC and designed mini-pilots around concepts with the most promise to reduce costs, enhance equity, and promote ease of use.
- **Conducted a series of work sessions** with other states that have implemented or are seriously considering implementing a RUC program on the topics of customer service, procurement, enforcement, and manual reporting.

Alongside the research activities, the project team conducted regular coordination meetings, including periodic updates to the Transportation Commission and the RUC Steering Committee, as well as ongoing quality management and risk management. The RUC Steering Committee held three “spotlight briefings” in the spring and three more in the fall, each one providing an update on research activities. The full Steering Committee met in July and December to review research progress and next steps, and the Commission received updates from the *Forward Drive* team at its May and December meetings.

Next Steps

The project team will continue to advance the scope of *Forward Drive* pursuant to the tasks outlined earlier in this report, with small-scale testing occurring throughout 2022, and a Final Report and Roadmap delivered in 2023.

In parallel, the Commission will support and monitor legislative activities related to RUC and incorporate relevant directives into the research and development of testing plans. The Commission also stands ready to serve as a resource for information regarding previous RUC efforts, from financial modeling to pilot testing to policy analysis.

Outside Washington, the Commission will continue to monitor efforts in other states to incorporate findings and developments that will aid the Legislature in implementing RUC in Washington. Of note, the states of Utah and Oregon continue to develop and enhance their RUC programs. At least one other state (Virginia) has passed legislation creating a similar program.

At the Federal level, passage of the Infrastructure Investment and Jobs Act (IIJA) will provide states with opportunities to further study RUC. The Commission anticipates significant action on many fronts at the Federal level, including continued grant funding to states for exploration of RUC programs. Washington has benefited from these grant programs, formerly known as STSFA grants, but renamed under the Infrastructure Investment and Jobs Act (IIJA) to Strategic Innovation for Revenue Collection (SIRC).

Notably, the new law increases the federal cost share of grant awards, expands eligibility, and allows states to use funds for system implementation. Additionally, the IIJA also provides for a multi-year, nationwide RUC pilot program. Details about these programs will be forthcoming as the U.S. Department of Transportation sets out rules and procedures for administering these programs. The Commission will keep the Legislature apprised of all relevant information to support *Forward Drive* and Washington's broader efforts for finding a gas tax replacement.

